NEBRASKA
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DEPT. OF ENVIRONMENT AND ENERGY

Pete Ricketts, Governor

July 19, 2021

Edward Chu
Acting Regional Administrator
U.S. EPA Region 7
11201 Renner Blvd.
Lenexa, KS 66219

Re: Nebraska 2021 Ambient Air Monitoring Network Plan and 5-Year Assessment

Dear Mr. Chu,

Enclosed is the *Nebraska 2021 Ambient Air Monitoring Network Plan* (2021 Network Plan). This document is submitted pursuant to the requirements set forth in 40 CFR Part 58.10.

The 2020 Network Plan seeks approval for upcoming modifications to the Nebraska Air Monitoring Network:

1) Relocation of the south Omaha ozone and PM_{10} monitoring site at the request of the propery owner;
2) Installation of a new $PM_{2.5}$ monitoring site at Homestead National Historical Park near Beatrice, Nebraska;
3) Replacement of a sequential filter-based $PM_{2.5}$ monitor with a continuous monitor in Blair, Nebraska.

The 2021 Network Plan was made available to the public on the NDEE website on May 7, 2021. The public comment period ended June 7, 2021. No comments were received as of that date.

Please direct questions or inquiries concerning the 2021 Network Plan to David Adams at 402-471-4159 (david.adams@nebraska.gov) or Randy Smith at 402-471-4272 (randy.smith@nebraska.gov).

Sincerely,

Tom Buell
Monitoring and Remediation Division Administrator

Enclosure:
Nebraska 2021 Ambient Air Monitoring Network Plan

E-copies with enclosures to:
Will Stone, U.S. EPA Region 7; Russ Hadan, DCHD; Gary R. Bergstrom and Jim Fobben, LLCHD

Department of Environment and Energy
P.O. Box 98922
Lincoln, Nebraska 68509-8922

Jim Macy, Director
OFFICE 402-471-2186 FAX 402-471-2909
ndee.moreinfo@nebraska.gov

Draft 2021 Ambient Air Quality Monitoring Network Plan

This information is provided by the Nebraska Department of Environment and Energy
to assist the public and regulated community.

Form #: 21-008 **Annual Reports** Revised: 5/7/21

Size	File Name
1,895 KB	21-008 - Nebraska_2021_Ambient_Air_Monitoring_Network_Plan_PID.pdf

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Nebraska's Draft 2021 Ambient Air Quality Monitoring Network Plan was prepared to meet the federal requirements set forth in 40 CFR Part 58.10. It describes the current ambient air quality monitoring network in Nebraska and planned and possible changes through 2021.

Written comments regarding this Draft Network Plan may be submitted to the Nebraska Department of Environment and Energy (NDEE) at the mail or e-mail addresses below. Comments should be submitted by June 18, 2021. Comments will be addressed as appropriate in the Final Network Plan.

Mail:
Nebraska Department of Environment and Energy
Attn: David Adams - Air Quality Compliance Section
PO Box 98922
Lincoln, NE 68509

Email: NDEE.airquality@nebraska.gov

Nebraska Department of Environment and Energy

Nebraska 2021 Ambient Air Monitoring Network Plan

For the period July 1, 2021 through June 30, 2022

NDEE Document #21-008

NEBRASKA

Good Life. Great Resources.

DEPT. OF ENVIRONMENT AND ENERGY

Jim Macy, Director

May 10, 2021

This document fulfills the requirements of 40 CFR Part 58.10 for an annual plan for the ambient air quality monitoring conducted by the Nebraska Department of Environment and Energy, the Lincoln-Lancaster County Health Department, and the Douglas County Health Department.

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Acronyms, Abbreviations, and Definitions

Agencies/Organizations

DCHD - Douglas County Health Department

EPA - United States Environmental Protection Agency

EPA R7 - United States Environmental Protection Agency Region VII

LLCHD - Lincoln/Lancaster County Health Department

NDEE - Nebraska Department of Environment and Energy

Regulations

CFR - Code of Federal Regulations

DRR - Data Requirements Rule or 40 CFR Part 51 Subpart BB - Data Requirements for Characterizing Air Quality for the Primary SO_2 NAAQS

NAAQS - National Ambient Air Quality Standards

Title 129 - Nebraska Air Quality Regulations

Site Types

IMPROVE - Interagency Monitoring of Protected Visual Environments (monitoring performed to evaluate regional haze)

MDN - Mercury Deposition Network (a type of NADP site)

NADP - National Atmospheric Deposition Program (analysis of deposition components in precipitation. May include NTN and MDN sites)

NCore - National Core multi-pollutant monitoring stations. Monitors at these sites are required to measure particles ($PM_{2.5}$, speciated $PM_{2.5}$, $PM_{10–2.5}$), O_3, SO_2, CO, nitrogen oxides (NO/NO_y), Pb, and basic meteorology.

NTN - National Trends Network (a type of NADP site that analyzes for acidity, sulfate, nitrate, ammonium, chloride, and base cations (e.g., CA, Mg, K and Na))

SLAMS - State and Local Air Monitoring Stations

Monitor Terminology

AirNow - EPA web application that reports current local air quality conditions (airnow.gov).

AQS - Air Quality System, the name for EPA's air monitoring data base

FRM - Federal Reference Method used for determining compliance with the NAAQS

FEM - Federal Equivalent Method used for determining compliance with the NAAQS

PWEI - Population Weighted Emissions Index (a term defined in 40 CFR Part 58 Appendix D that relates to SO_2 monitoring requirements)

2020 Network Plan - Nebraska's *2020 Ambient Air Monitoring Network Plan & 5-Year Assessment*

2021 Network Plan – Nebraska's *2021 Ambient Air Monitoring Network Plan (i.e., this document)*

Concentration Units

ppb - Parts per billion (a volume/volume concentration unit)

ppm - Parts per million (a volume/volume concentration unit)

mg/m^3 - Milligrams per cubic meter (a mass/volume concentration unit)

$\mu g/m^3$ - Micrograms per cubic meter (a mass/volume concentration unit)

Acronyms, Abbreviations, and Definitions (continued)

Pollutants

CO - Carbon Monoxide

NO - Nitric Oxide

NO_2 - Nitrogen Dioxide

NOy - Total reactive oxides of nitrogen. The parameter NOy – NO measured at NCore sites approximates the concentration of NO_2 but may be higher.

O_3 - Ozone

Pb - Lead

TSP-Pb - Lead sampled using a TSP sampler

$PM_{2.5}$ - Particulate matter with a diameter equal to or less than 2.5 micrometers or microns (reported as $\mu g/m^3$ with air volumes measures at local conditions)

PM_{10} - Particulate matter with a diameter equal to or less than 10 micrometers or microns (reported as $\mu g/m^3$ with air volumes measures at standard conditions (25º C, 1 atm))

$PM_{10-2.5}$ - The difference between PM_{10} and $PM_{2.5}$ (Both being calculated at local conditions)

SO_2 - Sulfur Dioxide

TSP - Total Suspended Particulates

Definitions

Criteria Pollutants – The six pollutants for which National Ambient Air Quality Standards (NAAQS) have been established: carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, particulates and lead.

in situ - A Latin phrase meaning *in the place*. As used in this report it refers to the formation of pollutants in the atmosphere. For example, ozone is formed *in situ* from the photochemical reaction of pollutant precursors. Ozone is not emitted directly from sources. $PM_{2.5}$ and haze are also formed *in situ*, although they are also emitted by sources. PM_{10} and CO, on the other hand, are largely emitted from sources; *in situ* formation being of minimal importance. NOx and SOx are emitted and then undergo transformations to NO_2 and SO_2; they also can play a role in the *in situ* formation of ozone and $PM_{2.5}$.

Census Terms

Core-Based Statistical Area (CBSA) – a geographic area defined by the Office of Management and Budget containing an urbanized core of at least 10,000 people and adjacent areas that have a high degree of social and economic integration with the core. CBSAs are made up of whole counties or county equivalents.

Metropolitan Statistical Area (MSA) – a CBSA that has at least one urbanized area with population of 50,000 or more.

Micropolitan Statistical Area (MiSA) – a CBSA that has at least one urban cluster with population at least 10,000 but less than 50,000.

I. Introduction and Purpose

This Nebraska 2021 Ambient Air Monitoring Network Plan (hereafter referred to as the "2021 Network Plan") was prepared to meet federal requirements set forth in 40 CFR Part 58.10. State air monitoring agencies are required to submit to the U.S. Environmental Protection Agency (EPA) by July 1 each year an ambient air monitoring network plan with the following purposes:

- Describe the current ambient air monitoring network, including the location and purpose of each monitoring site.
- Describe changes made in the network since submission of the previous plan.
- Review whether the ambient air monitoring network meets the requirements set forth in 40 CFR Part 58 Appendices A, C, D, and E.
- Describe planned and possible changes in the ambient air monitoring network in the upcoming year, as best they can be determined at the time the plan is prepared.

II. Public Participation

Federal regulations require that annual ambient air monitoring network plans must be made available for public inspection and comment for at least 30 days prior to submission to the EPA. The Nebraska Department of Environment and Energy (NDEE) meets this requirement by posting the plan on the NDEE website (http://deq.ne.gov/Publica.nsf/Pubs_Air_Amb.xsp). Written comments regarding this 2021 Network Plan may be submitted to the Nebraska Department of Environment and Energy during the 30-day inspection period as provided below:

Mail:

Nebraska Department of Environment and Energy
Attn: David Adams – Air Quality Compliance Section
PO Box 98922
Lincoln, NE 68509-8922

Email:

NDEE.airquality@nebraska.gov

The deadline for submittal of written comments can be found on the NDEE website. Informal inquiries may also be directed to David Adams at 402-471-4159. Verbal comments are not necessarily included or addressed as review comments.

III. Purpose of Ambient Air Quality Monitoring

The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants that are common in outdoor air, that come from numerous and diverse sources, and are considered harmful to public health and the environment. Standards have been established for six "criteria" air pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), lead, and particle pollution, which is subdivided into particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

The statute established two types of national standards for each criteria pollutant. Primary standards set limits to protect public health, including the health of sensitive populations such as people with asthma, children, and the elderly. Secondary standards set limits to protect the public welfare and the environment, including protection against damage to animals, crops, vegetation, and to prevent visibility impairment. The current

primary and secondary standards are shown in Table III-1. Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu g/m^3$).

An ambient air monitoring network serves several purposes:

(1) Provide air pollution data to the public in a timely manner.
(2) Support compliance with ambient air quality standards and pollution control strategies.
(3) Support air pollution research studies.

An area that is in compliance with the standard for a criteria pollutant is said to be in attainment. All areas of Nebraska are currently in attainment for each of the NAAQS.

Table III-1. National Ambient Air Quality Standards (NAAQS)

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		Primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead		Primary and Secondary	Rolling 3-month average	0.15 $\mu g/m^3$ (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)		Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary and Secondary	1 year	53 ppb (2)	Annual mean
Ozone (O_3)		Primary and Secondary	8 hours	0.070 ppb (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	Primary	1 year	12.0 $\mu g/m^3$	Annual mean, averaged over 3 years
		Secondary	1 year	15.0 $\mu g/m^3$	Annual mean, averaged over 3 years
		Primary and Secondary	24 hours	35 $\mu g/m^3$	98th percentile, averaged over 3 years
	PM_{10}	Primary and Secondary	24 hours	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		Primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 $\mu g/m^3$ as a calendar quarter average) also remain in effect.
(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.
(3) Final rule signed October 1, 2015, and effective December 28, 2015; retained in December 2020. The previous (2008) O_3 standards additionally remain in effect in some areas. The previous (2008) O_3 standards are not revoked and remain in effect for designated areas.
(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

When an air quality monitor records pollutant levels that exceed the NAAQS limit, that measurement is termed a "NAAQS exceedance". For most criteria pollutants a single recorded exceedance does not violate the standard; monitor data from the most recent three-year period must be analyzed to make that determination. Federal regulations specify for each pollutant how the 3-year monitor data must be analyzed to calculate a "design value" that is compared to the level of the NAAQS to establish whether or not the measured air quality is in compliance with the standard. The Form column in Table III-1 specifies how the design value is calculated for each criteria pollutant. The most recent design values for Nebraska's ambient air monitors are presented in Appendix B.

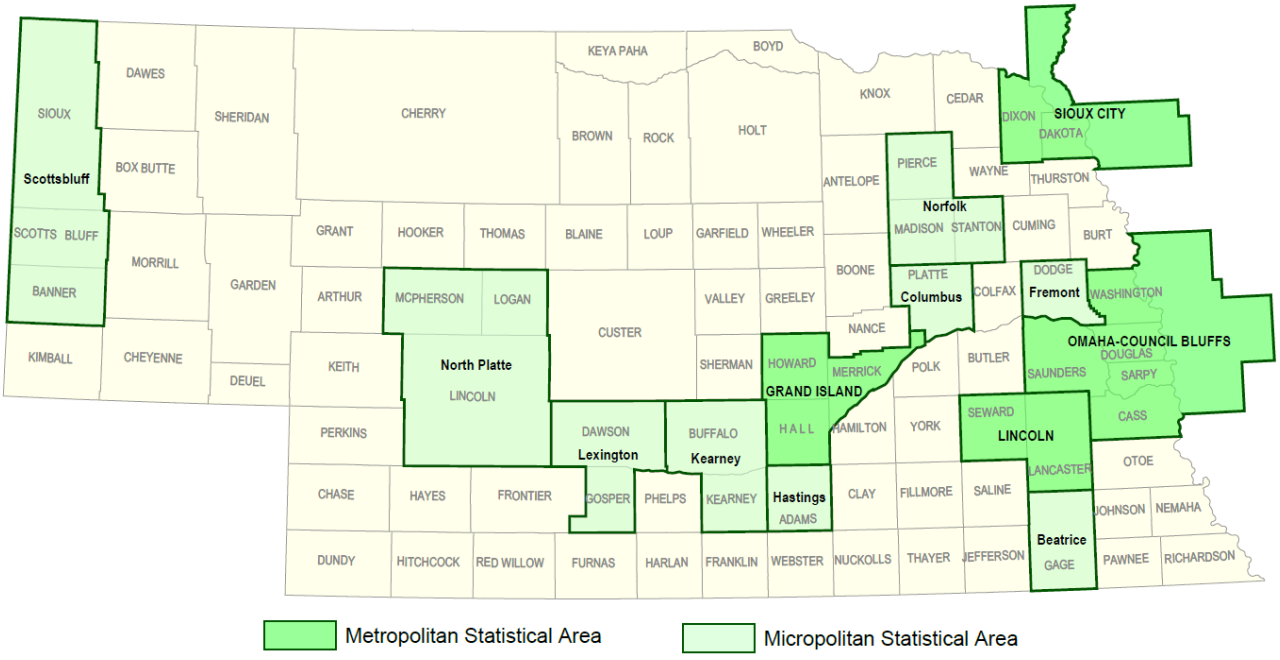
An ambient air monitoring network may include a variety of types of sites to provide information on peak air pollution levels, typical levels of exposure, air pollution levels near significant sources, and pollutant transport. EPA has identified the following general site types:

- Sites located to determine the highest concentrations expected to occur in the area covered by the network.
- Sites located to measure typical concentrations in areas of high population density.
- Sites located to determine the impact of significant sources or source categories.
- Sites located to determine general background levels.
- Sites located to determine the extent of regional pollutant transport among populated areas.
- Sites located to measure air pollution impacts on visibility, vegetation, or other welfare-based impacts.

IV. Nebraska Metropolitan and Micropolitan Statistical Areas

Discussions in this document of the ambient air monitoring network in Nebraska are organized around the Metropolitan Statistical Areas (MSAs) and Micropolitan Statistical Areas (MiSAs) in which the monitors are located. Nebraska includes all or part of four Metropolitan Statistical Areas along with nine Micropolitan Statistical Areas. Each of these federally-defined urbanized units consists of one or more entire counties. A map of Nebraska's MSAs and MiSAs is shown in Figure IV-1 below.

Figure IV-1. Nebraska Metropolitan and Micropolitan Statistical Areas (MSAs and MiSAs) *



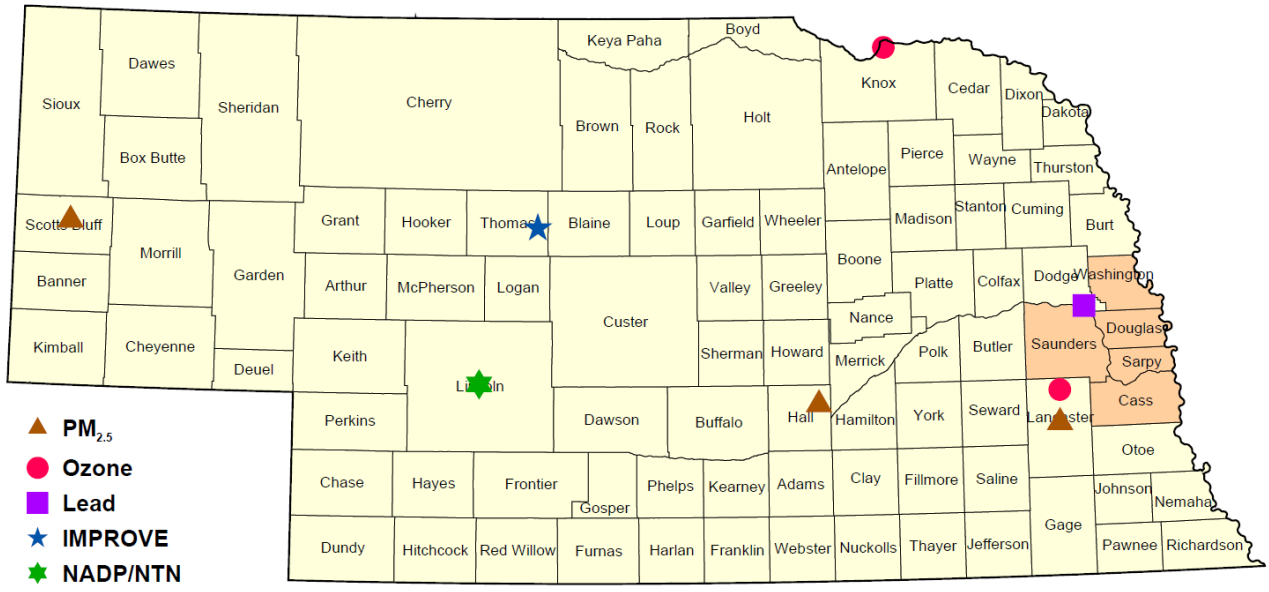
* Areas as defined by the U.S. Office of Management and Budget, September 2018.

V. Overview of Current Nebraska Ambient Air Monitoring Network

Nebraska's current air monitoring network is summarized in Table V-1 below, and monitor locations are shown in Figures V-1 and VI-2 below. The network description tables in Appendix A provide more detailed information on the network, including site locations and monitoring objectives.

Nebraska's State and Local Air Monitoring Stations (SLAMS) network includes monitoring sites for ozone, carbon monoxide, nitrogen oxides, sulfur dioxide, lead, PM_{10}, $PM_{2.5}$, $PM_{10-2.5}$ and regional haze (i.e., IMPROVE monitor). The network is operated by the Nebraska Department of Environment and Energy and two local agencies: the Douglas County Health Department (DCHD) and the Lincoln-Lancaster County Health Department (LLCHD).

Figure V-1. Nebraska Air Quality Monitoring Sites Outside of the Omaha-Council Bluffs Metropolitan Statistical Area, 3/31/2021



$PM_{2.5}$
Lincoln (Lancaster County)
Grand Island (Hall County)
Scottsbluff (Scottsbluff County)

Ozone
Davey (Lancaster County)
Santee (Knox County; operated by EPA)

Lead
Fremont (Dodge County)

NADP/NTN
Maxwell (Lincoln County)

IMPROVE
Nebraska National Forest (Thomas County)

The Nebraska counties in the Omaha-Council Bluffs Metropolitan Statistical Area are indicated by the orange shading.

Note: The ozone monitoring site in Knox County is operated by EPA on the Santee Indian Reservation and is not part of NDEE's SLAMS network. The IMPROVE and NADP/NTN sites are also not part of NDEE's SLAMS network.

Table V-1. Nebraska Ambient Air Monitoring Network on March 31, 2021. (1)					
	DCHD Omaha MSA (2)(3)	NDEE Cass County (4)	LLCHD Lincoln MSA	NDEE Other Areas	Total
SLAMS Sites (includes NCore)	8	1	2	3	14
IMPROVE (5)	0	0	0	1	1
NADP (6)	1	0	0	1	2
Total Monitoring Sites	9	1	2	5	17
Sites by Pollutant: SLAMS Sites including NCore (3)					
Ozone	3	0	1	0	4
Carbon Monoxide	2	0	0	0	2
Nitrogen Oxides	1	0	0	0	1
Sulfur Dioxide	2	0	0	0	2
PM_{10}	3	1	0	0	4
$PM_{2.5}$	4	0	1	2	7
$PM_{10-2.5}$	1	0	0	0	1
$PM_{2.5}$ Speciation	1	0	0	0	1
Lead	0	0	0	1	1
Total Pollutant Sites	17 (3)	1	2	3	23

Footnotes:

(1) This table summarizes the number of operating sites as of 3/31/21 in the NE SLAMS network (including NCore) by operating agency, as well as IMPROVE and NADP sites in Nebraska.

(2) The Omaha MSA encompasses 5 NE counties: Cass, Douglas, Sarpy, Saunders, & Washington. DCHD operates sites in Douglas, Sarpy & Washington counties. NDEE operates a site in Cass County.

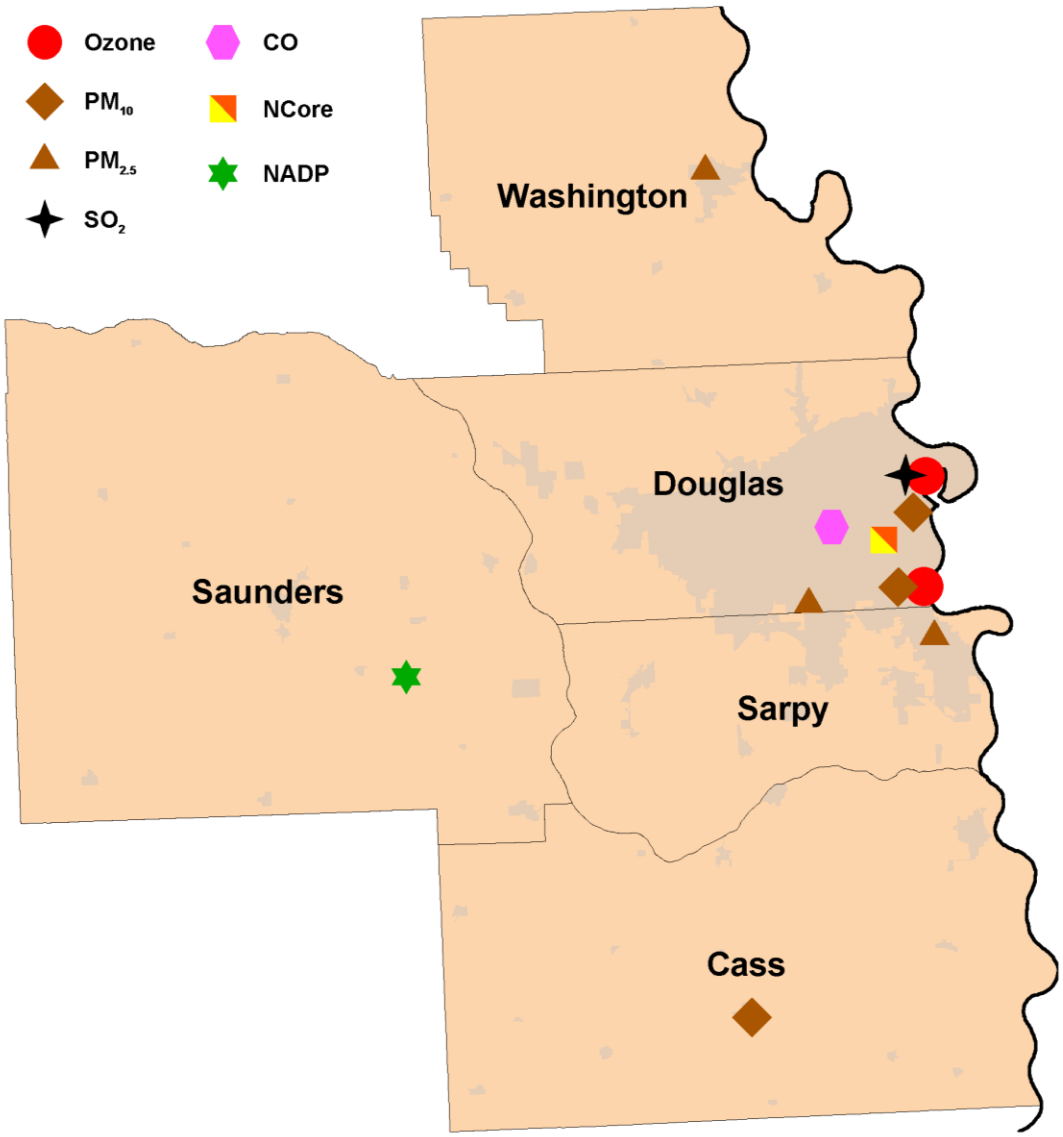
(3) There were 3 multi-pollutant monitoring sites in the Omaha MSA in 2019: 1616 Whitmore – SO_2 & Ozone (2 pollutants); 24th & O Streets (South Omaha) – Ozone and PM_{10} (2 pollutants); and NCore (42nd & Woolworth) – CO, NO-NOy, O_3, SO_2, and PM (8 pollutants). The number of monitoring sites by individual pollutant is thus greater than the number of monitoring locations within the Omaha MSA and for the state as a whole.

(4) Cass County has limestone mining and processing facilities, which are subject to specific air emission rules for the county set forth in Chapter 21 of Nebraska Administrative Code Title 129 – Nebraska Air Quality Regulations.

(5) IMPROVE – Interagency Monitoring of Protected Visual Environments. These are fine particulate and particulate speciation monitors intended to provide information for studying regional haze that may impact Class I National Park and wilderness Areas. IMPROVE sites are not part of the SLAMS network. EPA is responsible for the design of the IMPROVE network. Changes to the IMPROVE Network within Nebraska do not need to be included in Nebraska's annual network plan, but the existence of the site is recognized within the network plans. The NDEE provides administrative support (with EPA funding) for one IMPROVE site at the Nebraska National Forest near Halsey, NE.

(6) NADP - National Atmospheric Deposition Program sites are not part of the SLAMS network. They are not subject to 40 CFR Part 58 requirements and are not used for NAAQS attainment determinations. They are included in the Network Plan for informational purposes only.

Figure V-2. Air Quality Monitor Locations in the Nebraska Portion of the Omaha-Council Bluffs Metropolitan Statistical Area, 3/31/2021.



NCore
4102 Woolworth Avenue

Ozone
Omaha, 4102 Woolworth Avenue (NCore)
Omaha, 1616 Whitmore Street
Omaha, 2411 O Street

Carbon Monoxide
Omaha, 4102 Woolworth Avenue (NCore Trace Monitor)
Omaha, 7747 Dodge Street

Sulfur Dioxide (SO_2)
Omaha, 4102 Woolworth Avenue (NCore Trace Monitor)
Omaha, 1616 Whitmore Street

PM_{10}
Omaha, 19th & Burt Streets
Omaha, 2411 O Street
Omaha, 4102 Woolworth Avenue (NCore)
Weeping Water, 102 P Street

$PM_{2.5}$
Omaha, 4102 Woolworth Avenue (NCore)
Omaha, 9225 Berry Street
Bellevue, 2912 Coffey Avenue
Blair, 2242 Wright Street

NADP/NTN/MDN
Mead, Saunders County

VI. Nebraska Ambient Air Monitoring Network: January 1, 2020 through March 31, 2021

This section describes Nebraska's Ambient Air Monitoring Network in place from January 1, 2020 through March 31, 2021, and changes made during that period. Detailed information on individual monitoring sites, including purpose, scale, monitor specifications, and start dates is contained in Appendix A.

This section is organized around the Metropolitan Statistical Areas (MSAs) and Micropolitan Statistical Areas (MiSAs) in which monitoring is conducted.

A. Omaha-Council Bluffs MSA Sites Operated by the Douglas County Health Department (DCHD)

DCHD operates an ambient air network of eight sites in Douglas, Sarpy, and Washington Counties, Nebraska. Multi-pollutant monitoring is currently conducted at three of the sites:

- The NCore site monitors for eight pollutant parameters (CO, NOy/NO, O_3, SO_2, $PM_{2.5}$, PM_{10}, $PM_{10-2.5}$, and $PM_{2.5}$ speciation), as well as meteorological parameters and atmospheric radiation (RADNET*).
- The South Omaha site has both an ozone and a PM_{10} monitor.
- The 1616 Whitmore site has both SO_2 and ozone monitors.

In addition, there are single-pollutant monitoring sites for carbon monoxide (one), $PM_{2.5}$ (three), and PM_{10} (one). The Omaha area monitoring network is therefore more extensive than the eight-site total might indicate; if the pollutants are counted separately, there are 17 pollutant monitoring sites. See Appendix A for detailed information on the sites operated by DCHD.

NDEE and Iowa DNR share responsibilities for air quality monitoring in the Omaha-Council Bluffs MSA. Iowa currently relies on monitors in the Nebraska portion of the MSA to meet minimum monitoring requirements for ozone, $PM_{2.5}$, PM_{10}, and SO_2.

* Note: RadNet is a nationwide system that monitors the nation's air, drinking water, precipitation, and pasteurized milk to determine levels of radiation in the environment. RadNet sample analyses and monitoring results provide baseline data on background levels of radiation in the environment and can detect increased radiation from radiological incidents. The RadNet monitor is not subject to the network planning process set forth in 40 CFR Part 58.10. It is recognized above for informational purposes only.

Several changes have occurred in the DCHD monitoring network in Omaha since January 2020.

1. Permanent Closure of the North Omaha Station Source-Oriented Monitor as allowed by the SO_2 Data Requirements Rule.

In accordance with rules set forth in 40 CFR Part 51 Subpart BB (known as the SO_2 Data Requirements Rule), DCHD began operating a source-oriented SO_2 monitoring site (AIRS ID 31-055-0057) at 7288 John Pershing Drive in early 2017 to characterize air quality near the Omaha Public Power District North Omaha Station coal-fired power plant. As reported in the 2020 Network Plan, data collected from 2017 through 2019 demonstrated a 3-year Design Value (DV) that was less than 50% of the NAAQS. Based on this finding, NDEE's 2020 Network Plan requested removal of the North Omaha Station SO_2 monitor, as allowed by the Data Requirements Rule. This request was approved by the Regional Administrator on December 22, 2020, effective January 1, 2021.

2. Relocation of the 19th and Burt Streets PM_{10} Monitor Site.

DCHD operated a population and source-oriented PM_{10} monitoring site at 1909 Burt Street in Omaha starting in 2001. This site had primary and collocated filter-based samplers situated on the roof of a

building owned by Creighton University. NDEE's 2019 Network Plan reported that DCHD had been informed that Creighton University planned to demolish this building to make way for new construction, with demolition to begin later in 2019. DCHD therefore began a search for suitable alterative locations for this monitoring site. In October 2019 the EPA Region 7 Administrator approved relocation of this site. However, the University subsequently informed DCHD that demolition plans had been postponed, and the monitors continued operating at the 1909 Burt Street location through 2020. The building demolition is now scheduled to proceed. Consequently, on March 10th, 2021, the monitors were relocated to a new rooftop site at 723 North 18th Street, one and one-half blocks east of the previous location.

B. Omaha-Council Bluffs MSA Sites Operated by NDEE

NDEE operates a MetOne BAM continuous PM_{10} sampler at the Weeping Water wastewater treatment plant in Cass County. This is a population and source-oriented site that monitors nearby limestone mining and processing facilities in the surrounding rural area.

C. Lincoln MSA Sites Operated by the Lincoln-Lancaster County Health Department (LLCHD)

LLCHD operates two SLAMS monitoring sites:

- A $PM_{2.5}$ site at 3140 N Street in Lincoln, and
- An ozone site in Davey, NE (northern Lancaster County).

The N Street $PM_{2.5}$ site has three monitors: a primary filter-based Federal Reference Method (FRM) sampler, a collocated filter-based FRM sampler, and a continuous MetOne BAM monitor. Data from the continuous monitor is reported to AirNow but not to EPA's Air Quality System (AQS) database.

One change has occurred in the LLCHD monitoring network since January 1, 2020.

In accordance with rules set forth in the SO_2 Data Requirements Rule, LLCHD began operating a source-oriented SO_2 monitoring site (AIRS ID 31-109-0025) near Hallam, NE (SW 42nd Street, 0.2 miles north of West Pella Road) in early 2017 to characterize air quality near the Nebraska Public Power District Sheldon Generating Station coal-fired power plant. As reported in the 2020 Network Plan, data collected from 2017 through 2019 demonstrated a 3-year Design Value (DV) that was less than 50% of the NAAQS. Based on this data, NDEE's 2020 Network Plan requested removal of the Sheldon Station SO_2 monitor, as allowed by the Data Requirements Rule. This request was approved by the Regional Administrator on December 22, 2020, effective January 1, 2021.

D. Sioux City MSA in Dakota and Dixon Counties

There are no monitoring sites in the Nebraska portion of the Sioux City MSA. There are two monitoring sites in the Iowa and South Dakota portions of the MSA:

- A PM_{10}/$PM_{2.5}$ site in Sioux City operated by the Iowa DNR, and
- A multi-pollutant site for SO_2, NO_2, O_3, PM_{10}, and $PM_{2.5}$ in Union County, South Dakota operated by the South Dakota DENR.

NDEE has an agreement with South Dakota DENR that Nebraska relies on the Union County monitors and data to meet minimum monitoring requirements for ozone and SO_2 in the Sioux City MSA. Based on population size and ambient PM levels measured at the Iowa and South Dakota sites, PM_{10} and $PM_{2.5}$ monitors are not currently required in the Sioux City MSA (see Table C-2 in Appendix C).

E. Grand Island MSA

NDEE began operating a filter-based FRM $PM_{2.5}$ sampler on the roof of Grand Island Senior High School in 2004. In 2019 NDEE acquired a continuous MetOne BAM 1020 Federal Equivalent Method (FEM) sampler as a replacement for the filter-based sampler. However, this rooftop location did not allow for a climate-controlled shelter required for operation of the continuous sampler, and NDEE was unable to obtain permission for a shelter elsewhere on the school grounds. As a result, NDEE relocated the Grand Island monitoring site about 2 miles south-southwest to a Nebraska Department of Transportation lot in Grand Island. The new site began operating on 11/26/2019, and the Grand Island Senior High School site was closed on 3/31/2020. The Grand Island continuous $PM_{2.5}$ data is reported to AirNow.

F. Scottsbluff MiSA

NDEE operates a $PM_{2.5}$ monitoring site at Scottsbluff Senior High School. A filter-based FRM sampler operated at this location on a 3-day sampling schedule until 3/24/2020, when a MetOne BAM FEM continuous sampler was installed at the same location. NDEE staff were unable to correctly update the monitor information in the EPA AQS under the existing AIRS ID, so a new AIRS ID was assigned and the previous one marked as closed. The Scottsbluff continuous $PM_{2.5}$ data is reported to AirNow.

G. Fremont MiSA

NDEE operated primary and collocated total suspended particulate lead samplers at 1255 Front Street in Fremont beginning in 2010 to provide source-oriented monitoring of the Magnus-Farley brass/bronze foundry. The site owner notified the Department in March 2018 that he no longer wished to host the lead monitors, which were removed from this location at the end of September 2018. An alternative location has been identified and approved by EPA Region 7, and NDEE staff are in negotiations with the property owner considering relocation of the monitors to that site.

H. Lexington MiSA

Currently there are no ambient air monitoring sites in the Lexington MiSA.

I. IMPROVE Site

IMPROVE is the acronym for Interagency Monitoring of Protected Visual Environments. These sites contain fine particulate and particulate speciation monitors intended to provide information for studying regional haze that may impact Class I National Park and Wilderness Areas. There are no Class I National Park and Wilderness Areas in Nebraska; the nearest sites are Rocky Mountain National Park in Colorado and Wind Cave National Park and Badlands National Park in South Dakota.

NDEE provides administrative support for one IMPROVE site at Halsey National Forest in Thomas County. Data collected at this site facilitates regional haze and pollution transport studies but is not used for NAAQS compliance.

J. National Atmospheric Deposition Program (NADP) / National Trends Network (NTN) and Mercury Deposition Network (MDN)

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) is a federal, nationwide network of sites that monitor for air pollutants deposited by rain and snow. The deposition parameters examined include acidity, sulfate, nitrate, ammonium, chloride, and base cations (e.g., calcium, magnesium, potassium, and sodium).

There are two NADP/NTN sites in Nebraska: one near Mead (Saunders County) that has operated since 1978 and one near North Platte (Lincoln County) that has operated since 1985. These sites are operated by

the University of Nebraska with analytical and data development support from the federal NADP. There were no changes to the NADP/NTN network from January 1, 2020 thru March 31, 2021.

Mercury Deposition Network (MDN) monitoring was initiated at the Mead site on June 26, 2007 and is continuing. At the North Platte site, MDN monitoring was conducted from October 2008 thru October 2010.

The operation of NADP sites is not subject to the provisions of 40 CFR Part 58.10. Their inclusion in this Network Plan is for informational purposes only. More information on the NADP/NTN and the NADP/MDN sites can be found in Appendix A of this network plan. For NADP, NTN and MDN program information see: http://nadp.slh.wisc.edu.

VII. Considerations for Network Planning

A. EPA Air Monitoring and Network Design Requirements

The Nebraska Ambient Air Monitoring Network must comply with the applicable requirements of 40 CFR Part 58 Appendices A through E. As the review in Appendix C of this plan documents, the Nebraska network operated by NDEE, DCHD, and LLCHD is meeting all of the applicable requirements of 40 CFR Part 58 Appendices A, C, D, and E except for the $PM_{2.5}$ collocation requirements in Appendix A, as discussed below.

Part 58 Appendix B applies to Prevention of Significant Deterioration (PSD) monitoring as part of New Source Review. Monitoring required for PSD is generally conducted by the source rather than a state or local monitoring agency. Therefore, compliance with Appendix B is not directly addressed in this network plan. No PSD-required background monitoring took place in Nebraska during 2020.

40 CFR Part 58 Appendix A Section 3.2.3 specifies quality control sampling procedures for $PM_{2.5}$, with respect to Federal Reference Method (FRM) and Federal Equivalent Method (FEM) samplers. This section requires that for each distinct monitoring method (FRM or FEM) that a Primary Quality Assurance Organization (PQAO) utilizes as a primary monitor, there must be a collocated quality control monitor at 15% of the monitor sites, with a minimum of one collocated monitor. The first collocated monitor must be a designated FRM monitor.

Currently NDEE is the PQAO for three $PM_{2.5}$ monitoring sites: Grand Island and Scottsbluff sites operated by NDEE and the Lincoln site operated by LLCHD. The Lincoln site has primary and collocated sequential FRM monitors that sample for 3-day and 6-day intervals, respectively. Prior to 2020, the Grand Island and Scottsbluff sites also each had a primary sequential FRM monitor with a 3-day sampling interval, and collocation at the Lincoln site satisfied the collocation requirement for the three sites.

As discussed in the 2020 Network Plan, in late 2019 and early 2020 NDEE replaced the FRM monitors at the Grand Island and Scottsbluff sites with continuous FEM samplers. Because NDEE now operates two sites with primary FEM $PM_{2.5}$ monitors, Appendix A Section 3.2.3 requires a collocated FRM sampler at one of the sites. NDEE proposes to meet this requirement by setting up a new $PM_{2.5}$ monitoring site near Beatrice, Nebraska with a primary continuous FEM sampler and a collocated FRM sampler (see section VIII below).

B. Air Quality and NAAQS Attainment

Nebraska's ambient air monitoring data for 2018 through 2020 show that all monitoring sites in Nebraska (and sites in portions of the Omaha and Sioux City MSAs in adjacent states) are in attainment with the NAAQS. See the monitoring data tables in Appendix B for the detailed results.

1. Ozone

The current NAAQS for ozone (O_3) was set in 2015 at 0.070 parts per million (ppm; or 70 parts per billion) for both the primary and secondary standard. The previous standard was 0.075 ppm. Nebraska's ozone monitoring network includes four sites in the Omaha and Lincoln MSAs plus an EPA-operated site at Santee, Nebraska. There is also an ozone monitor at the Union County, SD, site in the Sioux City MSA. Ozone monitoring is only required in Metropolitan Statistical Areas (MSAs), with the required number of monitors set by population and whether the most recent ozone Design Values (DVs) are greater or less than 85% of the ozone NAAQS. All of Nebraska's MSAs meet current ozone monitoring requirements (see Appendix C).

As shown in Appendix B, Table B-1, the 2018-2020 ozone DVs at monitoring sites in Nebraska and adjacent state areas are elevated but in attainment with the ozone NAAQS (ranging from 80% to 94% of the NAAQS). The highest ozone levels in Nebraska are found in the Omaha-Council Bluffs MSA, the Sioux City MSA, and at Santee. The map in Figure VII-1 shows the 2018-2020 ozone DVs for monitoring sites in Nebraska and surrounding states. Nearly all urban and rural monitoring sites in the region show DVs of 60 ppb or higher (a DV of 59.5 ppb is 85% of the NAAQS).

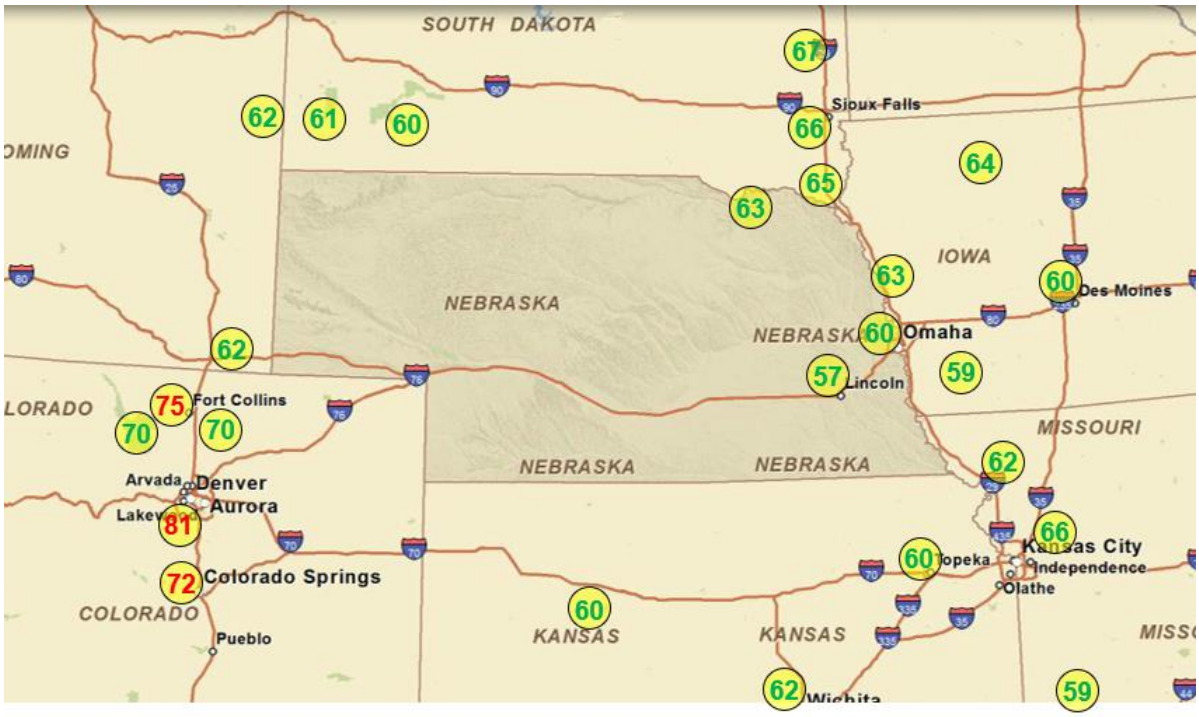
Ozone monitoring sites in the Kansas City metropolitan area and in the vicinity of Sioux Falls, South Dakota also show elevated design values. Because prevailing winds in eastern Nebraska are from the south to south-southeast during the warmer months of the ozone season, it is likely that there is considerable northwestward transport of ozone and/or ozone precursors through the corridor extending from Kansas City to Sioux Falls, including the Omaha and Sioux City MSAs. The highest ozone levels in the region are found in Denver, Fort Collins, and Colorado Springs, Colorado.

The map in Figure VII-2 shows the difference between the 2018-2020 ozone design value and the site-average design value from 2014 through 2019 for monitor sites in the Nebraska region. This period encompasses ozone trends since the historic drought year of 2012. Sites in Nebraska, Kansas, northwest Missouri, and southwest Iowa show 2018-2020 ozone design values that are equal to or slightly lower than the site averages. Sites in northwest Iowa and southern South Dakota experienced slightly above-average ozone levels for the 2018-2020 period.

Figures VII-3a, VII-3b, and VII-3c show plots of annual 4th-highest daily maximum 8-hour ozone values for monitors in the Omaha-Council Bluffs MSA, Lincoln and Sioux City MSAs, and for rural monitor sites in the region, respectively. Values are shown for 2013 through 2020. These values are used in calculating the 3-year average design values.

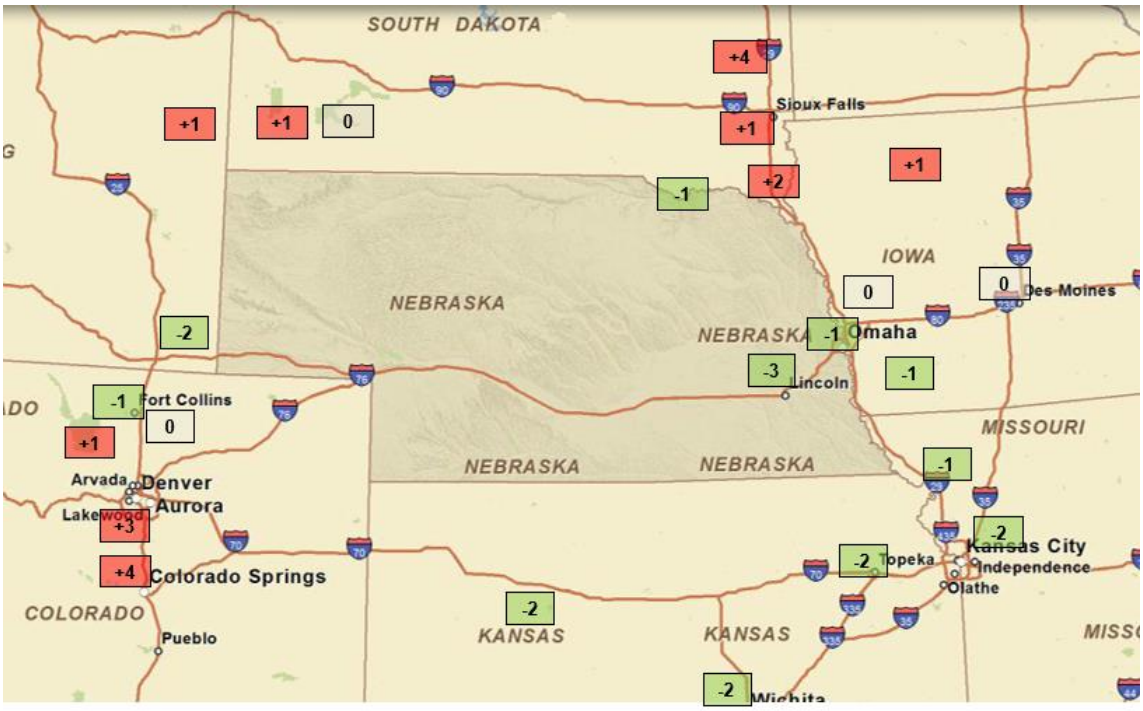
These plots show that most monitoring sites in the region experienced an upward trend in 4th-highest 8-hour ozone values from 2016 through 2018, followed by a declining trend continuing through 2020.

Figure VII-1. Three-Year (2018-2020) Ozone Design Values (DVs, in ppb) for Locations in and Around Nebraska *



* Where there is more than one monitoring site in a locale, the highest ozone DV is shown. DVs in green are in attainment with the NAAQS (70 ppb); values in red are not in attainment.

Figure VII-2. Difference Between 2018-2020 Ozone Design Value (ppb) and 2014-2019 Site Average Design Value for Monitor Sites in and Around Nebraska *



* Red background color in boxes indicates sites with a 2019 DV higher than the site average; green background color indicates sites with a 2019 DV lower than the site average. Where there is more than one monitoring site in the locale, the value for the site with the highest 2019 DV is shown.

Figure VII-3a. Annual 4th High Daily Maximum 8-hour Ozone Trends 2013 through 2020 for Monitors in the Omaha-Council Bluffs MSA

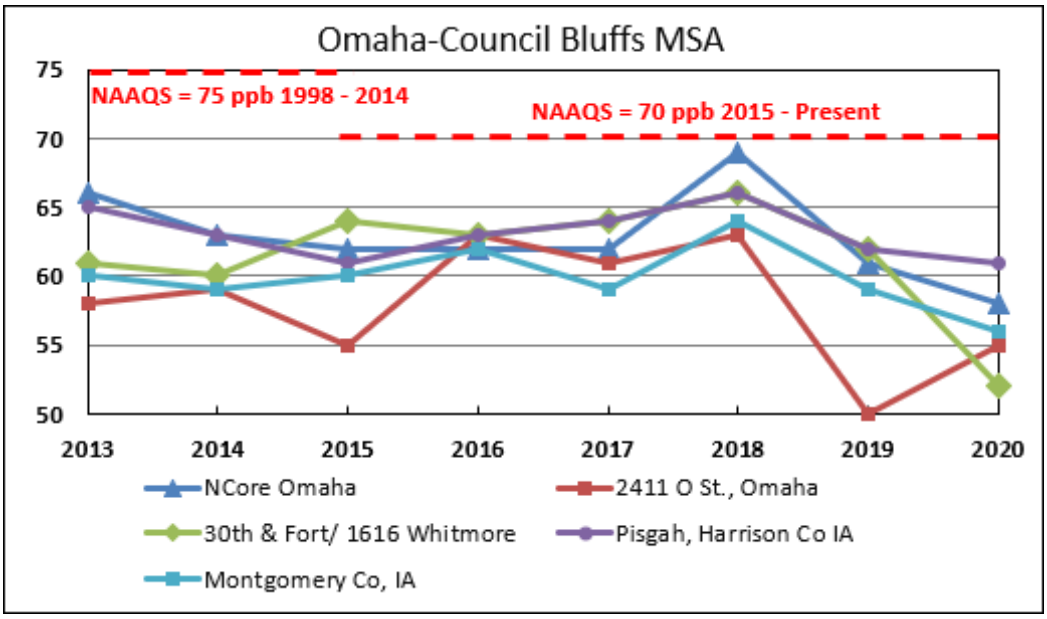


Figure VII-3b. Annual 4th High Daily Maximum 8-hour Ozone Trends 2013 through 2020 for Monitors in the Lincoln, NE and Sioux City, IA MSAs

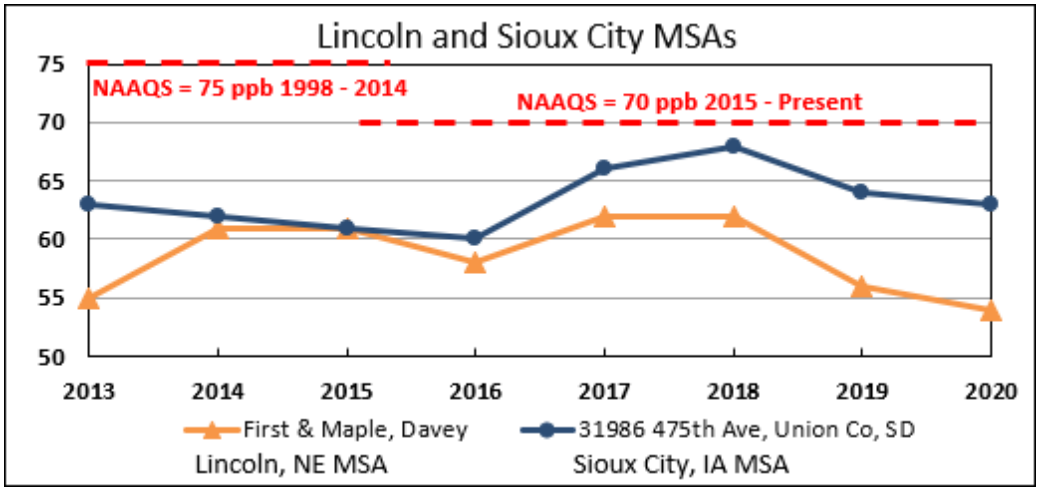
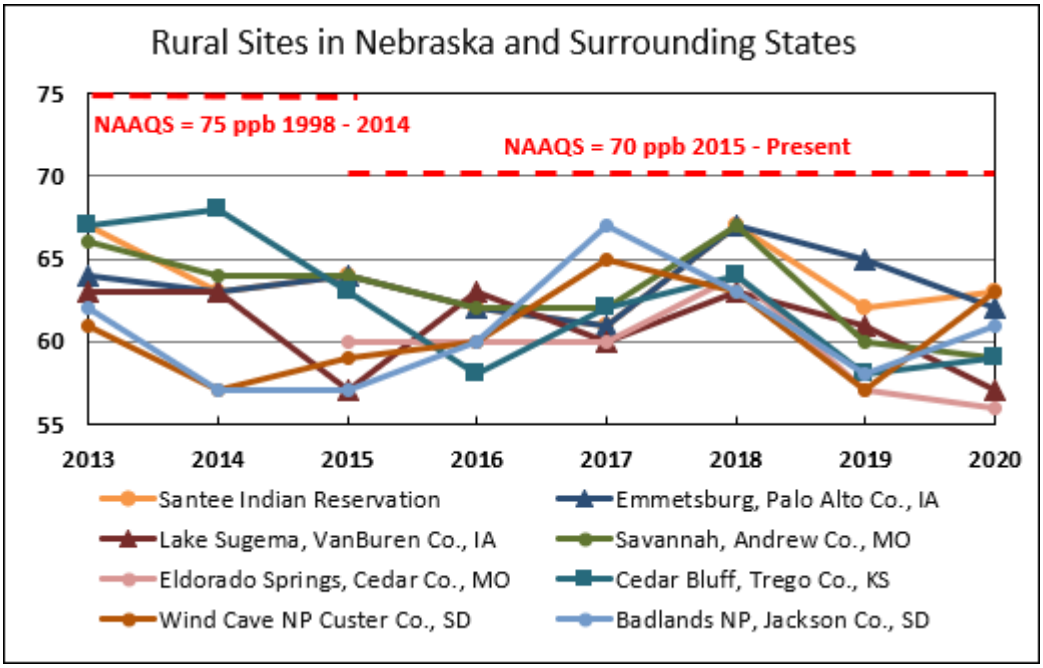


Figure VII-3c. Annual 4th High Daily Maximum 8-hour Ozone Trends 2013 through 2020 for Monitors at Rural Sites in Nebraska and Surrounding States



One change in the Nebraska ozone monitoring network is expected in 2021. The property owner at DCHD's 2411 O Street site has requested removal of the ozone and PM_{10} monitors. DCHD is working to locate and seek approval of a new ozone monitoring site in south Omaha.

2. Fine Particulate Matter: $PM_{2.5}$

In December 2020 EPA announced that it would retain, without revision, the existing primary (health-based) and secondary (welfare-based) $PM_{2.5}$ NAAQS. The primary annual average NAAQS (based on the three-year average of the weighted annual mean) remains at 12 µg/m^3 and the 24-hour NAAQS (based on the three-year average of the annual 98th percentile of 24-hour maximum values) was retained at 35 µg/m^3. As shown in Table VII-1 and in more detail in Appendix B Tables B-6a and B-6b, all monitored metropolitan areas in Nebraska are in attainment with the annual average and 24-hour $PM_{2.5}$ NAAQS. The highest values are found in the Omaha MSA and Sioux City MSA.

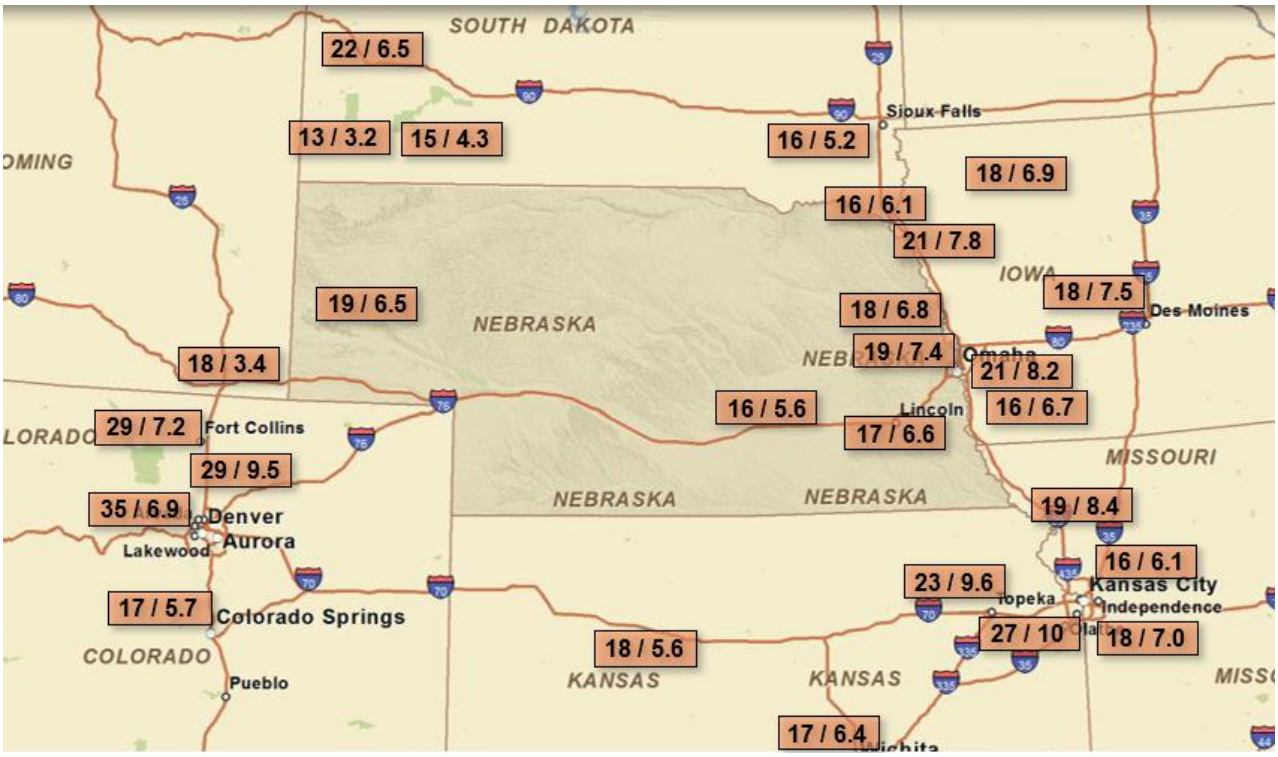
Table VII-1. PM2.5 Levels (2018-2020 Design Values) as a Percent of the NAAQS (1)

Location	24-Hour DV	Annual Average DV
Omaha MSA	59%	69%
Lincoln MSA	50%	55%
Sioux City MSA	60%	65%
Grand Island MSA	50%	46%
Scottsbluff MiSA	53%	54%

(1): Where there is more than one monitoring site in a locale, the highest DV is used to calculate the % NAAQS value shown above.

Figure V-4 below shows the 2018-2020 Design Values for $PM_{2.5}$ monitoring sites in and around Nebraska. The highest values are measured in the larger metropolitan areas in the region (Omaha-Council Bluffs, Kansas City, and Denver). $PM_{2.5}$ values are generally lower in the smaller metropolitan and micropolitan areas and in rural areas.

Figure VII-4. $PM_{2.5}$ 2018-2020 Design Values (DVs) for Sites in and Around Nebraska (1)(2)

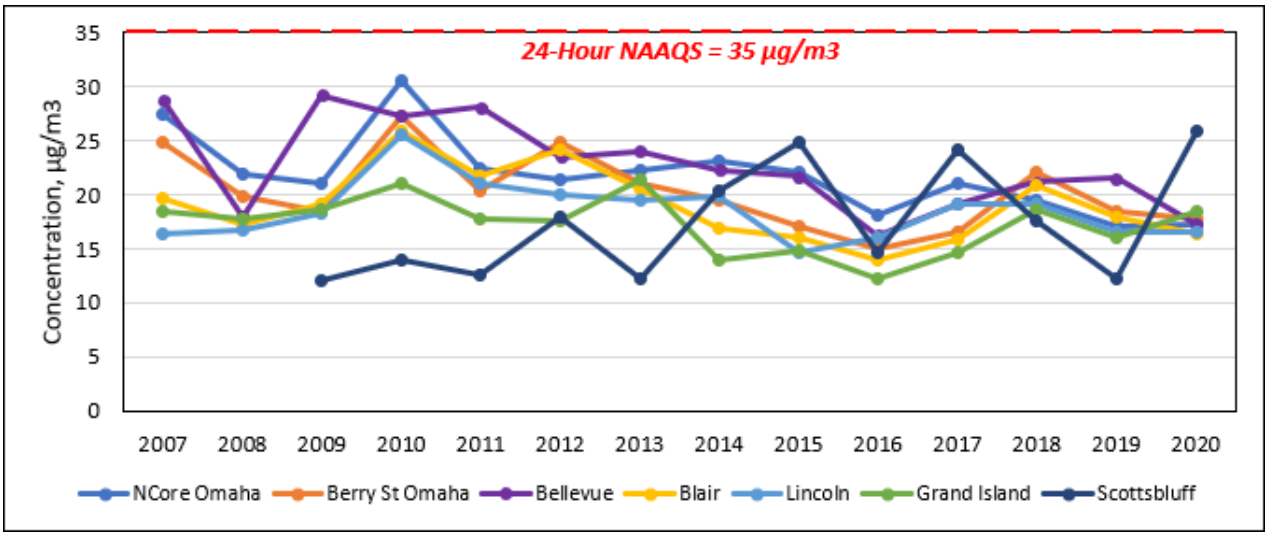


Footnotes:
(1) The first number is the 24-hour DV and the second number is the annual average DV.
(2) Where there is more than one site in a metropolitan area, the highest DVs are shown.

Figures VII-5 and VII-6 plot trends in $PM_{2.5}$ values from 2007 through 2020 for the annual 98th percentile of daily maximum 24-hour data and the annual average data, respectively. From 2010 through 2016 most stations show an overall downward trend in both parameters, but since 2016 mixed trends are evident, with small overall increases or decreases at different sites.

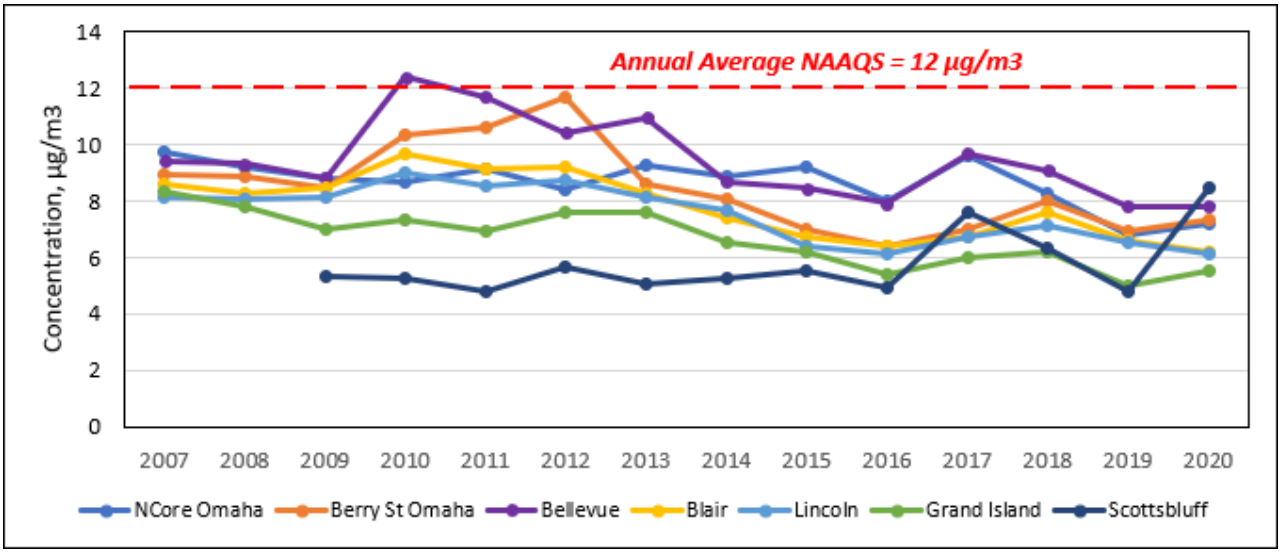
The Scottsbluff site is an exception. Low annual average values were recorded from 2009 through 2016, after which there were several years with much higher values. The 98th percentile data show more variability, as expected, with high values in 2015, 2017, and 2020. The highest daily values in 2017 coincided with a widespread smoke plume from wildfires in the western states and a cluster of fires in southeastern Montana and northern Wyoming. The 2020 values were also affected by smoke from wildfires in Colorado and Wyoming for much of September and October. In addition, in 2020 the filter-based monitor that record data over 3-day intervals was replaced by a continuous monitor. The 2020 annual values were calculated from the continuous data recorded over only 252 days and are thus not representative of the entire year and are not valid for NAAQS comparison. Both the 98th percentile daily maximum and the annual average value are likely to be anomalously high due to the shorter period of data collection.

Figure VII-5. Trends in Annual 98th Percentile of Daily Maximum 24-hour $PM_{2.5}$ for Nebraska Monitoring Sites 2007-2020 (1)



Footnote (1): A new continuous monitor was installed at Scottsbluff in 2020. The 2020 value shown was computed from only 252 days of continuous monitor data and is thus not valid for NAAQS comparison.

Figure VII-6. Trends in Annual Average $PM_{2.5}$ for Nebraska Monitoring Sites 2007-2020 (1)



Footnote (1): A new continuous monitor was installed at Scottsbluff in 2020. The 2020 value shown was computed from only 252 days of continuous monitor data and is thus not valid for NAAQS comparison.

As noted above, wildfires and prescribed fires can impact air quality and $PM_{2.5}$ levels in Nebraska. Prescribed burns are used in Nebraska and near-by states for prairie conservation and maintenance of grazing lands. The Flint Hills of Kansas and Oklahoma, and areas near the Flint Hills in Kansas, are areas of concentrated use of prescribed fires, primarily in the spring months. Smoke from prescribed fires in the Flint Hills and nearby areas was a major source of elevated $PM_{2.5}$ levels experienced in Lincoln and Omaha in early April 2017. Since then favorable weather patterns during Flint Hills burn events have resulted in minimal impacts on air quality in Nebraska.

NDEE is working with Kansas Department of Health and Environment (KDHE), EPA Region 7, local air quality agencies, and other stakeholders on strategies to improve air quality in Nebraska during the spring prescribed burn season. To provide up-to-date information to the public regarding prescribed burning, NDEE created a smoke awareness web page in March 2017. During the burn season, current smoke forecast information is provided along with links to the Kansas Smoke Management Plan, AirNow, and other related information. NDEE has also collaborated with the Nebraska Department of Health and Human Services (DHHS), LLCHD, and DCHD to develop a public smoke advisory system that was announced on April 10, 2018. Smoke advisories are issued by DHHS for impacted counties based on forecasts provided by KDHE.

Two changes in Nebraska's $PM_{2.5}$ network are planned for 2021. As noted in the 2020 Network Plan, NDEE has purchased a MetOne BAM continuous $PM_{2.5}$ sampler and climate-controlled enclosure to replace the current filter-based sampler operated by DCHD in Blair, Nebraska. Due to the COVID-19 pandemic, the new continuous sampler has not yet been installed in Blair. This replacement is expected to be completed in 2021. As noted in section V.A.1 of this plan, NDEE plans to install a new $PM_{2.5}$ monitoring site near Beatrice, Nebraska with a primary continuous FEM sampler and a collocated FRM sampler (see section VIII below).

3. Coarse Particulate Matter: PM_{10}

Coarse particulate matter (PM_{10}) remains more localized to the source than $PM_{2.5}$. The current national ambient air quality 24-hour standard (NAAQS) for PM_{10} is 150 $\mu g/m^3$ for both the primary standard and the secondary standard. These standards were retained by EPA in December 2020. The PM_{10} NAAQS states that the 24-hour standard of 150 $\mu g/m^3$ is not to be exceeded more than once per year on average over the latest 3-year time frame, where an exceedance is a 24-hour average value of 155 $\mu g/m^3$ or more. This means that the 4th highest value over the most recent 3 years needs to be below 155 $\mu g/m^3$ to avoid an exceedance.

There are five PM_{10} monitoring sites in the Omaha MSA: three in Omaha operated by DCHD, one in Council Bluffs operated by Iowa DNR, and a source-oriented monitor in Weeping Water, Nebraska, operated by NDEE. South Dakota DENR operates a monitor in Union County, SD in the Sioux City MSA. There were no 24-hour exceedances of the 150 $\mu g/m^3$ value over the 2018-2020 period at any of these sites, so all are in attainment with the NAAQS. The 4th highest value over that period ranged from 29% to 47% of the NAAQS at these sites (see Appendix B, Table B-5a and B-5b).

One change in Nebraska's PM_{10} monitoring network is expected in 2021. As noted in section VII.B.1, the property owner at DCHD's 2411 O Street site has requested removal of the ozone and PM_{10} monitors. DCHD is working to locate and seek approval of a new PM_{10} monitoring site in south Omaha.

4. Sulfur Dioxide (SO_2)

The NAAQS for sulfur dioxide (SO_2) was revised in 2010 to establish a 1-hour standard of 75 ppb (99th percentile of daily maximum 1-hour average concentrations), which was reviewed and retained in 2018. All areas of Nebraska were designated as "Attainment/Unclassifiable" with respect to this standard in 2016 except for Lancaster County, which was designated "Unclassifiable", and Douglas County, which was designated "Attainment/Unclassifiable" in 2020, effective 4/30/2021. Nebraska has submitted a recommendation to designate Lancaster County as "Attainment/Unclassifiable" based on source-oriented monitoring.

DCHD operates two SO_2 monitors in Omaha, one at the multipollutant NCore site and the other in an industrial area in north Omaha. As discussed in sections VI.A.1 and VI.C above, SO_2 monitoring was also carried out from 2017 through 2020 adjacent to coal-fired electrical generating plants in north

Omaha and in southwest Lancaster County in accordance with rules set forth in 40 CFR Part 51 Subpart BB (known as the SO_2 Data Requirements Rule). The three-year design values at these two sites were below the threshold that would have required continued monitoring under the Data Requirements Rule. EPA approved termination of monitoring at these sites at the end of 2020.

Currently SO_2 monitors are not required in the other Nebraska MSAs, but South Dakota DENR monitors SO_2 at the multipollutant site in Union County, SD, within the Sioux City MSA.

The 2018-2020 1-hour SO_2 annual levels and Design Values (DVs) for Nebraska-area monitoring sites are listed in Appendix B, Table B-3. These tables include all monitors that were operating in 2020. The highest DVs were recorded at the two north Omaha sites: Whitmore Street (45% of the NAAQS) and the John Pershing Drive coal-fired powerplant site (48%). The DV at the neighborhood-scale Omaha NCore site was 15% of the NAAQS and only 4% at the rural Union County, SD, site.

Nebraska also has three areas that are subject to ongoing requirements of the Data Requirements rule by demonstrating attainment with the 2010 SO_2 NAAQS by air quality modeling. As required by 40 CFR 51.1205(b), NDEE is submitting an annual report to document the SO_2 emissions of each applicable source in these areas and assess the cause of any emissions increase from the previous year. This report is being submitted as Appendix D of this Network Plan.

5. Nitrogen Dioxide (NO_2)

In 2010 EPA established a primary 1-hour NAAQS for NO_2 of 100 parts per billion (ppb; based on the 98th percentile of the annual distribution of daily maximum 1-hour NO_2 concentrations, averaged over 3 years) and retained a primary and secondary annual average standard of 53 ppb. Both standards were retained in 2018. EPA has designated all areas of Nebraska (and all areas of the country) as "unclassifiable/attainment" with respect to these standards.

Currently there are no NO_2 monitoring sites within Nebraska. South Dakota DENR monitors NO_2 at the multipollutant site in Union County, SD, within the Sioux City MSA. This is an area background site with a 2018-2020 design value that is 17% of the NAAQS (see Appendix B, Table B-4a).

At multipollutant NCore sites EPA requires measurement of reactive oxides of nitrogen (NOy) instead of NO_2 in order to quantify more of the oxidation products of nitric oxide (NO). These additional oxidation products are relevant to the secondary formation of ozone and $PM_{2.5}$. NO and NOy are therefore measured at the Omaha NCore site.

The difference between measured NOy and NO (NOy-NO) generally approximates NO_2, with NOy-NO being equal to or possibly higher than NO_2. Table B-4b in Appendix B shows the measured NOy-NO annual values for 2018-2020. The three-year average of the 98th percentile 1-hour NOy-NO levels at the Omaha NCore site was 38% of the NAAQS, while the annual average value was 10% of the NAAQS.

6. Carbon Monoxide (CO)

Vehicle emissions are a primary source of carbon monoxide emissions. EPA last reviewed the carbon monoxide NAAQS in 2011, at which time it retained a primary 1-hour standard of 35 parts per million (ppm) and a primary 8-hour standard of 9 ppm. The Omaha NCore site includes a required neighborhood-scale CO monitor, and DCHD also operates a near-road, highest-concentration site at 78th and Dodge Streets in Omaha. As shown in Table B-2 in Appendix B, during the 2018-2020 time frame both sites recorded CO design values 5% or less of the 1-hour NAAQS and less than 20% of the 8-hour standard.

7. Lead (Pb)

The lead NAAQS was last changed in 2008, when it was tightened from a concentration of 1.5 μg/m^3 to 0.15 μg/m^3 as determined from the highest three-month average concentration of suspended particulates in the last three years. This standard was reviewed and retained in 2016. EPA requires source-oriented SLAMS lead monitoring near industries that emit over 0.5 tons per year of lead. The rule allows for the EPA Regional Administrator to waive the monitoring requirements if the air agency can demonstrate that the lead source will not contribute to a maximum lead concentration in ambient air in excess of 50% of the NAAQS. This demonstration can be made through historical monitoring data or air dispersion modeling.

Currently there are two lead sources in Nebraska that are potentially subject to the lead monitoring requirement.

a. Nucor Steel, Norfolk (Lead Monitoring Waiver)

In April 2014 EPA approved a lead monitoring waiver request from Nucor Steel that provided modeling demonstrating that ambient lead levels would not exceed 50% of the NAAQS. The waiver was effective for five years and thus expired in April 2019.

Nebraska's 2019 Ambient Air Quality Monitoring Network Plan included a request to renew the Nucor Steel lead monitoring waiver for an additional five years. Modeling presented with the request predicted three-month rolling average lead emissions of 0.04 μg/m^3, or 27% of the lead NAAQS. EPA Region 7 approved this waiver as part of the 2019 Network Plan in October 2019. The waiver will be in force until April 2024.

b. Magnus Farley, Fremont

Magnus-Farley is a bronze and brass casting facility in Fremont, Nebraska. Nebraska operated a lead monitoring site at 1255 Front Street, adjacent to this facility, beginning in 2010. The site had primary and collocated total suspended particulate samplers. In 2012 the maximum three-month average ambient lead level was 0.14 μg/m3 or 93% of the NAAQS. In 2016 through 2018 the maximum three-month average lead concentrations were lower at 41%, 28%, and 16% of the NAAQS, respectively. Facility awareness and diligence, coupled with agency feedback on ambient air lead concentrations, appear to have facilitated the air quality improvements.

In 2018 the landowner that hosted this monitoring site asked that the monitors be removed; removal occurred at the end of September 2018. NDEE and EPA Region 7 staff evaluated several alternative monitoring sites, and EPA approved the relocation requested in Nebraska's 2019 Network Plan. However, negotiation of a site hosting agreement has been delayed due to COVID-19 health concerns. Lead monitoring will resume at the new site when negotiation of a site hosting agreement is concluded.

C. Population Trends and Network Design

Population data is reviewed as part of the network planning process because:

- Population growth may be associated with pollution source growth.
- High population density generally correlates with high air pollution potential.
- Some 40 CFR Part 58 requirements are based on population and/or federally defined metropolitan statistical definitions.

Overall growth trends in Nebraska appear basically unchanged from those described in previous annual Network Plans. Most population growth is occurring in Nebraska's three most populous and densely populated counties: Douglas, Lancaster, and Sarpy (i.e., the Omaha and Lincoln MSAs). Many rural counties in the state have declining populations.

The basic design of the Nebraska ambient air monitoring network is consistent with these population trends: 71% of the monitoring sites and 87% of the pollutant monitors are located within the Omaha and Lincoln MSAs. The Omaha MSA network contains 59% of the monitoring sites in Nebraska and 78% of the monitors.

D. Funding

Air monitoring is supported by a combination of federal, cash, state, and local funding sources. Table VII-2 on the next page provides a summary of the primary funding sources used for air monitoring.

Federal CAA §103 funding is used to operate $PM_{2.5}$ and IMPROVE monitors. Funding for April 2020 through March 2021 was maintained at the same level as the previous year.

Current funding levels are adequate to continue the operation of the existing and planned Nebraska air monitoring network, provided major new equipment purchases are not required.

Table VII-2: Primary Funding Sources Used to Support Air Monitoring in Nebraska	
Nebraska Department of Environment and Energy (NDEE)	
Funding Source	**Comments**
State General Funds	At a minimum must be sufficient to meet minimum federal match requirements
State Title V Funds	Fees paid by major sources based on the quantity of air pollutants they emit. NDEE collects Title V fees for sources throughout Nebraska, except those regulated by LLCHD and Omaha Air Quality Control. Title V funds cannot be used for state/local match.
CAA §105 Funds	Federal grant funds used for air monitoring activities set forth in a bi-annually negotiated EPA-NDEE work plan. Requires a 40% state/local match. A portion of this grant funding is passed on to DCHD and LLCHD.
CAA §103 Funds	Federal grant funds used for air monitoring activities set forth in a bi-annually negotiated EPA-NDEE work plan. This money is currently limited to funding $PM_{2.5}$ and IMPROVE monitoring, and sometimes for specified equipment purchases and/or special monitoring studies. Requires no state/local match. A portion of this grant funding is passed on to DCHD and LLCHD.
Douglas County Health Department (DCHD)	
Local County Funds	At a minimum must be sufficient to meet minimum federal match requirements
City of Omaha Title V funds	See *State Title V Funds* comments above. Omaha Air Quality Control regulates air emission sources in the City of Omaha, including the collection of Title V fees from major sources. A portion of the Omaha Title V funds are directed to DCHD to support air monitoring. Title V funds cannot be used for state/local match.
CAA §105 Funds	NDEE passes through a portion of the Federal §105 funds to DCHD for activities described in an NDEE/DCHD work plan. DCHD is required to meet the 40% state/local match requirement.
CAA §103	NDEE passes through a portion of the federal §103 funds to DCHD for activities described in an NDEE/DCHD work plan, primarily $PM_{2.5}$ related monitoring activities. There is no state/local match requirement.
Metropolitan Area Planning Assoc. (MAPA) Funds	Federal grant funds obtained by MAPA are for specific purposes such as transportation or homeland security. Historically they have been used for equipment purchases and site set-up, not network operating costs.
Lincoln Lancaster County Health Department (LLCHD)	
Local County Funds	At a minimum must be sufficient to meet minimum federal match requirements
Lancaster County Title V funds	See *State Title V Funds* comments above. LLCHD regulates air emission sources in Lancaster County, including the collection of Title V fees from major sources. A portion of the Title V funds are used to support air monitoring activities performed by LLCHD. Title V funds cannot be used for state/local match.
CAA §105 Funds	NDEE passes through a portion of the Federal §105 funds to LLCHD for activities described in an NDEE/LLCHD work plan. LLCHD is required to meet the 40% state/local match requirement.
CAA §103	NDEE passes through a portion of the federal §103 funds to LLCHD for activities described in an NDEE/LLCHD work plan, primarily $PM_{2.5}$ related monitoring activities. There is no state/local match requirement.

VIII. Anticipated Nebraska Ambient Air Monitoring Network Modifications

A. Relocation of Ozone and PM_{10} Monitors from 2411 O Street, Omaha

Douglas County Health Department (DCHD) has operated an ozone and PM_{10} monitoring site at 2411 O Street in south Omaha since 1978. As discussed in sections VI.B.1 and VI.B.3 above, in late 2020 the owner of that property requested the removal of the monitors. Ozone monitoring ceased at the end of October 2020 (the end of the ozone monitoring season), but the property owner has allowed PM_{10} monitoring to continue. DCHD is working to locate and seek approval of a new ozone and PM_{10} monitoring site (or sites) in south Omaha.

B. New $PM_{2.5}$ Monitoring Site at Homestead National Historical Park near Beatrice, NE

As noted in section V.A.1 of this document, NDEE currently operates two $PM_{2.5}$ monitoring sites (Grand Island and Scottsbluff) with primary FEM continuous monitors. In order to satisfy $PM_{2.5}$ collocation requirements, a sequential FRM sampler must be collocated at one NDEE site with a primary FEM sampler.

NDEE proposes to satisfy the collocation requirement by setting up a new $PM_{2.5}$ monitoring site at Homestead National Historical Park three miles northwest of Beatrice, in Gage County, Nebraska (Beatrice MiSA). The Homestead site is approximately 35 miles south-southwest of Lincoln (see Figure VIII-1). When spring winds are from the south, this site is in the potential path of smoke from prescribed burning in the Kansas Flint Hills. In the spring of 2018, the Lincoln-Lancaster County Health Department operated an investigatory continuous $PM_{2.5}$ sampler at this location to monitor for possible smoke impacts between Lincoln and the Kansas border. The location therefore has the infrastructure and site characteristics required to host the $PM_{2.5}$ monitoring station.

Figure VIII-1. Location map of proposed $PM_{2.5}$ monitoring site at Homestead National Historical Park near Beatrice.

NDEE plans to install a new primary continuous FEM sampler and a new collocated FRM sampler at a location adjacent to the park headquarters building. When this site is operational NDEE will have three $PM_{2.5}$ sites with primary FEM samplers, one of which will have a collocated FRM sampler, in accordance with the collocation requirement.

C. Replacement of Sequential $PM_{2.5}$ Monitor with Continuous Monitor in Blair, NE

As noted in the 2020 Network Plan, NDEE has purchased a MetOne BAM continuous $PM_{2.5}$ sampler and climate-controlled enclosure to replace the current filter-based sampler operated by DCHD in Blair, Nebraska. Due to the COVID-19 pandemic, the new continuous sampler has not yet been installed in Blair. This replacement is expected to be completed in 2021.

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Appendix A: Ambient Air Monitoring Sites in Nebraska

See Appendix C for a compliance review with respect to 40 CFR Part 58 Appendixes A through E.

Omaha NCore Site Operated by DCHD

Site Name: Omaha NCore [(1)]	AIRS ID: 31-055-0019 [(1)]
Location: 4102 Woolworth Ave., Omaha	Latitude: 41.246792º Longitude: -95.973964º
Operating Agency: Douglas County Health Department	
Purpose: NCore	Scale: Neighborhood
Monitor/Pollutant: Carbon Monoxide (CO) - Trace Level	
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 48i-TLE	EPA Method: RFCA-0981-054 (AQS 554)
Start-Up Date: 1/20/11	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor/Pollutant: Ozone (O_3)	
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 49i	EPA Method: EQOA-0880-047
Start-Up Date: 4/1/11	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor/Pollutant: Nitrogen Oxides (NO/NO_y)	
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 42i $NO/NO_2/NOx$	EPA Method: RFNA-1289-074
Start-Up Date: 1/20/11	Closure Date: Currently operating
Data used for NAAQS comparison: Not Applicable. Monitors for NO & NOy, but not NO_2	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor/Pollutant: Sulfur Dioxide (SO_2) – Trace Level	
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 43i-TLE	EPA Method: EQSA-0486-060 (AQS 560)
Start-Up Date: 1/20/11	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor/Pollutant: $PM_{2.5}$ [(2)]	
Type/POC: Primary Continuous / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Met One BAM-1020 [(2)] [(3)]	EPA Method: EQPM-0308-170
Start-Up Date: 2/1/04 [(2)]	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor/Pollutant: $PM_{2.5}$ [(2)]	
Type/POC: POC 02	Monitoring Frequency: Once every 6 days
Analyzer/Sampler: Met One E-SEQ-FRM [(2)]	EPA Method: RFPS-0717-245
Start-Up Date: 1/1/99 [(2)]	Closure Date: Currently operating
Data used for NAAQS comparison: Only when POC 1 data is not available.	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor/Pollutant: $PM_{2.5}$ Speciation	
Type/POC: Speciation / POC 05	Monitoring Frequency: Once every 3 days
Analyzer/Sampler: $PM_{2.5}$ Speciation	Sampler Type: SASS and a 3000 URG [(3)]
Start-Up Date: 5/25/01	Closure Date: Currently operating
Data used for NAAQS comparison: Not applicable	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Continued on next page	

Appendix A: Ambient Air Monitoring Sites in Nebraska

Omaha NCore Site Operated by DCHD - continued

Site Name: Omaha NCore AIRS ID: 31-055-0019 (See Comment 1)
Location: 4102 Woolworth Ave., Omaha Latitude: 41.246792º Longitude: -95.973964º
Operating Agency: Douglas County Health Department (continued from previous page)

Monitor/Pollutant: PM_{10} – STP & Local Conditions

Type/POC: Continuous / POC 01 — Monitoring Frequency: Continuous
Analyzer/Sampler: Met One BAM-1020 [3)] — EPA Method: EQPM-0798-122
Start-Up Date: 1/1/11 [(3)] — Closure Date: Currently operating

Data used for NAAQS comparison: Local conditions data only
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable

Monitor/Pollutant: $PM_{10-2.5}$ – Local Conditions

Type/POC: Continuous / POC 01 — Monitoring Frequency: Continuous
Analyzer/Sampler: Met One BAM-1020 [(3)] — EPA Method: EQPM-0709-185
Start-Up Date: 1/1/11 [(3)] — Closure Date: Currently operating

Data used for NAAQS comparison: Yes
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable

Monitor/Pollutant: Lead (Pb) – Non-source oriented

Type/POC: Primary / POC 01 — Monitoring Frequency: Once every 6 days
Analyzer/Sampler: Hi-Vol TSP-Pb (ICP-MS) — EPA Method: EQL-0310-189
Start-Up Date: 12/1/12 — Closure Date: 12/31/17

Data used for NAAQS comparison: NA (not operating)
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: NA (site closed)

Meteorological Parameters – Manufacturer & Model – Start Date
Wind Direction & Velocity – MetOne 50.5 Sonic - 5/13/11
Temperature - MetOne Model 083D – 4/12/11 — Barometric Pressure – MetOne Model 090D – 4/12/11
Relative Humidity – MetOne 083D – 4/12/11 — Solar Radiation – MetOne Model 096-1 – 4/12/11
Closure Date: Currently operating

Atmospheric Radiation – RadNet Air Monitor

RadNet is a nationwide system that monitors the nation's air, drinking water, precipitation, and pasteurized milk to determine levels of radiation in the environment. RadNet sample analyses and monitoring results provide baseline data on background levels of radiation in the environment and can detect increased radiation from radiological incidents. The RadNet monitor is not subject 40 CFR Part 58 requirements. It is recognized in this Network Plan for informational purposes only. The RadNet monitor began operating at the Woolworth site in June 2006.

Comments:

1. Site History: Site 31-055-0019 was referred to as the "Woolworth site" through 12/31/10. The Woolworth site was a PM monitoring site with $PM_{2.5}$ filter-based, continuous and speciation monitors located on the roof of Douglas County Hospital. To accommodate NCore monitoring, more space was required and the site was moved approximately 550 ft north to the roof of an adjacent/attached building in December 2010. Gaseous and meteorological monitors began operation in 2011 and lead in 2012. Lead monitoring was discontinued at the end of 2017 in accordance with the 2017 Network Plan. Permanent discontinuation of lead monitoring was approved by EPA Region 7 in December 2018.
2. On 1/1/99 $PM_{2.5}$ sampling was initiated using primary and collocated R&P 2025 filter-based FRM samplers. A continuous monitor was first operated at this site 2/1/04. It was replaced by a MetOne BAM FEM monitor on 1/6/09. The MetOne BAM was operated as an auxiliary monitor to the primary and collocated R&P 2025 FRM samplers through September 2009. Beginning 10/1/09, the MetOne BAM was designated the primary sampler and an R&P 2025 FRM sampler was retained as the collocated sampler. The 2025 FRM sampler was replaced by a MetOne E-SEQ-FRM 16-channel sequential sampler on 1/1/2020.
3. Between 10/28/10 and 1/3/11, the $PM_{2.5}$ Met One BAM-1020 was temporarily removed from service while being reconfigured to operate as the $PM_{2.5}$ portion of a paired $PM_{10-2.5}$ monitoring system. The other part of the paired system is a PM_{10} Met One BAM-1020, which is configured to report data in local and STP conditions. The paired units comprising the $PM_{10-2.5}$ monitoring system were put on-line on 1/1/11.

Appendix A: Ambient Air Monitoring Sites in Nebraska

Carbon Monoxide Sites in the Omaha MSA Operated by DCHD

Site Name: 78th & Dodge – Omaha	AIRS ID: 31-055-0056
Location: 78th St and W Dodge Rd, Omaha	Latitude: 41.259175º Longitude: -96.028628º
Operating Agency: Douglas County Health Department	
Monitor Information	**Pollutant: Carbon Monoxide (CO)**
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 48c	EPA Method:
Purpose: Highest Concentration	Scale: Microscale
Start-Up Date: 10/01/07	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: None	

Combined Sulfur Dioxide & Ozone Site in the Omaha MSA Operated by DCHD

Site Name: Whitmore – Omaha	AIRS ID: 31-055-0053
Location: 1616 Whitmore St, Omaha (1)	Latitude: 41.297778º Longitude: -95.937500º
Operating Agency: Douglas County Health Department	
Monitor Information	**Pollutant: Sulfur Dioxide (SO_2)**
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 43c-tle	EPA Method: EQSA-0486-060
Purpose: High Conc. & Population Oriented (1)	Scale: Neighborhood (1)
Start-Up Date: 7/1/99	Closure Date: Currently operating*
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor Information	**Pollutant: Ozone (O_3) (2)**
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 49C	EPA Method: EQOA-0880-047
Purpose: Population Oriented (1)	Scale: Neighborhood (1)
Start-Up Date: 4/1/15	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments:	
(1) This site is in a socioeconomically disadvantaged area.	
(2) The ozone monitor from the 30th & Fort Street site was re-located to this site in 2015.	

Appendix A: Ambient Air Monitoring Sites in Nebraska

Combined Ozone & PM_{10} Site in the Omaha MSA Operated by DCHD

Site Name: South Omaha – Ozone	AIRS ID: 31-055-0028	
Location: 2411 O Street, Omaha	Latitude: 41.207500º	Longitude: -95.947500º
Operating Agency: Douglas County Health Department		
Monitor Information	**Pollutant: Ozone (O_3)**	
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 49C	EPA Method: EQOA-0880-047	
Purpose: Population Oriented	Scale: Neighborhood	
Start-Up Date: 7/1/78	Closure Date: Currently operating	
Data used for NAAQS comparison: Yes		
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable		
Monitor Information	**Pollutant: PM_{10}**	
Type/POC: Primary / POC 01	Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: Hi-Vol Filter	EPA Method: RFPS 1287-063	
Purpose: Population & Source Oriented	Scale: Neighborhood	
Start-Up Date: 6/1/06 (1)	Closure Date: Currently operating	
Data used for NAAQS comparison: Only when there is no primary data		
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable		
Comments: (1) The PM_{10} sampler was initially set-up as a SPAM at 25th & L Sts and then moved to 2411 O St on 8/22/07. (2) In 2020 the landowner at 2411 O Street asked for the site to be removed from the property. Ozone monitoring continued through the end of October 2020, the end of the required monitoring season. The owner has allowed PM_{10} monitoring to continue while a new site is found. As of March 2021 a new site has not been located.		

PM_{10} Sites in the Omaha MSA Operated by DCHD

Site Name: 19th & Burt, Omaha	AIRS ID: 31-055-0054	
Location: 723 North 18th Sts, Omaha	Latitude: 41.26664º	Longitude: -95.93940º
Operating Agency: Douglas County Health Department		
Monitor Information	**Pollutant: PM_{10}**	
Type/POC: Primary / POC 01	Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: Hi-Vol Filter	EPA Method: RFPS 1287-063	
Purpose: Population & Source Oriented	Scale: Middle	
Start-Up Date: 6/1/01	Closure Date: Currently operating	
Data used for NAAQS comparison: Yes		
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable		
Monitor Information	**Pollutant: PM_{10}**	
Type/POC: Collocated / POC 02	Monitoring Frequency: Once every 6 days (1)	
Analyzer/Sampler: Hi-Vol Filter	EPA Method: RFPS 1287-063	
Purpose: Population & Source Oriented	Scale: Middle	
Start-Up Date: 6/1/01	Closure Date: Currently operating	
Data used for NAAQS comparison: Only when there is no primary data		
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable		
Comments: The 19th & Burt Streets site was originally located at 1909 Burt Streets on the rooftop of a building owned by Creighton University. In 2019 the Douglas County Health Department was notified that the university planned to demolish this building to make way for new construction, but that action postponed. The site was moved on March 10, 2021 one and one-half blocks to the east to the new location at 723 North 19th Streets.		

Appendix A: Ambient Air Monitoring Sites in Nebraska

$PM_{2.5}$ Sites in the Omaha MSA Operated by DCHD

Site Name: Berry Street Omaha	AIRS ID: 31-055-0052
Location: 9225 Berry Street, Omaha	Latitude: 41.333056º Longitude: -96.099722º
Operating Agency: Douglas County Health Department	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Primary / POC 01	Monitoring Frequency: Once every 3 days
Analyzer/Sampler: Thermo 2025 Sequential	EPA Method: RFPS-0498-118
Purpose: Population & Source Oriented	Scale: Neighborhood
Start-Up Date: 1/1/99	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Collocated / POC 02	Monitoring Frequency: Once every 6 days
Analyzer/Sampler: R&P/Thermo 2025 Sequential	EPA Method: RFPS-0498-118
Purpose: Population & Source Oriented	Scale: Neighborhood
Start-Up Date: 10/1/14	Closure Date: Currently operating
Data used for NAAQS comparison: Only when there is no primary data	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: None	

Site Name: Bellevue	AIRS ID: 31-153-0007
Location: 2912 Coffey Ave., Bellevue	Latitude: 41.166944º Longitude: -95.923889º
Operating Agency: Douglas County Health Department	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Primary Continuous / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Met One BAM-1020 (1)	EPA Method: EQPM-0308-170
Purpose: Population & Source Oriented	Scale: Neighborhood
Start-Up Date: 3/1/99	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: (1) This site was operated with a 2025 sequential sampler from 3/1/99 thru 6/30/10 (RFPS-0498-118). On 7/1/10 a Met One BAM monitor began operating.	

Site Name: Blair	AIRS ID: 31-177-0002
Location: 2242 Wright St., Blair	Latitude: 41.551136º Longitude: -96.146753
Operating Agency: Douglas County Health Department	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Primary / POC 01	Monitoring Frequency: Once every 3 days
Analyzer/Sampler: R&P/Thermo 2025 Sequential	EPA Method: RFPS-0498-118
Purpose: Population & Source Oriented	Scale: Neighborhood
Start-Up Date: 4/6/09	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: None	

Appendix A: Ambient Air Monitoring Sites in Nebraska

Permanently Closed [1] Sulfur Dioxide Site in the Omaha MSA Operated by DCHD

Site Name: OPPD North Omaha Station	AIRS ID: 31-055-0057
Location: 7288 John Pershing Drive	Latitude: 41.325579º Longitude: -95.946297º
Operating Agency: Douglas County Health Department	
Monitor Information	**Pollutant: Sulfur Dioxide (SO_2)**
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Thermo 43i	EPA Method: EQSA-0486-060
Purpose: Population & Source Oriented	Scale: Microscale
Start-Up Date: 01/01/17	Closure Date: 12/31/2020
Data used for NAAQS comparison: Yes Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, Appendix B not applicable	
Comments: (1) This site was established to satisfy requirements of the Data Requirements Rule (DRR) in 40 CFR Part 51 to characterize air quality near the Omaha Public Power District North Omaha Station coal-fired power plant. The SO_2 Design Value after three years of monitoring (2017-2020) was below the threshold that would require continued monitoring under the DRR. As a result, EPA approved closure of the site at the end of 2020.	

PM_{10} Site in the Weeping Water Area* Operated by NDEE

* The Weeping Water Area is in Cass County, which is part of the Omaha MSA. This is a relatively non-urbanized area of the county with limestone mining and processing activities. The PM_{10} monitoring conducted here is for evaluation of air quality in the vicinity of Weeping Water, and not the Omaha MSA as a whole.

Site Name: Weeping Water City [1]	AIRS ID: 31-025-0002
Location: 102 P Street, Weeping Water	Latitude: 40.866228 Longitude: -96.137678
Operating Agency: Nebraska Department of Environment and Energy	
Monitor Information	**Pollutant: PM_{10}**
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Met One BAM [2]	EPA Method: EQPM-0798-170
Purpose: Population & Source Oriented	Scale: Neighborhood
Start-Up Date: 01/01/85	Closure Date: Currently operating
Data used for NAAQS comparison: Yes Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes. See Section V.A.1.a. App B not applicable	
Comments: (1) Site is located at the city wastewater treatment facility. (2) This site was operated with a primary 2025 sequential monitor from 8/12/2004 to 9/30/2016. A MetOne BAM continuous monitor began operating on 10/1/2016. A collocated 2025 sequential monitor at the site suffered a major electronic breakdown and last sampled on 3/25/15. With the installation of the continuous monitor, collocation is no longer required.	

Appendix A: Ambient Air Monitoring Sites in Nebraska

Sites in the Lincoln MSA Operated by LLCHD

Site Name: Davey	AIRS ID: 31-109-0016
Location: 1st & Maple Sts., Davey	Latitude: 40.984722º Longitude: -96.677222º
Operating Agency: Lincoln Lancaster County Health Department	
Monitor Information	**Pollutant: Ozone**
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Teledyne API 400E	EPA Method: EQOA-0992-087
Purpose: Population Oriented	Scale: Urban
Start-Up Date: 1/1/85	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: This site was upgraded at the beginning of the 2014 ozone season with the Teledyne API 400E analyzer replacing the Dasibi 1003 AH analyzer.	

Site Name: LLCHD Building	AIRS ID: 31-109-0022
Location: 3140 N St., Lincoln	Latitude: 40.812590º Longitude: -96.683020º
Operating Agency: Lincoln Lancaster County Health Department	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Primary / POC 01	Monitoring Frequency: Once every 3 days
Analyzer/Sampler: R&P 2025 Seq. Filter	EPA Method: RFPS 0498-118
Purpose: Population Oriented	Scale: Neighborhood
Start-Up Date: 1/1/99	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Collocated / POC 02	Monitoring Frequency: Once every 6 days
Analyzer/Sampler: R&P 2025 Seq. Filter	EPA Method: RFPS 0498-118
Purpose: Population Oriented	Scale: Neighborhood
Start-Up Date: 1/1/99	Closure Date: Currently operating
Data used for NAAQS comparison: Only when primary data is not available.	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Continuous / POC 03(1)	Monitoring Frequency: Continuous
Analyzer/Sampler: Met One BAM-1020	EPA Method: EQPM-0308-170
Purpose: Population Oriented	Scale: Neighborhood
Start-Up Date: 7/1/06	Closure Date: Currently operating
Data used for NAAQS comparison: No. Reports to AirNow, but not AQS (1)	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	

Comment:

(1) The MetOne BAM monitor reported data to AirNow , but not AQS. Data from the MetOne BAM is not used for NAAQS comparison. The MetOne BAM data typically demonstrates a positive bias when compared to same day FRM data. In 2015, there was a 39% bias on same-day annual average data, and a 17% positive bias for the same-day 98th percentile.

Appendix A: Ambient Air Monitoring Sites in Nebraska

Permanently Closed (1) Sulfur Dioxide Site in the Lincoln MSA Operated by LLCHD

Site Name: Sheldon Station	AIRS ID: 31-109-0025
Location: SW 42nd St ~0.2 mi N of W Pella Rd	Latitude: 40.554722º Longitude: -96.780278º
Operating Agency: Lincoln-Lancaster County Health Department	
Monitor Information	**Pollutant: Sulfur Dioxide (SO_2)**
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Teledyne API T100	EPA Method: EQSA-0495-100
Purpose: Highest Concentration	Scale: Microscale
Start-Up Date: 12/23/16	Closure Date: 12/31/2020
Data used for NAAQS comparison: Yes Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: This site was established to satisfy requirements of the Data Requirements Rule (DRR) in 40 CFR Part 51 to characterize air quality near the Nebraska Public Power District Sheldon Station coal-fired power plant. The SO_2 Design Value after three years of monitoring (2017-2020) was below the threshold that would require continued monitoring under the DRR. As a result, EPA approved closure of the site at the end of 2020.	

Permanently Closed $PM_{2.5}$ Sites Operated by NDEE

Site Name: Grand Island Senior High	AIRS ID: 31-079-0004
Location: 2124 N Lafayette Ave, Grand Island	Latitude: 40.942099º Longitude: -98.364967º
Operating Agency: Nebraska Department of Environment and Energy	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Primary FRM/ POC 01	Monitoring Frequency: Once every 3 days
Analyzer/Sampler: R&P 2025 Sequential	EPA Method: RFPS-0498-118
Purpose: Transport & Population Oriented	Scale: Regional & Neighborhood
Start-Up Date: 5/7/04	Closure Date: 3/31/20
Data used for NAAQS comparison: Yes Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: Site superseded by site 31-079-0005 in Grand Island.	

Site Name: Scottsbluff Senior High School	AIRS ID: 31-157-0004
Location: Hwy 26 & 5th Ave, Scottsbluff (1)	Latitude: 41.87609º Longitude: -103.6587º
Operating Agency: Nebraska Department of Environment and Energy	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Primary FRM/ POC 01	Monitoring Frequency: Once every 3 days
Analyzer/Sampler: Thermo 2025i Sequential	EPA Method: RFPS-0498-118
Purpose: Background & Population Oriented	Scale: Regional & Neighborhood
Start-Up Date: 5/13/09	Closure Date: 3/23/2020
Data used for NAAQS comparison: Yes Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: (1) The previous sampler was moved ~170 m W-SW on 4/15/16 (1st sample date at new location). The move was necessitated by re-construction of athletic fields and at the request of the school. The site ID # was retained at that time.	

Appendix A: Ambient Air Monitoring Sites in Nebraska

$PM_{2.5}$ Sites Operated by NDEE

Site Name: Grand Island NDOT	AIRS ID: 31-079-0005
Location: 3305 W Old Potash Hwy, Grand Island	Latitude: 40.918333º Longitude: -98.378889º
Operating Agency: Nebraska Department of Environment and Energy	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Primary Continuous/ POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Met One BAM-1020	EPA Method: EQPM-0308-170
Purpose: Background Surveillance	Scale: Regional
Start-Up Date: 11/26/19	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: None	

Site Name: Scottsbluff Senior High School	AIRS ID: 31-157-0006
Location: Hwy 26 & 5th Ave, Scottsbluff (1)	Latitude: 41.875556º Longitude: -103.658056º
Operating Agency: Nebraska Department of Environment and Energy	
Monitor Information	**Pollutant: $PM_{2.5}$**
Type/POC: Primary Continuous/ POC 01	Monitoring Frequency: Continuous
Analyzer/Sampler: Met One BAM-1020	EPA Method: EQPM-0308-170
Purpose: Background & Population Oriented	Scale: Regional & Neighborhood
Start-Up Date: 3/24/20	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Comments: (1) A Thermo 2025i FRM Sequential sampler operated at this location on a 3-day sampling schedule with the AIRS ID 31-157-0004 until 3/24/20, when a continuous sampler was installed at the same location and a new AIRS ID was assigned.	

Appendix A: Ambient Air Monitoring Sites in Nebraska

Temporarily Closed Source-Oriented Lead (Pb) Site Operated by NDEE

Site Name: Fremont	AIRS ID: 31-053-0005
Location: 1255 Front St., Fremont, NE	Latitude: 41.90583º Longitude: -97.31583º
Operating Agency: Nebraska Department of Environmental Quality	
Monitor Information	**Pollutant: Lead (Pb)**
Type/POC: Primary / POC 01	Monitoring Frequency: Once every 6 days
Analyzer/Sampler: Hi-Vol TSP-Pb (ICP-MS)	EPA Method: EQL-0310-189
Purpose: Source-Oriented (1)	Scale: Micro-scale
Start-Up Date: 3/9/10	Closure Date: Currently operating
Data used for NAAQS comparison: Yes	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	
Monitor Information	**Pollutant: Lead (Pb)**
Type/POC: Collocated / POC 02	Monitoring Frequency: Once every 6 days
Analyzer/Sampler: Hi-Vol TSP-Pb (ICP-MS)	EPA Method: EQL-0310-189
Purpose: Source Oriented	Scale: Micro-scale
Start-Up Date: 3/9/10	Closure Date: 9/31/2018
Data used for NAAQS comparison: Only if primary sampler data is not available	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable	

Comments:

(1) Source-oriented with respect to Magnus Farley. Site closed at the request of the landowner. A nearby alternative site has been approved and a site agreement is being negotiated.

Source-Oriented Lead Monitoring Waivers pursuant to 40 CFR Part 58 Section 4.5(ii)

(1) Nucor Steel in Norfolk, NE: Waiver first approved by the EPA R7 Administrator in April 2014 and effective through April 2019. Renewal of this waiver was requested in the Nebraska 2019 Network Plan, which was approved by the EPA R7 Administrator in October 2019. The waiver will remain in effect until April 2024.

Appendix A: Ambient Air Monitoring Sites in Nebraska

Interagency Monitoring of Protected Visual Environments (IMPROVE) Sites *

* Interagency Monitoring of Protected Visual Environments (IMPROVE) monitors are operated to evaluate regional haze that may impact Federal Class I areas in National Parks and Wilderness Areas. Fine particulate and particulate speciation monitoring is conducted at these sites. They do not have an AIRS ID, are not subject to 40 CFR Part 58 requirements, and are not used for NAAQS attainment determinations.

Site Name: NE National Forest IMPROVE	AIRS ID: Not applicable, See Comments
Location: Nebraska National Forest, Thomas Co.	Latitude: 41.8888º Longitude: -100.3387º
Operating Agency: Nebraska Department of Environment and Energy / US Forest Service	
Monitor Information	**Pollutant: IMPROVE** (See Comments)
Type/POC: IMPROVE	Monitoring Frequency: Continuous
Method Description: : IMPROVE	EPA Method: Not applicable
Purpose: Background & Transport	Scale: Regional
Start-Up Date: 2002	Closure Date: Currently operating
Data used for NAAQS comparison: Not applicable.	
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Not applicable	
Comments: None	

National Atmospheric Deposition Program (NADP) Sites**

** The NADP site information below is included in the Network Plan for informational purposes only. They are not subject to 40 CFR Part 58 requirements, nor used for NAAQS attainment determinations.

Site Name: Mead NADP	AIRS ID: Not applicable, See Comments
Location: U of NE Field Lab, Saunders Co.	Latitude: 41.1528º Longitude: -96.4912
Operating Agency: University of Nebraska	
Monitor Information	**Pollutant: TNT/MDN**
Type/POC: NTN/MDN	Monitoring Frequency: Continuous
Method Description: NTN/MDN	EPA Method: Not applicable
Purpose: Background & Transport	Scale: Regional
Start-Up Date: 7/25/78	Closure Date: Currently operating

Comments: The Mead and North Platte National Atmospheric Deposition Program (NADP) sites are operated by the University of Nebraska with analytical and data processing support from the NADP. NADP sites are not subject to review under the provisions of 40 CFR Part 58.10, and thus are not subject to review under this Network Plan. They are included herein for informational purposes only.

- Monitoring methods are specific to this program and are not Federal Reference or Equivalent Methods (FRM/FEM).
- The National Trends Network (NTN) sites collect deposition data on acidity, sulfate, nitrate, ammonium, chloride, and base cations (e.g., calcium, magnesium, potassium, and sodium).
- Mercury Deposition Network (MDN) sites collect mercury deposition data.
- The NADP oversees both NTN and MDN sites and provides analytical and data processing support.
- The Mead site began operation as an NTN site in 1978 and began MDN operations in June 2007. NDEE provides financial support for MDN operations at this site through Title V fees.

Appendix A: Ambient Air Monitoring Sites in Nebraska

National Atmospheric Deposition Program (NADP) Sites (continued)

Site Name: North Platte NADP	AIRS ID: Not applicable, See Comments
Location: U of Ne Ag Station, Lincoln, Co.	Latitude: 41.0592º Longitude: -100.7464º
Operating Agency: University of Nebraska	
Monitor Information	**Pollutant:** NTN
Type/POC: NTN	Monitoring Frequency: Continuous
Method Description: NTN	EPA Method: Not applicable
Purpose: Background & Transport	Scale: Regional
Start-Up Date: 9/24/85	Closure Date: Currently operating

Comments: The Mead and North Platte National Atmospheric Deposition Program (NADP) sites are operated by the University of Nebraska with analytical and data processing support from the NADP. NADP sites are not subject to review under the provisions of 40 CFR Part 58.10, and thus are not subject to review under this Network Plan. They are included herein for informational purposes only.

- Monitoring methods are specific to this program and are not Federal Reference or Equivalent Methods (FRM/FEM).
- The National Trends Network (NTN) sites collect deposition data on acidity, sulfate, nitrate, ammonium, chloride, and base cations (e.g., calcium, magnesium, potassium, and sodium).
- Mercury Deposition Network (MDN) data was collected at this site from October 2009 thru October 2011 using Nebraska Environmental Trust funding.
- The NADP oversees both NTN and MDN sites and provides analytical and data processing support.

Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS

This appendix compares ambient air quality data from 2018 through 2020 to the NAAQS. The annual data and estimated Design Values (DVs) presented below were retrieved from the EPA AQS database.

Table B-1: Ozone Data

Comparison of 3-Year Design Values for 8-hour Ozone to NAAQS (1)						
Site	**Operator**	**2018**	**2019**	**2020**	**DV**	**% NAAQS**
Omaha MSA and Near-By Montgomery Co., IA (4)						
Omaha NCore	DCHD	0.069	0.061	0.058	0.062	89%
2411 O St., Omaha	DCHD	0.063	0.050	0.055	0.056	80%
1616 Whitmore St, Omaha	DCHD	0.066	0.062	0.052	0.060	86%
Pisgah, Harrison Co., IA	IA DNR	0.066	0.062	0.061	0.063	90%
Montgomery County, IA (2)	IA DNR	0.064	0.059	0.056	0.059	84%
Lincoln MSA						
First & Maple, Davey	LLCHD	0.062	0.056	0.054	0.057	81%
Sioux City MSA						
31986 475th Ave, Union Co, SD	SD DEP	0.068	0.064	0.063	0.065	94%
Nebraska Non-MSA						
Santee Indian Reservation	US EPA	0.065	0.062	0.063	0.063	90%
Sites in Surrounding States						
Emmetsburg, IA	IA DNR	0.067	0.065	0.062	0.064	91%
Des Moines, IA	IA DMR	0.065	0.059	0.057	0.060	86%
Savanah, MO	MO DNR	0.067	0.060	0.059	0.062	89%
Kansas City Metro (Max DV site)	MO DNR	0.072	0.062	0.065	0.066	94%
Topeka KS	KS DHE	0.062	0.061	0.057	0.060	86%
Cedar Bluff Reservoir, KS	KS DHE	0.064	0.058	0.059	0.060	86%
Denver, CO Metro (Max DV site)	CO DPHE	0.083	0.078	0.083	0.081	116%
Greeley, CO	CO DPHE	0.073	0.065	0.072	0.070	100%
Cheyenne, WY (Max DV site)	WY DEQ	0.068	0.059	0.060	0.062	89%
Newcastle, WY	WY BLM	0.063	0.059	0.066	0.062	89%
Sioux Falls, SD	SD DEP	0.069	0.065	0.064	0.066	94%
Wind Cave NP, Custer Co., SD	SD DEP	0.063	0.057	0.063	0.061	87%
Badlands NP, Jackson Co., SD	SD DEP	0.063	0.058	0.061	0.060	86%

Notes and Explanations:

(1) EPA AQS data retrieval 4/2/21. Concentrations are in units of ppm. Annual values are the 4th highest daily maximum 8-hour concentrations (ppm). The Design Value (DV) is the truncated 3-year average of the 4th highest max for each year. The NAAQS = 0.070 ppm (promulgated 10/1/2015).

(2) The Montgomery County, IA site is located outside the Omaha MSA at Viking Lake State Park; ~18 miles east of the Mills-Montgomery County line and ~ 45 miles SE of the I-29/I-80 intersection.

Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-2: Carbon Monoxide Data

Comparison of 3-Year Maximum Value for 1-Hour Carbon Monoxide to NAAQS (1) (2)					
Site	**2018**	**2019**	**2020**	**Design Value** (2)	**% NAAQS**
Omaha MSA					
78th & Dodge Streets, Omaha	1.7	1.9	1.8	1.9	5%
Omaha NCore (4)	1.01	0.95	0.85	1.01	3%
Comparison of 3-Year Maximum Value for 8-Hour Carbon Monoxide to NAAQS (1) (3)					
Site	**2018**	**2019**	**2020**	**Design Value** (3)	**% NAAQS**
Omaha MSA					
78th & Dodge Streets, Omaha	1.3	16	1.6	1.6	18%
Omaha NCore (4)	0.7	0.6	0.5	0.7	8%

Notes and Explanations:

(1) EPA AQS data retrieval 3/3/21. The CO NAAQS were last revised in 1984. The latest review was concluded in August 2011 when EPA determined no changes in the CO NAAQS were warranted.

(2) The 1-hour NAAQS = 35 ppm. The Design Value is the highest annual 2nd highest maximum value over the last 3 years. The annual values shown are the annual 2nd highest maximum values. Concentrations are in units of ppm.

(3) The 8-hour NAAQS = 9 ppm. The Design Value is the highest annual 2nd highest maximum value over the last 3 years. The annual values shown are the 2nd highest 8-hour maximum values. Concentrations are in units of ppm.

(4) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.

Table B-3: Sulfur Dioxide Data

Comparison of Daily Maximum 1-Hour Sulfur Dioxide Levels to the Primary NAAQS (1)					
Site	**2018**	**2019**	**2020**	**Design Value (1)**	**% NAAQS**
Omaha MSA					
1616 Whitmore St., Omaha	0.029	0.038	0.034	0.034	45%
Omaha NCore (2)	0.017	0.009	0.008	0.011	15%
7288 John Pershing Dr., Omaha (3)	0.037	0.029	0.044	0.036	48%
Lincoln MSA					
SW 42nd St., Lancaster Co. (4)	0.010	0.033	0.025	0.023	30%
Sioux City MSA Sites					
31986 475th Ave, Union Co, SD (5)	0.003	0.003	0.002	0.003	4%

Notes and Explanations:

(1) EPA AQS data retrieval 4/2/21. The 1-hour NAAQS is 75 ppb or 0.075 ppm (promulgated in June 2010 and retained in December 2020). The annual values shown are the 99th percentile of the daily maximum values in ppm units. The Design Value is the three-year average of the annual 99th percentile daily maximum values.

(2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.

(3) The 7288 John Pershing Dr. site began operation on 01/01/17 and was operated by DCHD. This site adjacent to the OPPD North Omaha Generating Station was established to satisfy the requirements of the Data Requirements Rule (DRR) in 40 CFR Part 51. These requirements being satisfied after three years of data collection, the site was closed on 12/31/2020.

(4) The SW 42nd St., Lancaster County site began operation on 12/23/16 and was operated by LLCHD. This site adjacent to the NPPD Sheldon Generating Station was established to satisfy the requirements of the Data Requirements Rule (DRR) in 40 CFR Part 51. These requirements being satisfied after three years of data collection, the site was closed on 12/31/2020.

(5) The Union Co., SD site is operated by the South Dakota Department of Environment & Natural Resources.

Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-4a: Nitrogen Dioxide Data

Comparison of 1-Hour Maximum Levels of Nitrogen Dioxide to NAAQS (1)(2)					
Site	**2018**	**2019**	**2020**	**Design Value (2)**	**% NAAQS**
Sioux City MSA					
31986 475th Ave, Union Co, SD (4)	0.018	0.012	0.022	0.017	17%
Comparison of 3-Year Maximum Annual Average Value for Nitrogen Dioxide to NAAQS (3)					
Site	**2018**	**2019**	**2020**	**Design Value (3)**	**% NAAQS**
Sioux City MSA					
31986 475th Ave, Union Co, SD (4)	0.002	0.002	0.002	0.002	3%

Notes and Explanations:

(1) EPA AQS data retrieval 4/20/21. All concentrations expressed in ppm units.

(2) The 1-hour NO_2 NAAQS is 0.100 ppm (promulgated Feb. 2010 and retained Apr. 2018). NAAQS attainment is achieved if the 3-year average of the annual 98th percentile of the daily maximum 1-hour values does not exceed 0.100 ppm.

(3) The Annual Average NO_2 NAAQS is 0.053 ppm not to be exceeded in a calendar year. It was promulgated 1971 and retained in the 1996 and 2010 reviews. The Design Value is the highest annual average over the 3-year comparison period.

(4) The Union County SD site is operated by the South Dakota Department of Environment & Natural Resources.

Table B-4b: Nitrogen Oxide Data from the Omaha NCore Site (1)(2)

Parameter	**2018**	**2019**	**2020**	**Approx. DV (3)**	**Max % NAAQS**
1-Hour Data: 98th Percentile					
NOy-NO (3)(4)(5)	0.038	0.040	0.035	0.038	38%
Annual Average Data					
NOy-NO	0.0060	0.0058	0.0058	0.0045	10%

Footnotes:

(1) EPA AQS data retrieval 3/8/21. All concentrations expressed in ppm units.

(2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.

(3) NOy – Reactive oxides of nitrogen, which include NO, NO_2 and other nitrogen oxides, including organic nitrogen oxide compounds.

(4) NO – Nitrogen oxide

(5) NOy-NO provides an approximation of nitrogen dioxide (NO_2), with some possibility of over-estimating the true NO_2 concentration. For this reason, the NOy-NO parameter can be used to demonstrate attainment, but not non-attainment.

Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-5a: PM_{10} – Annual Number of Exceedances (1) (2)

Site	2018	2019	2020	Design Value (1)
Omaha MSA Sites (6)				
Omaha NCore, 4102 Woolworth St. (3)	0	0	0	0.0
2411 O St, Omaha	0	0	0	0.0
19th & Burt Streets, Omaha	0	0	0	0.0
3130 C Ave, Council Bluffs, IA (4)	0	0	0	0.0
Weeping Water City (5)	0	0	0	0.0
Sioux City MSA Site				
31986 475th Ave, Union Co, SD (6)	0	0	0	0.0

Notes and Explanations:

(1) EPA AQS data retrieval 4/20/21. The PM_{10} NAAQS is an exceedance-based standard with a 24-hour averaging time and 150 $\mu g/m^3$ level at standard temperature (25° C) and pressure (760 mm Hg) conditions. This standard is not to be exceeded more than once per year on average over 3 years, where exceedance is defined as a value of 155 $\mu g/m^3$ or more. Sites with 3-year average of exceedances of 1.0 or less are in attainment with the NAAQS.

(2) NAAQS History: The primary 24-hour NAAQS was initially set at 150 $\mu g/m^3$ in 1987 and was retained at this level in the 1997, 2006 and 2012 PM NAAQS reviews.

(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.

(4) The Council Bluffs, IA site is operated by the IA DNR

(5) Weeping Water is a limestone mining and processing area in Cass County, which is located 15 to 20 miles south of the main urbanized area within the Omaha MSA.

(6) The Union Co., SD site is operated by the South Dakota Department of Environment & Natural Resources

Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-5b: PM_{10} – Annual Maximum 24-Hour Data (1) (2)

Site	2018	2019	2020	4th Highest Value (1)	% NAAQS
Omaha MSA Sites (6)					
Omaha NCore, 4102 Woolworth St. (3)	64	52	71	66	44%
2411 O St, Omaha	55	43	83	55	37%
19th & Burt Streets, Omaha	51	40	84	44	29%
3130 C Ave, Council Bluffs, IA (4)	83	48	95	60	40%
Weeping Water City (5)	67	50	95	71	47%
Sioux City MSA Site					
31986 475th Ave, Union Co, SD (6)	131	56	94	94	63%

Notes and Explanations:

(1) EPA AQS data retrieval 4/20/21. Year columns show annual maximum 24-hour average values of PM_{10}. NAAQS = 150 µg/m^3, not to be exceeded more than once per year on average over 3 years, where exceedance is defined as a value of 155 µg/m^3 or more. Annual values that do not meet completeness requirements are shown in red. The 4th-highest 24-hour average value in the three-year period is shown for informal comparison to the NAAQS.

(2) NAAQS History: The primary 24-hour NAAQS was initially set at 150 µg/m^3 in 1987, and was retained at this level in the 1997, 2006 and 2012 PM NAAQS reviews.

(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.

(4) The Council Bluffs, IA site is operated by the IA DNR

(5) Weeping Water is a limestone mining and processing area in Cass County, which is located 15 to 20 miles south of the main urbanized area within the Omaha MSA.

(6) The Union Co., SD site is operated by the South Dakota Department of Environment & Natural Resources

Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-5c: PM_{10} - Annual Average Data (1)

Site	2018	2019	2020	3-Year Average	% Old Std
Omaha MSA (4)					
Omaha NCore, 4102 Woolworth St. (2)	18.6	17.7	20.6	19.0	38%
2411 O St, Omaha	23.1	20.7	23.8	22.5	45%
19th & Burt Streets, Omaha	20.9	18.8	21.7	20.5	41%
3130 C Ave, Council Bluffs, IA (3)	21.5	19.0	22.0	20.8	42%
Weeping Water City (4)	17.3	15.7	18.7	17.2	34%
Sioux City MSA					
31986 475th Ave, Union Co, SD (5)	18.2	15.2	19.4	17.6	35%

Notes and Explanations:

(1) EPA AQS data retrieval 4/20/21. There is currently no NAAQS for the annual average PM_{10} concentration. An annual average NAAQS of 50 $\mu g/m^3$ was established in 1987, and then rescinded on December 18, 2006. Annual values and average values that do not meet completeness requirements are shown in red. Comparison to the rescinded NAAQS is provided for informational purposes only. Concentrations are in units of $\mu g/m^3$.

(2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.

(3) The Council Bluffs IA site is operated by the IA DNR

(4) Weeping Water is a limestone mining and processing area in Cass County, which is located 15 to 20 miles south of the main urbanized area within the Omaha MSA.

(5) The Union Co., SD site is operated by the South Dakota Department of Environment & Natural Resources.

Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-6a: $PM_{2.5}$ - 98th Percentile 24-Hour Data (1) (2)

Site	2018	2019	2020	Design Value (1)	% NAAQS
Omaha MSA & Montgomery Co., IA (5)					
Omaha NCore (3)	19.5	17.0	17.3	17.9	51%
9225 Berry St.; Omaha	22.0	18.5	17.7	19.4	55%
2912 Coffey Ave., Bellevue	21.2	21.5	17.3	20.0	57%
2242 Wright St., Blair	20.8	17.9	16.3	18.3	52%
3130 C Ave., Council Bluffs, IA (4)	22.0	17.7	21.8	20.5	59%
Montgomery Co., IA (outside Omaha MSA) (4) (5)	18.5	15.2	14.8	16.2	46%
Lincoln MSA					
3140 N Street, Lincoln	19.2	16.6	16.5	17.4	50%
Sioux City MSA					
901 Floyd Blvd, Sioux City, IA (4)	20.0	22.3	20.9	21.1	60%
31986 475th Ave, Union Co, SD (6)	15.5	16.5	16.9	16.3	47%
Other Nebraska Sites					
Grand Island (7)	18.6	16.1	18.5	17.7	50%
Scottsbluff (8)	17.6	12.3	25.8	18.6	53%

Notes and Explanations:

(1) EPA AQS data retrieval 4/2/21. The Design Values are the 3-year average of the annual 98th percentile values. To determine attainment status, the Design Values are compared to the 35 µg/m^3 NAAQS. Concentrations are in units of µg/m^3. Annual values and Design Values that do not meet completeness requirements are shown in red.

(2) NAAQS History: The 24-hour $PM_{2.5}$ NAAQS was initially established at 65 µg/m^3 in 1997. It was lowered to 35 µg/m^3 in 2006 and retained at the 35 µg/m^3 level in 2012 and again in December 2020.

(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.

(4) The Council Bluffs, Montgomery Co., and Sioux City IA sites are operated by the IA DNR

(5) The Montgomery County, IA site is located outside the Omaha MSA at Viking Lake State Park, ~18 miles east of the Mills-Montgomery County line and ~ 45 miles SE of the I-29/I-80 intersection.

(6) The Union Co., SD site is operated by the South Dakota Department of Environment & Natural Resources.

(7) The Grand Island site was relocated in 2020 and assigned a new AIRS ID. The 2020 value shown is from the new site and the Design Value is computed using values from both old and new sites.

(8) The sequential filter-based monitor in Scottsbluff was replaced in 2020 by a continuous monitor, and the site was assigned a new AIRS ID. The 2020 value shown was computed from the continuous monitor data recorded for only 252 days and is thus not valid for NAAQS comparison.

Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS

Table B-6b: $PM_{2.5}$ - Annual Average Data (1) (2)

Site	2018	2019	2020	Design Value (1)	% NAAQS
Omaha MSA & Montgomery Co., IA (4)					
Omaha NCore (3)	8.3	6.8	7.2	7.4	62%
9225 Berry St.; Omaha	8.0	6.9	7.3	7.4	62%
2912 Coffey Ave., Bellevue	9.1	7.8	7.8	8.2	69%
2242 Wright St., Blair	7.6	6.6	6.2	6.8	57%
3130 C Ave., Council Bluffs, IA (4)	8.8	7.7	8.3	8.3	69%
Montgomery Co., IA (outside Omaha MSA) (4) (5)	6.9	6.5	6.7	6.7	56%
Lincoln MSA					
3140 N Street, Lincoln	7.1	6.5	6.1	6.6	55%
Sioux City MSA					
901 Floyd Blvd, Sioux City, IA (4)	8.3	7.4	7.6	7.8	65%
31986 475th Ave, Union Co, SD (6)	6.3	5.8	6.1	6.1	51%
Other Nebraska Sites					
Grand Island (7)	6.2	5.0	5.5	5.6	46%
Scottsbluff (8)	6.3	4.8	8.5	6.5	54%

Notes and Explanations:

(1) EPA AQS data retrieval 4/2/21. The Design Values are the 3-year average of the annual average values. To determine attainment status, the Design Values are compared to the 12 $\mu g/m^3$ NAAQS. Concentrations are in units of $\mu g/m^3$. Annual values and Design Values that do not meet completeness requirements are shown in red.

(2) NAAQS History: The annual average $PM_{2.5}$ NAAQS was initially established in 1997 at 15$\mu g/m^3$. It was retained at this level in the 2006 review, then lowered to 12 $\mu g/m^3$ in December 2012 and retained at that level in December 2020.

(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.

(4) The Council Bluffs, Montgomery Co., and Sioux City IA sites are operated by the IA DNR

(5) The Montgomery County, IA site is located outside the Omaha MSA at Viking Lake State Park, ~18 miles east of the Mills-Montgomery County line and ~ 45 miles SE of the I-29/I-80 intersection.

(6) The Union Co., SD site is operated by the South Dakota Department of Environment & Natural Resources.

(7) The Grand Island site was relocated in 2020 and assigned a new AIRS ID. The 2020 value shown is from the new site and the Design Value is computed using values from both old and new sites.

(8) The sequential filter-based monitor in Scottsbluff was replaced in 2020 by a continuous monitor, and the site was assigned a new AIRS ID. The 2020 value shown was computed from the continuous monitor data recorded for only 252 days and is thus not valid for NAAQS comparison.

Table B-7: Lead in Total Suspended Particulate (TSP-Pb)

Annual Maximum Rolling 3-Month Average Values (1) (2)					
Site	**2017**	**2018**	**2019**	**DV (1)**	**% NAAQS**
Fremont (3)	0.024	nd	nd	0.024	16%

Notes and Explanations:

(1) Concentrations are in units of μg/m^3. The 3-month average NAAQS = 0.15 μg/m^3. The DV or Design Value is the highest 3-month average in the last 3 years. Values from monitors with less than 3 years of data are shown in red.

(2) NAAQS History: The initial NAAQS was promulgated in 1978 and was set at 1.5 μg/m^3 calendar quarter average. In 2008, it was modified to 0.15 μg/m^3 3-month running average.

(3) The Fremont lead monitor was temporarily closed 9/31/2018 pending relocation at the request of the site host. A new location has been determined and approved by EPA Region 7. The new site is expected to be in operation in 2021.

Nebraska 2021 Ambient Air Monitoring Network Plan

Appendix C: Compliance Verification with 40 CFR Part 58

This appendix reviews compliance with applicable requirements in 40 CFR Part 58 Appendices A through E, including revisions effective 4/27/16. Nebraska Ambient Monitoring activities and network are in compliance with these requirements.

I. 40 CFR Part 58 Appendix A Review

40 CFR Part 58 Appendix A sets forth quality assurance requirements for the collection, calculation, and reporting of ambient air monitoring data. The *Quality Assurance Project Plan (QAPP) for the Nebraska Ambient Air Monitoring Program for Criteria Pollutants, NCore Parameters, $PM_{2.5}$ Speciation, and Total Reduced Sulfur* (EPA approved October 2018) was developed to comply with Part 58 requirements and the provisions of the EPA *Quality Assurance Handbook for Air Pollution Measurement Systems Volume II* (May 2013). The DCHD, LLCHD and NDEE all use this QAPP. Actual procedures for operating monitors, as well as for collecting, reviewing and submitting data, are set forth in Standard Operating Procedures (SOPs) that comply with the QAPP.

40 CFR Part 58 Appendix A also sets forth requirements specifying the number of collocated monitors required for $PM_{2.5,}$ $PM_{10,}$ $PM_{10\text{-}2.5}$ and Lead (Pb) monitors. Table C-1 summarizes the collocated sites in Nebraska. All PM and Pb sub-networks operated by DCHD, LLCHD and NDEE either currently meet collocation requirements or will do so after network changes outlined in this 2021 Network Plan.

II. 40 CFR Part 58 Appendix C Review

40 CFR Part 58 Appendix C contains requirements for approved ambient air monitoring methodologies. Any monitor that is used to evaluate NAAQS compliance must be a Federal Reference Method (FRM) or a Federal Equivalent Method (FEM) sampler or an alternatively approved method as defined in Appendix C. The network description tables in Appendix A of this network plan identify the sampling method used by each monitor in the Nebraska ambient air monitoring network. All monitors used to evaluate compliance with the NAAQS are FRM or FEM certified. The only monitors that are not FRM/FEM certified are those not subject to 40 CFR Part 58 requirements (i.e., NADP, IMPROVE, RadNet, etc.)

Table C-1: Compliance Summary: Collocation Requirements of 40 CFR Part 58 Appendix A[1]

Parameter	Primary Sampler Method FRM = Federal Reference Method FEM = Federal Equivalent Method	Percent Collocation Required	NDEE/LLCHD [2]			DCHD [2]		
			# of Sites	# Collocated	% Collocated	# of Sites	# Collocated	% Collocated
PM_{10}	Hi-Vol Sampler (FRM)	15%	0	0	na	2	1	50%
PM_{10}	Sequential 2025 Sampler (FRM)	15%	0	0	na	0	0	na
PM_{10}	Met One BAM Continuous (FEM)	None	1	0	(3)	1	0	(3)
$PM_{2.5}$	Sequential 2025 Sampler (FRM)	15%	1	1	100%	1	1	100%
$PM_{2.5}$	Met One BAM Continuous (FEM)	15%	3 [4][5]	1 [4]	33% [4]	3 [6]	1	33%
$PM_{10-2.5}$	Met One BAM Continuous (FEM)	None	0	0	na	1	0	(7)
TSP-Lead	Hi-Vol Sampler (FRM)	15% except NCore	1	1	100%	0	0	0

Footnotes:

(1) Collocation Requirements: 40 CFR Part 58 Appendix A requires 15% of the sites in each parameter/method category to have collocated monitors with certain exceptions and additional requirements. Listed site counts incorporate network changes outlined in this Network Plan.

(2) Collocation requirements apply to each Primary Quality Assurance Organization (PQAO) separately. There are two PQAO's in Nebraska: DCHD and NDEE/LLCHD.

(3) Collocated monitors are not required for continuous PM_{10} monitors.

(4) Counts include the planned Beatrice site with primary MetOne BAM and collocated sequential $PM_{2.5}$ samplers.

(5) LLCHD operates a MetOne BAM $PM_{2.5}$ sampler for AirNow and AQI reporting. It is collocated with the primary and collocated sequential samplers at the site.

(6) A MetOne BAM $PM_{2.5}$ sampler is being installed at the Blair site, replacing a sequential 2025 FRM sampler.

(7) DCHD operates 2 MetOne BAM samplers at the NCore site. One is set-up to sample $PM_{2.5}$ and the other samples PM_{10}. $PM_{10-2.5}$ is calculated using the results from these 2 samplers. There is a sequential $PM_{2.5}$ collocated sampler at the NCore site, but not a collocated PM_{10} sampler. Collocated PM_{10} samplers are not required in Appendix A for continuous PM_{10} samplers. EPA has designated some NCore sites to have collocated samplers for $PM_{10-2.5}$; the Omaha NCore site is not one of them.

Network Descriptions:

NDEE Continuous PM_{10}: Weeping Water City (collocation not required)
NDEE MetOne BAM Continuous $PM_{2.5}$: Grand Island and Scottsbluff
NDEE MetOne BAM Continuous and collocated sequential 2025 $PM_{2.5}$: Beatrice
LLCHD Primary and collocated sequential 2025 $PM_{2.5}$: Lincoln
NDEE TSP-Lead: Fremont (collocated)

DCHD Hi-Vol PM_{10}: 19 & Burt (collocated) and South Omaha
DCHD MetOne BAM Continuous PM_{10}: NCore
DCHD Primary and collocated sequential 2025 $PM_{2.5}$: Berry St
DCHD MetOne BAM Continuous and collocated sequential 2025 $PM_{2.5}$: NCore
DCHD MetOne BAM Continuous $PM_{2.5}$: Bellevue and Blair
DCHD MetOne BAM Continuous $PM_{10-2.5}$: NCore (collocation not required)

III. 40 CFR Part 58 Appendix D Review

40 CFR Part 58 Appendix D sets forth monitoring objectives and minimum monitoring site requirements that must be met. The review that follows demonstrates that the Nebraska ambient air monitoring network meets the Appendix D requirements in effect on February 28, 2013.

EPA periodically re-evaluates the NAAQS and monitoring requirements. Regulatory modifications may impact the minimum monitoring requirements in one of two ways:

- Appendix D minimum monitoring requirements may be changed (i.e., more or less monitoring could be required); or
- Monitoring needs may change as a result of a NAAQS modification (e.g., when the annual average $PM_{2.5}$ NAAQS was lowered from 15 *u*g/m^3 to 12 *u*g/m^3, the 85% of NAAQS threshold set forth in 40 CFR Part 58 Appendix D Sec. 4.7 Table D.5 was crossed, and the minimum number of $PM_{2.5}$ monitoring sites for the Omaha MSA increased from 1 to 2).

A: 40 CFR Part 58 Appendix D - Objectives Review

40 CFR Part 58 Appendix D Section 1.1 sets forth three objectives that ambient air monitoring networks must be designed to meet:

- Provide air pollution data to the general public in a timely manner.
- Support compliance with ambient air quality standards and emissions strategy development.
- Support for air pollution research studies.

Each of these objectives is discussed below.

1. Timely Dissemination of Data - Met

Air monitoring data is made available to the public and other parties in several ways.

a. Ambient air monitoring data is reviewed quarterly and entered into the national EPA-operated AQS database. The AQS database is available to federal, state, and local monitoring agency personnel, as well as some other public agencies and researchers. AQS data cannot be directly accessed by the general public, but the NDEE does respond to data requests.

b. Air Quality Index reporting is performed by DCHD and LLCHD for their respective jurisdictions. The AQI information is made available on their respective city websites.

c. Monitoring data from continuous particulate, ozone, and CO monitors in the Omaha, Lincoln, and Grand Island MSAs and the Scottsbluff MiSA report directly to the EPA AirNow system. The general public can access air quality index information on-line at www.airnow.gov.

2. Support compliance with ambient air quality standards and emissions strategy development – Met

The NDEE reviews all data collected by DCHD, LLCHD, and NDEE during the previous year as part of the annual data certification process, which is submitted to EPA by May 1st. At this time design values are calculated and compared with the NAAQS. This design value information is then incorporated into the annual Network Plan. The annual Network Plans discuss attainment/non-attainment status and monitoring strategies that may be related.

The NDEE, DCHD, and LLCHD also perform data validation reviews at least once each quarter and in many instances monthly. Any potential non-attainment or near non-attainment circumstances will be recognized during these reviews. If such conditions are identified, efforts are made to ascertain the cause and to the extent possible bring about corrective action through regulatory and/or voluntary mechanisms.

NDEE staff can access current ozone and $PM_{2.5}$ values through the AirNow Tech website when needed. When elevated ozone or $PM_{2.5}$ levels are reported, this information is passed on to air quality managers at DCHD, LLCHD, and NDEE.

The examples below illustrate how state and local air quality programs have recognized air quality issues and reacted to them.

a. In the fall of 2011, the 3-month average lead concentration at the Fremont site exceeded the NAAQS. EPA and Magnus Farley, the one known source, were notified. The data were discussed and presented to EPA for review. NDEE and the source conducted an on-site review of the facility and potential emission sources.

   In 2012, NDEE continued to calculate daily and 3-month average lead monitoring data as the data became available and disseminated this information to Magnus Farley. High daily lead levels in May thru early July brought the 3-month average within 93% of the NAAQS, and these lead levels were discussed with Magnus Farley. Lower lead levels were seen beginning in July and continuing thereafter. The impact of this information exchange with the source is difficult to evaluate, but it may have played an important role in facilitating the source in remaining diligent with their control efforts.

   The NDEE continues to inform Magnus Farley of lead levels as the data become available. Lead levels have remained in attainment with the current DV at 41% of the NAAQS. See Attachment B Table B-7 for 2016-2018 maximum 3-month average data.

b. From September 2011 thru June 2012, the 46th & Farnam site recorded four (4) 24-hour average PM_{10} values greater than the 150 $\mu g/m^3$ standard. The 46th & Farnam site was source-oriented with respect to Omaha Steel Castings Company, and the company had initiated a move to a new location in Wahoo, NE.

   Douglas County Health Department notified Omaha Air Quality Control and Omaha Steel of the high values in a timely manner. Omaha Air Quality Control staff met with Omaha Steel to discuss potential PM_{10} sources and controls. Omaha Steel proceeded with process-handling and housekeeping changes intended to reduce PM_{10} emissions. These efforts were effective in reducing PM_{10} levels. Omaha Steel completed their move to their new facility in 2014 and closed the 46th & Farnam facility.

c. In the summer of 2012, Nebraska monitoring sites began reporting ozone levels above those seen in recent years. The NDEE began using AirNow data to track the current 4th highest values for sites in and around Nebraska as the ozone season progressed. Although the 4th high values at two sites in the Omaha MSA exceeded 0.075 ppm 8-hour ozone NAAQS, the 3-year average design values did not exceed the NAAQS (i.e., the maximum unofficial 2010-2012 DVs = 0.069 ppm).

d. In the spring of 2014, 2016, and 2017, smoke from prescribed grassland fires in the Flint Hills area of Kansas impacted Nebraska. AirNow data was used to track the degree and extent of the impact on ambient ozone and $PM_{2.5}$. At times, the impact from these controlled burns raised ozone and $PM_{2.5}$ levels in Nebraska, but there were no NAAQS violations. Both DCHD and LLCHD issued air quality alerts related to these burns.

Beginning in early 2018, NDEE has engaged with stakeholders and key players to address the air quality impacts associated with prescribed fires in the Flint Hills and the surrounding region. Roundtable meetings are held in February each year to discuss current trends, research, and options for collaboration and coordination to provide timely health advisories and notifications to the public. In addition to the local Nebraska air quality agencies, the group includes representatives from EPA Region 7, Kansas Department of Health and Environment (KDHE), the National Weather Service, the University of Nebraska Lincoln, the Nebraska Department of Health and Human Services (DHHS), the Nebraska Game and Parks Commission, and the Nebraska Prescribed Fire Council.

As a result of this effort, beginning with the 2018 spring burn seasons KDHE has provided NDEE and local Nebraska air quality agencies with weekly summaries of burn activity in the Flint Hills and the resulting smoke impacts. KDHE also issues predictions of fire activity and impacts for the upcoming week and more frequently as needed. Working group conference calls assess potential smoke impacts and health advisories are issued when needed. These advisories are relayed to relevant local health departments in Nebraska and disseminated to the public by DHHS. The Smoke Awareness web page on the NDEE website has been expanded with additional information on spring burn activity and to provide access to smoke impact outlooks. Although favorable weather patterns during the 2018 through 2020 spring burn seasons resulted in minimal impacts on air quality in Nebraska from Flint Hills burning, the communication framework that has been established will be instrumental in addressing future smoke and air quality impacts and in providing timely communication to the public regarding those impacts and related health concerns.

3. Support for air pollution research studies – Met

The NDEE, DCHD, and LLCHD operate the Nebraska SLAMS network in accordance with the monitor specifications, site placement, and QA requirements set forth in 40 CFR Part 50 and 58. EPA R7 provides oversight to ensure that regulatory requirements are met with respect to methodology and QA.

Data is reviewed quarterly before being submitted to EPA's AQS database. Once in AQS, the data is available for pollution research studies.

Near real-time data is also reported to the EPA AirNow data from the continuous PM, CO, and ozone monitors operating in the Omaha and Lincoln MSA. This data is also available for research purposes.

B: 40 CFR Part 58 Appendix D Review – Minimum Monitoring Site Requirements

Nebraska meets the requirements set in 40 CFR Part 58 Appendix D for the minimum number of monitoring sites. The minimum monitoring site requirements are set by Core Based Statistical Areas (CBSAs), which include Metropolitan Statistical Areas (MSAs) and Micropolitan Statistical Areas (MiSAs). The minimum monitoring site requirements for each of the four MSAs in Nebraska are examined separately and documented in Tables C-2.a through C-2.d below.

The review for non-MSA areas of the state was performed on a pollutant-specific basis. This review is documented in narrative form in Section III.C below.

It should be noted that the number of monitoring sites required in a network generally needs to be greater than the minimum number required by 40 CFR Part 58 Appendix D. This is stated in 40 CFR Part 58 Appendix D Section 1.1.2: "… total number of monitoring sites that will serve the variety of data needs will be substantially higher than these minimum requirements provide…"

C: 40 CFR Part 58 Appendix D Review – Minimum Monitoring Requirements for non-MSAs

NCore – (40 CFR Part 58 App. D Sec. 3) No sites required or operated.

Nebraska has one required NCore site located in the Omaha MSA. At this time there is no requirement or plan to develop an additional NCore site in Nebraska.

Ozone (O_3) – (40 CFR Part 58 App. D Sec. 4.1) No sites required or operated.

At this time there is no requirement or plan to deploy ozone monitoring sites outside of the MSAs.

Carbon Monoxide (CO) – (40 CFR Part 58 App. D Sec. 4.2) No sites required or operated.

At this time there is no requirement or plan to conduct CO monitoring outside the MSAs. Elevated CO levels are primarily associated with vehicle emissions and congested traffic areas. Highest levels would be anticipated in the Omaha and Lincoln MSAs. Highest concentration site monitoring in Lincoln and

Omaha has consistently found CO levels well below the NAAQS. Thus there is no need for additional monitoring sites in less populated communities.

Nitrogen Dioxide (NO_2) – (40 CFR Part 58 App. D Sec. 4.3) No sites required or operated.

At this time there is no requirement or plan to conduct NO_2 monitoring outside the MSAs.

Sulfur Dioxide (SO_2) – (40 CFR Part 58 App. D Sec. 4.4) No sites required or operated.

There are no Part 58 requirements to operate SO_2 monitoring sites in non-MSA areas. However, pursuant to Part 51, Subpart BB, monitoring may be used to demonstrate attainment with the 1-hour SO_2 NAAQS. NDEE has no current plans for SO_2 monitoring in non-MSA areas.

Lead (Pb) – (40 CFR Part 58 App. D Sec. 4.5)

Two source-oriented sites required; 1 currently suspended and 1 waived.

40 CFR Part 58 Appendix D requires source-oriented monitoring near sources with lead emissions of 0.5 tpy or more. Three sources in Nebraska initially met this threshold: Magnus Farley in Fremont, Magnolia Metals in Auburn, and Nucor Steel in Norfolk.

Monitoring near Magnus Farley in Fremont and Magnolia Metals in Auburn was initiated in 2010. A waiver pursuant to Part 58 Appendix D Section 4.5 was sought from and granted by EPA R7 for Nucor Steel in Norfolk in April 2014. This waiver expired in April 2019. NDEE sought a renewal of this waiver in the 2019 Network Plan, which was approved by EPA R7 in October 2019.

In 2012 and 2013 Magnolia Metals installed pollution-control equipment that reduced their lead emissions to 0.1 tpy. Ambient lead levels dropped to below 5% of the NAAQS in 2015. The 2015 Network Plan proposed to discontinue lead monitoring near Magnolia Metals. The Auburn lead site was shut down in June 2016 in accordance with the approved 2015 Network Plan.

The Magnus Farley facility in Fremont currently is the only Nebraska facility that requires lead monitoring. Monitoring on a property adjacent to this facility was discontinued in September 2018 at the request of the site host. NDEE has identified an alternative site that was approved by EPA Region 7 during a site visit on December 5, 2019. Monitoring of lead emissions by the Magnus Farley facility remains suspended at this time until the alternative site can be established.

PM_{10} Particulate Matter (40 CFR Part 58 App. D Sec. 4.6) No sites required. No sites operated.

There are no minimum PM_{10} monitoring requirements for areas outside of MSAs.

Fine Particulate Matter: $PM_{2.5}$ (40 CFR Part 58 Appendix D Section 4.7 & 4.7.3) Two (2) sites required and 2 operated.

States are required to operate a background site and a transport site for $PM_{2.5}$. Nebraska's background site is in Scottsbluff, and the transport site is in Grand Island.

Coarse Particulate Matter: $PM_{10-2.5}$ (40 CFR Part 58 App D Sec 4.8) No sites required or operated.

Photochemical Assessment Monitoring Stations (PAMS) (40 CFR Part 58 Appendix D Section 5) No sites required or deployed.

EPA requires state and local air monitoring agencies to make PAMS measurements (including hourly averaged mixing height) at NCore sites in CBSAs with a population of 1,000,000 or more. The 2019 estimated population of the Omaha-Council Bluffs MSA, where Nebraska's only NCore site is located, was 949,442 which is below the threshold requiring PAMS monitoring.

Tables C-2.a through C-2d: Minimum Monitoring Reviews for Each Nebraska MSA*

Table C-2a: 40 CFR Part 58 Appendix D Review: Omaha-Council Bluffs MSA (MSA Population ~ 949,400)					
Pollutant	**App. D Citation**	**Review Criteria & *Comments***	**Sites Required**	**NE Sites Operated**	**Criteria Met?**
Ozone	Sec. 4.1 Table D-2	The Omaha MSA population is between 350K to 4M and O_3 levels are ≥ 85% of NAAQS (*See Design Values in Attachment B).*	2	3 Includes NCore	Y
CO	Sec. 4.2	The population threshold for requiring a near-road CO monitoring site in a CBSA is 1 million. The population of the Omaha MSA is below this threshold.	0	2 Includes NCore	Y
NO_2	Sec. 4.3.2	The Omaha MSA has a population between 500K and 1M and is thus not currently required to have a near-road NOx monitoring site.	0	0	Y
	Sec.4.3.3	Area-Wide monitoring only required if CBSA ≥ 1M (Omaha MSA population < 1 M)	0	1 @ NCore	Y
	Sec. 4.3.4	Regional Administrator required monitoring: None at this time.	0	0	Y
SO_2	Sec. 4.4	The need for SO_2 sites is based on the *Population Weighted Emissions Index* (PWEI). Omaha's PWEI = 19,682, which falls within the 5,000 to 100,000 range requiring 1 site (see Table C-3 below for PWEI calculation data). The current network of two highest concentration sites and one NCore site exceeds the minimum requirements.	1	3 Includes NCore	Y
		Regional Administrator required monitoring: None at this time.	0	0	Y
Lead	Sec. 4.5 (a)	There are no sources emitting ≥ 0.5 tpy of lead in the Nebraska portion of the Omaha MSA.	0	0	Y
	Sec. 4.5 (b)	Revised regulations effective 4/27/16 eliminated the requirement for one community-based lead monitor at each NCore site. DCHD discontinued lead monitoring at the Omaha NCore site at the end of 2017 in accordance with this regulation change and the 2017 Network Plan.	0	0	Y
	Sec. 4.5 (c)	Regional Administrator required monitoring: None at this time.	0	0	Y
PM_{10}	Sec. 4.6 Table D-4	The Omaha MSA has a population between 500K – 1M and a medium PM_{10} concentration range with max values > 80% of NAAQS at 46th & Farnam St Site in 2014 and 2015 and at the Weeping Water Farm site on four dates from 2014 to 2016. See Attachment B for PM_{10} data.	2-4	4 Includes NCore & 1 site @ Weeping Water	Y
$PM_{2.5}$	Sec 4.7 Table D-5	The Omaha MSA has a population between 500K – 1M and $PM_{2.5}$ levels < 85% of NAAQS range (*See Design Values in Appendix B).*	1	4 Includes NCore	Y
	Sec 4.7.2	Continuous monitor required.	1	1 @ NCore	Y
	Sec. 4.7.4	$PM_{2.5}$ Speciation Trends Network monitoring required (included SASS and URG samplers as one)	1	1 @ NCore	Y
PAMS	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O_3 and at NCore sites in CBSAs with populations over 1,000,000. Omaha MSA population < 1 million.	0	0	NA
NCore	Sec. 3	Omaha has been designated to operate an NCore site with NOx/NOy monitoring.	1	1	Y

* Unless noted otherwise, this analysis does not count monitors located in Iowa toward meeting the minimum monitoring requirements. It does consider pollutant levels measured at Iowa sites when determining minimum monitoring needs for ozone and $PM_{2.5}$.

Table C-2.b: 40 CFR Part 58 Appendix D Review: Lincoln MSA (Population ~ 336,400)					
Pollutant	App. D Citation	**Review Criteria & *Comments***	Sites Required	Sites Operated	Criteria Met?
Ozone	Sec. 4.1 Table D-2	The Lincoln MSA population is between 50K to 350K and O_3 levels < 85% of NAAQS (*See Design Values in Attachment B).*	0	1	Y
CO	Sec. 4.2	No minimum requirement	0	0	Y
NO_2	Sec. 4.3.2	Near-road monitoring: No requirement for CBSA < 500K.	0	0	Y
	Sec.4.3.3	Area-Wide monitoring only required if CBSA $\geq$ 1M (Lincoln MSA population < 1 M).	0	0	Y
	Sec. 4.3.4	Regional Administrator required monitoring: none.	0	0	Y
SO_2	Sec. 4.4	The number of SO_2 sites required is based on the *Population Weighted Emissions Index* (PWEI). Lincoln's PWEI = 912, which falls below 5,000 (see Table C-3 below for PWEI calculation data). Thus no sites are required. However, LLCHD began operating a source-oriented SO_2 monitor near Hallam, NE in December 2016.	0	1	Y
		Regional Administrator required monitoring: none.	0	0	Y
Lead	Sec. 4.5 (a)	There are no sources emitting $\geq$ 0.5 tpy of lead.	0	1	Y
	Sec. 4.5 (b)	Community-based monitoring not required.	0	1	Y
	Sec. 4.5 (c)	Regional Administrator required monitoring: none.	0	0	Y
PM_{10}	Sec. 4.6 Table D-4	The Lincoln MSA population is between 250K and 500K. Monitoring is only required if current monitoring indicates $PM_{10} \geq$ 85% of NAAQS. *The highest 24-hr value found during monitoring in Lincoln from 1988-98 was 102 $\mu g/m^3$ or 68% of the NAAQS, and PM_{10} concentrations have been declining in Nebraska since that time.*	0-1	0	Y
$PM_{2.5}$	Sec 4.7 Table D-5	The Lincoln MSA population is between 50K – 500K and $PM_{2.5}$ levels < 85% of NAAQS (*See Design Values in Appendix B).*	0	1	Y
	Sec 4.7.2	Continuous monitor not required.	0	1	Y
	Sec. 4.7.4	$PM_{2.5}$ Speciation Trends Network monitoring not required.	0	0	Y
PAMS	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O_3.	0	0	Y
NCore	Sec. 3	Lincoln has not been designated to operate an NCore site.	0	0	Y

Table C-2.c: 40 CFR Part 58 Appendix D Review: Sioux City MSA (Population ~ 169,900) *					
Pollutant	App. D Citation	**Review Criteria & *Comments***	Sites Required	NE Sites Operated	Criteria Met?
Ozone	Sec. 4.1 Table D-2	The Sioux City MSA population is between 50K and 350K. Appendix D Sec. 4.1, Table D-2 says that for MSAs of this size 1 ozone site is required if the DV $\geq$ 85% of the NAAQS. There is one ozone monitor in the MSA located in a rural area of Union County, SD. The 3-year Design Value from this Union County site is 64 ppb or 91% of the NAAQS. *Nebraska has no current plans to install a second ozone monitor in the Sioux City MSA.*	1	0	Y See comment
CO	Sec. 4.2	No minimum requirement.	0	0	Y
NO_2	Sec. 4.3.2	Near-road monitoring: No requirement for CBSA < 500K.	0	0	Y
	Sec.4.3.3	Area-Wide monitoring only required if CBSA $\geq$ 1M (Sioux City MSA population < 1 M)	0	0	Y
	Sec. 4.3.4	Regional Administrator required monitoring; none.	0	0	Y
SO_2	Sec. 4.4	The number of SO_2 sites required is based on the *Population Weighted Emissions Index* (PWEI). Sioux City MSA's PWEI = 1,679, which falls below the 5,000 to 100,000 range requiring 1 site (see Table C-3 below for PWEI calculation data). *One site exists in the MSA in Union County, SD.*	0	0	Y See comment
		Regional Administrator required monitoring: none	0	0	Y
Lead	Sec. 4.5 (a)	There are no sources emitting $\geq$ 0.5 tpy of lead in the Nebraska portion of the Sioux City MSA.	0	0	Y
	Sec. 4.5 (b)	Community-based lead monitoring not required.	0	0	Y
	Sec. 4.5 (c)	Regional Administrator required monitoring: none.	0	0	Y
PM_{10}	Sec. 4.6 Table D-4	The Sioux City MSA population is between 100K – 250K and PM_{10} levels are < 80% of NAAQS (*See Design Values in Attachment B).*	0	0	Y
$PM_{2.5}$	Sec 4.7 Table D-5	The Sioux City MSA population is between 50K and 500K and $PM_{2.5}$ levels are < 85% of NAAQS, thus no monitor is required. (*See Design Values in Appendix B).*	0	0	Y
	Sec 4.7.2	Continuous monitor not required	0	0	Y
	Sec. 4.7.4	$PM_{2.5}$ Speciation Trends Network monitoring not required	0	0	Y
PAMS	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O_3	0	0	Y
NCore	Sec. 3	The Nebraska portion of the Sioux City MSA has not been designated to operate an NCore site.	0	0	Y

* Unless noted otherwise, this analysis does not count monitors located in Iowa and South Dakota toward meeting the minimum monitoring requirements. It does use pollutant levels measured at IA and SD monitoring sites, when determining minimum monitoring needs for ozone and PM.

Table C-2.d: 40 CFR Part 58 Appendix D Review: Grand Island MSA (Population ~ 75,550)					
Pollutant	App. D Citation	**Review Criteria & *Comments***	Sites Required	Sites Operated	Criteria Met?
Ozone	Sec. 4.1 Table D-2	Grand Island MSA population is between 50K -350K. Monitoring is only required if current monitoring finds O_3 > 85% of NAAQS as set forth in Part 58 Appendix D Table D-2.	0	0	Y
CO	Sec. 4.2	No minimum requirement.	0	0	Y
NO_2	Sec. 4.3.2	Near-road monitoring: No requirement for CBSA < 500K.	0	0	Y
	Sec.4.3.3	Area-Wide monitoring only required if CBSA $\geq$ 1M (Grand Island MSA population < 1 M)	0	0	Y
	Sec. 4.3.4	Regional Administrator required monitoring: none	0	0	Y
SO_2	Sec. 4.4	*Population Weighted Emissions Index* (PWEI) = 53, which falls below 5,000 (see Table C-3 below for PWEI calculation data). No monitoring sites required.	0	0	Y
		Regional Administrator required monitoring: none	0	0	Y
Lead	Sec. 4.5 (a)	There are no sources emitting $\geq$ 0.5 tpy of lead	0	0	Y
	Sec. 4.5 (b)	Community-based lead monitoring not required.	0	0	Y
	Sec. 4.5 (c)	Regional Administrator required monitoring: none	0	0	Y
PM_{10}	Sec. 4.6 Table D-4	PM_{10} monitoring is not required if MSA population < 100,000	0	0	Y
$PM_{2.5}$	Sec 4.7 Table D-5	Grand Island's CBSA population is between 50K – 500K and $PM_{2.5}$ levels are < 85% of NAAQS (*See Design Values in Appendix B)*	0	1(1)	Y
	Sec 4.7.2	Continuous monitoring is not required	0	0	Y
	Sec. 4.7.4	$PM_{2.5}$ Speciation Trends Network monitoring is not required	0	0	Y
PAMS	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O_3	0	0	Y
NCore	Sec. 3	The Grand Island MSA has not been designated to operate a NCore site	0	0	Y

Footnote:
(1) The $PM_{2.5}$ site operated in Grand Island is Nebraska's transport site.

Table C-3: SO_2 Population Weighted Emissions Index (PWEI) Data for Nebraska Core Based Statistical Areas (CBSAs) [(a) (b) (c)] Page 1 of 2

CBSA	County	Population 7/1/2020 [(c)]	SO_2 Emissions (tons/year)		SO_2 Emissions % Change	PWEI [(a) (b)]	
			2014 EI	2017 EI		2014 EI	2017 EI
Omaha MSA	Douglas	574,332	11,498	8,980	-22%	25,528	**19,682**
	Sarpy	188,856	58	267	360%		
	Cass	26,232	1,269	749	-41%		
	Saunders	21,927	34	46	35%		
	Washington	20,901	30	63	110%		
	Pottawattamie, IA	93,328	13,797	10,430	-24%		
	Mills, IA	14,766	15	30	100%		
	Harrison, IA	13,928	50	60	20%		
	Totals	**954,270**	**26,751**	**20, 626**	**-23%**		
Lincoln MSA	Lancaster	320,650	3,424	2,628	-23%	1,166	**912**
	Seward	17,186	27	73	170%		
	Totals	**337,836**	**3,451**	**2,701**	**-22%**		
Sioux City MSA	Woodbury, IA	103,138	13,472	9,316	-31%	2,306	**1,679**
	Plymouth, IA	25,219	25	331	1224%		
	Dakota	20,070	24	138	475%		
	Dixon	5,596	12	29	142%		
	Union, SD	16,192	12	50	317%		
	Totals	**170,215**	**13,545**	**9,865**	**-27%**		
Grand Island MSA[(d)]	Hall	61,028	1,528	622	-59%	120	**53**
	Howard	6,488	29	27	-7%		
	Merrick	7,809	30	52	73%		
	Totals	**75,325**	**1,587**	**701**	**-56%**		

Observation: The EPA's emission inventory data indicates that SO_2 emissions from the four Nebraska MSAs decreased by 22% to 56% from 2014 to 2017.

Footnotes at bottom of page 2 of this table.

Table C-3 (continued): SO_2 Population Weighted Emissions Index (PWEI) Data for Nebraska Core Based Statistical Areas (CBSAs) [a] [b] [c] Page 2 of 2

CBSA	County	Population 7/1/2020 [c]	SO_2 Emissions (tons/year)		SO_2 Emissions (% Change)	PWEI [a] [b]	
			2014 EI	2017 EI		2014EI	2017 EI
Kearney MiSA	Buffalo	50,114	34	137	303%	2	**9**
	Kearney	6,652	4	16	300%		
	Totals	**56,766**	**38**	**153**	**303%**		
Norfolk MiSA	Madison	34,813	16	102	538%	8	**16**
	Pierce	7,184	28	37	32%		
	Stanton	5,880	126	188	49%		
	Totals	**47,877**	**170**	**327**	**92%**		
Hastings MiSA	Adams	**31,321**	**3,172**	**2,604**	-18%	99	**82**
Scottsbluff MiSA	Banner	786	1	1	0%	7	**8**
	Scotts Bluff	35,299	163	224	37%		
	Sioux	1,200	12	1	-92%		
	Totals	**37,285**	**176**	**226**	**28%**		
North Platte MiSA	Lincoln	34,347	24,534	21,346	-13%	873	**759**
	Logan	747	1	4	300%		
	McPherson	474	3	2	-33%		
	Totals	**35,568**	**24,538**	**21,352**	**-13%**		
Fremont MiSA	Dodge	**36,222**	**2,247**	**1,032**	**-54%**	81	**37**
Columbus MiSA	Platte	**33,364**	**395**	**516**	**31%**	13	**17**
Lexington MiSA	Dawson	23,510	29	114	293%	1	**3**
	Gosper	1,986	6	11	83%		
	Totals	**25,496**	**35**	**125**	**257%**		
Beatrice MiSA	Gage	**21,431**	**31**	**93**	**200%**	1	**2**

Footnotes:

(a) Population Weighted Emission Index (PWEI) = (CBSA Population) x (SO_2 Emissions (tpy))/1,000,000.

(b) SO_2 Emission data were obtained from the EPA National Emission Inventory database for 2011, 2014, and 2017. The 2017 NEI data is the most recent data available from EPA at the time this table was created (May 7, 2020).

(c) U.S. Census population estimate data for 7/1/2020 were used in this table and the PWEI calculations.

(d) Prior to September 2018, the Grand Island MSA also included Hamilton County, Nebraska.

The PWEI calculated with 2017 Emission Inventory data is currently applicable. The PWEI was also calculated with 2014 EI data to document any change that might have occurred.

IV: 40 CFR Part 58 Appendix E Review

This appendix sets forth requirements for probe and monitoring path placement, including: horizontal and vertical placement, spacing from minor sources, spacing from obstructions, spacing from trees, spacing from roadways, cumulative interferences on a monitoring path, maximum monitoring path length, and probe material and sample residence time. Compliance with these criteria is verified when the site is set up and periodically thereafter. Compliance is evaluated using review sheets developed for that purpose.

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Nebraska Department of Environment and Energy

2021 Annual Report on Modeled Facilities (Data Requirements Rule, 2010 SO_2 NAAQS)

Jim Macy, Director
May 10, 2021

Introduction

The Data Requirements Rule (DRR) for the 2010 1-hour SO_2 Primary National Ambient Air Quality Standards (NAAQS) was issued in August 2015 and outlines ongoing requirements for states with areas designated as attainment based on air quality modeling. Of the three areas in Nebraska subject to the rule, there are two areas that meet the criteria for ongoing requirements.

Nebraska Department of Environment and Energy (NDEE) asserts that all areas continue to demonstrate attainment with the NAAQS, and that additional air quality modeling is not necessary at this time. Analysis of emissions data and discussion are provided below.

Areas Subject to Ongoing Requirements

The areas surrounding three coal-fired electrical generating plants in Nebraska are subject to the ongoing requirements described in 40 CFR Part 51.1205:

- Gerald Gentleman Station near Sutherland
- Gerald Whelan Energy Center, Hastings
- Nebraska City Station

Modeling analyses used to characterize these areas utilized actual emissions data provided on the following pages, and these areas have no subsequent “nonattainment” designations.

The area surrounding Gerald Gentleman Station (GGS), Sutherland, NE

Nebraska Public Power District (Lincoln County)

The modeling analysis used to characterize this area was performed in September 2015 and utilized actual facility emissions from 2012-2014. This analysis indicated the SO_2 impact (99th percentile 1-hour SO_2 concentration) on the area to be 144.8 µg/m^3, or 55.3 parts per billion (ppb). This impact value equates to 73.7% of the 1-hour SO_2 NAAQS of 75 ppb, and this area (Lincoln County) was designated "unclassifiable/attainment" on July 12, 2016 (81 FR 45039).

Emissions data for GGS are shown in Table D-1. Data from 2012-2014 used in the modeling analysis, and emissions data for 2018-2020, are included for comparison. The SO_2 emissions reported for 2020 indicate a 22.4% decrease from 2019, and the 2018-2020 average emissions indicate a 12.6% decrease from the 2012-2014 modeled three-year average. Overall facility SO_2 emissions have decreased 31.2% since 2012. Therefore, NDEE asserts that the area surrounding GGS continues to be in attainment with the 1-hour SO_2 NAAQS, and additional modeling is not necessary at this time.

GGS participates in the Cross-State Air Pollution Rule (CSAPR) trading program for SO_2, and actual 2020 facility emissions are below the SO_2 allocations of 13,780 tons (Unit 1) and 15,116 tons (Unit 2).[1]

Table D-1. Gerald Gentleman Station

Unit	SO_2 Emissions (tons per year)					
	2012	**2013**	**2014**	**2018**	**2019**	**2020**
1	14,832	13,047	12,539	14,334	10,467	10,187
2	11,605	15,383	11,945	13,405	12,946	7,989
Total	**26,437**	**28,430**	**24,484**	**27,739**	**23,413**	**18,176**
Average (2012-2014)	**26,450**					
Average (2018-2020)				**23,109**		

Emissions data acquired from the Clean Air Markets Division, https://ampd.epa.gov/ampd/.

[1] https://www.epa.gov/csapr/cross-state-air-pollution-rule-csapr-allowance-allocations-and-templates

The area surrounding Gerald Whelan Energy Center

Hastings Utilities (Adams County)

The modeling analysis used to characterize this area was performed in December 2016 and utilized actual facility emissions data from 2013-2015. This analysis indicated the SO_2 impact (99^{th} percentile 1-hour SO_2 concentration) on the area to be 188.7 µg/m^3, or 72.02 parts per billion (ppb), which equates to 96% of the NAAQS. This impact value is below the 1-hour SO_2 NAAQS of 75 ppb and the area (Adams County) was designated "attainment/unclassifiable" on January 9, 2018 (83 FR 1098).

Emissions data for Whelan Energy Station are shown in Table D-2. Data from 2013-2015 used in the modeling analysis, and emissions data for 2018-2020, are included to provide comparison. The data for 2013-2015 have been corrected in this report, as previous reports had emission totals incorrectly attributed by year. The SO_2 emissions reported for 2020 indicate an 8% decrease from 2019, and the 2018-2020 average emissions indicate a 5.6% decrease from the 2013-2015 modeled three-year average. Overall facility SO_2 emissions have decreased 5.4% since 2012. Therefore, NDEE asserts that the area surrounding Gerald Whelan Energy Center continues to be in attainment with the 1-hour SO_2 NAAQS, and additional modeling is not necessary at this time.

Gerald Whelan Energy Center participates in the Cross-State Air Pollution Rule (CSAPR) trading program for SO_2 (Unit 1), and actual 2020 emissions from Unit 1 are below the SO_2 allocations of 1,722 tons for that unit.[2]

Table D-2. Gerald Whelan Energy Center

Unit	SO_2 Emissions (tons per year)					
	2013	**2014**	**2015**	**2018**	**2019**	**2020**
1	1,439	2,302	1,495	1,776	1,622	1,641
2	692	598	409	567	569	374
Total	**2,131**	**2,900**	**1,904**	**2,343**	**2,191**	**2,015**
Average (2013-2015)	**2,312**					
Average (2018-2020)				**2,183**		

Emissions data (except for 2018-Unit 2) acquired from the Clean Air Markets Division, https://ampd.epa.gov/ampd/
Data for 2018 (Unit 2) was obtained using methodology described in the 2019 Annual Report on Modeled Facilities.

[2] https://www.epa.gov/csapr/cross-state-air-pollution-rule-csapr-allowance-allocations-and-templates

The area surrounding Nebraska City Station (NCS)

Omaha Public Power District (Otoe County)

This area was last addressed in the 2017 Modeled Facilities Report. Per 40 CFR Part 51.1205(b)(2), the state is not required to annually report on areas in which the impact value is less than 50% of the NAAQS; thus, this area was not addressed in the 2018, 2019, and 2020 reports. Discussion of the area is being included in this report due to an increase in facility SO_2 emissions in 2020.

The modeling analysis used to characterize this area was performed in August 2015 and utilized actual facility emissions data from 2012-2014. This analysis indicated the SO_2 impact (99th percentile 1-hour SO_2 concentration) on the area to be 78.5 µg/m^3, or 32.7 parts per billion (ppb). This impact value is below the 1-hour SO_2 NAAQS of 75 ppb and the area was designated "unclassifiable/attainment" on July 12, 2016 (81 FR 45039).

Emissions data for NCS are shown in Table D-3. Data from 2012-2014 used in the modeling analysis, and emissions data for 2018-2020 are included to provide comparison.

In 2020, SO_2 emissions from this facility increased 10.5% as compared to 2019, which is attributed to a 17.6% increase in heat input and 18.4% increase in operating time.[3] Despite the increase, overall facility emissions have decreased by 31.5% since 2012, and the 2018-2020 average emissions indicate an 21.6% decrease from the 2012-2014 modeled three-year average. Therefore, NDEE asserts that the area surrounding NCS continues to be in attainment with the 1-hour SO_2 NAAQS, and that additional modeling is not necessary at this time.

Table D-3. Nebraska City Station

Unit	SO_2 Emissions (tons per year)					
	2012	2013	2014	2018	2019	2020
1	14,544	14,696	13,969	14,754	8,452	9,459
2	2,222	2,214	2,165	2,455	1,934	2,020
Total	**16,766**	**16,910**	**16,134**	**17,209**	**10,386**	**11,479**
Average (2012-2014)	**16,603**					
Average (2018-2020)				**13,025**		

Emissions data acquired from the Clean Air Markets Division, https://ampd.epa.gov/ampd/.

NCS participates in the Cross-State Air Pollution Rule (CSAPR) trading program for SO_2, and actual 2020 facility emissions are below the SO_2 allocations of 12,313 tons (Unit 1) and 3,377 tons (Unit 2).[4]

[3] Clean Air Markets Division, https://ampd.epa.gov/ampd/
[4] https://www.epa.gov/csapr/cross-state-air-pollution-rule-csapr-allowance-allocations-and-templates

Omaha Public Power District voluntarily requested and obtained a plantwide applicability limit (PAL) permit, issued by NDEE in March of 2020, that limits total Nebraska City Station SO_2 emissions to less than 17,389 tons per year. This PAL is 4.7% greater than the 2012-2014 average SO_2 emissions provided in Table D-3 that was the basis for modeling, which demonstrated the impact in the area surrounding Nebraska City Station at 43.6% of the 2010 SO_2 NAAQS. The NCS is meeting this PAL with some margin.

Conclusion

Analysis of emissions data from the areas subject to the ongoing requirements indicates that these areas continue to demonstrate attainment with the 2010 1-hour SO_2 NAAQS. Based on this analysis, NDEE asserts that additional modeling is not necessary at this time to further characterize these areas.

Public Notice

This document was made available for public inspection and comment from May 7, 2021 until June 7, 2021. No comments were received during this time.