

# Nebraska Department of Environment and Energy

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

For the period 1 July 2025 through 30 June 2026

NDEE Document #25-012

**Jesse Bradley, Director**

**June 13, 2025**

**NEBRASKA**

The logo for the Nebraska Department of Environment and Energy features the word "NEBRASKA" in a bold, blue, sans-serif font. A thick, yellow, curved line sweeps across the bottom of the letters, starting from the left and ending on the right, creating a sense of motion and energy.

Good Life. Great Resources.

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**DEPT. OF ENVIRONMENT AND ENERGY**

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.

# Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

<b>Contents</b>	<b>Page</b>
Table of Contents .....	ii
List of Figures.....	iv
List of Tables.....	v
Executive Summary .....	vii
Acronyms, Abbreviations, and Definitions .....	ix
I. Introduction and Purpose .....	1
II. Public Participation.....	1
III. Purpose of Ambient Air Quality Monitoring .....	2
A. Criteria Air Pollutants .....	2
B. National Ambient Air Monitoring Standards .....	4
IV. Nebraska Metropolitan and Micropolitan Statistical Areas .....	5
V. Overview of Current Ambient Air Monitoring Network .....	6
VI. Nebraska Topography, Climate, and Population .....	10
A. Topography .....	10
B. Climate .....	10
C. Population Distribution and Trends .....	18
VII. Nebraska Ambient Air Monitoring Network: January 1, 2024, through March 31, 2025 .....	22
A. Omaha NE-IA MSA Sites Operated by the Douglas County Health Department (DCHD) .....	22
1. Monitor Replacement at the Berry Street PM <sub>2.5</sub> Site in Omaha .....	22
2. Relocation of 19th and Burt Streets PM <sub>10</sub> Monitor Site in Omaha .....	22
3. Continued Closure of the South Omaha Ozone-PM <sub>10</sub> Monitor Site Pending Relocation .....	22
B. Omaha-Council Bluffs MSA Site Operated by NDEE .....	23
C. Lincoln MSA Sites Operated by the Lincoln-Lancaster County Health Department (LLCHD) .....	23
D. Sioux City MSA .....	23
E. Grand Island MSA .....	23
F. Beatrice MiSA .....	23
G. Scottsbluff MiSA .....	23
H. Fremont MiSA .....	24
I. NCore Monitoring .....	24
VIII. Considerations for Network Planning.....	24
IX. Ozone Monitoring .....	25
A. Network Assessment.....	25
B. NAAQS Compliance .....	28
X. Fine Particulate (PM <sub>2.5</sub> ) Monitoring .....	31
A. Network Assessment .....	31
B. NAAQS Compliance .....	35
XI. Coarse Particulate (PM <sub>10</sub> ) Monitoring .....	39
A. Network Assessment .....	39
B. NAAQS Compliance .....	40
XII. Sulfur Dioxide (SO <sub>2</sub> ) Monitoring .....	40
A. Network Assessment .....	40
B. NAAQS Compliance .....	42

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

XIII. Nitrogen Dioxide (SO <sub>2</sub> ) Monitoring .....	43
A. Network Assessment .....	43
B. NAAQS Compliance .....	44
XIV. Carbon Monoxide (CO) Monitoring .....	45
A. Network Assessment .....	45
B. NAAQS Compliance .....	45
XV. Lead Monitoring .....	45
A. Network Assessment .....	46
1. Magnus Bearings, Fremont.....	46
2. Nucor Steel, Norfolk (Lead Monitoring Waiver) .....	48
B. NAAQS Compliance .....	48
XVI. Funding .....	48
XVII. Anticipated and Potential Nebraska Ambient Air Monitoring Network Modifications ..	50
A. Lincoln MSA: Additional Ozone Monitoring Site Required .....	50
B. Omaha MSA: New Monitoring Requirements .....	50
C. Omaha MSA: Relocation of Ozone and PM <sub>10</sub> Monitors from 2411 O Street, Omaha.....	51
D. Relocation of Fremont Lead Monitors .....	51
E. Request for Renewal of Nucor Steel Lead Monitoring Waiver .....	52
Appendix A. Ambient Air Monitoring Sites in Nebraska .....	A-1
Appendix B. Comparison of Ambient Air Monitoring Data to NAAQS .....	B-1
Appendix C. Population Data .....	C-1
Appendix D. Compliance Verification with 40 CFR Part 58 .....	D-1
I. 40 CFR Part 58 Appendix A Review.....	D-1
II. 40 CFR Part 58 Appendix C Review .....	D-1
III. 40 CFR Part 58 Appendix D Review .....	D-3
A. 40 CFR Part 58 Appendix D - Objectives Review .....	D-3
1. Timely dissemination of data – Met .....	D-3
2. Support compliance with ambient air quality standards and emissions strategy development .....	D-3
3. Support for air pollution research – Met .....	D-5
B. 40 CFR Part 58 Appendix D Review – Minimum Monitoring Site Requirements for MSAs .....	D-5
C. 40 CFR Part 58 Appendix D Review – Minimum Monitoring Site Requirements for non-MSAs .....	D-12
IV. 40 CFR Part 58 Appendix E Review .....	D-13
Appendix E – 2024 Annual Report on Modeled Facilities .....	E-1
Introduction .....	E-2
Areas Subject to Ongoing Requirements .....	E-2
The area surrounding Gerald Gentleman Station (GGS), Sutherland, NE .....	E-3
The area surrounding Gerald Whelan Energy Center .....	E-4
The area surrounding Nebraska City Station (NCS) .....	E-5
Conclusion .....	E-6
Public Notice.....	E-7
Appendix F – Request for Renewal of Nucor Steel Lead Monitor Waiver .....	F-1
Appendix G – Public Comment and Response .....	G-1

# Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

## List of Figures

Figure	Page
Figure III-1. Trends in Criteria Air Pollutant Emissions in Nebraska, 1996-2023 .....	3
Figure IV-1. Nebraska Metropolitan and Micropolitan Statistical Areas (MSAs and MiSAs) .....	6
Figure V-1. Nebraska Air Quality Monitoring Sites Outside of the Omaha NE-IA Metropolitan Statistical Area, 3/31/2025 .....	7
Figure V-2. Air Quality Monitoring Locations in the Nebraska Portion of the Omaha NE-IA Metropolitan Statistical Area, 3/31/2025 .....	8
Figure VI-1. Color Shaded Relief Map of Nebraska .....	10
Figure VI-2. Topographic Regions of Nebraska .....	11
Figure VI-3. Source Areas of Major Air Masses Affecting Nebraska .....	11
Figure VI-4. Köppen-Geiger Climate Zones in the Nebraska Region .....	12
Figure VI-5. Annual Average Temperature 1991-2020 in the Central Great Plains .....	12
Figure VI-6. Monthly Temperature Normals 1991-2020 for Alliance and Lincoln, Nebraska .....	13
Figure VI-7. Average Annual Number of Days with Maximum Temperature 90°F or Above for Nebraska and Nearby Locations .....	13
Figure VI-8. Map of Annual Average Precipitation in Nebraska, 1991-2020 .....	14
Figure VI-9. Nebraska Modeled Average Wind Speed at 30 Meters Above the Surface .....	14
Figure VI-10. Wind Roses for Representative Nebraska Locations .....	15
Figure VI-11. Seasonal Wind Roses for Lincoln, Nebraska .....	16
Figure VI-12. Seasonal Wind Roses for Alliance, Nebraska .....	17
Figure VI-13. Map of Estimated Nebraska County Populations as of 7/1/2024.....	18
Figure VI-14. Map of Nebraska County Population Density as of 7/1/2024 .....	18
Figure VI-15. Map of Nebraska MSAs and MiSAs by Percentage of 2024 State Population .....	19
Figure VI-16. Map of Nebraska County Population Changes 2020-2024 .....	20
Figure VI-17. Map of Nebraska MSA & MiSA Percent Population Growth and Decline, 2020-2024 .....	20
Figure VI-18. Graph of Nebraska MSAs and MiSA Percent Population Change 2020-2024.....	21
Figure VI-19. Population Trends for Urban and Rural Areas 2010-2024.....	21
Figure VII-1. Omaha NCore Site .....	24
Figure IX-1. Location Map of Nebraska Ozone Monitoring Network Sites .....	26
Figure IX-2. Nebraska Ozone Monitoring Sites and County-Level NO <sub>x</sub> Emissions Per Square Mile .....	27
Figure IX-3. Nebraska Ozone Monitoring Sites and County-Level VOC Emissions Per Square Mile .....	27
Figure IX-4. Three-Year (2022-2024) Ozone Design Values (DVs, in ppb) for Locations in and Around Nebraska .....	29
Figure IX-5. Difference Between 2022-2024 Ozone Design Value (ppb) and 2019-2023 Site Average Design Value for Locations in and Around Nebraska .....	29
Figure IX-6. Annual 4 <sup>th</sup> High Daily Maximum 8-Hour Ozone Trends 2013 through 2024 for Monitors in the Omaha MSA .....	30
Figure IX-7. Annual 4 <sup>th</sup> High Daily Maximum 8-Hour Ozone Trends 2013 through 2014 for Monitors in the Lincoln, NE and Sioux City, IA MSAs .....	31
Figure IX-8. Annual 4 <sup>th</sup> High Daily Maximum 8-Hour Ozone Trends 2013 through 2014 for Monitors at Rural Sites in Nebraska and Surrounding States .....	31
Figure X-1. Location Map of Nebraska PM <sub>2.5</sub> Monitoring Network Sites .....	32
Figure X-2. Nebraska PM <sub>2.5</sub> Monitoring Sites and County-Level NO <sub>x</sub> Emissions Per Square Mile .....	33

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

<b>Figure</b>	<b>Page</b>
Figure X-3. Locations of PM <sub>2.5</sub> Monitoring Network Sites in the Omaha MSA .....	34
Figure X-4. Correlation Plots for Pairs of Continuous PM <sub>2.5</sub> Monitoring Sites in the Omaha MSA .....	34
Figure X-5. Plot of Annual Average PM <sub>2.5</sub> Values 2022-2024 and Three-Year Design Values (DV) for Nebraska and Nearby Sites .....	35
Figure X-6. Trends in 24-hour PM <sub>2.5</sub> for Nebraska Monitoring Sites 2007-2024 .....	36
Figure X-7. Trends in Annual Average PM <sub>2.5</sub> for Nebraska Monitoring Sites 2007-2024 .....	37
Figure X-8. PM <sub>2.5</sub> 2022-2024 Design Values (DVs) for Sites in and Around Nebraska .....	38
Figure XI-1. PM <sub>10</sub> Monitoring Sites in the Omaha MSA – Active, Inactive, and Closed .....	39
Figure XI-2. Nebraska 24-hour PM <sub>10</sub> Trends, 2016-2024 .....	40
Figure XII-1. SO <sub>2</sub> Monitoring and Modeling Sites in Nebraska .....	41
Figure XII-2. Trends in 1-hr SO <sub>2</sub> for Nebraska and Nearby Monitoring Sites 2011-2024 .....	42
Figure XII-3. Trends in Annual Average 1-hr SO <sub>2</sub> at Omaha Monitoring Sites 2016-2024 for Comparison to Revised Secondary NAAQS .....	43
Figure XII-2. Trends in Nitrogen Oxide Values 2011-2024 in Omaha and Union County SD .....	44
Figure XIV-1. Trends in Annual 2 <sup>nd</sup> Highest CO Values 2011-2024 at Omaha Monitoring Sites .....	45
Figure XV-1. EPA Air Dispersion Modeling of Magnus Bearings, Fremont .....	47
 Appendix C: Population Data	
Figure C-1. Nebraska Metropolitan and Micropolitan Statistical Areas (MSAs and MiSAs) .....	C-2
Figure C-2. Omaha MSA Population Distribution Chart and Table) .....	C-4
Figure C-3. Lincoln MSA Population Distribution Chart and Table) .....	C-5
Figure C-4. Sioux City MSA Population Distribution Chart and Table) .....	C-6
Figure C-5. Grand Island MSA Population Distribution Chart and Table) .....	C-7

### List of Tables

<b>Table</b>	<b>Page</b>
Table III-1. National Ambient Air Quality Standards (NAAQS) in Effect in 2025 .....	4
Table V-1. Nebraska Ambient Air Monitoring Network on March 31, 2024 .....	9
Table IX-1. Ozone 2024 Design Values as Percentage of the NAAQS and Air Quality Index (AQI) Status for Nebraska Locations (Number of Days and Percentage of Days Per Category .....	28
Table X-1. 24-hour PM <sub>2.5</sub> Design Values (as percentage of the NAAQS) and daily Air Quality Index (AQI) Results for Continuous Monitoring Locations in and Nearby Nebraska .....	35
Table XV-1. Primary Funding Sources Used to Support Air Monitoring in Nebraska .....	49
Table XVII-1. Ozone Design Values for the Davey Site, 2017-2024 .....	50
 Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS	
Table B-1. Ozone Data .....	B-1
Table B-2. Carbon Monoxide Data .....	B-2
Table B-3. Sulfur Dioxide Data .....	B-2
Table B-4. Nitrogen Oxide Data from the Omaha NCore Site .....	B-3
Table B-5a. PM <sub>10</sub> – Annual Number of Exceedances .....	B-4

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

<b>Table</b>	<b>Page</b>
Table B-5b. PM <sub>10</sub> – Annual Maximum 24-Hour Data .....	B-5
Table B-5c. PM <sub>10</sub> – Annual Average Data .....	B-6
Table B-6a. PM <sub>2.5</sub> – 98 <sup>th</sup> Percentile 24-Hour Data .....	B-7
Table B-6b. PM <sub>2.5</sub> – Annual Average Data .....	B-8
Table B-7. Lead in Total Suspended Particulate (TSP-Pb) .....	B-9
 Appendix C: Population Data	
Table C-1. 2024 Estimated Population Within Nebraska MSAs and MiSAs .....	C-2
Table C-2. Micropolitan Statistical Area (MiSA) Population Data 2020-2024 .....	C-8
Table C-3. Urban and Rural Population Trends 2000-2024 .....	C-9
Table C-4. Nebraska Counties Outside of MSAs and MiSAs with Populations Greater Than 10,000 ....	C-10
Table C-5. Eighteen Most Populated Nebraska Counties, 2010, 2020, and 2024 .....	C-11
Table C-6. Top Ten Nebraska Counties for 2024 Population, 2020-2024 Population Growth, and 2010-2024 Population Growth .....	C-12
Table C-7. Population and Population Change Data for Nebraska and Nebraska Counties Ordered by Percent Population Change 2020-2024 .....	C-13
 Appendix D: Compliance Verification with 40 CFR Part 58	
Table D-1. Compliance Summary: Collocation Requirements of Appendix A .....	D-2
Table D-2a. 40 CFR Part 58 Appendix D Review: Omaha MSA .....	D-6
Table D-2b. 40 CFR Part 58 Appendix D Review: Lincoln MSA .....	D-7
Table D-2c. 40 CFR Part 58 Appendix D Review: Sioux City MSA .....	D-8
Table D-2d. 40 CFR Part 58 Appendix D Review: Grand Island MSA .....	D-9
Table D-3. SO <sub>2</sub> Population Weighted Emissions Index (PWEI) Data for Nebraska Core Based Statistical Areas (CBSAs) .....	D-10
 Appendix E: 2025 Annual Report on Modeled Facilities (Data Requirements Rule, 2010 SO <sub>2</sub> NAAQS)	
Table E-1. Gerald Gentleman Station .....	E-3
Table E-2. Gerald Whelan Energy Center .....	E-4
 Appendix F: Request for Renewal of Nucor Steel Lead Monitor Waiver	
Table F-1. Historical Lead Emissions as Reported to NDEE in Emissions Inventories .....	F-1
Table F-2. Lead Stack Emission Rate Test Results for the Nucor Meltshop Baghouses 2015 through 2023 .....	E-2

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### Executive Summary

This Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment was prepared to meet federal requirements set forth in 40 CFR Part 58.10. Nebraska’s air quality monitoring network includes sites for the seven “criteria” air pollutants for which National Ambient Air Quality Standards (NAAQS) have been established: ozone, carbon monoxide, nitrogen oxides, sulfur dioxide, lead, coarse particulate matter (PM<sub>10</sub>), and fine particulates (PM<sub>2.5</sub>). Nebraska’s measured pollutant levels are currently in attainment with the NAAQS for all of the criteria pollutants.

Nebraska is a largely rural state with relatively few large population centers. The state population at the last decennial census in 2020 was 1,961,504. The U.S. Census Bureau estimates that by July 1, 2024, the state population had increased by about 2.24% to 2,005,465. Large numbers of state residents are concentrated in urban areas. Over 55% of the population resides in the three most populous counties (Douglas and Sarpy in the Omaha metropolitan area and Lancaster in the Lincoln metropolitan area), and over 60% reside in these two Metropolitan Statistical Areas (MSAs), which are also the fastest growing areas of the state.

Nebraska’s Ambient Air Quality Monitoring network is operated by the Nebraska Department of Environment and Energy (NDEE) and two local agencies: the Douglas County Health Department (DCHD) and the Lincoln-Lancaster County Health Department (LLCHD). DCHD operates eight sites in the Omaha Metropolitan Statistical Area (MSA; in Douglas, Sarpy, and Washington Counties). One of the Omaha sites is Nebraska’s National Core Multipollutant Monitoring Network (NCore) site. LLCHD operates three sites in Lancaster County (Lincoln MSA). NDEE operates one source-oriented site in the Omaha MSA and four sites in other areas of Nebraska. The current distribution of Nebraska’s monitoring sites by pollutant is summarized below.

Summary of Nebraska Air Quality Monitoring Sites by Pollutant (including NCore)					
	DCHD Omaha MSA	NDEE Omaha MSA	LLCHD Lincoln MSA	NDEE Other Areas	Total
Ozone	2	0	1	1	4
Carbon Monoxide	2	0	0	0	2
Nitrogen Oxides	1	0	0	0	1
Sulfur Dioxide	2	0	0	0	2
PM <sub>10</sub>	2	1	0	0	3
PM <sub>2.5</sub>	4	0	1	3	8
PM <sub>10-2.5</sub>	1	0	0	0	1
PM <sub>2.5</sub> Speciation	1	0	0	0	1
Lead	0	0	0	1	1
Total Pollutant Sites	15	1	2	5	23

Patterns of air pollution are influenced by weather and climate. Most of Nebraska has a warm-summer or hot-summer humid continental climate. Air masses moving south across the northern Great Plains dominate in winter, bringing cold dry air from Canada. Summer weather is dominated by air masses moving northward, bringing warm dry air from Mexico and the desert southwest or warm humid air from the Gulf of Mexico and the Caribbean. Over most of the state these movements result in prevailing winds from the north to north-northwest in winter and from the south to south-southeast in summer. The state has a subdued topography, mostly forming a gently rolling surface that offers little impediment to the movement of air masses.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### Anticipated and Potential Network Changes

For many years NDEE has maintained an ambient air monitoring network that has met or exceeded all federal requirements for the minimum number of sites needed for each criteria pollutant. Requirements for the minimum number of air monitoring sites in a Metropolitan Statistical Area depend in part on the most recent population figures from the U.S. Census Bureau. With the release of 2024 population estimates for Nebraska counties, both the Lincoln and Omaha MSAs now have populations that for the first time exceed thresholds that trigger additional air monitoring requirements. As a result of these population increases, NDEE anticipates the following potential modifications to Nebraska's air monitoring network over the next several years:

- Addition of a required new ozone monitoring site in the Lincoln MSA.
- Addition of a required Photochemical Assessment Monitoring Station (PAMS) at the NCore multi-pollutant monitoring site at 4102 Woolworth Street in Omaha.
- Addition of a required near-road monitoring site adjacent to a high-traffic roadway in Omaha, with NO<sub>2</sub>, CO, and PM<sub>2.5</sub> monitors.

In addition to these new population-based requirements, several other site relocation efforts are under consideration:

- Acquisition of a new site for the temporarily-closed South Omaha ozone-PM<sub>10</sub> monitoring station.
- Relocation of the source-oriented lead monitors in Fremont to a maximum-concentration site adjacent to the Magnus Bearings facility.
- Request for renewal of the lead monitoring waiver for the Nucor Steel facility in Norfolk to extend the waiver until 2030, when the next Five-Year Assessment will be due.

## 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<sub>2</sub> 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<sub>2.5</sub>, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub>), O<sub>3</sub>, SO<sub>2</sub>, CO, nitrogen oxides (NO/NO<sub>y</sub>), 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<sub>2</sub> monitoring requirements)

2022 Network Plan - Nebraska's 2022 Ambient Air Monitoring Network Plan

2023 Network Plan – Nebraska's 2023 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<sup>3</sup> - Milligrams per cubic meter (a mass/volume concentration unit)
- µg/m<sup>3</sup> - Micrograms per cubic meter (a mass/volume concentration unit)

## Acronyms, Abbreviations, and Definitions (continued)

### Pollutants

CO	- Carbon Monoxide
NO	- Nitric Oxide
NO <sub>2</sub>	- Nitrogen Dioxide
NO <sub>x</sub>	- Oxides of nitrogen, including NO, NO <sub>2</sub> , and NO <sub>y</sub>
NO <sub>y</sub>	- Total reactive oxides of nitrogen. The parameter NO <sub>y</sub> – NO measured at NCore sites approximates the concentration of NO <sub>2</sub> but may report higher than the actual concentration.
O <sub>3</sub>	- Ozone
Pb	- Lead
TSP	- Total Suspended Particulates
TSP-Pb	- Lead sampled using a TSP sampler
PM <sub>2.5</sub>	- Particulate matter with an average diameter equal to or less than 2.5 micrometers or microns (reported as µg/m <sup>3</sup> with air volumes measured at local conditions)
PM <sub>10</sub>	- Particulate matter with an average diameter equal to or less than 10 micrometers or microns (reported as µg/m <sup>3</sup> with air volumes measured at standard conditions (25° C, 1 atm))
PM <sub>10-2.5</sub>	- The difference between PM <sub>10</sub> and PM <sub>2.5</sub> (both being calculated at local conditions)
SO <sub>2</sub>	- Sulfur Dioxide
SO <sub>x</sub>	- Group of sulfur oxides, including SO <sub>2</sub> and SO <sub>3</sub>

### 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<sub>2.5</sub> and haze are also formed *in situ*, although they are also emitted by sources. PM<sub>10</sub> and CO, on the other hand, are largely emitted from sources; *in situ* formation being of minimal importance. NO<sub>x</sub> and SO<sub>x</sub> are emitted and then undergo transformations to NO<sub>2</sub> and SO<sub>2</sub>; they also can play a role in the *in-situ* formation of ozone and PM<sub>2.5</sub>.

### 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.

# Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

## 1. Introduction and Purpose

This Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment (hereafter referred to as the “2025 Network Plan”) was prepared to meet federal requirements set forth in 40 CFR Part 58.10. The U.S. Environmental Protection Agency (EPA) requires state air monitoring agencies to submit, 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.

In addition, 40 CFR Part 58.10(d) requires states to submit to the EPA Regional Administrator an assessment of the air quality surveillance system every five years to determine, at a minimum, if the network meets the monitoring objectives defined in 40 CFR Part 58, Appendix D, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. The 5-year assessment may be combined with the annual ambient air monitoring network plan. This document is intended to meet both requirements.

As part of the network assessment, this document reviews background information relevant to the efficacy of Nebraska’s ambient air quality network, including topography, climate, population distribution and trends, and historic trends in emissions of air pollutants.

## 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 ([https://dee.nebraska.gov/forms/publications-grants-forms?combine=&form\\_type=All&program=184](https://dee.nebraska.gov/forms/publications-grants-forms?combine=&form_type=All&program=184)).

Written comments regarding this 2025 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 – Monitoring Section  
245 Fallbrook Blvd., Suite 100  
Lincoln, NE 68509-8922

Email:

[NDEE.airquality@nebraska.gov](mailto:NDEE.airquality@nebraska.gov)

The deadline to submit 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

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.

#### A. Criteria Air Pollutants

The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants that are common in outdoor air, 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<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), lead, and particle pollution, which is subdivided into particulate matter less than 10 micrometers in diameter (PM<sub>10</sub>) and particulate matter less than 2.5 micrometers in diameter (PM<sub>2.5</sub>).

Several of the criteria air pollutants are byproducts of fuel combustion at electric power plants, industrial facilities, and mobile sources (on-road vehicles and construction equipment). **Carbon monoxide** (CO) is a colorless and odorless gas formed when carbon in fuel is not burned completely. The majority of CO emissions come from mobile sources. Breathing air with a high concentration of CO reduces the amount of oxygen that can be transported in the bloodstream to critical organs like the heart and brain.

**Sulfur dioxide** (SO<sub>2</sub>) is formed from burning coal or fuel oil containing sulfur. Coal-fired electric power plants are the largest source of these emissions. SO<sub>2</sub> dissolves in water vapor to form sulfuric acid, which in high concentrations can irritate the human respiratory system and can contribute to acid rain that damages plant foliage. Sulfur dioxide can also react with other compounds in the air to form small particles that contribute to particulate matter pollution and atmospheric haze that reduces visibility.

**Nitrogen dioxide** (NO<sub>2</sub>) is the indicator pollutant for a family of nitrogen oxides (NO<sub>x</sub>) that are formed by burning of fuels at high temperature. NO<sub>2</sub> is emitted by cars, diesel trucks and buses, electrical power plants and industrial boilers, and off-road equipment. It is an irritant that can aggravate respiratory diseases, including asthma. NO<sub>2</sub> and other NO<sub>x</sub> react with other chemicals in the air to form both particulate matter and ozone, which are also harmful when inhaled due to effects on the respiratory system. NO<sub>x</sub> compounds can also react with water vapor to form acid droplets that contribute to acid rain and reduced visibility.

**Ground level ozone** (O<sub>3</sub>) is a criteria pollutant that is not directly emitted. Ozone is formed in the atmosphere from NO<sub>x</sub> and volatile organic compounds (VOCs) in the presence of sunlight. Volatile organic compounds are produced by fuel combustion (vehicles and industrial sources), gasoline vapors, and chemical solvents and paints. Ozone is produced primarily on hot sunny days in urban environments, but it can be transported long distances by wind into surrounding rural areas. Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and airway inflammation. It also can reduce lung function and harm lung tissue. Ozone can worsen bronchitis, emphysema, and asthma, leading to increased needs for medical care.

**Particulate matter** (PM) is a general term for a mixture of solid particles and liquid droplets found in the air that are small enough to be inhaled. Larger particles (PM<sub>10</sub>) include dust blown from construction sites, agricultural fields, or unpaved roads; the concentration of these particles in the air typically decreases rapidly away from these local sources. Finer particles (PM<sub>2.5</sub>) include combustion products from industrial sources and fires, organic compounds, and metals, as well as droplets produced in the atmosphere by complex reactions of chemicals such as SO<sub>2</sub> and NO<sub>x</sub>. Because of their small size and secondary production, finer particles may be transported large distances in the atmosphere.

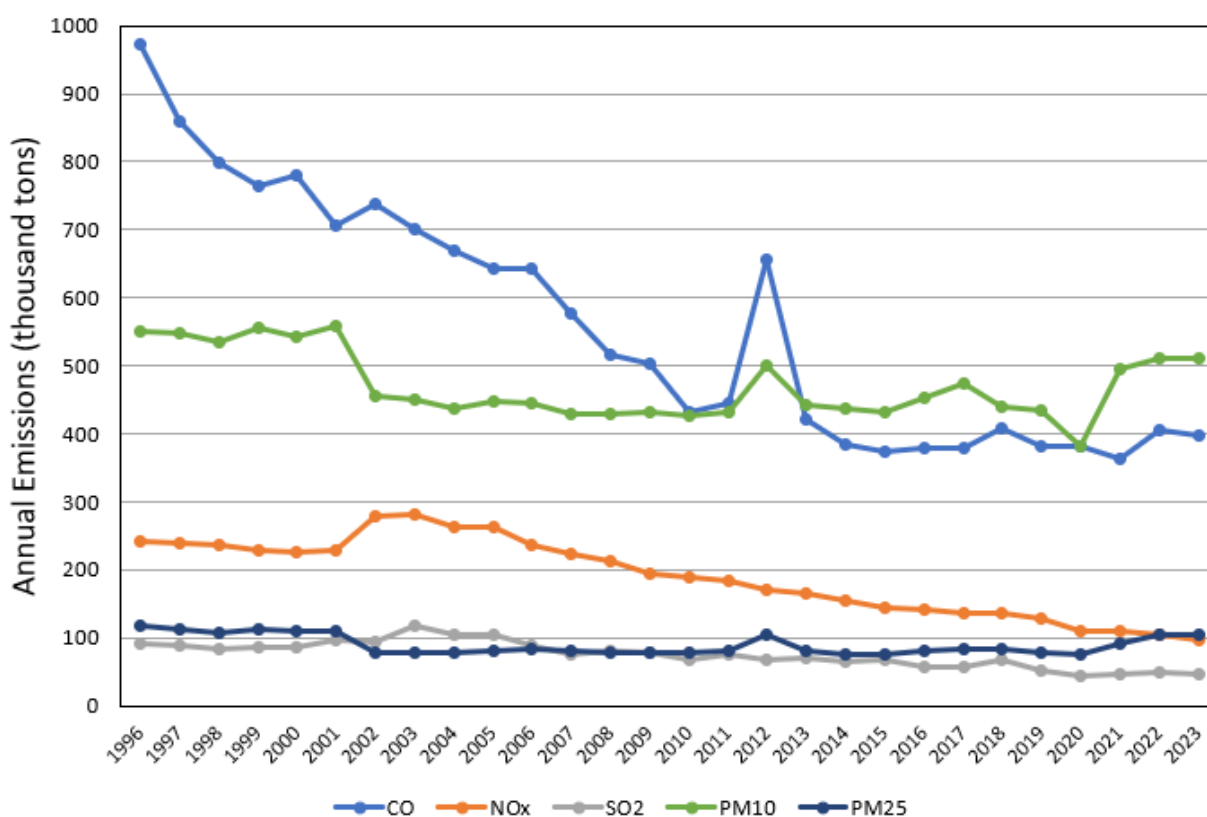
## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Inhaled particles less than 10 microns in diameter can get deep into the lungs, and finer particles may be transferred from the lungs into the bloodstream. These particles can cause damage to the lungs as well as to the heart. Fine particles are also the main cause of reduced visibility (haze) in parts of the United States.

**Lead** pollution typically affects small areas close to industrial sources such as lead smelters, foundries, and steel plants. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood. The lead effects most commonly encountered in current populations are neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults.

Figure III-1 shows trends in criteria air pollutant emissions in Nebraska from 1996 through 2023 using data and modeling from EPA's 2020 National Emissions Inventory. (EPA prepares and releases an inventory at three-year intervals; the 2023 inventory is expected to be published in March 2026). Air pollutant concentrations can vary from year to year, influenced not only by human activities but also by natural events, such as wildfires, dust storms, and other weather conditions. The chart does not include ozone, which is not directly emitted by sources and thus is not part of the inventory. Lead emissions are also not shown due to the low level of annual emissions compared to the other criteria pollutants.

**Figure III-1. Trends in Criteria Air Pollutant Emissions in Nebraska, 1996-2023**



Data for criteria pollutants from EPA National Emissions Inventory 2020, including modeled values for 2021 through 2023: <https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>.

In Nebraska, as well as nationally, concentrations of air pollutants have dropped significantly since 1996. The largest reductions have been for carbon monoxide, NOx, and sulfur dioxide, primarily due to tighter controls on vehicle emissions, requirements for lower sulfur content in diesel fuel, reduced combustion of high-sulfur coal, and enforcement of national air quality standards.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### B. National Ambient Air Quality Standards (NAAQS)

The Clean Air Act 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, and vegetation, and to reduce 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 ( $\mu\text{g}/\text{m}^3$ ).

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	$0.15 \mu\text{g}/\text{m}^3$ <sup>(1)</sup>	Not to be exceeded
Nitrogen Dioxide (NO <sub>2</sub> )		Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary and Secondary	1 year	53 ppb <sup>(2)</sup>	Annual mean
Ozone (O <sub>3</sub> )		Primary and Secondary	8 hours	$0.070 \text{ ppm}$ <sup>(3)</sup>	Annual fourth-highest daily maximum 8-hour average concentration, averaged over 3 years
Particle Pollution (PM)	PM <sub>2.5</sub>	Primary	1 year	$9.0 \mu\text{g}/\text{m}^3$ <sup>(4)</sup>	Annual mean, averaged over 3 years
		Secondary	1 year	$15.0 \mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years
		Primary and Secondary	24 hours	$35 \mu\text{g}/\text{m}^3$	98 <sup>th</sup> percentile, averaged over 3 years
	PM <sub>10</sub>	Primary and Secondary	24 hours	$150 \mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO <sub>2</sub> )		Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	Annual	10 ppb <sup>(5)</sup>	Annual average, averaged over 3 years

(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 ( $1.5 \mu\text{g}/\text{m}^3$  as a calendar quarter average) also remain in effect.

(2) The level of the annual NO<sub>2</sub> 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<sub>3</sub> standards are not revoked and remain in effect for designated areas. In October 2021, EPA announced it is reconsidering the 2020 decision to retain the 2015 O<sub>3</sub> NAAQS; that review is not yet complete.

(4) A final rule published March 6, 2024, and effective May 6, 2024, revised the primary annual PM<sub>2.5</sub> standard, lowering it to  $9 \mu\text{g}/\text{m}^3$ . The rule also revised category breakpoints for the PM<sub>2.5</sub> Air Quality Index. The agency retained the current primary and secondary 24-hour standards for PM<sub>2.5</sub> and PM<sub>10</sub>.

(5) EPA issued a final rule on December 10, 2024, on secondary standards for NO<sub>2</sub>, SO<sub>2</sub>, and PM<sub>2.5</sub>. The secondary standard for SO<sub>2</sub> was revised from a 3-hour value of 0.5 ppm not to be exceeded more than once per year, to an annual average value (averaged over three consecutive years) of 10 ppb. The other two secondary standards were retained without revision.

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

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

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 complies with or violates the standard. The Form column in Table III-1 specifies how the design value is calculated for each criteria pollutant. The current design values for Nebraska’s ambient air monitors are presented in Appendix B.

An area that is in compliance with the standard for a criteria pollutant (based on measured design values) is said to be in *attainment*. For each pollutant, EPA is required to designate areas as in attainment or in *nonattainment* of the NAAQS. All areas of Nebraska are currently in attainment for each of the criteria air pollutant NAAQS. The Clean Air Act requires states to develop a general plan (State Implementation Plan, or SIP) to attain and maintain the standards for each criteria pollutant.

For any area designated in *nonattainment*, a specific plan to return to attainment with the standards must be created and approved by EPA. A nonattainment area SIP must outline the strategies the state will implement to improve air quality and meet the NAAQS. These strategies may include mandating emissions control measures on air pollutant sources.

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 location purposes:

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

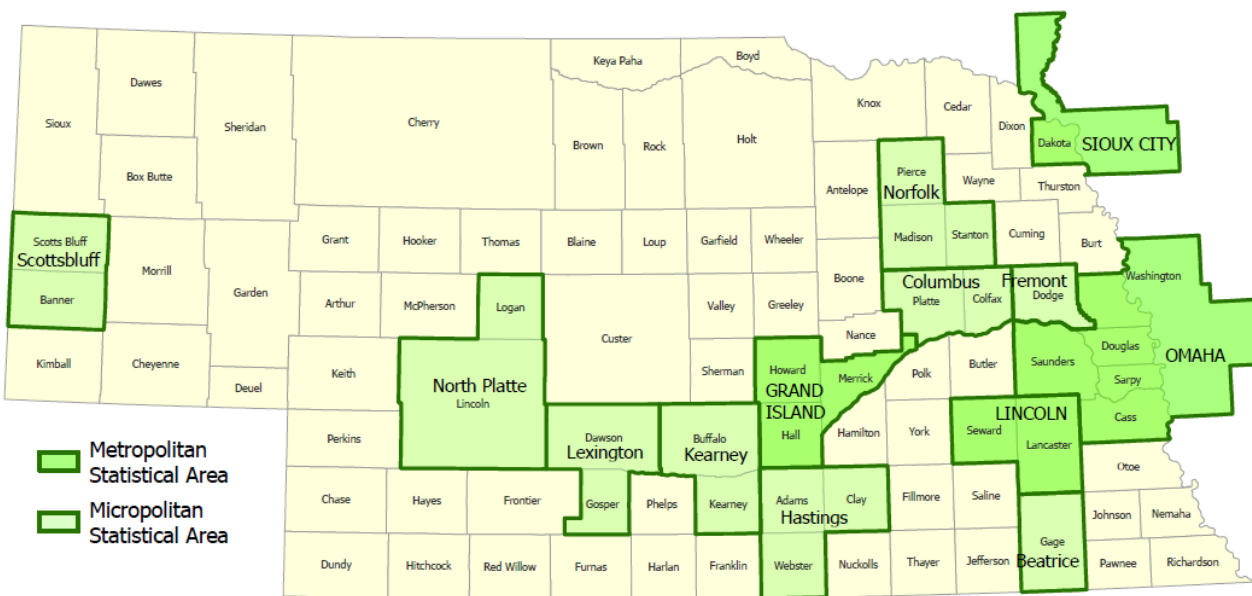
### IV. Nebraska Metropolitan and Micropolitan Statistical Areas

In this document discussions of the ambient air monitoring network in Nebraska are organized around the Metropolitan Statistical Areas and Micropolitan Statistical Areas in which the monitors are located. Evaluations of minimum air monitoring requirements are organized around these geographic units. The United States Office of Management and Budget (OMB) delineates these two types of Core-Based Statistical Area (CBSA) according to published standards that are applied to Census Bureau population data. Both types of statistical area include one or more entire counties, and they may cross state boundaries. Each type contains an urbanized core together with any adjacent counties that have a high degree of economic and social interaction with that core community. A Metropolitan Statistical Area (MSA) has at least one urban area with 50,000 or more inhabitants. A Micropolitan Statistical Area (MiSA) contains an urban area with a population of at least 10,000 but less than 50,000 people.

Nebraska includes all or part of four MSAs (Omaha, Lincoln, Grand Island, and Sioux City) along with nine MiSAs. A map of Nebraska’s MSAs and MiSAs is shown in Figure IV-1. Both the Omaha and Sioux City MSAs include counties in adjacent states. The standards for defining these statistical areas were updated in 2020, and the new delineation issued by OMB in July 2023 changed the makeup of four Nebraska MiSAs. Colfax county was added to the Columbus MiSA, while Clay and Webster counties were added to the Hastings MiSA. In contrast, McPherson County was removed from the North Platte MiSA, and Sioux County was removed from the Scottsbluff MiSA. In addition to these changes, Dixon County, Nebraska, was removed from the Sioux City MSA, leaving Dakota County as the only Nebraska county in this MSA.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

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



\* Areas as defined by the U.S. Office of Management and Budget, July 2023.

### 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 V-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 sites for ozone, carbon monoxide, nitrogen oxides, sulfur dioxide, lead, PM<sub>10</sub>, PM<sub>2.5</sub>, and PM<sub>10-2.5</sub>. A National Core Multipollutant Monitoring Network (NCore) station is located in Omaha to provide continuous monitoring of particles, pollutant gases, and meteorology. Monitors at the SLAMS sites are subject to 40 CFR Part 58 requirements and are used for NAAQS attainment determinations. 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).

Over the past several years NDEE has taken advantage of federal grant opportunities to upgrade and replace aging regulatory monitors in the network, as described in previous Network Plans. At several sites particulate samplers that use filters to capture particles over three-day and six-day intervals have been replaced with continuous monitors that provide hourly data. In addition, older continuous ozone and sulfur dioxide monitors have been replaced with new equipment at several locations. Real-time data from continuous ozone and PM<sub>2.5</sub> monitors is reported to and available to the public on EPA's AirNow website (<https://www.airnow.gov>).

EPA operates other specialized ambient air monitoring sites in Nebraska that are not part of NDEE's SLAMS network and are not used for NAAQS attainment determinations. These sites are part of the CASTNET, IMPROVE, NADP, and RadNet networks.

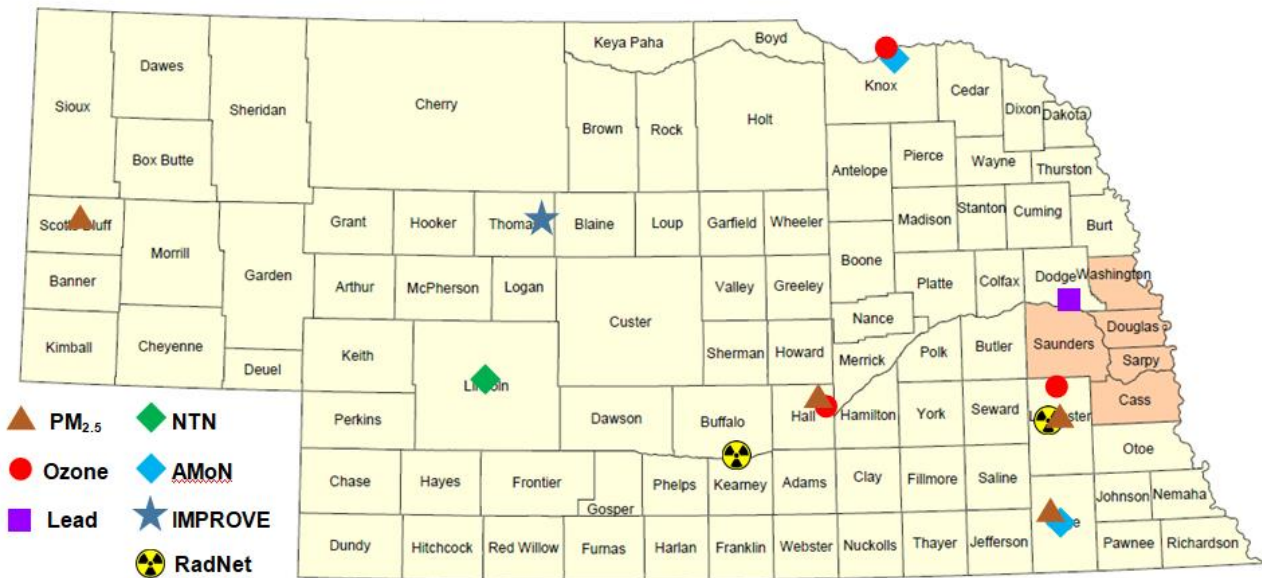
The Clean Air Status and Trends Network (CASTNET) was established to assess trends in pollutant concentrations and dry deposition of acidic sulfur and nitrogen compounds. These sites also measure hourly ambient ozone concentrations. The ozone monitoring site in the Santee Sioux reservation in Knox County shown in the map above is a CASTNET site.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Interagency Monitoring of Protected Visual Environments (IMPROVE) sites host fine particulate and particulate speciation monitors intended to provide information for studying regional haze that may impact Class I National Park and wilderness areas. The NDEE provides administrative support (with EPA funding) for one IMPROVE site at the Nebraska National Forest near Halsey, NE. Monitoring resumed at this site in October 2024 after a wildfire in October 2022 destroyed the shelter, equipment, and overhead electrical line powering the site. EPA grants obtained by NDEE funded a buried power line and construction of a new shelter for the site.

Four locations in Nebraska are part of the National Atmospheric Deposition Program (NADP), which includes several networks that measure surface deposition of air pollutants. The site at Mead (Saunders County) is part of the Mercury Deposition Network (MDN), which measures mercury concentrations in precipitation (rain and snow). The Mead and North Platte (Lincoln County) sites are part of the National Trends Network (NTN), which measures several chemicals in precipitation, including calcium, magnesium, sodium, potassium, sulfate, and nitrate. The Ammonia Monitoring Network (AMoN) measures ammonia concentrations in the air at rural sites, including the Santee Sioux CASTNET site and a location at Homestead National Historic Park. The NDEE provides administrative support (with EPA funding) for sample analyses for the NADP sites in the state.

**Figure V-1. Nebraska Air Quality Monitoring Sites Outside of the Omaha NE-IA Metropolitan Statistical Area, 3/31/2025**



**PM<sub>2.5</sub>**

- Lincoln (Lancaster County)
- Homestead National Historic Park (Gage County)
- Grand Island (Hall County)
- Scottsbluff (Scottsbluff County)

**Ozone**

- Davey (Lancaster County)
- Grand Island (Hall County)
- Santee Sioux (Knox County; CASTNET site operated by EPA)

**Lead**

- Fremont (Dodge County)

**National Atmospheric Deposition Program (NADP)**

- North Platte (Lincoln County): NTN (National Trends Network)
- Santee (Knox County): AMoN (Ammonia Monitoring Network)
- Homestead (Gage County): AMoN

**IMPROVE**

- Nebraska National Forest (Thomas County)

**RadNet**

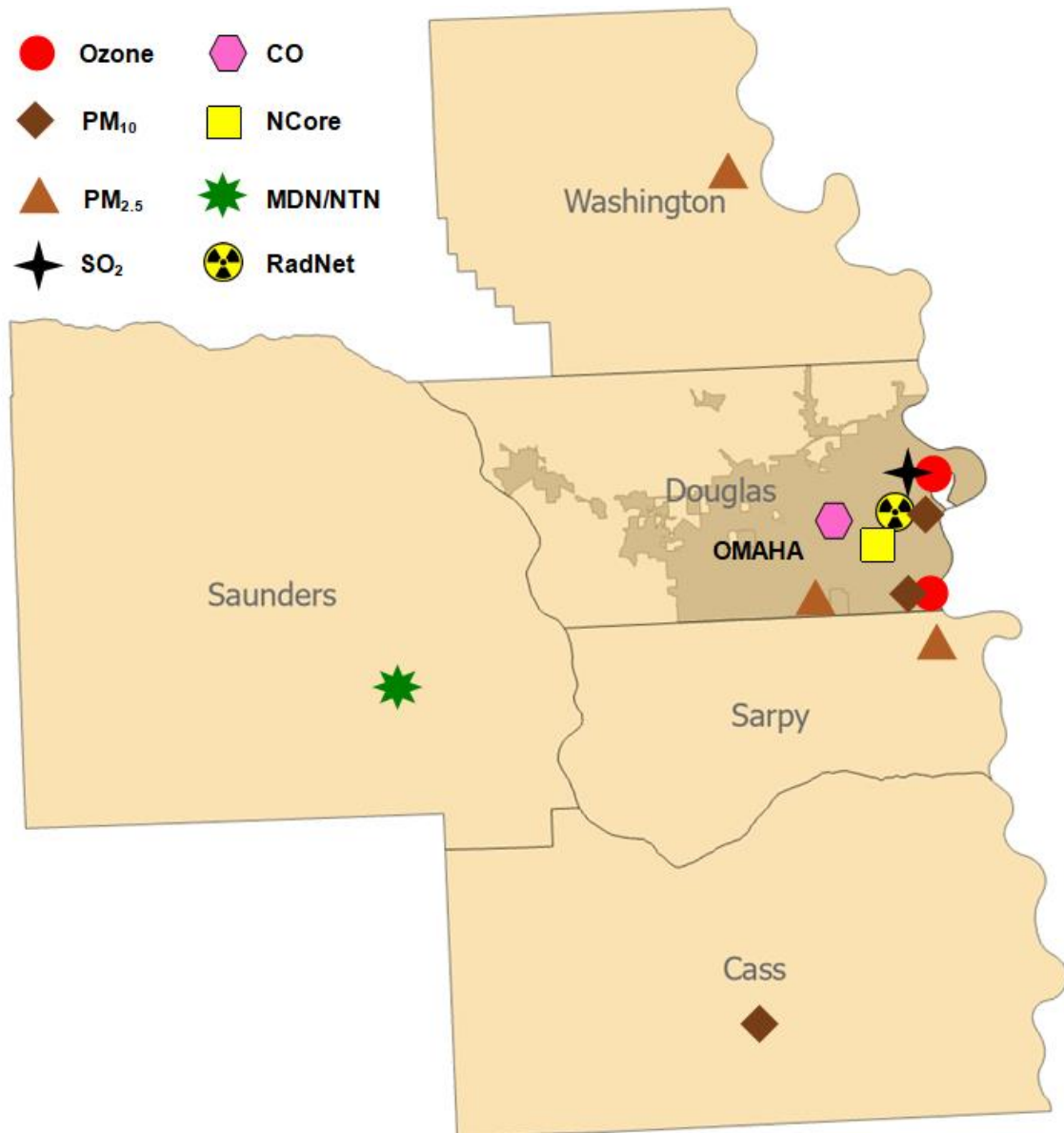
- Lincoln (Lancaster County), Kearney (Buffalo County)
- The Nebraska counties in the Omaha-Council Bluffs Metropolitan Statistical Area are indicated by the orange shading.

RadNet is a nationwide system that monitors air, precipitation, and drinking water to track radiation in the environment. RadNet sample testing and monitoring track changes in normal background levels of radiation and can also detect higher radiation levels during a radiological incident. RadNet air monitoring sites are located

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

in Omaha, Lincoln, and Kearney. These stations continuously monitor and report gamma ray levels and also capture airborne particulates for laboratory analysis to detect radioactive particles.

**Figure V-2. Air Quality Monitor Locations in the Nebraska Portion of the Omaha NE-IA Metropolitan Statistical Area, 3/31/2024**



## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

<b>Table V-1. Nebraska Ambient Air Monitoring Network on March 31, 2025 <sup>(1)</sup></b>					
	DCHD Omaha MSA <sup>(2)(3)</sup>	NDEE Cass County <sup>(4)</sup>	LLCHD Lincoln MSA	NDEE Other Areas	Total
SLAMS Sites (includes NCore)	7 <sup>(5)</sup>	1	2	4	14
IMPROVE <sup>(6)</sup>	0	0	0	1	1
NADP <sup>(6)</sup>	1	0	0	3	4
CASTNET <sup>(6)</sup>	0	0	0	1	1
Total Monitoring Sites	8	1	2	9	20
<b>Sites by Pollutant: SLAMS Sites including NCore <sup>(3)</sup></b>					
Ozone	2 <sup>(5)</sup>	0	1	1	4
Carbon Monoxide	2	0	0	0	2
Nitrogen Oxides	1	0	0	0	1
Sulfur Dioxide	2	0	0	0	2
PM <sub>10</sub>	2 <sup>(5)</sup>	1	0	0	3
PM <sub>2.5</sub>	4	0	1	3	8
PM <sub>10-2.5</sub>	1	0	0	0	1
PM <sub>2.5</sub> Speciation	1	0	0	0	1
Lead	0	0	0	1 <sup>(7)</sup>	1
Total Pollutant Sites	15 <sup>(3)</sup>	1	2	5	23
Footnotes:					
(1) This table summarizes the number of operating sites as of 3/31/25 in the NE SLAMS network (including NCore) by operating agency, as well as IMPROVE and NADP sites in Nebraska.					
(2) The Omaha MSA encompasses five 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 two multi-pollutant monitoring sites in the Omaha MSA in 2022: 1616 Whitmore – SO <sub>2</sub> & Ozone (2 pollutants); and NCore (42 <sup>nd</sup> & Woolworth) – CO, NO-NO <sub>y</sub> , O <sub>3</sub> , SO <sub>2</sub> , 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) Counts do not include the South Omaha ozone-PM <sub>10</sub> site currently closed for relocation.					
(6) See text for discussion of CASTNET, IMPROVE, and NADP sites.					
(7) The lead monitor site in Fremont was closed in 2018 and reopened at a nearby location in July 2023.					

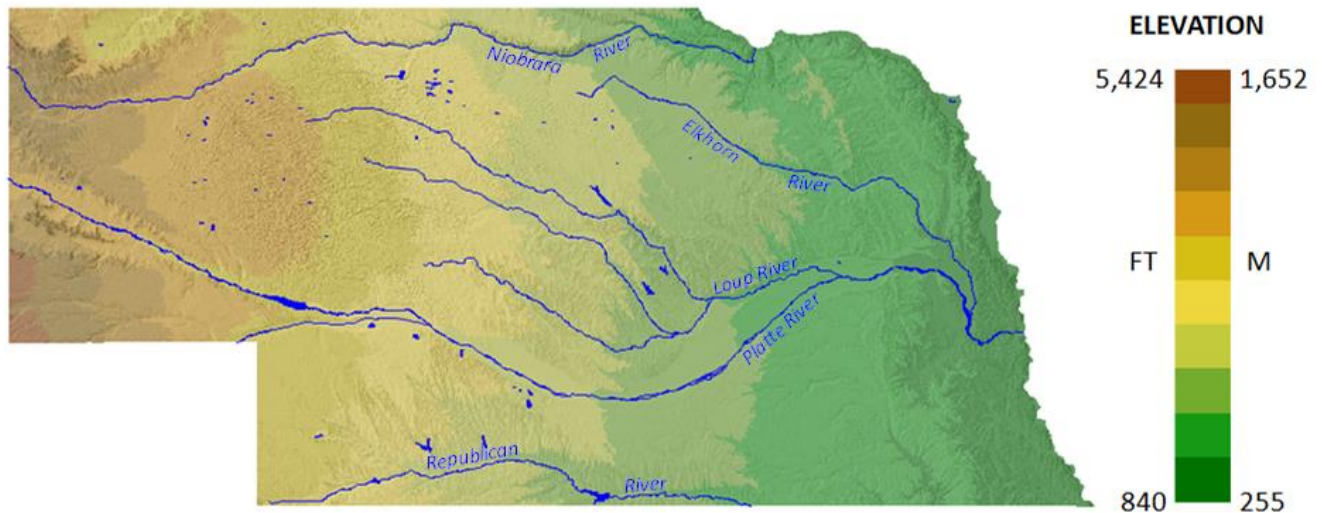
## VI. Nebraska Topography, Climate, and Population

### A. Topography

Nebraska lies in the heart of the Great Plains physiographic province. This low-relief surface slopes gently eastward from the Rocky Mountains toward the interior lowlands. Elevations in Nebraska range from 4,000 to over 5,000 feet along the western border to 840 to 1,100 feet in the Missouri River valley, which forms the eastern border of the state (see Figure VI-1). The Niobrara, Elkhorn, Loup, Platte, and Republican rivers flow eastward in broad open valleys across the state toward the Missouri River.

Much of Nebraska is an erosional surface variably dissected by streams. Plains, dissected plains, and rolling hills make up much of the state, with the sandhills (inactive, grass-covered sand dunes) occupying a large area in north-central Nebraska (see Figure VI-2). Although there are some prominent buttes and escarpments in western Nebraska, most of the state is a gently rolling surface that forms little impediment to the movement of air masses across it.

**Figure VI-1. Color Shaded Relief Map of Nebraska\***

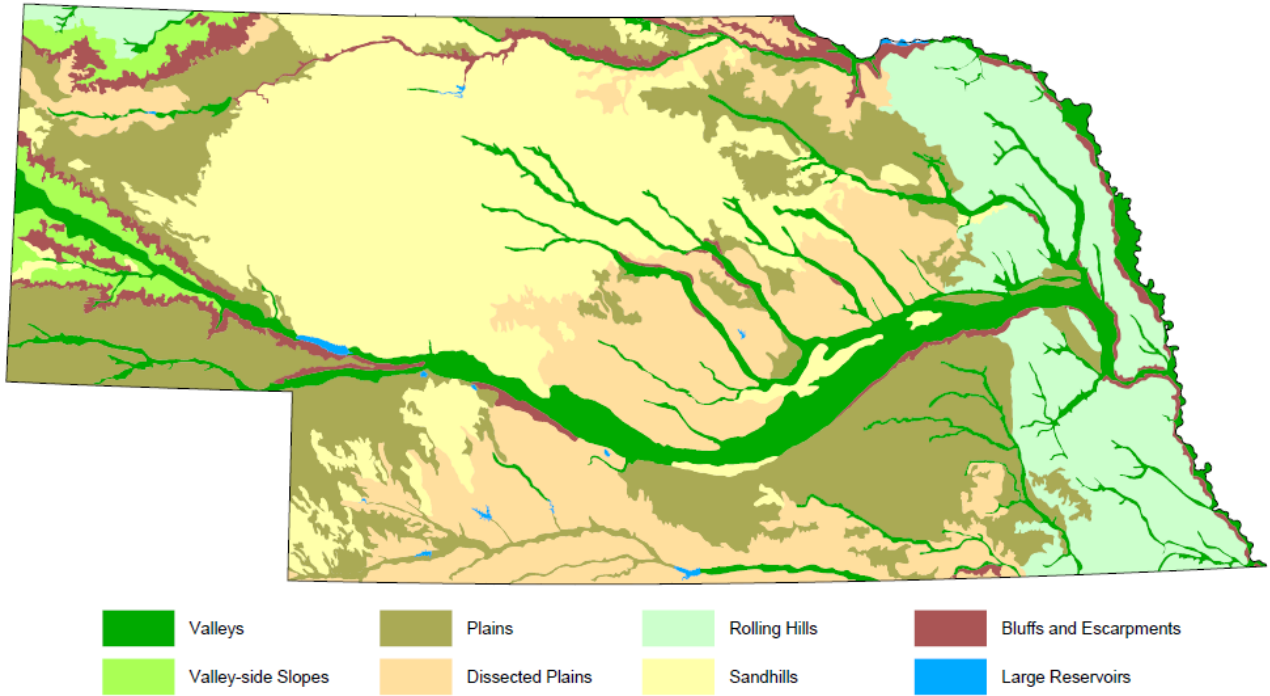


\* Created from 30-meter digital elevation model provided by the U.S. Geological Survey.

### B. Climate

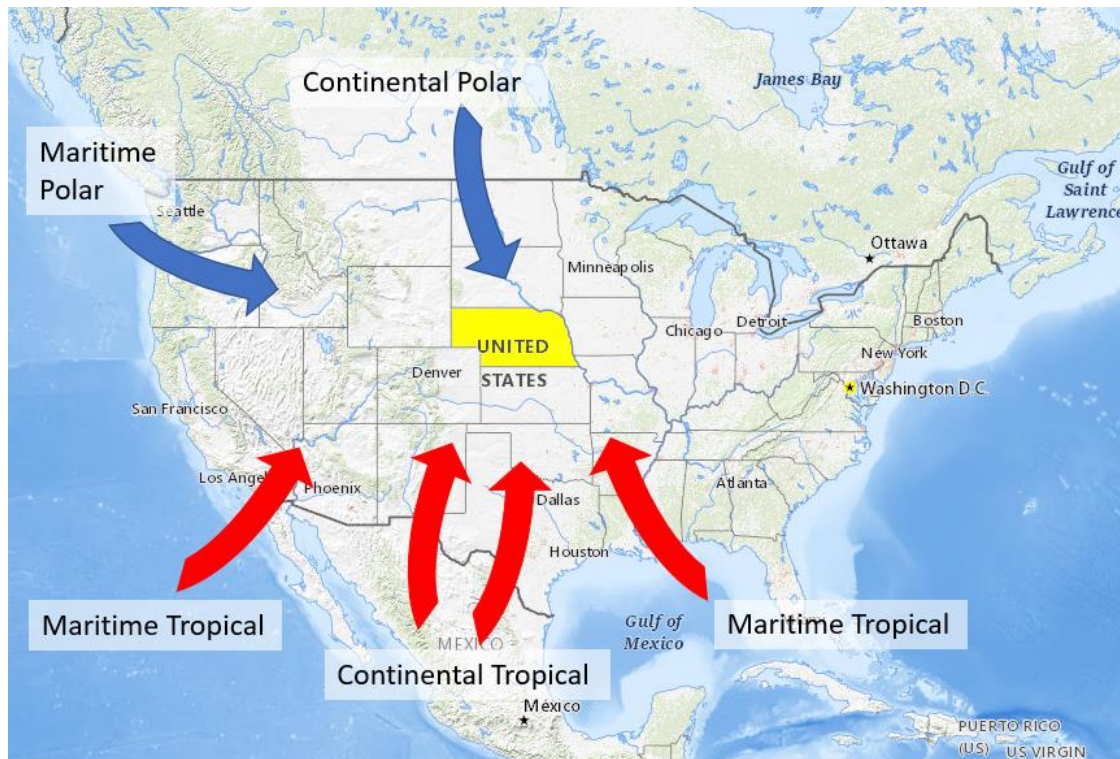
Nebraska's central position in the interior of North America places it in a climate crossroads. The state is affected by several air masses that have different origins and very different temperature and moisture properties. Air masses moving south across the northern Great Plains dominate in winter, bringing cold dry air from Canada (see Figure VI-3 below). Summer weather is dominated by air masses moving northward, bringing warm dry air from Mexico and the desert southwest or warm humid air from the Gulf of Mexico and the Caribbean. Cold or warm air masses originating in the Pacific Ocean also move eastward into the Great Plains, but much of the moisture carried by them is extracted during their transit across the Rocky Mountains.

Figure VI-2. Topographic Regions of Nebraska\*



\* Map data from Conservation and Survey Division/Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.

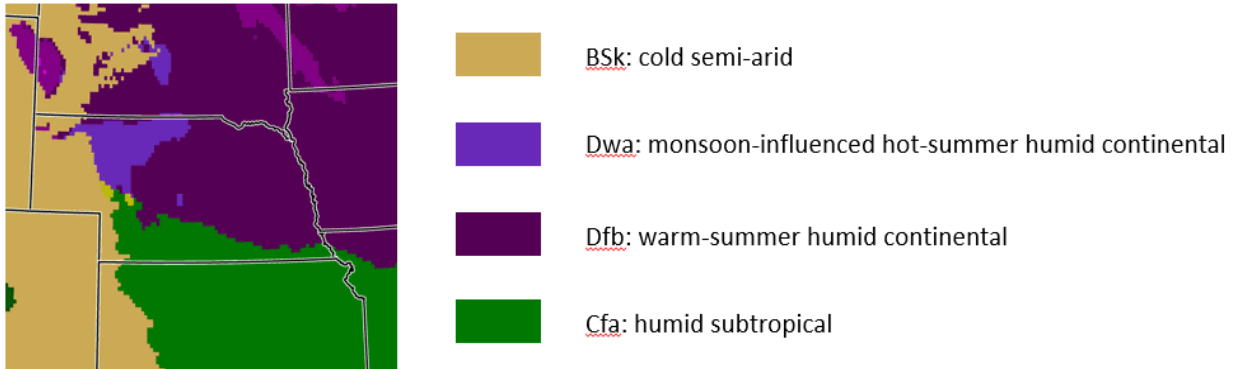
Figure VI-3. Source Areas of Major Air Masses Affecting Nebraska



## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

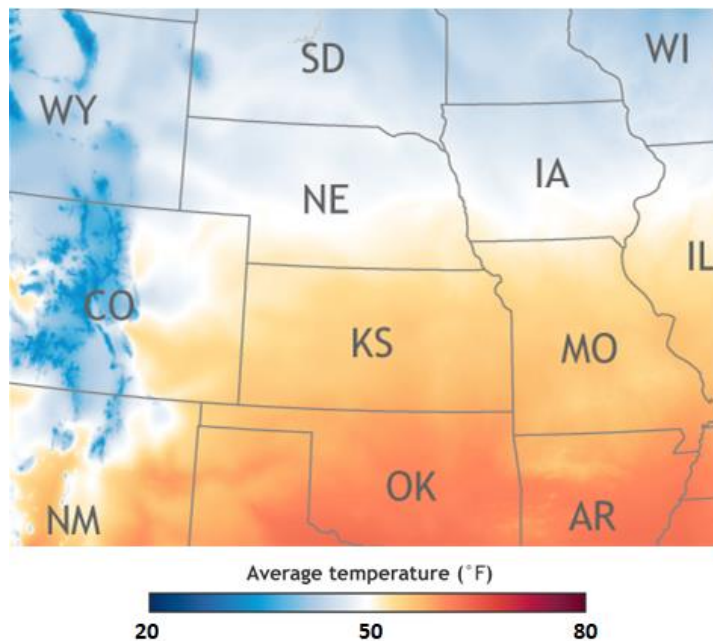
As a result of the influence of these contrasting air masses, portions of Nebraska fall into different climate zones (Figure VI-4). Most of the state has a warm-summer or hot-summer humid continental climate. The southernmost portion of the state is more influenced by warm, humid air masses from the south and is on the northern edge of the humid subtropical climate zone. The higher-elevation areas in the Nebraska panhandle and the far southwest are in the rain shadow of the Rocky Mountains and have a cold semi-arid climate.

**Figure VI-4. Köppen-Geiger Climate Zones in the Nebraska Region\***



\* Kottke, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: [World Map of the Köppen-Geiger climate classification updated](http://koeppen-geiger.vu-wien.ac.at/present.htm). Map data accessed from <http://koeppen-geiger.vu-wien.ac.at/present.htm>.

**Figure VI-5. Annual Average Temperature 1991-2020 in Central Great Plains**



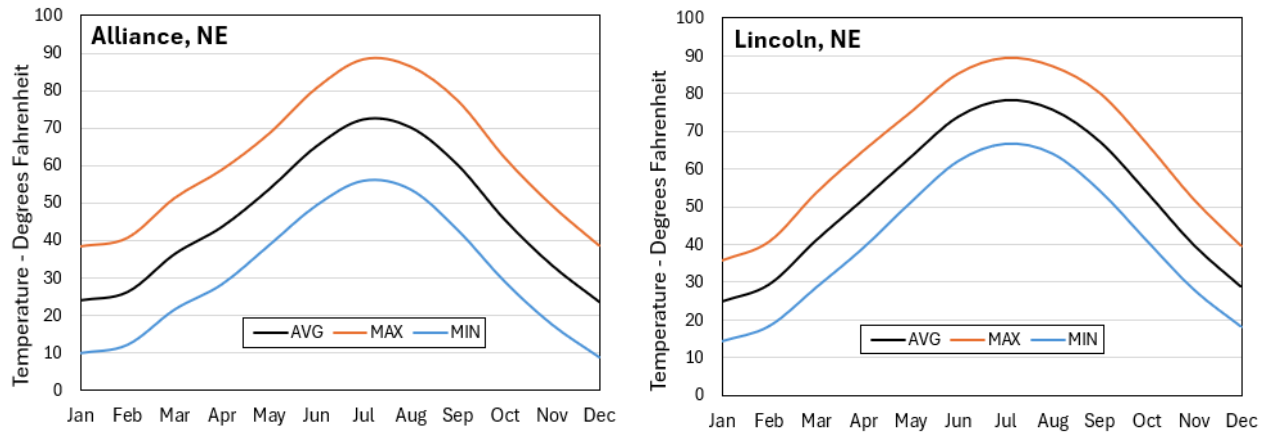
Extract from map downloaded from <https://www.climate.gov/news-features/featured-images/new-maps-annual-average-temperature-and-precipitation-us-climate>

Average annual temperatures in Nebraska from 1991 to 2020 ranged from 53° Fahrenheit near the southeastern border to 45° in the northwest (Figure VI-5). However, because of its location in the dry interior of the continent, all portions of the state show extreme variation in temperatures from summer to winter. Monthly temperature normals for southeastern (Lincoln) and northwestern (Alliance) Nebraska are shown in Figure VI-6. Over the period from 1991-2020, mean temperatures in July and August were in the upper 70s in Lincoln

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

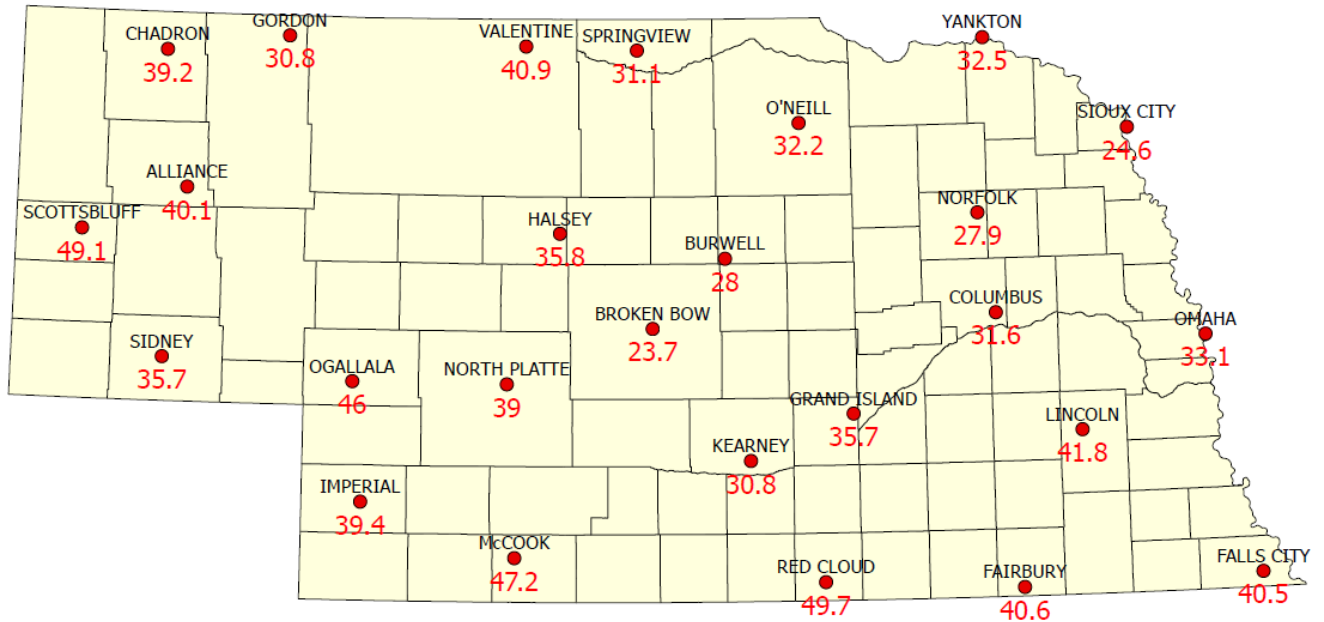
and in the lower 70s in Alliance, while mean January temperatures were about 23° to 24° in both locations. The more humid southeastern portion of the state shows a smaller spread of normal minimum and maximum temperatures around the monthly mean (about 10°) than the drier panhandle region (about 15°).

**Figure VI-6. Monthly Temperature Normals 1991-2020 for Alliance and Lincoln, Nebraska**



Data from National Oceanic and Atmospheric Administration National Centers for Environmental Information.

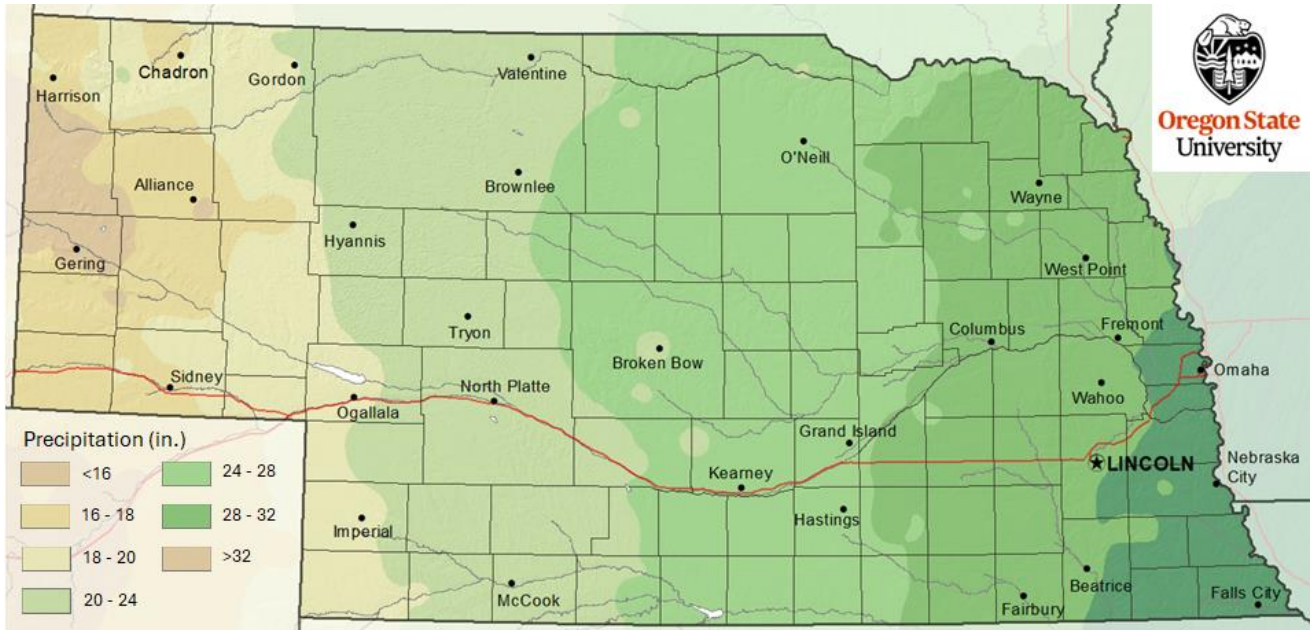
**Figure VI-7. Average Annual Number of Days with Maximum Temperature 90°F or Above for Nebraska and Nearby Locations**



Averages from daily maximum temperatures 1991 through 2020. Data accessed through <http://climod2.nrcc.cornell.edu>.

From 1991 through 2020, the average annual number of days with maximum temperature at or above 90 degrees F ranged from 24 to 50 across the state (Figure VI-7). Locations in northeast and north-central Nebraska experienced lower average numbers of these hot days (24 to 35 days per year), while locations near the southern border and experienced high annual average counts (30 to 50 days per year). High summer temperatures are an important triggering factor for the formation of secondary ozone if precursor components are present in the atmosphere.

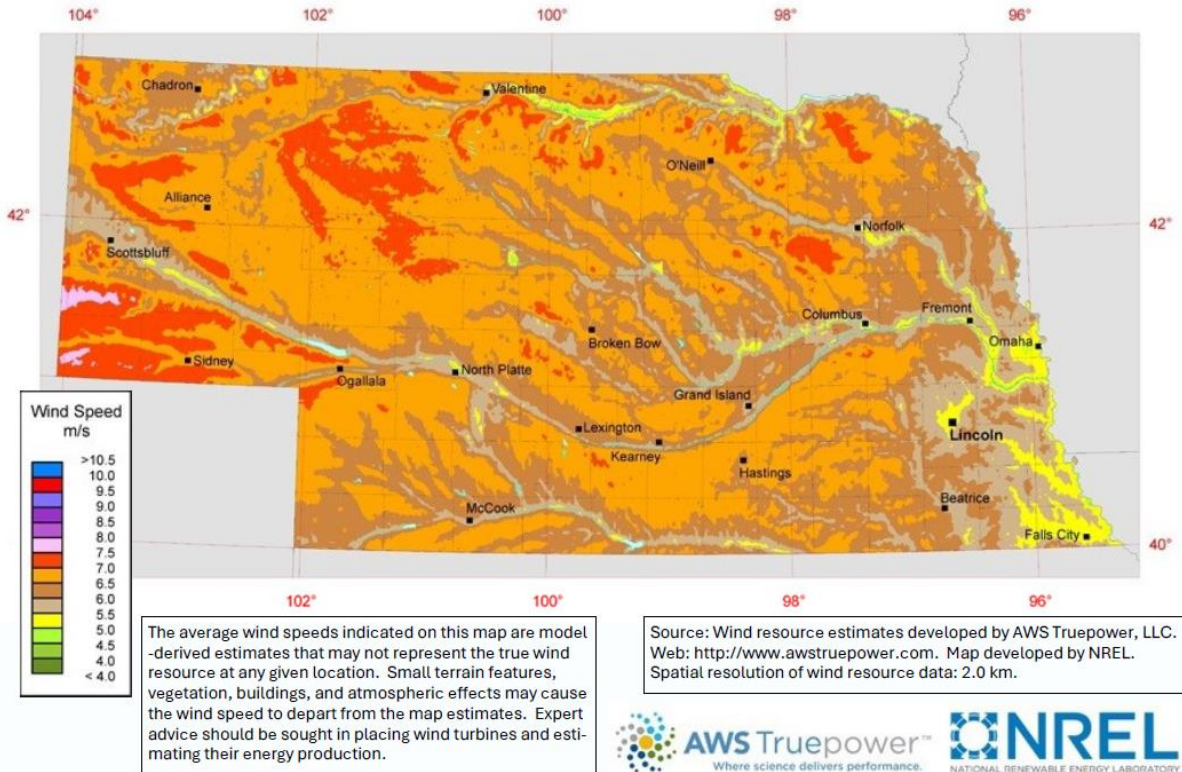
Figure VI-8. Map of Annual Average Precipitation in Nebraska, 1991-2020



Modified from map by PRISM Climate Group, Oregon State University, ©2022 at [https://www.prism.oregonstate.edu/projects/gallery\\_view.php?state=NE](https://www.prism.oregonstate.edu/projects/gallery_view.php?state=NE)

Precipitation is also unevenly distributed in the state. Average annual precipitation ranges from over 32 inches per year in the southeast corner of the state to less than 16 inches per year in parts of far western Nebraska (see Figure VI-8).

Figure VI-9. Nebraska Modeled Average Wind Speed at 30 Meters Above the Surface



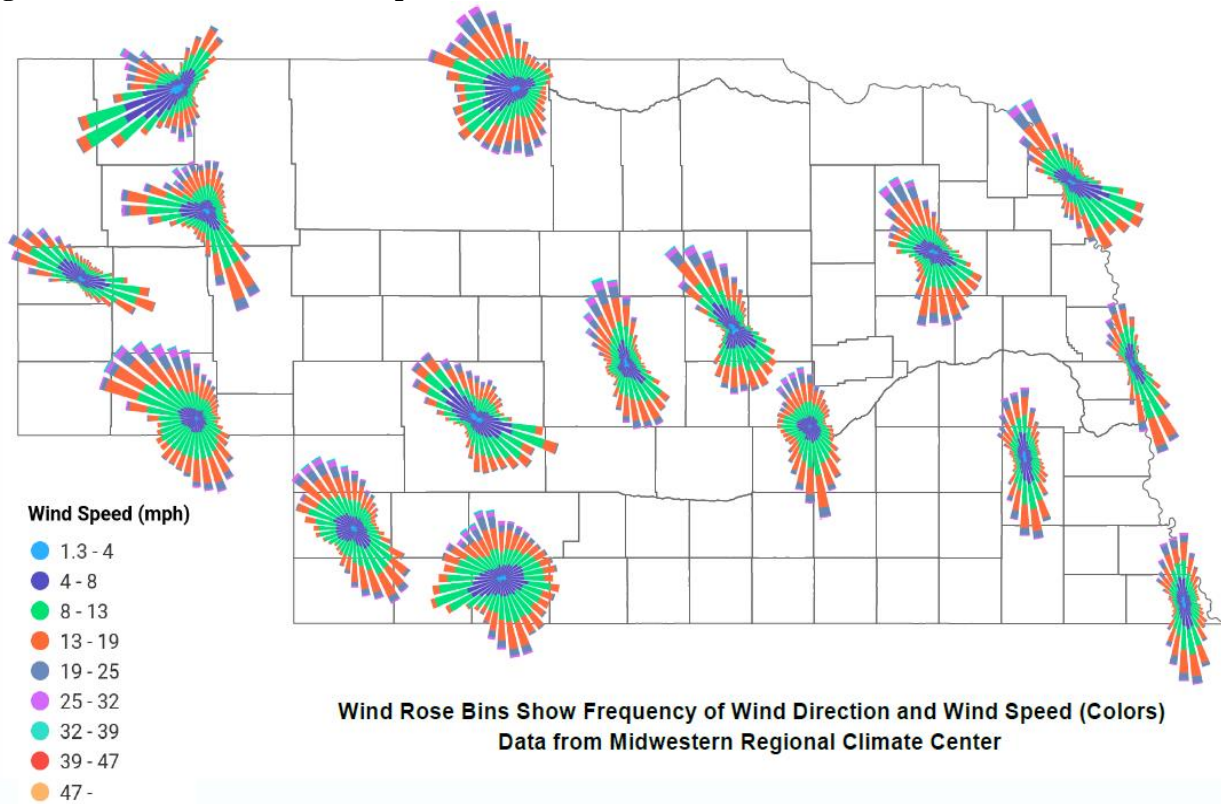
Modified from map sourced at: <https://windexchange.energy.gov/maps-data/289>

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

The Great Plains region is known for its strong winds, and Nebraska is no exception. Figure VI-9 is a map of modeled average wind speeds at 30 meters above the surface. Widespread upland areas between the main river valleys exhibit annual average wind speeds between 6.5 and 7.0 meters/second (14.5 to 16.7 miles per hour).

Figure VI-10 shows wind roses portraying frequency of surface wind directions and speeds for a number of locations across Nebraska for the previous ten years (2015 through 2024). Locations in the eastern half of the state experience two prevailing wind directions, from the north to northwest and from the south to southeast. Locations in the western half of the state are also strongly influenced by these wind directions but have greater frequency of winds from other directions. Locations in the northern panhandle exhibit variable winds including a high frequency of winds from the southwest, west, and northwest.

**Figure VI-10. Wind Roses for Representative Nebraska Locations\***

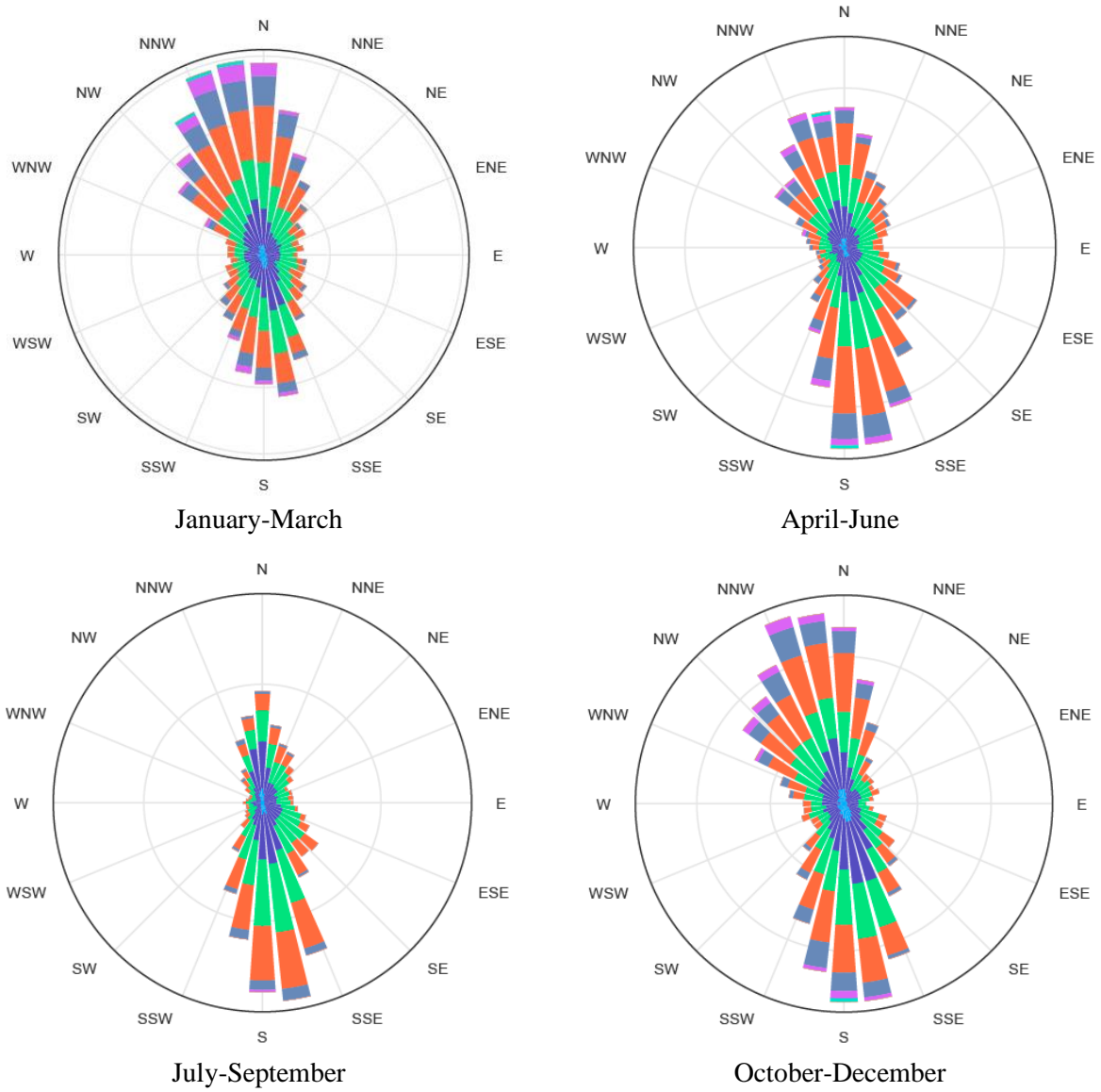


\* Full-year hourly data, 1 January 2015 through 31 December 2024. Plots modified from wind roses obtained using the Midwestern Regional Climate Center (MRCC) cli-MATE data portal: <https://mrcc.purdue.edu>.

Prevailing wind directions vary greatly with the season, reflecting the seasonal movement of northern and southern air masses. Figures VI-11 and VI-12 show seasonal wind roses for Lincoln and Alliance, respectively. In Lincoln, from January to March winds from the north to northwest are more frequent than southerly winds. Southerly winds increase in the following quarter, and from July to September southerly winds are dominant. The October-December quarter sees the return of northerly winds, which are the dominant wind direction by the close of the quarter.

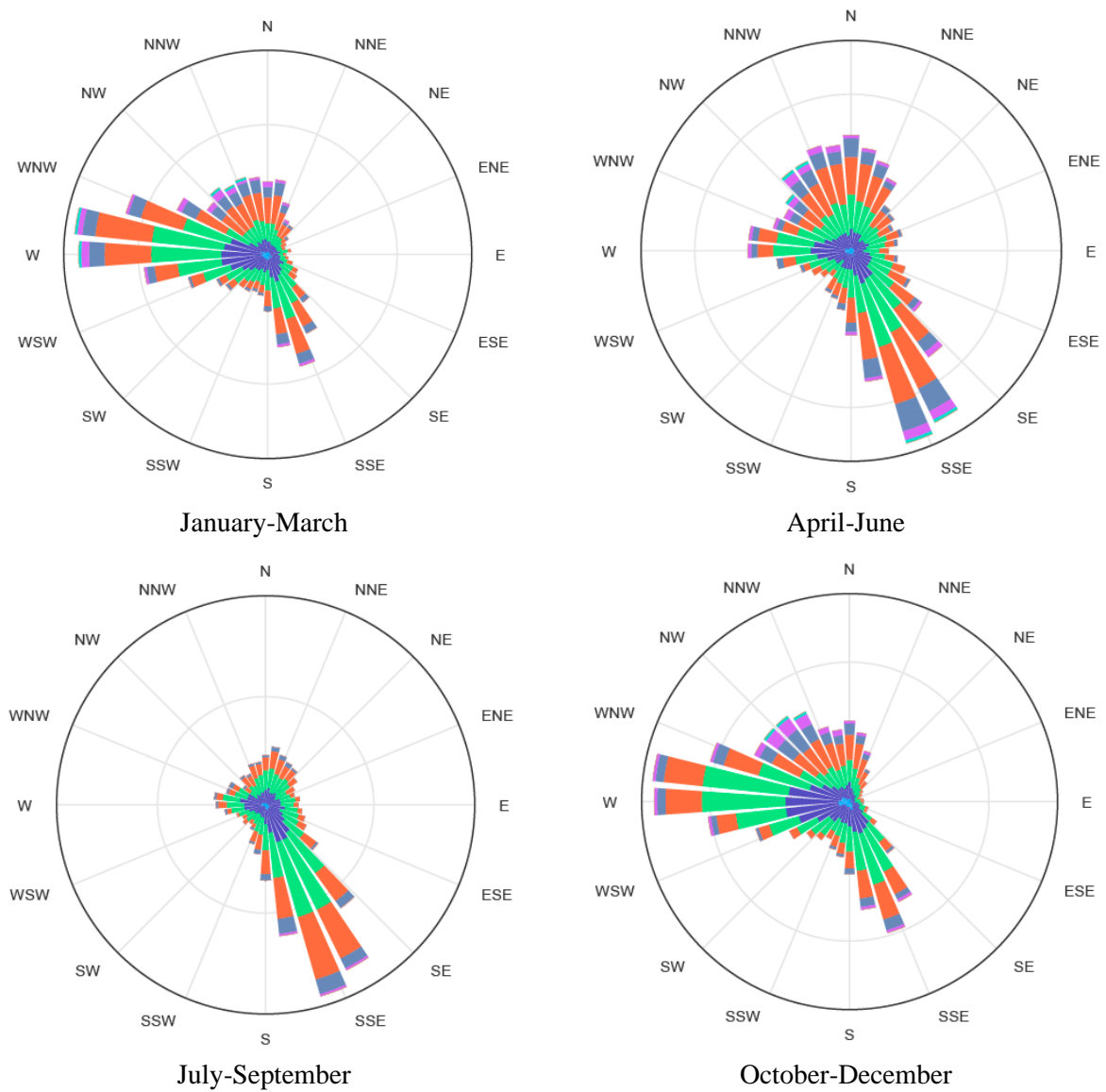
In Alliance, summer winds (July to September) show a similar pattern to that of Lincoln, with prevailing winds from the south to south-southeast. However, the winter, fall, and to a lesser extent spring roses show the strong influence of westerly winds. These patterns show the effect of Chinook winds originating along the eastern slopes of the Rocky Mountains as arctic fronts retreat to the east. Air descending the mountain front and down the slope of the high plains warms with increasing pressure and can attain very high speeds.

Figure VI-11. Seasonal Wind Roses for Lincoln, Nebraska



\* Full-year hourly data, 1 January 2015 through 31 December 2024.

Figure VI-12. Seasonal Wind Roses for Alliance, Nebraska

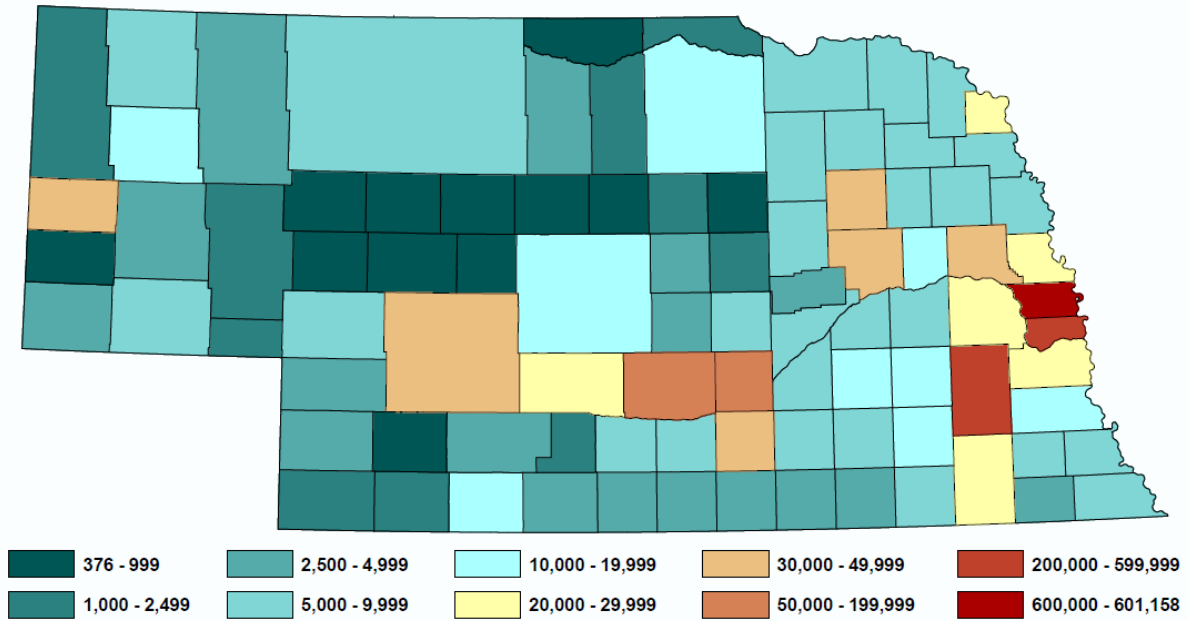


\* Full-year hourly data, 1 January 2015 through 31 December 2024.

**C. Population Distribution and Trends**

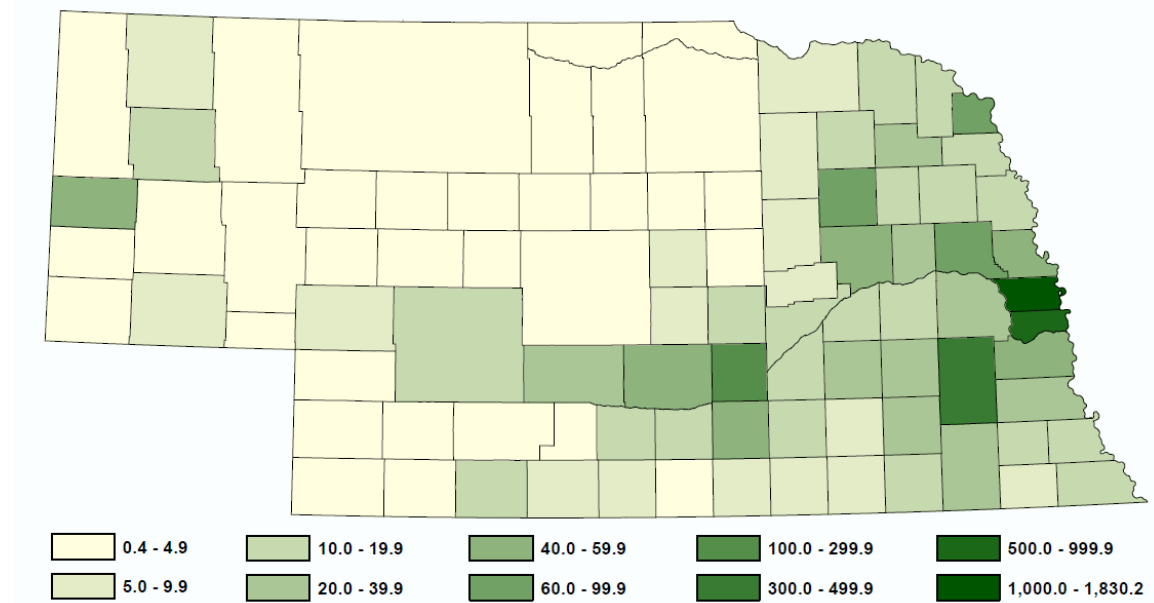
Nebraska is a largely rural state with relatively few large population centers. The state population at the last decennial census in 2020 was 1,961,504. The U.S. Census Bureau estimates that by July 1, 2024, the state population had increased by 2.2% to 2,005,465. Large numbers of state residents are concentrated in urban areas: over 55% of the population resides in the three most populous counties (Douglas and Sarpy in the Omaha metropolitan area and Lancaster in the Lincoln metropolitan area). The uneven population distribution is illustrated in the maps of county population (Figure VI-13) and county population density (Figure VI-14) below. Detailed population data are provided in Appendix C.

**Figure VI-13. Map of Estimated Nebraska County Populations as of 7/1/2024\***



\* Population estimates from the U.S. Census Bureau, March 2025.

**Figure VI-14. Map of Nebraska County Population Density\* as of 7/1/2024**

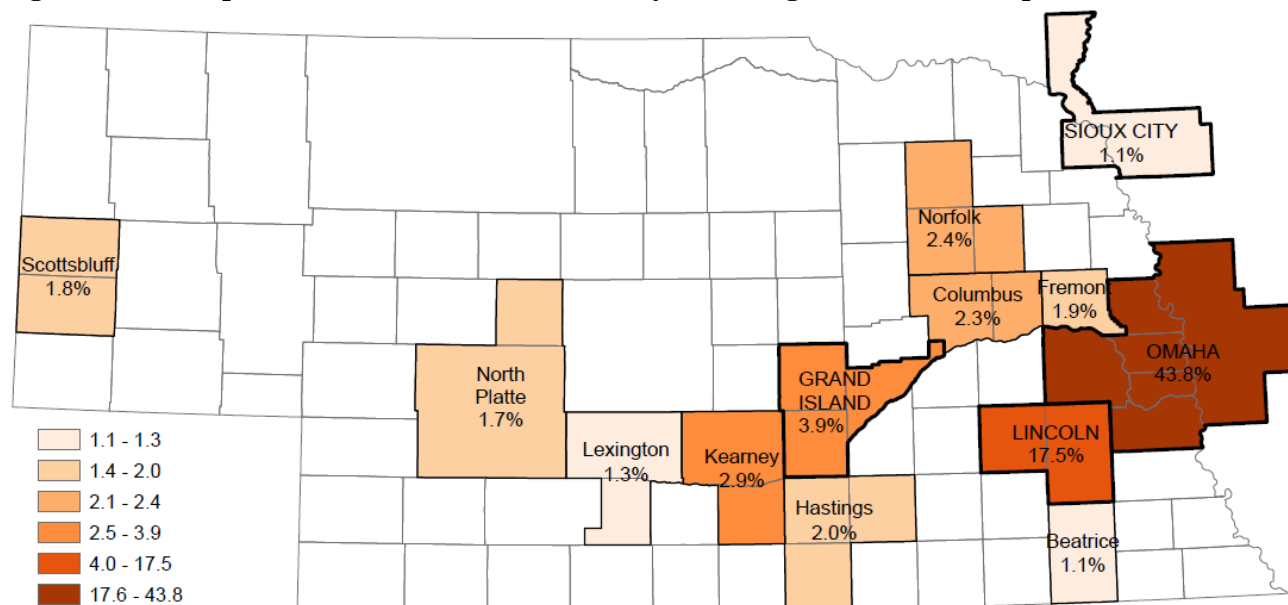


\* Population density in persons per square mile.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Of Nebraska's 93 counties, 29 are included in Core-Based Statistical Areas (CBSAs): 11 in Metropolitan Statistical Areas (MSAs) and 18 in Micropolitan Statistical Areas (MiSAs). The counties in the four MSAs account for 66.2% of the state's 2024 total population, while those in the MiSAs total another 17.4%. Altogether, counties in CBSAs include 83.6% of the state's population in 2024, with the other 64 counties including only 16.4% of the population. Population figures for Nebraska MSAs and MiSAs is listed in Table C-1 in Appendix C.

**Figure VI-15. Map of Nebraska MSAs and MiSAs by Percentage of 2024 State Population\***



\* MSAs have bold outlines and are labeled in all capital letters.

Figure VI-15 maps Nebraska's MSAs and MiSAs by their percentage of the state population in 2024. The two most populous MSAs (Omaha and Lincoln) together account for 61.3% of Nebraska's 2024 population (Omaha 43.8% and Lincoln 17.5%). The populations of the nine MiSAs individually range from 1.1% to 2.9% of the state population.

Although Nebraska's population grew overall from 2020 to 2024, that growth is also not equally distributed. During this period 32 Nebraska counties experienced population growth, whereas 61 counties had declining populations. Figure VI-16 maps Nebraska counties by the magnitude of their population growth and decline (number of persons). The largest population increases (over 10,000 added persons) occurred in the state's three most populous counties (Douglas and Sarpy in the Omaha metropolitan area and Lancaster in the Lincoln metropolitan area). A large number of mostly rural counties experienced population losses during this period.

Figure VI-17 is a map of Nebraska MSAs and MiSAs color-coded by growth or decline in population from 2020 to 2024, and Figure VI-18 graphs the magnitude of these population changes. (For the two multistate MSAs, the figures are for the entire multistate area.) The four Nebraska MSAs all experienced growth, with the Lincoln MSA at 3.1% and the Omaha MSA at 3.5%. Nearly all of the population growth in the Omaha MSA was in the Nebraska portion (at 3.9%), with only 0.1% growth overall for the three Iowa counties. The Grand Island and Sioux City MSAs experienced much lower growth (0.3% and 1.0%, respectively), and Dakota County, the only Nebraska county in the Sioux City MSA, lost population during this period.

From 2020 to 2024 four MiSAs (Columbus, Fremont, Lexington, and Kearney) experienced population growth ranging from 1.4% to 3.2%, while five (Beatrice, Hastings, Norfolk, North Platte, and Scottsbluff) had declining populations.

Figure VI-16. Map of Nebraska County Population Changes 2020-2024

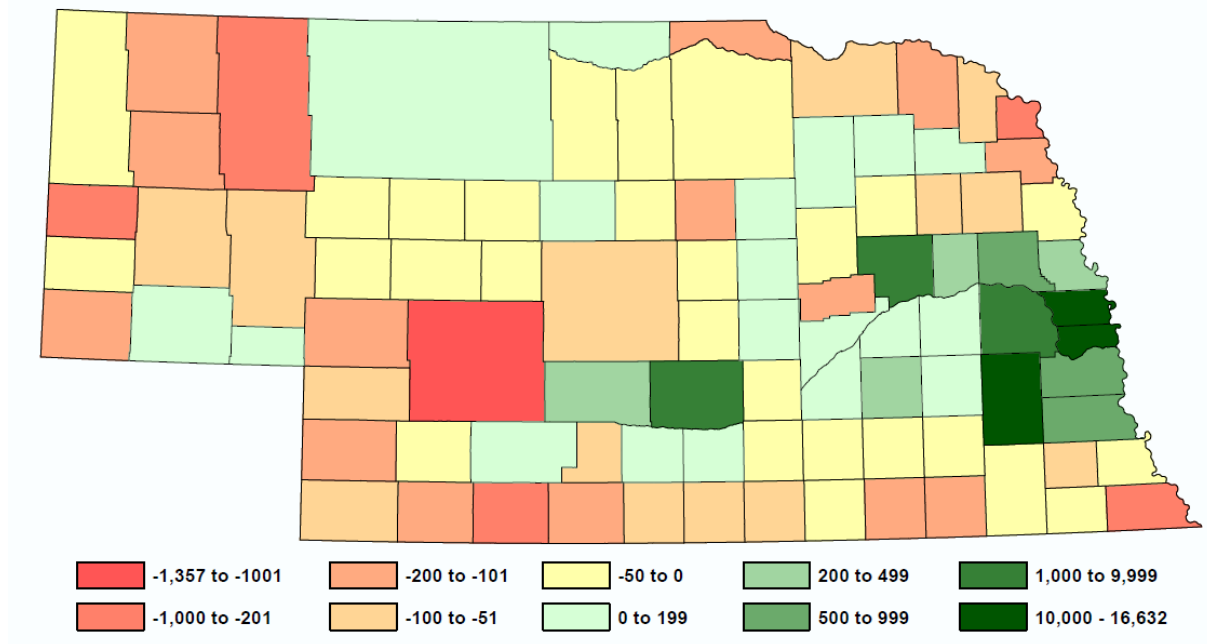
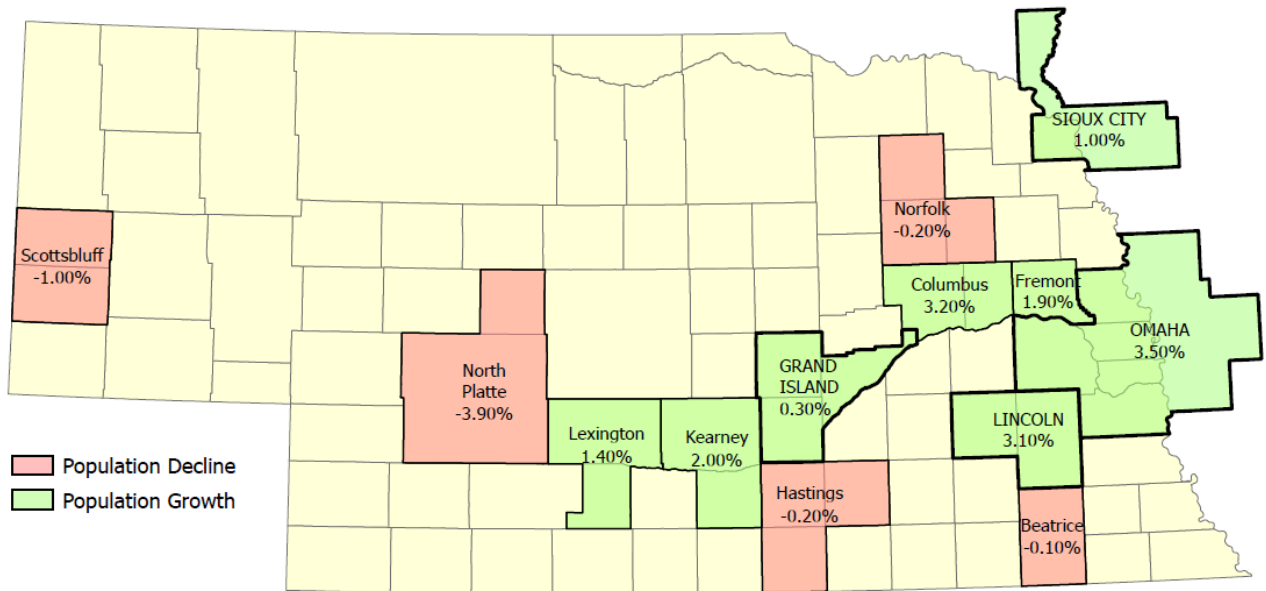


Figure VI-17. Map of Nebraska MSA & MiSA Percent Population Growth and Decline, 2020-2024\*

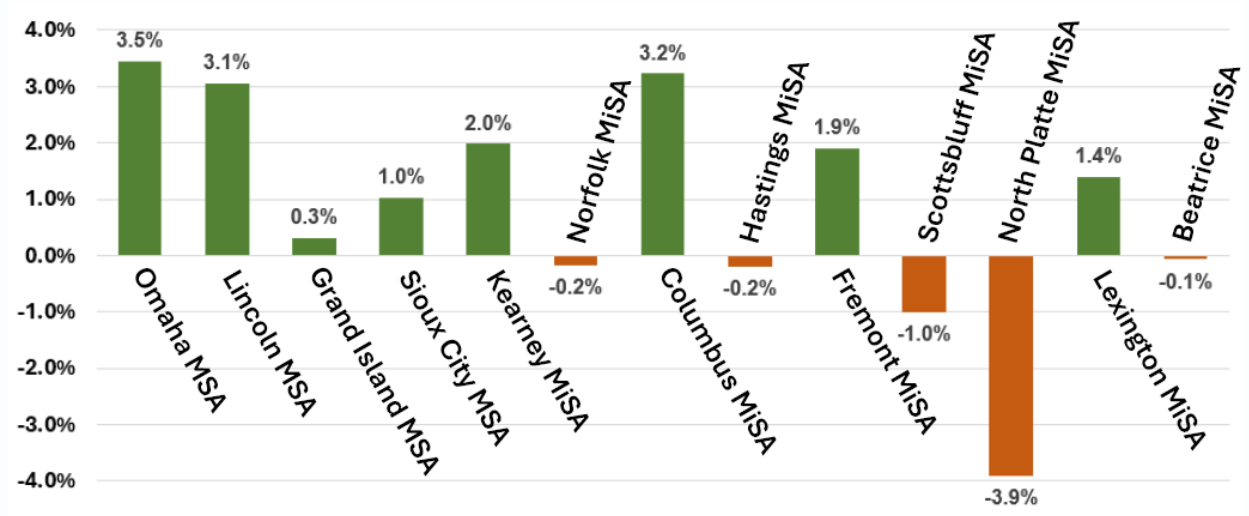


\* Percentage change figures for the Omaha and Sioux City MSAs reflect the entire multistate area of each. MSAs have bold outlines and are labeled in all capital letters.

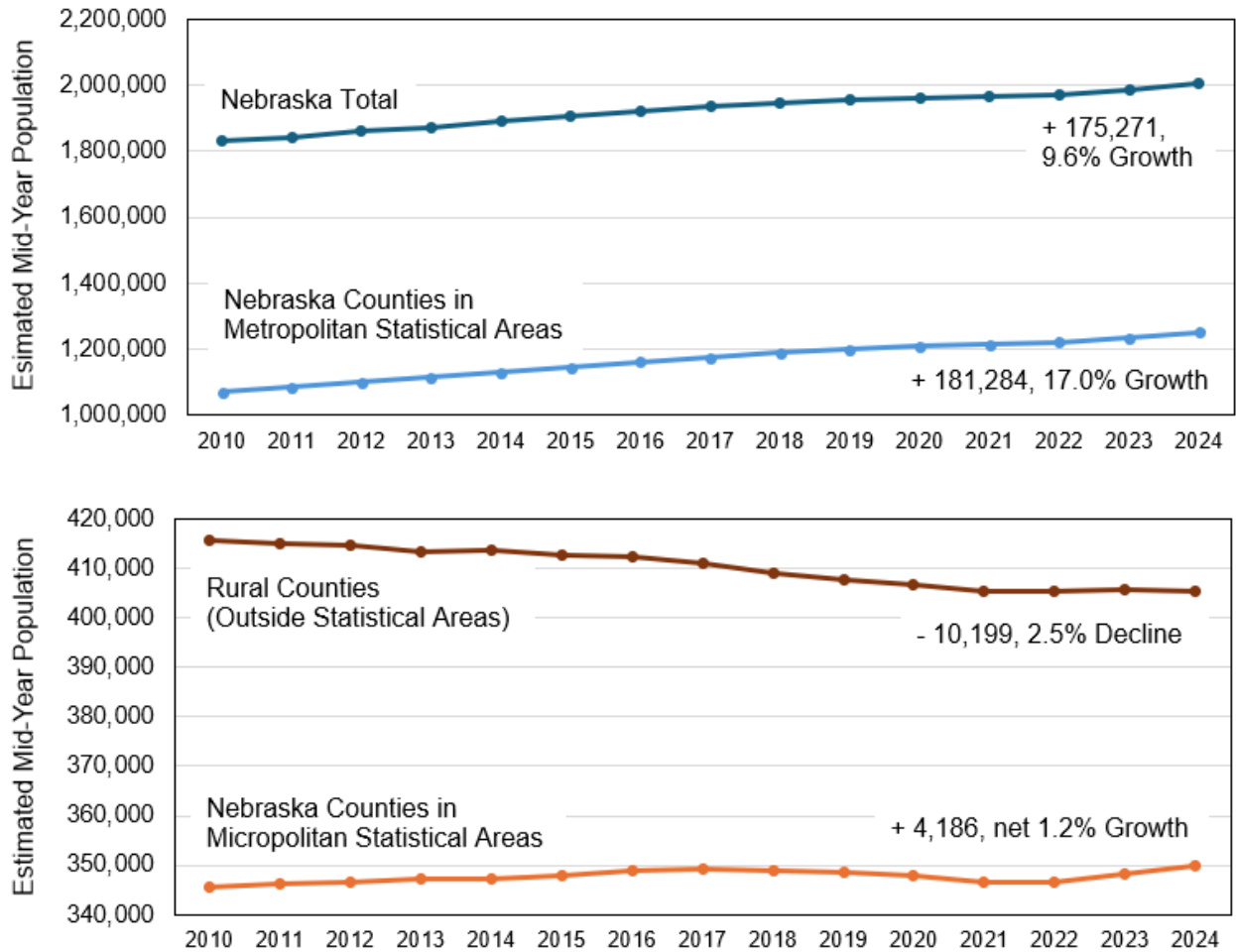
Figure VI-19 plots longer-term (2010 to 2024) population trends for urban and rural counties. Nebraska’s statewide population grew by 9.6% over this period. The aggregate population of the 11 Nebraska counties in Metropolitan Statistical Areas increased at a higher rate (17.0%), while the 18 counties in Micropolitan Statistical Areas had fluctuating trends with a net growth of only 1.2%. The 64 rural counties outside of MSAs and MiSAs had an aggregate 2.5% loss of population from 2010 to 2024.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

**Figure VI-18. Graph of Nebraska MSA & MiSA Percent Population Change 2020-2024**



**Figure VI-19. Population Trends for Urban and Rural Areas 2010 to 2024**



## VII. Nebraska Ambient Air Monitoring Network: January 1, 2024, through March 31, 2025

This section describes Nebraska's Ambient Air Monitoring Network in place from January 1, 2024, through March 31, 2025, 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 NE-IA MSA Sites Operated by the Douglas County Health Department (DCHD)

Nebraska and Iowa share responsibilities for air quality monitoring in the Omaha NE-IA MSA. Iowa currently relies on monitors in the Nebraska portion of the MSA to meet minimum monitoring requirements for ozone, PM<sub>2.5</sub>, PM<sub>10</sub>, and SO<sub>2</sub>. DCHD currently operates an ambient air network of seven sites in Douglas, Sarpy, and Washington Counties, Nebraska. Multi-pollutant monitoring is currently conducted at two of the sites:

- The NCore site monitors for eight pollutant parameters (CO, NOy/NO, O<sub>3</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, PM<sub>10-2.5</sub>, and PM<sub>2.5</sub> speciation), as well as meteorological parameters and atmospheric radiation (RADNET\*).
- The 1616 Whitmore site has both SO<sub>2</sub> and ozone monitors.

In addition, there are single-pollutant monitoring sites for carbon monoxide (one), PM<sub>2.5</sub> (three), and PM<sub>10</sub> (one). The Omaha area monitoring network is therefore more extensive than the seven-site total might indicate; if the pollutants are counted separately, there are 15 pollutant monitoring sites. See Appendix A for detailed information on the sites operated by DCHD.

Changes since January 2024 in the Omaha MSA include equipment replacements, relocation of a monitoring site, and continuing efforts to relocate a temporarily closed monitoring site.

#### 1. Monitor Replacement at the Berry Street PM<sub>2.5</sub> Site in Omaha

At the beginning of October 2024, primary and collocated filter-based PM<sub>2.5</sub> samplers at the Berry Street site in Omaha were replaced with a continuous monitor purchased through American Rescue Plan grant funds. Real-time data from this site are reported to AirNow and available to the public.

#### 2. Relocation of 19<sup>th</sup> and Burt Streets PM<sub>10</sub> Monitor Site in Omaha

Douglas County Health Department has operated a PM<sub>10</sub> monitoring site near 19<sup>th</sup> and Burt Streets, on the Creighton University Campus in Omaha, since 2001. The site was originally located on the rooftop of a building at 1909 Burt Street. The site was relocated in 2021 to a maintenance building at 723 North 19<sup>th</sup> Street due to planned demolition of the host building. Due to planned demolition of that building, Nebraska's 2024 Network Plan proposed relocating the equipment approximately 360 feet to the roof of the Ryan Athletic Center on the university campus. That proposal was approved, and the relocation was completed on October 1, 2024. The street address of the new site is 701 Florence Blvd., Omaha.

#### 3. Continued Closure of the South Omaha Ozone-PM<sub>10</sub> Monitor Site Pending Relocation

Douglas County Health Department operated an ozone and PM<sub>10</sub> monitoring site at 2411 O Street in south Omaha beginning in 1978. In late 2020 the owner of that property requested the removal of the equipment. Ozone monitoring ceased at the end of October 2020 (the end of the required ozone monitoring season), and PM<sub>10</sub> monitoring ceased at the end of March 2021. Since then DCHD has had discussions with owners at several potential new sites, but at this time an alternative site in south Omaha has not yet been determined. The department continues working to find a suitable site with a willing property owner. Nebraska continues to meet minimum monitoring requirements in the Omaha MSA for both ozone and PM<sub>10</sub> without the South Omaha site.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### **B. Omaha NE-IA MSA Site Operated by NDEE**

NDEE operates a MetOne BAM 1020 continuous PM<sub>10</sub> sampler at the Weeping Water wastewater treatment plant in Cass County. This is a population and source-oriented site that monitors particulates generated by 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<sub>2.5</sub> site at 3140 N Street in Lincoln, and
- An ozone site in Davey (northern Lancaster County).

The 3140 N Street PM<sub>2.5</sub> site has three monitors: a primary filter-based FRM sampler, a collocated filter-based FRM sampler, and a MetOne BAM 1020 FEM continuous monitor. In 2024 a Thermo 2025 sequential FRM sampler was replaced with a new Thermo 2025i sampler. Data from the FRM samplers is reported to EPA's AQS database and used to demonstrate NAAQS compliance. Data from the continuous monitor is transmitted to AirNow but is not reported to AQS.

### **D. Sioux City MSA**

There are no monitoring sites in the Nebraska portion of the Sioux City MSA (Dakota County). There are currently two monitoring sites in the Iowa portion of the MSA. Iowa DNR operates a PM<sub>2.5</sub> site in Sioux City with a FRM sequential sampler, and an ozone site in Stone State Park northwest of Sioux City with continuous monitors. The ozone site was established in 2024 to satisfy minimum monitoring requirements for the Sioux City MSA after the 2022 closure of a monitoring site in the South Dakota portion of the MSA at the landowner's request.

### **E. Grand Island MSA**

The three-county Grand Island MSA is centered on the City of Grand Island, the fourth-largest city by population in Nebraska. NDEE operates a continuous PM<sub>2.5</sub> monitor at a Nebraska Department of Transportation (NDOT) equipment yard at 3305 West Old Potash Highway, with data reported to AirNow and to AQS.

Nebraska's 2024 Network Plan included a proposal for NDEE to begin ozone monitoring at the Grand Island NDOT site. Funds for the new equipment were secured through the Air Monitoring Direct Award program under the Inflation Reduction Act. All equipment for the site was purchased in 2024 and installed in February 2025. The ozone monitor began operation on March 1, 2025, with AIRS ID: 31-079-0005.

### **F. Beatrice MiSA**

NDEE has operated a PM<sub>2.5</sub> monitoring site at Homestead National Historical Park, three miles west of Beatrice, since June 2021. This site has a primary continuous FEM monitor and a collocated sequential (filter-based) FRM sampler that samples every third day. Data from the continuous monitor is transmitted to AirNow. This site assists with background surveillance and is in the potential path of smoke moving northward from spring prescribed burns in the Kansas Flint Hills.

### **G. Scottsbluff MiSA**

NDEE operates a PM<sub>2.5</sub> monitoring site at Scottsbluff Senior High School. A filter-based FRM sampler operated at this location on a 3-day sampling schedule until March 24, 2020, when a MetOne BAM 1020 FEM continuous monitor was installed at the same location. The Scottsbluff continuous PM<sub>2.5</sub> data is reported to AirNow in addition to AQS.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### H. 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 Bearings facility, which casts bronze railroad bearings. 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. After a protracted search and negotiations, an alternative site at an adjacent property was established, and the samplers resumed operation on July 1, 2023.

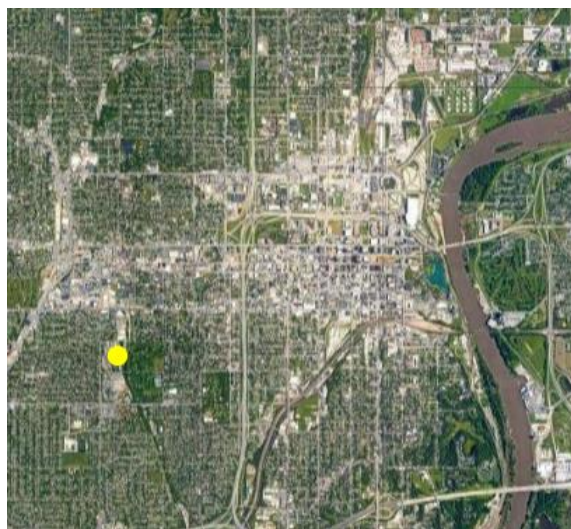
### I. NCore Monitoring

EPA established the National Core Multipollutant Monitoring Network (NCore) in 2011 to deploy advanced measurement systems for airborne particles, pollutant gases, and meteorology. Each state is required to operate at least one NCore site. Each site must measure, at a minimum,  $PM_{2.5}$  particle mass using continuous and filter-based samplers, speciated  $PM_{2.5}$  (chemical identification of particles),  $PM_{10-2.5}$  particle mass,  $O_3$ ,  $SO_2$ , CO, total reactive nitrogen ( $NO_y$ ) and nitrogen oxide (NO), wind speed and direction, relative humidity, and ambient temperature.

The NCore network objectives are to provide timely reporting of air quality data to the public, compliance monitoring, support for long-term health and ecosystem assessments, and support to scientific studies.

Nebraska's NCore site is located at 4102 Woolworth Avenue in Omaha, on the campus of the Douglas County Health Department, which operates the site. This neighborhood-scale urban site is located to measure representative concentrations of pollutants to be expected throughout the metropolitan area (see Figure VII-1). NDEE has no current plans to expand the NCore network in Nebraska.

**Figure VII-1. Omaha NCore Site**



Google Maps image of Omaha showing site location marked by yellow circle.



Photo of NCore instruments courtesy of Douglas County Health Department.

## VIII. Considerations for Network Planning

This Ambient Air Monitoring Network Plan and Five-Year Assessment must address:

- Does Nebraska's network meet federal monitoring objectives and requirements?
- Are new sites needed?
- Are there existing sites that are no longer needed and can be terminated?

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

The Nebraska Ambient Air Monitoring Network must comply with the applicable requirements of 40 CFR Part 58 Appendices A through E. Appendix D of this plan assesses compliance with those requirements. Although the Nebraska network operated by NDEE, DCHD, and LLCHD is meeting most of the applicable requirements of 40 CFR Part 58 Appendices A, C, D, and E, population growth in the Lincoln and Omaha MSAs since 2023 has triggered additional monitoring requirements that will be detailed in later sections of this document.

40 CFR 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 pre-construction monitoring took place in Nebraska during 2024.

40 CFR Part 58 Appendix A Section 3.2.3 specifies quality control sampling procedures for PM<sub>2.5</sub> with respect to Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors. 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. NDEE operates primary FEM monitors at three sites (Homestead, Grand Island, and Scottsbluff) with one collocated FRM sampler at Homestead, which meets this collocation requirement. DCHD operates primary FEM monitors at three sites (NCore in Omaha, Bellevue, and Blair) with a collocated FRM sampler at NCore to fulfil this requirement.

The following sections describe the Nebraska monitoring network for each of the criteria pollutants, address the adequacy of the network, and consider whether new sites should be added or existing sites closed.

### IX. Ozone Monitoring

#### A. Network Assessment

Ozone is a secondary pollutant formed in the atmosphere from nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs) in the presence of sunlight and warm temperatures. Because this process may take several hours, maximum ozone concentrations are often found downwind of the sources of the precursor compounds, and ozone can be transported over large areas. 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. Compliance of Nebraska's ozone network with minimum federal requirements is assessed in Appendix D of this document.

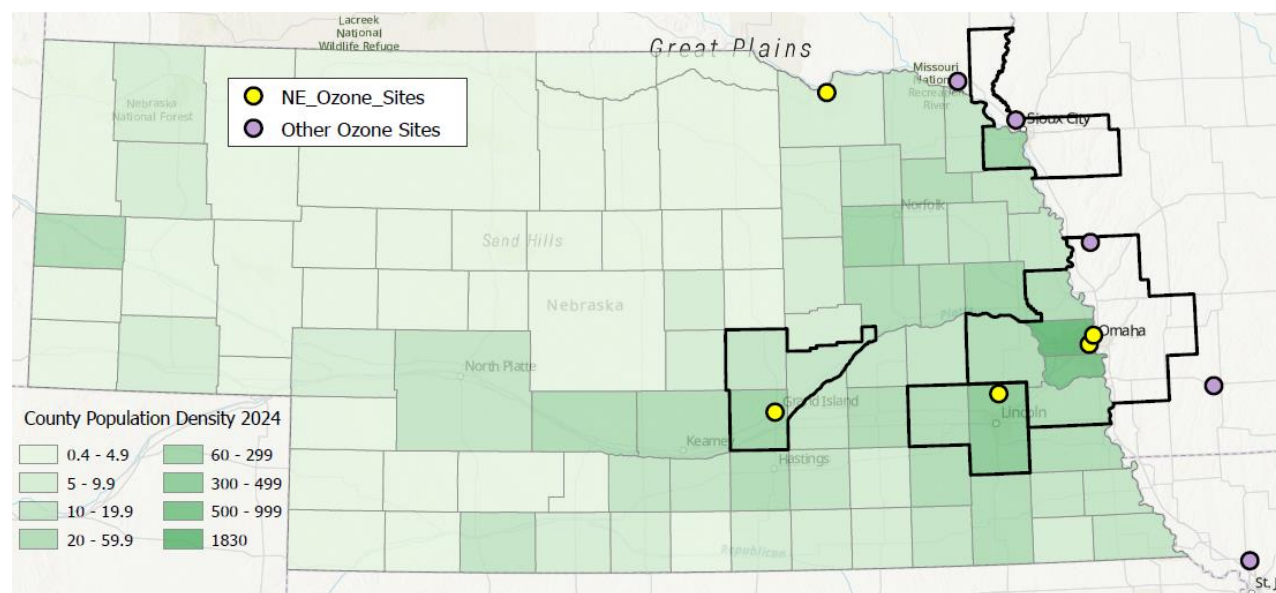
Nebraska's ozone monitoring network in 2024 included three sites used to verify NAAQS attainment plus an EPA-operated nonregulatory site in the Santee Sioux reservation in northeast Nebraska. Data from these continuous monitors is also reported to AirNow to provide timely public access. In March 2025 NDEE began operating an ozone monitor at an additional site in Grand Island, Nebraska, which will also report to AirNow when fully operational. Locations of Nebraska's ozone monitoring sites are shown in Figure IX-1 along with nearby sites in adjacent states. Counties in this map are color-coded according to their population density (number of persons per square mile) in 2024.

The Douglas County Health Department operates two ozone monitors in Omaha, and Iowa DNR operates one near the northern edge of the MSA. Ozone monitoring was previously conducted at a south Omaha site but was discontinued at the end of October 2020 at the request of the property owner. A new site in south Omaha has not yet been determined. The three operating locations exceed the minimum requirement of two ozone sites for this MSA. However, the mid-year 2024 population estimate for the Omaha MSA exceeds one million for the first time. This population change will require establishment of a Photochemical Assessment Monitoring Station (PAMS) at the Omaha NCore site to measure levels of ozone precursors along with meteorological parameters.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

The Lincoln Lancaster-County Health Department operates an ozone site at Davey, northern Lancaster County, in the Lincoln MSA. This site is downwind of precursor sources in Lincoln in the warmer months of the year, when southerly winds dominate. The Davey site has satisfied minimum monitoring requirements for the Lincoln MSA for many years. However, the mid-year 2024 population estimate for the Lincoln MSA exceeds the 350,000 mark for the first time. In combination with DVs slightly exceeding 85% of the ozone NAAQS, this population increase mandates a second ozone monitoring site in the Lincoln MSA to meet minimum monitoring requirements.

**Figure IX-1. Location Map of Nebraska Ozone Monitoring Network Sites\***



\* Metropolitan Statistical Area outlines are in black.

One ozone monitoring site is currently required for the Sioux City MSA. This requirement is met by a site near Sioux City, Iowa, which began operating in 2024. In addition, the South Dakota Department of Agriculture and Natural Resources operates an ozone monitor just outside of the western boundary of the MSA.

The midyear 2024 estimated population of the Grand Island MSA is 77,278. An MSA with a population between 50,000 and 350,000 is only required to have an ozone monitor if the DV is greater than 85% of the NAAQS. The continuous ozone monitor NDEE has installed in Nebraska's fourth largest city will provide additional real-time air quality data for residents while allowing NDEE to assess NAAQS compliance for this area for the first time.

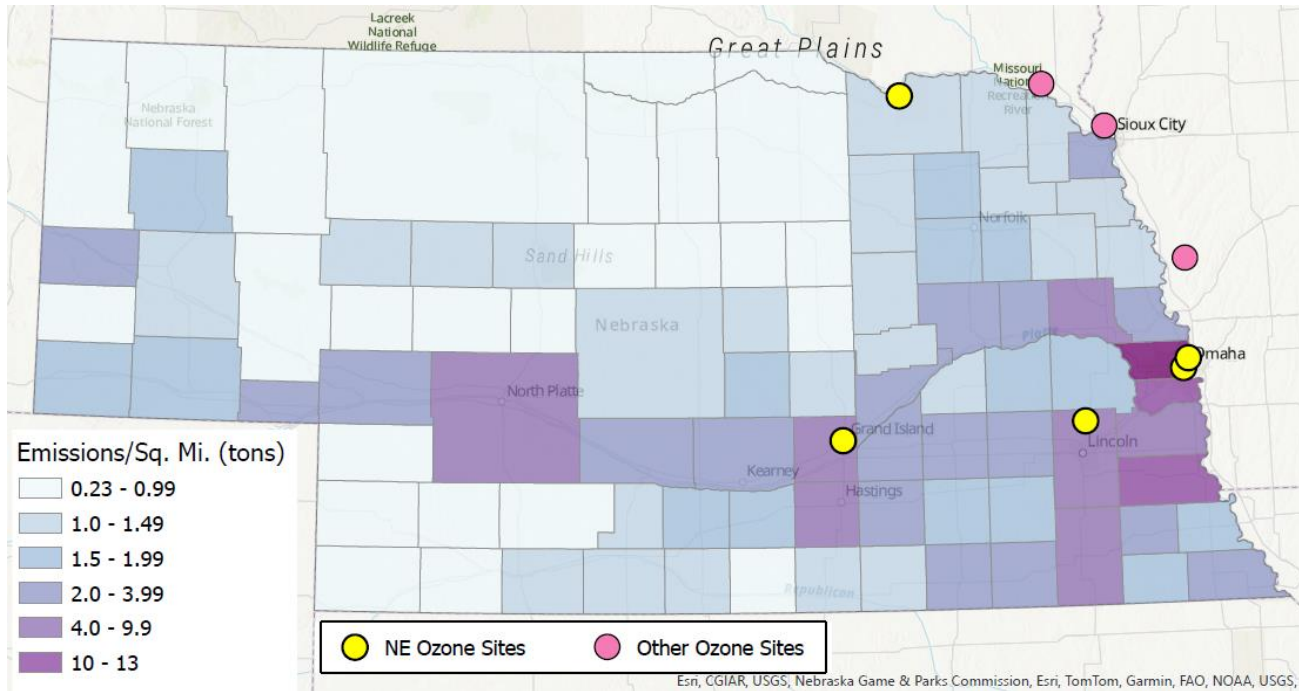
Nebraska's existing ozone monitor sites are located in areas of higher population density, where there are more potential sources and more people that could potentially be exposed to ozone pollution. Figures IX-2 and IX-3 map Nebraska's ozone monitoring network with respect to annual emissions of the precursor NO<sub>x</sub> and VOCs, utilizing results from the EPA 2020 National Emissions Inventory (NEI). The NEI aggregates pollutant emissions at the county level using data from stationary sources and modeled emissions from mobile and non-road sources. To account for the differing areal extent of counties and more closely approximate concentrations in air, emissions data on these maps are expressed as emissions (in tons) per square mile.

The current ozone monitoring conducted by Nebraska and neighboring states in the four MSAs coincides with most areas of higher emissions of ozone precursors in Nebraska. A notable exception is Lincoln County, where the 2020 NEI shows that Gerald Gentleman Station, a large coal-fired electrical generation station, is responsible for high NO<sub>x</sub> emissions in this largely rural area.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

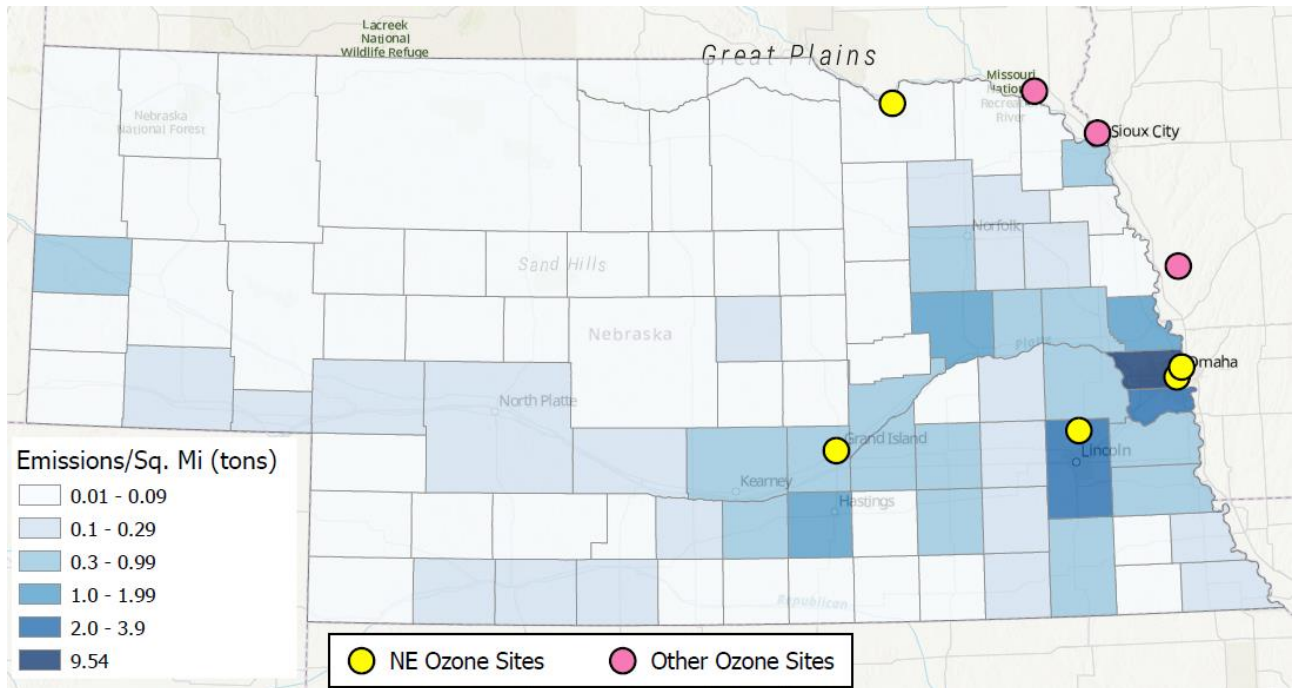
With the required addition of a second ozone site in the Lincoln MSA and PAMS in the Omaha MSA, Nebraska’s ozone monitoring network will meet minimum federal requirements, and NDEE considers that it provides adequate and needed coverage of sources and population centers.

**Figure IX-2. Nebraska Ozone Monitoring Sites and County-Level NO<sub>x</sub> Emissions Per Square Mile\***



\* Emissions data from the 2020 National Emissions Inventory

**Figure IX-3. Nebraska Ozone Monitoring Sites and County-Level VOC Emissions Per Square Mile\***



\* Emissions data from the 2020 National Emissions Inventory

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### B. NAAQS Compliance

The current 8-hour NAAQS for ozone (O<sub>3</sub>) of 0.070 parts per million (ppm; or 70 parts per billion) for both the primary and secondary standard was set in 2015 and retained in 2020. The previous (2008) standard was 0.075 ppm. In October 2021 EPA announced that it would reconsider the previous administration’s decision to retain the 2015 standard. On March 15, 2023, EPA released for public comment a draft Policy Assessment that stated a preliminary conclusion to retain the current standard without revision and revised the expected date for a final decision to spring 2024. In a letter to the EPA Administrator dated June 9, 2023, the EPA Clean Air Scientific Advisory Committee stated that all but one of the committee members disagreed with EPA’s recommendation to retain the current primary and secondary standards and instead recommended revising the NAAQS level to between 55 and 60 ppb to be protective of public health.

In August 2023 EPA announced a new full review of the ozone NAAQS to ensure the standards reflect the most current relevant science. As part of this process, EPA released the first two volumes of the Integrated Review Plan for the ozone review. However, in January 2025 the EPA Acting Administrator dismissed all members of the Clean Air Scientific Advisory Committee, so the status of the ozone NAAQS review is unclear as of this writing.

As shown in Table IX-1 and in Appendix B, Table B-1, the 2022-2024 ozone DVs at monitoring sites in Nebraska all exceeded 85% of the ozone NAAQS, but all sites remained in attainment with the standard. Data from these sites are reported to AirNow and are used to compute the daily Air Quality Index (AQI). As shown in Table IX-1, AQI values were in the Good range on over 87% of measurement days at all four locations in 2024. The AQI rose into the Unhealthy for Sensitive Groups range on only one day each at the Omaha NCore and Santee sites. These occurrences coincided with single-day exceedances of the NAAQS, on May 20<sup>th</sup> at NCore and July 26<sup>th</sup> at Santee; both of these occurrences may have been influenced by wildfire smoke.

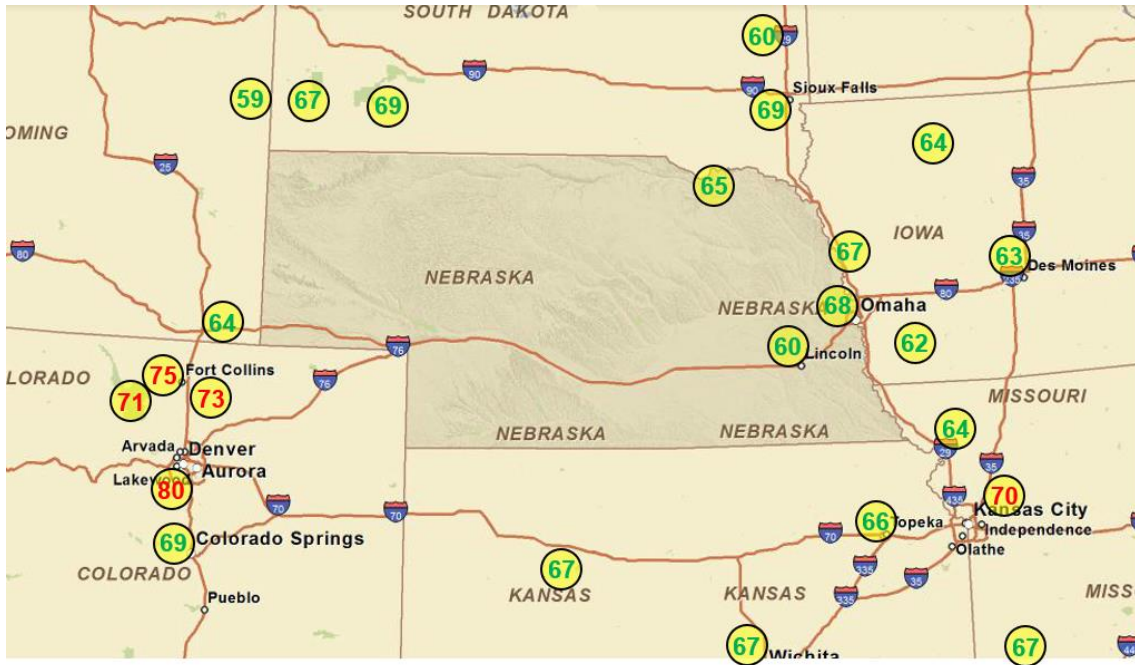
**Table IX-1. Ozone 2024 Design Values as Percentage of the NAAQS and Air Quality Index (AQI) Status for Nebraska Locations (Number of Days and Percentage of Days Per Category).**

	Design Value as Percent of NAAQS	Good		Moderate		Unhealthy for Sensitive Groups		Unhealthy	
		Days	%	Days	%	Days	%	Days	%
Omaha NCore <sup>(1)</sup>	97.1	310	87.6	43	12.1	1	0.3	0	0
1616 Whitmore, Omaha <sup>(2)</sup>	92.9	235	98.3	4	1.7	0	0	0	0
Davey (Lancaster Co.) <sup>(2)</sup>	85.7	234	95.1	12	4.9	0	0	0	0
Santee (Knox Co.) <sup>(1)</sup>	92.9	300	91.7	26	8.0	1	0.3	0	0
<p>(1) Ozone monitoring at NCore and Santee is active year-round, but the total number of monitoring days may be less than 365 due to maintenance and down-time. The Santee site was relocated in spring 2024; no data were recorded between 30 April and 6 June 2024.</p> <p>(2) Ozone monitoring at the Whitmore and Davey sites is conducted between March 1 and October 31 annually.</p>									

The map in Figure IX-4 shows the 2022-2024 ozone DVs for monitoring sites in Nebraska and surrounding states. All urban and rural monitoring sites in the region show DVs above 60 ppb (a DV of 59.5 ppb is 85% of the NAAQS). Ozone monitoring sites in the larger urban areas (Omaha, Kansas City, and Sioux Falls, South Dakota) show more elevated design values. The highest ozone levels in the region are found in the northern Colorado Front Range area, including Colorado Springs, Denver, Fort Collins, and surrounding communities, where ozone levels at several sites are not in attainment with the NAAQS.

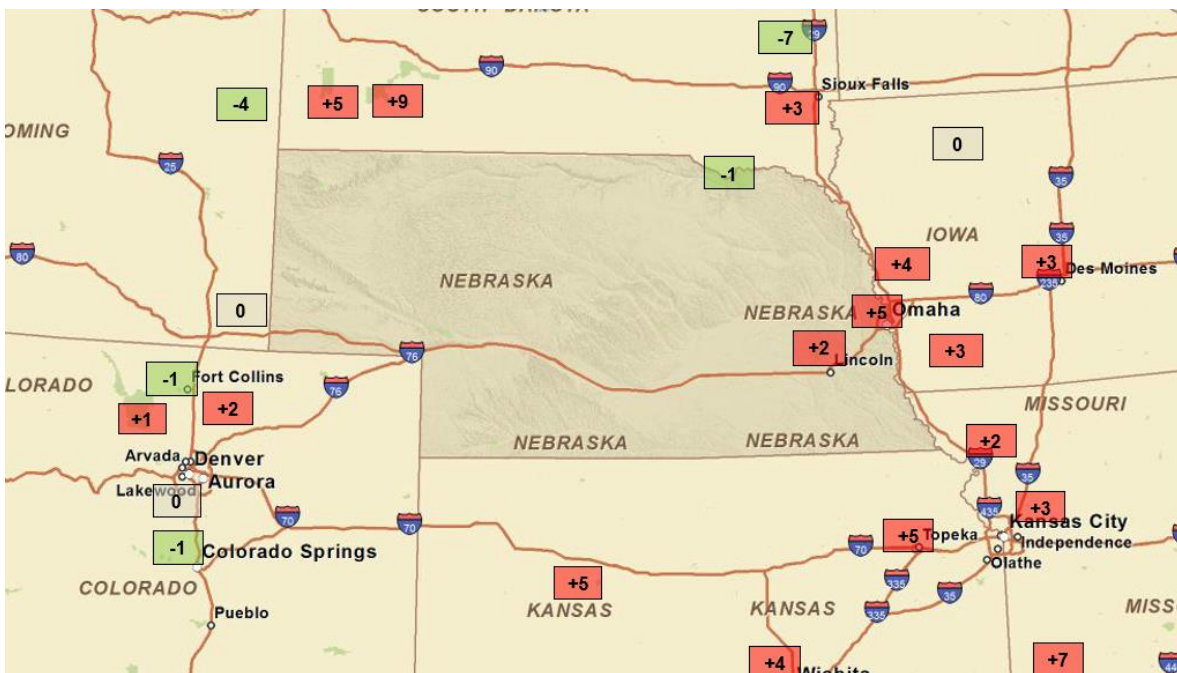
## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

**Figure IX-4. Three-Year (2022-2024) Ozone Design Values (DV, 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 IX-5. Difference Between 2022-2024 Ozone Design Value (ppb) and 2019-2023 Site Average Design Value for Locations in and Around Nebraska \***



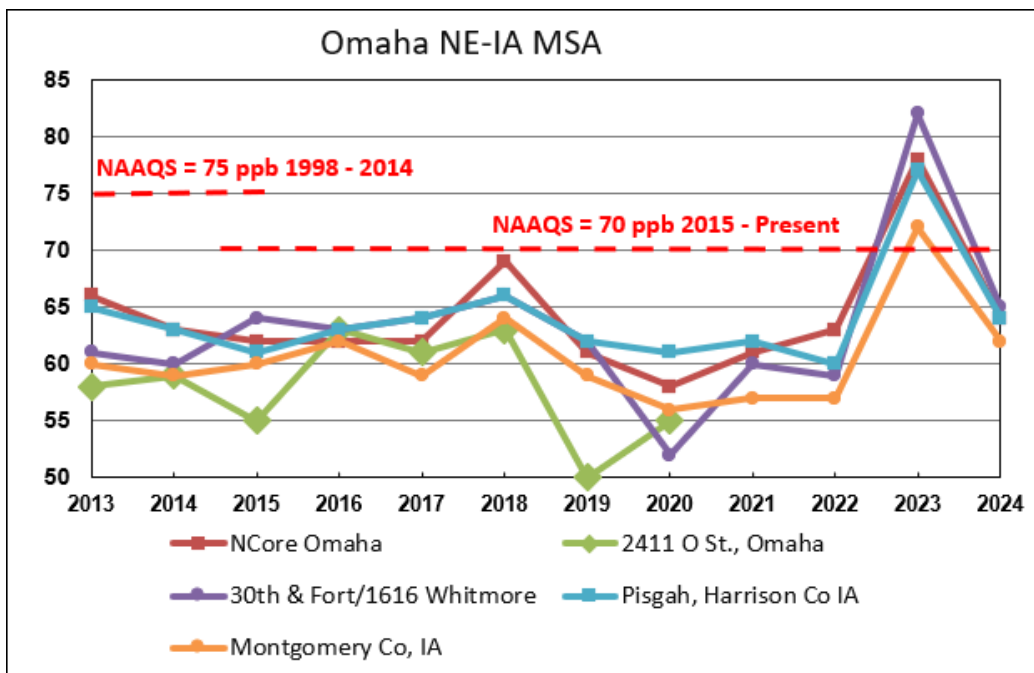
\* Red background color in boxes indicates sites with a 2024 DV higher than the five-year site average; green background color indicates sites with a 2024 DV lower than the site average. Where there is more than one monitoring site in the locale, the value for the site with the highest 2024 DV is shown.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

The map in Figure IX-5 shows the difference between the 2022-2024 ozone design value and the site-average design value from 2019 through 2023 for monitor sites in the Nebraska region. Most sites in Nebraska, South Dakota, Iowa, Missouri, and Kansas all have three-year DVs that are well above the five-year site average value. The current DVs incorporate the effect of unusually high ozone levels recorded across the region in 2023 due to prolonged impact of smoke from Canadian wildfires.

Figures IX-6, IX-7, and IX-8 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 2024. These plots show annual fluctuations that are smoothed out in calculating the 3-year average design values.

**Figure IX-6. Annual 4<sup>th</sup> High Daily Maximum 8-hour Ozone Trends 2013 through 2024 for Monitors in the Omaha MSA**



These plots show that many monitoring sites in the region experienced an upward trend in 4th-highest 8-hour ozone values beginning in 2016 or 2017. Peak levels occurred at most sites in 2018, followed by a declining trend through 2020. From 2020 through 2022 trends were mostly flat, with small increases or decreases at some sites. The ozone values for 2023 were sharply elevated at all sites in Nebraska and most of the surrounding region due to the smoke impacts from Canadian wildfires described above. The 2024 ozone season in Nebraska experienced little smoke impact, and 4<sup>th</sup>-highest ozone values returned to levels similar to or slightly above the 2020-2022 levels.

Figure IX-7. Annual 4<sup>th</sup> High Daily Maximum 8-hour Ozone Trends 2013 through 2024 for Monitors in the Lincoln, NE and Sioux City, IA MSAs

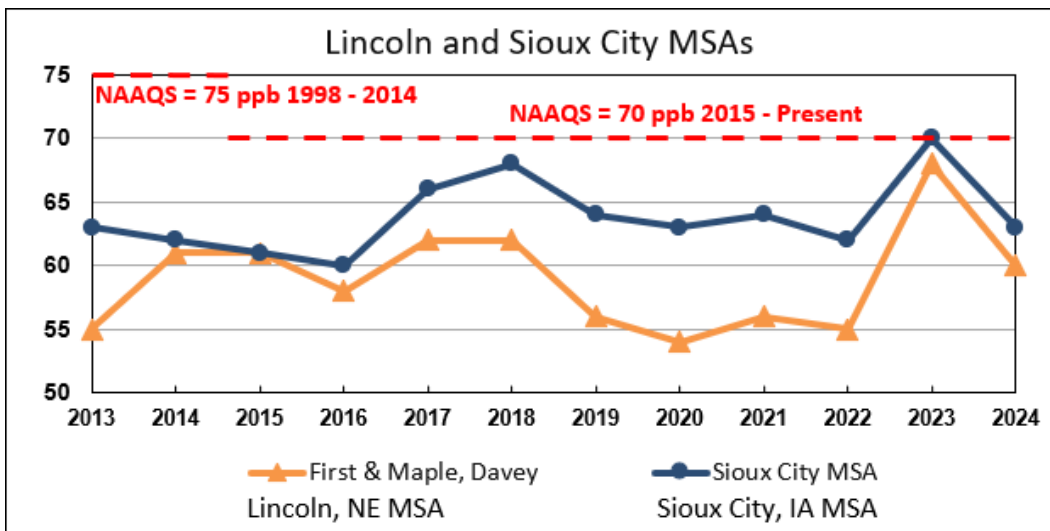
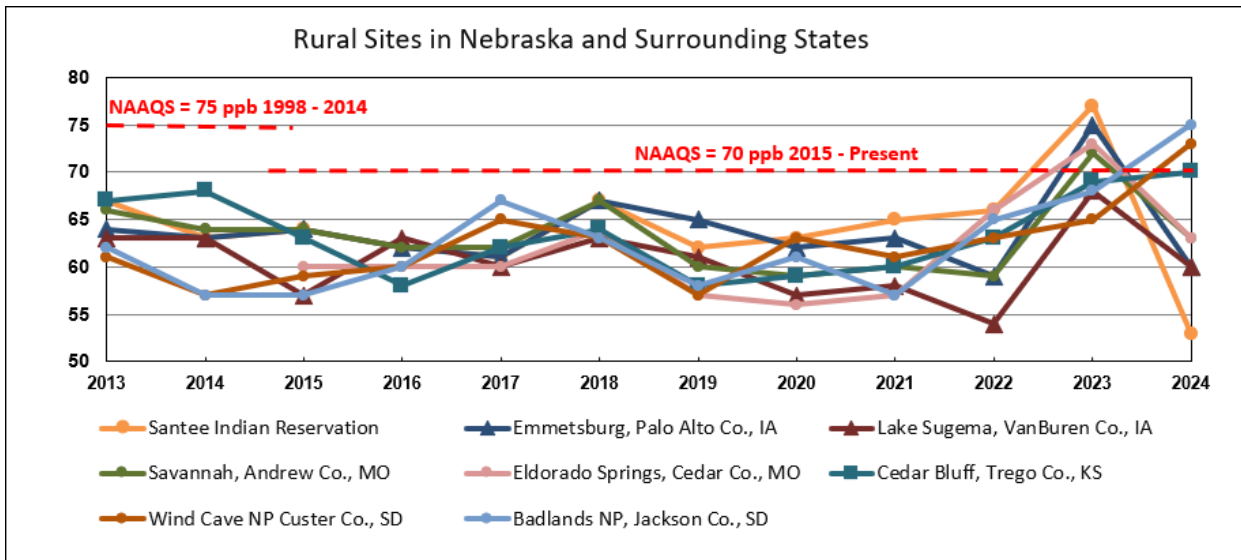


Figure IX-8. Annual 4<sup>th</sup> High Daily Maximum 8-hour Ozone Trends 2013 through 2024 for Monitors at Rural Sites in Nebraska and Surrounding States



## X. Fine Particulate Matter (PM<sub>2.5</sub>) Monitoring

### A. Network Assessment

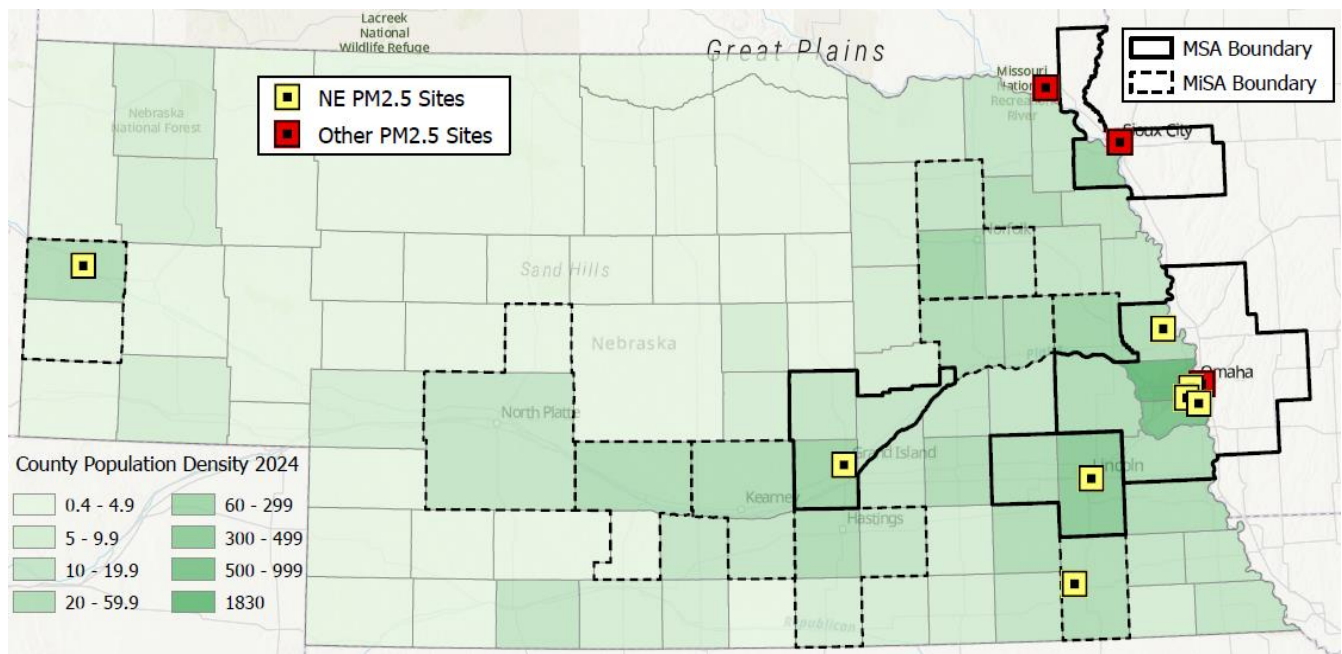
Fine particulate (PM<sub>2.5</sub>) monitoring is required in Metropolitan Statistical Areas (MSAs) that exceed certain population thresholds, with the number of monitor sites required dependent on whether the most recent PM<sub>2.5</sub> Design Values (DVs) are greater or less than 85% of any PM<sub>2.5</sub> NAAQS. An MSA with a population over one million must also collocate a PM<sub>2.5</sub> monitor at a near-road NO<sub>2</sub> monitoring station. At least half of the required monitors must be continuous monitors. In addition, each state must operate at least one site to monitor for regional background and one for regional transport. Compliance of Nebraska’s PM<sub>2.5</sub> network with minimum federal requirements is assessed in Appendix D of this document.

Nebraska’s PM<sub>2.5</sub> monitoring network currently consists of eight sites. The locations of Nebraska’s PM<sub>2.5</sub> monitoring sites are shown in Figure X-1 along with nearby sites in adjacent states. Nebraska counties in this map are color-coded according to their population density (number of persons per square mile) in 2024.

The only Nebraska MSA for which the federal criteria require PM<sub>2.5</sub> monitoring is the Omaha MSA, where the Douglas County Health Department operates population-oriented monitors at four locations (including the multipollutant NCore site). The four sites exceed the federal minimum monitoring requirement for number of sites based on population and design values. However, because the estimated population of the Omaha MSA in 2024 exceeds the threshold of one million, a PM<sub>2.5</sub> monitor is now required to be collocated at a near-road NO<sub>2</sub> monitoring station (see section XIII).

Other Nebraska MSAs also host PM<sub>2.5</sub> monitoring sites. The Lincoln-Lancaster County Health Department maintains a PM<sub>2.5</sub> monitoring site in Lincoln (Lincoln MSA), and NDEE operates a site in Grand Island (Grand Island MSA), which serves as a regional background and transport site in addition to serving the local population. The Sioux City MSA is served by a PM<sub>2.5</sub> site operated by Iowa DNR in Sioux City and a site just west of the MSA boundary maintained by South Dakota DANR.

**Figure X-1. Location Map of Nebraska PM<sub>2.5</sub> Monitoring Network Sites**

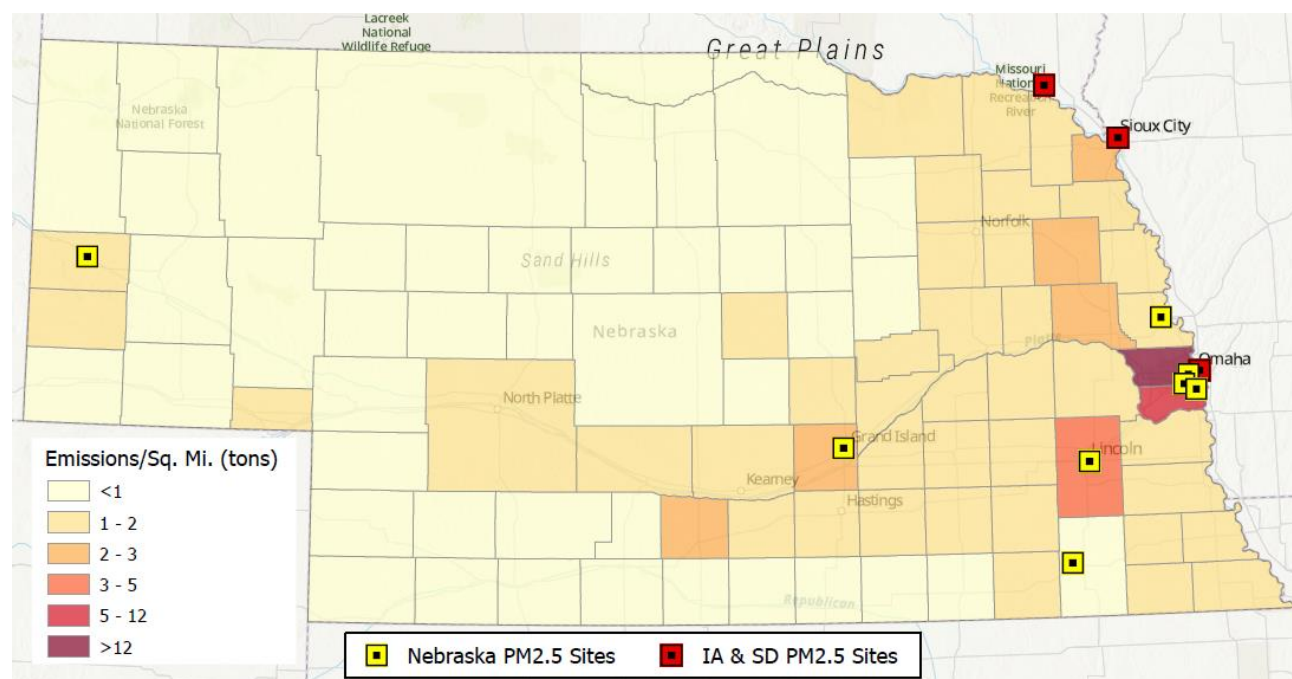


## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

In addition, NDEE operates a background site at Homestead National Historical Park near Beatrice (Beatrice MiSA). This site was established in part to provide early detection of particulates in smoke from spring prescribed fires in eastern Kansas. Smoke from these fires is frequently transported northward toward population centers in eastern Nebraska. NDEE also operates a regional transport site in Scottsbluff (Scottsbluff MiSA) serving western Nebraska. Seven of the Nebraska monitoring sites have continuous monitors that report data to AirNow.

Nebraska's existing PM<sub>2.5</sub> monitoring sites include locations in the larger population centers in the Omaha, Lincoln, and Grand Island MSAs. As shown in Figure X-2, these sites also correspond to the areas of highest local emissions of fine particulates.

**Figure X-2. Nebraska PM<sub>2.5</sub> Monitoring Sites and County-Level NO<sub>x</sub> Emissions Per Square Mile\***



\* Emissions data from the 2020 National Emissions Inventory

Of the four PM<sub>2.5</sub> monitoring sites in the Omaha MSA in 2024 (see map in Figure X-3), three of them were equipped with continuous monitors throughout the year. (Two filter-based instruments at the Berry Street location, sampling on 3-day and 6-day intervals, were replaced with a continuous monitor in October 2024). Considering only the Bellevue, Blair, and NCore sites, the graphs in Figure X-4 compare daily average values measured at each site versus the values measured at the other two locations to assess the degree of correlation between sites. The  $r^2$  value shown for each plot (Pearson's Correlation Coefficient) is a measure of that correlation, where a value of 1.0 would indicate perfect positive correlation and -1.0 would indicate perfect negative correlation. All three site pairs show correlation coefficients over 0.78, indicating very similar concentrations being measured at different locations. However, these plots are based on daily 24-hour average values and may not reflect shorter-term fluctuations potentially occurring at different sites that could have significance to the local population.

Nebraska's current PM<sub>2.5</sub> monitoring network provides effective surveillance in population centers and areas that are highest local sources of fine particulates. Other sites satisfy federal requirements for monitoring regional background and transport of particulates.

Figure X-3. Locations of PM<sub>2.5</sub> Monitoring Stations in the Omaha MSA

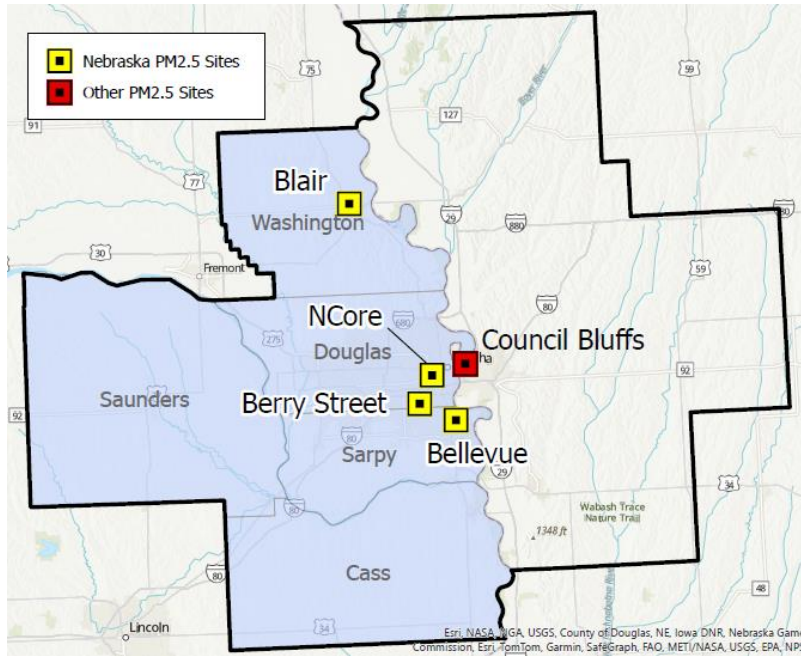
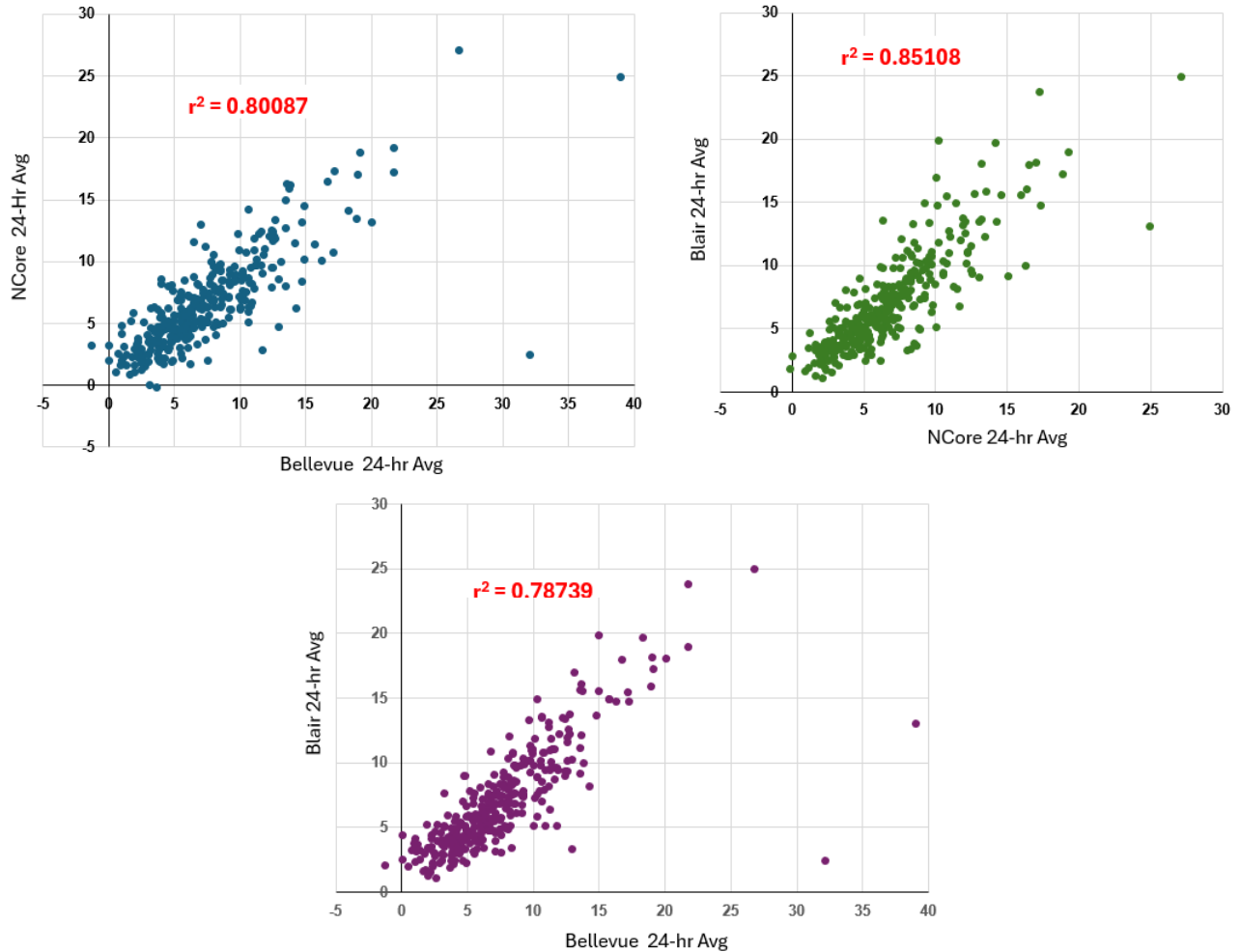


Figure X-4. Correlation Plots for Pairs of Continuous PM<sub>2.5</sub> Monitoring Sites in the Omaha MSA

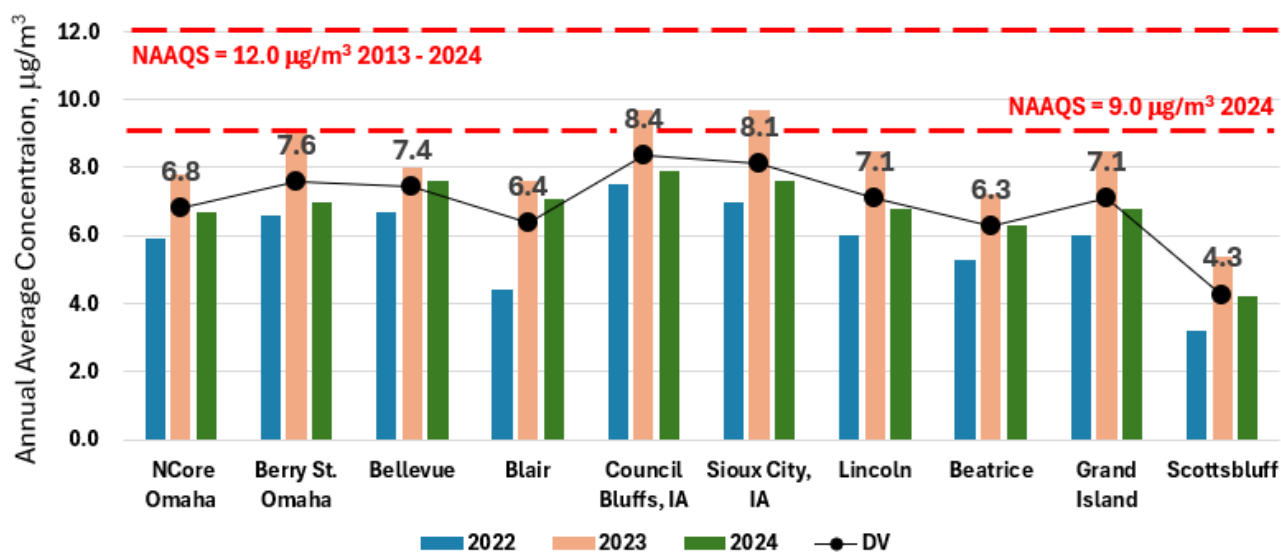


## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### B. NAAQS Compliance

In December 2020 EPA announced that it would retain, without revision, the existing primary (health-based) and secondary (welfare-based) PM<sub>2.5</sub> NAAQS. On June 10, 2021, EPA announced that it would reconsider the December 2020 decision on particulate matter standards. On March 6, 2024, EPA published a final rule lowering the primary annual average PM<sub>2.5</sub> standard to 9.0 µg/m<sup>3</sup>, retaining the secondary annual standard, and retaining the primary and secondary 24-hour PM<sub>2.5</sub> standards. Nebraska then joined a lawsuit with 23 other states in a petition to review and vacate the revised annual PM<sub>2.5</sub> NAAQS rule. A stay from the rule was not granted, and the final rule became effective on May 6, 2024. However, on March 12, 2025, EPA Administrator Zeldin announced that the agency is revisiting the revised annual standard.

**Figure X-5. Plot of Annual Average PM<sub>2.5</sub> Values 2022-2024 and Three-Year Design Values (DV) for Nebraska and Nearby Sites.**



**Table X-1. 24-hour PM<sub>2.5</sub> Design Values (as percentage of the NAAQS) and daily Air Quality Index (AQI) Results<sup>(1)</sup> in 2024 for Continuous Monitoring Locations in and Nearby Nebraska.**

	24-hour Design Value (%)	Good		Moderate		Unhealthy for Sensitive Groups		Unhealthy	
		# Days	%	# Days	%	# Days	%	# Days	%
Beatrice (Homestead)	54	224	73.0%	83	27.0%	0	0%	0	0%
Bellevue	57	244	70.1%	103	29.6%	1	0.3%	0	0%
Blair	53	268	75.7%	86	24.3%	0	0%	0	0%
Grand Island	54	248	76.8%	75	23.2%	0	0%	0	0%
Lincoln	60	291	86.1%	44	13.0%	3	0.9%	0	0%
Omaha – NCore	49	269	77.3%	79	22.7%	0	0%	0	0%
Scottsbluff	48	284	88.8%	36	11.3%	0	0%	0	0%
Vermillion SD	68	291	81.3%	65	18.2%	2	0.6%	0	0%

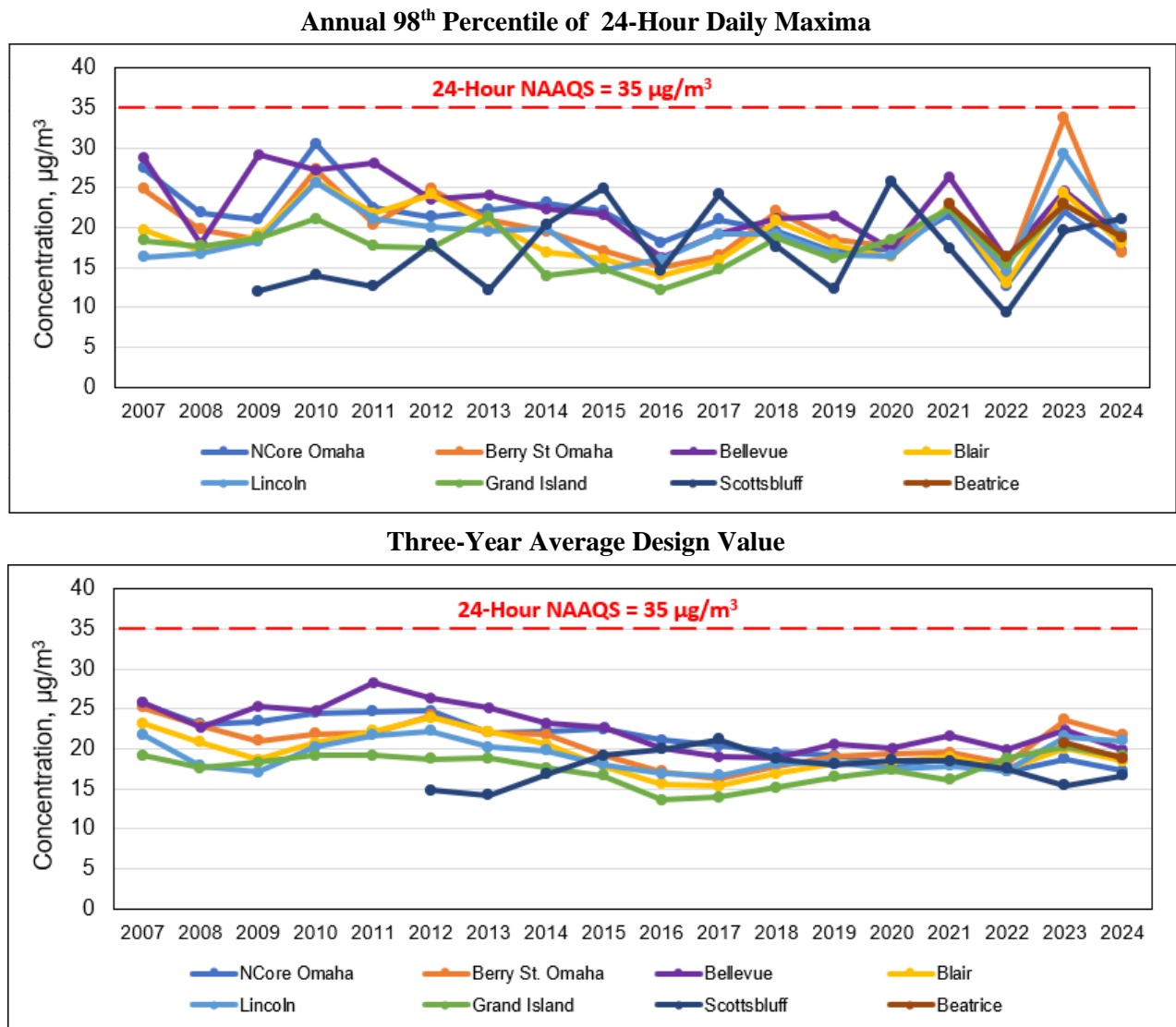
(1) Number and percentage of days in each category

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

As shown in Figure X-5 and in more detail in Appendix B (Tables B-6a and B-6b), the 2024 annual average design values at all monitored areas in Nebraska and nearby sites are in attainment with the revised annual average NAAQS. In 2023 the annual averages at all of these sites were elevated with respect to the preceding and following years due to persistent smoke from Canadian wildfires during the summer and fall. Annual averages at the Iowa sites (Council Bluffs and Sioux City) exceeded the revised standard of  $9 \mu\text{g}/\text{m}^3$  in 2023, but the design values at both sites also fall below the revised standard.

Table X-1 lists 24-hour  $\text{PM}_{2.5}$  design values (as a percentage of the standard) for continuous monitoring locations in Nebraska and South Dakota. Design values at all sites are well below the 24-hour NAAQS. These sites also report data to AirNow that are used to compute a daily Air Quality Index (AQI). Table X-1 also lists the number and percentage of measurement days in each AQI category. All sites had 70% or more days in the Good category. No sites recorded days in the Unhealthy for All category, and only three sites recorded any days at the Unhealthy for Sensitive Groups level (one day in Bellevue, three days in Lincoln, and two days in Vermillion SD). Only one Nebraska location recorded an exceedance of the 24-hour standard ( $35 \mu\text{g}/\text{m}^3$ ): Bellevue recorded a 24-hour average of  $39 \mu\text{g}/\text{m}^3$  on July 4<sup>th</sup>, with measurements almost certainly affected by smoke from fireworks.

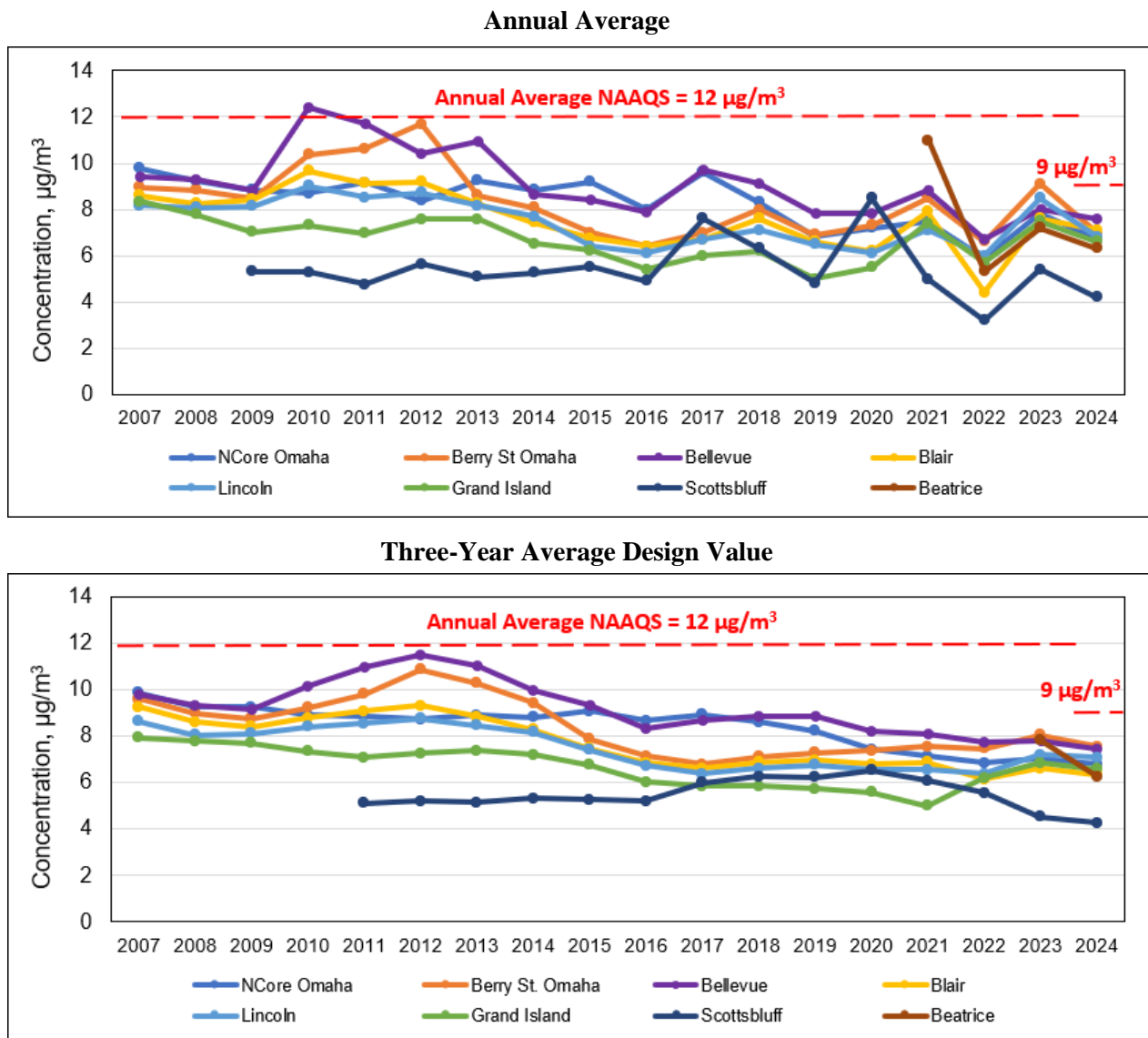
**Figure X-6. Trends in 24-hour  $\text{PM}_{2.5}$  for Nebraska Monitoring Sites 2007-2024**



## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Figure X-6 plots trends in PM<sub>2.5</sub> values for Nebraska monitoring sites from 2007 through 2024. Separate plots are shown for the annual 98<sup>th</sup> percentile of daily maximum 24-hour values and for the three-year average design value. Figure X-7 shows corresponding plots for annual average data, with the previous and revised annual average NAAQS marked by the red dashed lines. The design value plots for both datasets show significant declines at most locations from 2012 through 2016 or 2017. After 2017, annual average DVs continued to decrease at a slower rate at some sites (Bellevue and NCore), leveled off at others (Blair and Lincoln), or show an overall slight increase (Berry Street). However, since 2017 most sites show a trend of gradually increasing 24-hour PM<sub>2.5</sub> design values.

**Figure X-7. Trends in Annual Average PM<sub>2.5</sub> for Nebraska Monitoring Sites 2007-2024**



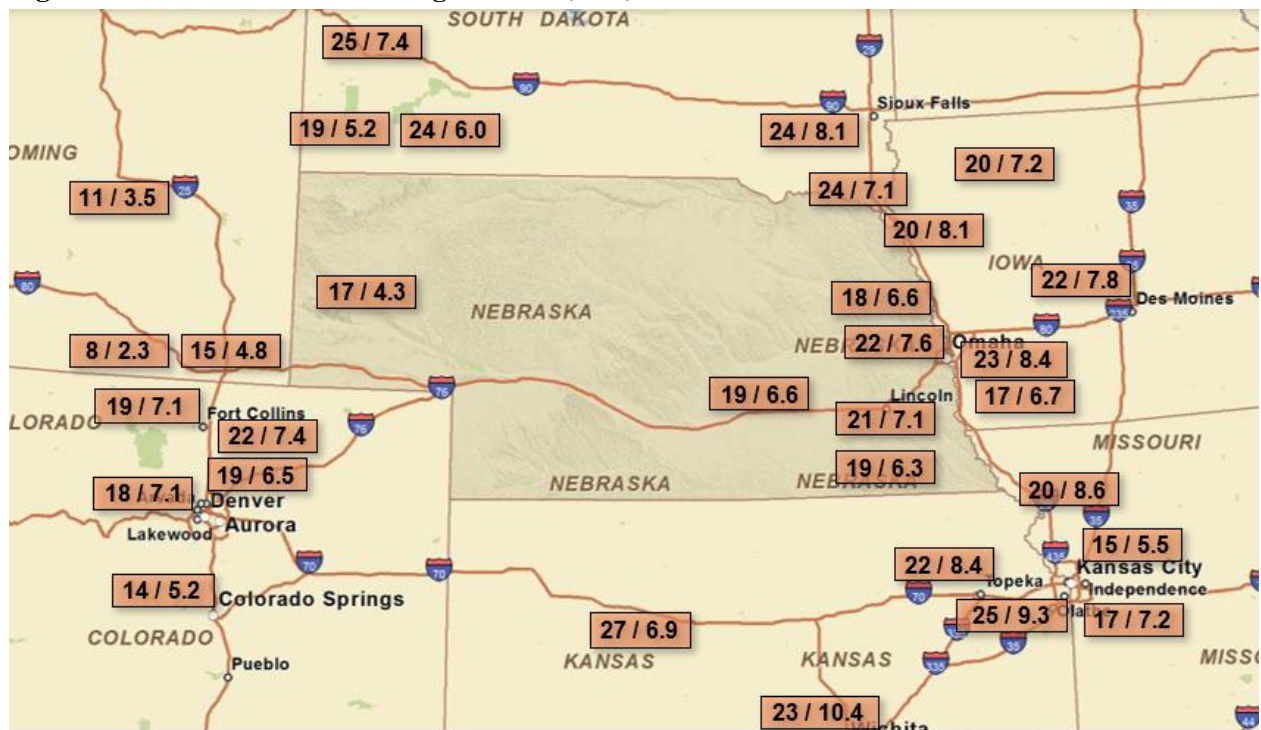
Smoke from wildfires and prescribed fires is a significant component of the variability in annual PM<sub>2.5</sub> values (both 24-hour and annual average) at Nebraska monitoring sites. As mentioned above and documented in the 2024 Nebraska Ambient Air Monitoring Network Plan, in 2023 both 24-hour maximum and annual average PM<sub>2.5</sub> values in the state and region were severely impacted by persistent, far-traveled smoke from wildfires in Canada. Eastern Nebraska sites are also impacted in some years by prescribed burning of

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

pastures by ranchers in the Flint Hills of eastern Kansas. NDEE has worked with the Kansas Department of Health and Environment (KDHE), EPA Region 7, the National Weather Service, local air quality agencies, and other stakeholders on strategies to improve communications on air quality in Nebraska during the spring prescribed burn season and in response to wildfire events. To provide up-to-date information to the public regarding potential smoke impacts, NDEE created a smoke awareness web page in March 2017. During the spring burn season, current smoke forecast information is provided along with links to the Kansas Smoke Management Plan, AirNow, and other related information. The Department also monitors the AirNow Fire and Smoke Map throughout the year to evaluate the potential for wildfire smoke impacts in Nebraska.

NDEE has collaborated with the National Weather Service, the Nebraska Department of Health and Human Services (DHHS), LLCHD, and DCHD to develop a public smoke advisory and alert system that was announced on April 10, 2018. Smoke advisories are issued by DHHS for impacted counties during the prescribed burn season based on forecasts provided by KDHE and for wildfire smoke events based on NDEE analysis and consultations with the National Weather Service (NWS). Advisories are disseminated through press releases, website and social media postings, and through local health departments. In addition to advisories, NDEE helps to prepare air quality alerts that are issued by the NWS for counties impacted by smoke. Both advisories and alerts are issued during the spring prescribed burn season and whenever wildfire smoke has potential for negative impacts on Nebraska.

**Figure X-8. PM<sub>2.5</sub> 2022-2024 Design Values (DV) for Sites in and Around Nebraska <sup>(1)</sup>**



Footnotes:

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

Figure X-8 shows the 2022-2024 Design Values for PM<sub>2.5</sub> monitoring sites in and around Nebraska. The highest values were measured in the larger metropolitan areas in the region (Omaha-Council Bluffs, Kansas City, and Denver). The only locations not in attainment with both standards were sites in Kansas City and Wichita, Kansas, with annual average values exceeding 9 µg/m<sup>3</sup>.

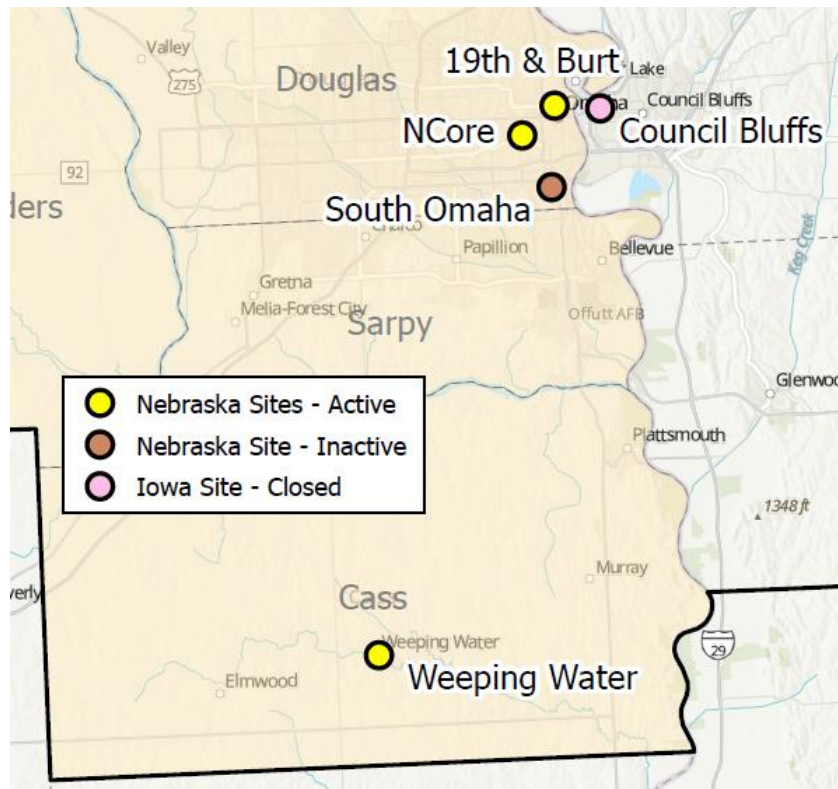
## XI. Coarse Particulate Matter (PM<sub>10</sub>) Monitoring

### A. Network Assessment

Coarse particulate (PM<sub>10</sub>) monitoring is only required in Metropolitan Statistical Areas (MSAs) with populations over 100,000. The Omaha, Lincoln, and Sioux City MSAs exceed that population threshold. The number of monitoring sites required in an MSA is dependent on the population size and whether measured coarse particulate concentrations are low, medium, or high. All monitoring sites in or near Nebraska MSAs have measured PM<sub>10</sub> concentrations in the low category (less than 80% of the NAAQS). In addition, a required NCore site must have a continuous PM<sub>10</sub> monitor (along with PM<sub>2.5</sub>) to allow determination of the concentration of particulates between 2.5 and 10 micrometers in size. Compliance of Nebraska’s PM<sub>10</sub> network with minimum federal requirements is assessed in Appendix D of this document.

The Omaha MSA, with population over one million and low PM<sub>10</sub> concentration, is required to have two to four PM<sub>10</sub> monitor sites. Monitor site locations in the Omaha MSA are shown in Figure XI-1. NDEE operates a site near Weeping Water, in Cass County, that is source-oriented to monitor particulates from nearby limestone mines and thus is not representative of area-wide air quality. The Douglas County Health Department (DCHD) currently operates two PM<sub>10</sub> sites, 19<sup>th</sup> & Burt Streets and Omaha NCore, that fulfill the minimum site number requirement for the MSA. PM<sub>10</sub> monitoring was previously conducted at a south Omaha site but was discontinued at the end of March 2021 at the request of the property owner. A new site in south Omaha has not yet been determined. Iowa DNR operated a PM<sub>10</sub> site in Council Bluffs that closed in 2023.

**Figure XI-1. PM<sub>10</sub> Monitoring Sites in the Omaha MSA – Active, Inactive, and Closed**



There are no PM<sub>10</sub> monitoring sites in the Lincoln MSA. With a population in the range from 250,000 to 500,000 and an assumed low concentration, zero or one monitor is required. The Sioux City MSA population is in the range from 100,000 to 250,000 for which no monitor is required for low concentration conditions.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

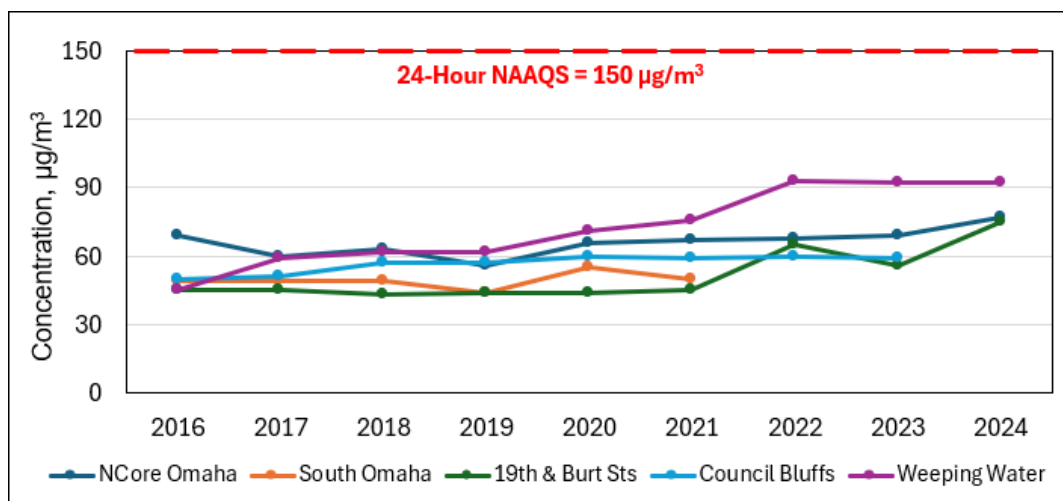
South Dakota DANR operated a PM<sub>10</sub> monitor in Union County, SD in the Sioux City MSA until the site was closed at the landowner's request at the end of September 2021. Measurements at that site demonstrated design values in the low concentration range.

### B. NAAQS Compliance

The current national ambient air quality 24-hour standard (NAAQS) for PM<sub>10</sub> is 150 µg/m<sup>3</sup> for both the primary standard and the secondary standard. These standards were retained by EPA in December 2020 but were part of the reconsideration announced by EPA in June 2021. The final rule announced March 15, 2024 retains the primary and secondary standard, effective May 6, 2024. The PM<sub>10</sub> NAAQS states that the 24-hour standard of 150 µg/m<sup>3</sup> is not to be exceeded more than once per year on average over the latest three-year time frame, where an exceedance is a 24-hour average value of 155 µg/m<sup>3</sup> or more. This means that the 4<sup>th</sup> highest value over the most recent three years needs to be below 155 µg/m<sup>3</sup> to avoid nonattainment of the NAAQS.

There were no 24-hour exceedances of the 150 µg/m<sup>3</sup> value over the 2022-2024 period at any of the Nebraska sites, so all are in attainment with the NAAQS. Their 4<sup>th</sup> highest values over that period ranged from 39% to 61% of the NAAQS (see Appendix B, Table B-5a and B-5b). The 4<sup>th</sup> highest values for Nebraska sites from 2016 through 2024 are plotted in Figure XI-2.

Figure XI-2. Nebraska 24-hour PM<sub>10</sub> Trends, 2016-2024



\* 4<sup>th</sup> highest 24-hour measurement in the latest three-year period.

Nebraska's current PM<sub>10</sub> monitoring network meets federal minimum monitoring requirements and provides adequate coverage in high-population areas. NDEE will continue to work with DCHD to locate a new site for the south Omaha monitoring station.

## XII. Sulfur Dioxide (SO<sub>2</sub>) Monitoring

### A. Network Assessment

Federal rules set forth in 40 CFR Part 58 Appendix D require SO<sub>2</sub> monitors in populated areas with high emissions. To implement these requirements, EPA uses the Population Weighted Emissions Index (PWEI) to determine if SO<sub>2</sub> monitoring is required in a Core-Based Statistical Area (CBSA: MSA or MiSA). The PWEI is calculated by multiplying the population of the CBSA by the total annual SO<sub>2</sub> emissions (tons per year) within the CBSA and dividing by 1,000,000. CBSA population is based on the most recent census figures,

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

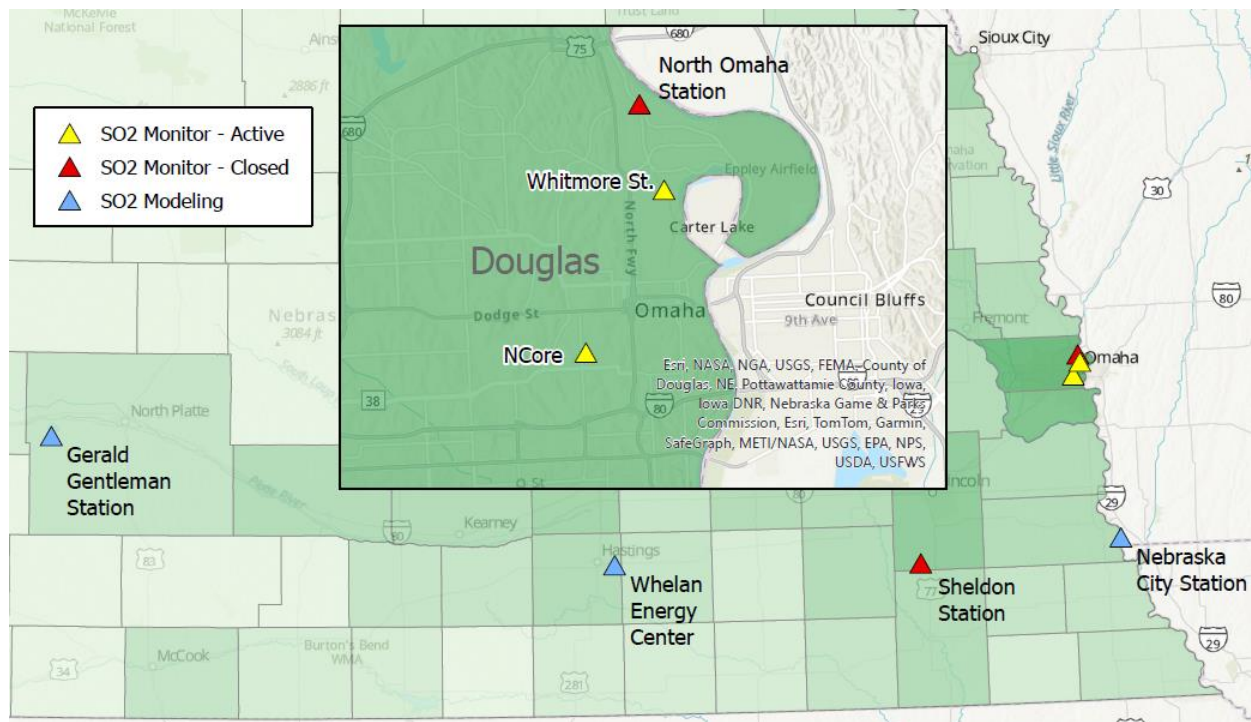
and emissions are determined using county-level data from the most recent National Emissions Inventory (NEI). The minimum PWEI value requiring SO<sub>2</sub> monitoring is 5,000, and the minimum number of monitors required (one to three) is set by the PWEI value. Compliance of Nebraska's SO<sub>2</sub> network with minimum federal requirements is assessed in Appendix D of this document; Table D-3 in that appendix presents the data that NDEE used to calculate PWEI values for Nebraska CBSAs.

The only Nebraska CBSA exceeding the PWEI monitoring threshold is the Omaha MSA, with a PWEI value of 12,617 using the 2024 estimated population and emissions data from the 2020 NEI. This value is within the PWEI range (over 5,000 and less than 100,000) requiring one SO<sub>2</sub> monitor. The Douglas County Health Department operates one SO<sub>2</sub> monitor at the Omaha NCore site and another at the Whitmore Street site in north Omaha near the Omaha Public Power District's North Omaha Station. These two sites exceed the federal minimum monitoring requirement for the Omaha MSA.

In addition to these minimum monitoring requirements, federal rules set forth in 40 CFR Part 51 Subpart BB (known as the SO<sub>2</sub> Data Requirements Rule), promulgated in 2015, required states to provide data on air quality in areas with large sources of SO<sub>2</sub> emissions (over 2,000 tons per year). The rule required characterization of the air quality in the area associated with each of these SO<sub>2</sub> sources by either monitoring (beginning by January 1, 2017) or by modeling, otherwise the state would have to set federally enforceable requirements to limit emissions of the subject facility to under 2,000 tons per year.

Five coal-fired electrical generation facilities in Nebraska met the emissions threshold set by the Data Requirements Rule; these source locations are shown in Figure XII-1. Two sources (Lincoln Electric System's Sheldon Station in southern Lancaster County and Omaha Public Power District's North Omaha Station) were addressed by monitoring near the fence lines of these facilities. Monitoring began in January 2017 as required. These monitors were eligible to be shut down (upon EPA approval) if the first three-year period of operation yielded a design value less than 50% of the 2010 SO<sub>2</sub> 1-hour NAAQS. Both monitor locations met that criterion using the 2017-2019 data, and NDEE requested shutdown of both in the 2020 Network Plan. Data collection ceased at both locations at the end of 2021 after EPA approval of the shutdowns.

**Figure XII-1. SO<sub>2</sub> Monitoring and Modeling Sites in Nebraska**



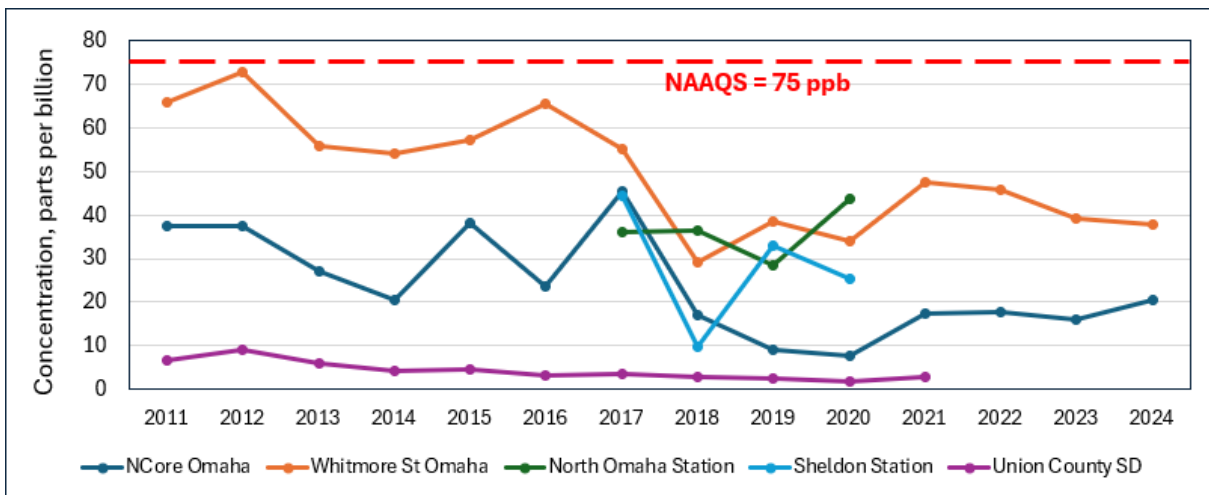
## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

The other three subject facilities were addressed by air dispersion modeling: Nebraska Public Power District’s Gerald Gentleman Station in Sutherland (Lincoln County), Hastings Utilities Whelan Energy Center, and OPPD’s Nebraska City Station. Modeling results based on records of actual SO<sub>2</sub> emissions were submitted to EPA by the required date of January 13, 2017. Nebraska is required to submit an annual report to EPA for any modeled facility for which expected emissions at any location in the modeled area exceed 50% of the 2010 SO<sub>2</sub> NAAQS. The report must document the annual SO<sub>2</sub> emissions of the facility and assess the cause of any increase in annual emissions. Two of the Nebraska sources (Gerald Gentleman Station and Whelan Energy Center) require annual reporting. The Modeled Facilities Report for 2024 is included as Appendix E of this Network Plan.

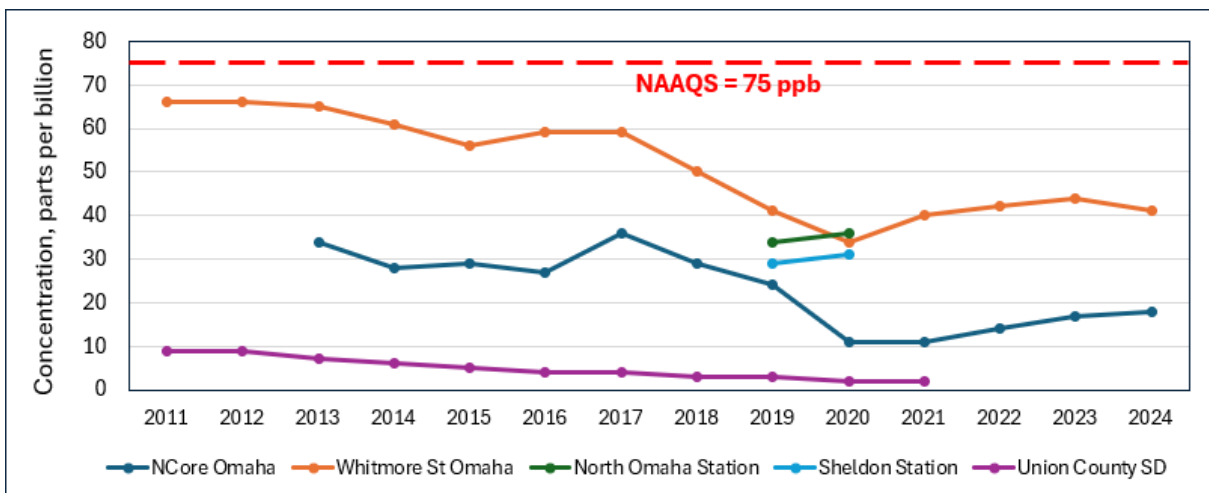
### B. NAAQS Compliance

The NAAQS for sulfur dioxide (SO<sub>2</sub>) was revised in 2010 to establish a one-hour primary standard of 75 ppb (99<sup>th</sup> percentile of daily maximum one-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 to be designated by December 31, 2020. Both counties were later designated as “Attainment/Unclassifiable”, effective April 30, 2021 for Douglas County and August 16, 2021 for Lancaster County.

**Figure XII-2. Trends in 1-hr SO<sub>2</sub> for Nebraska and Nearby Monitoring Sites 2011-2024**  
Annual 99<sup>th</sup> Percentile



**Three-Year Average Design Value**



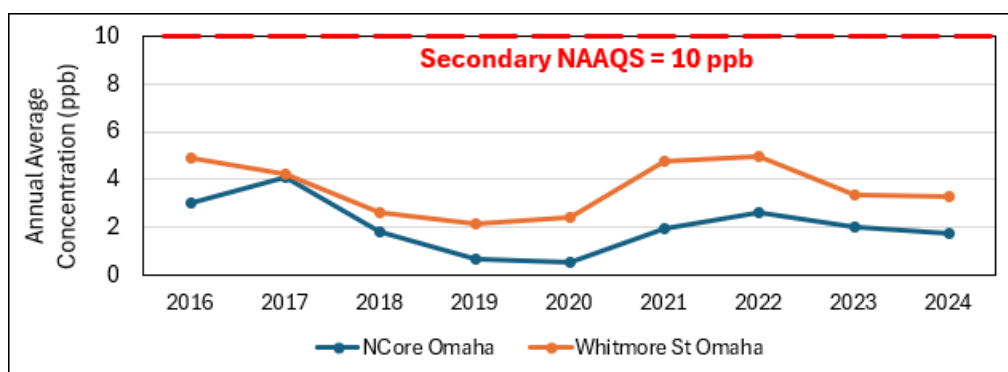
## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

The 2022-2024 1-hour SO<sub>2</sub> annual levels and Design Values (DVs) for Nebraska-area monitoring sites are listed in Appendix B, Table B-3. The highest DV (55% of the NAAQS) was recorded at the Whitmore Street site in north Omaha. The DV at the neighborhood-scale Omaha NCore site was 24% of the NAAQS

Figure XII-2 plots trends in 1-hour SO<sub>2</sub> values for Nebraska monitoring sites from 2011 through 2024, with separate plots for the annual 99<sup>th</sup> percentile values and for the three-year average design value. Data from a rural background site in Union County, South Dakota, which operated until 2021, are shown for comparison to the urban and source-oriented monitoring data for the Nebraska sites. All sites show levels well below the SO<sub>2</sub> NAAQS. The Whitmore Street monitor shows the highest concentrations, as expected from its location near North Omaha Station. SO<sub>2</sub> levels at Whitmore Street and NCore have declined since 2017, after OPPD, in 2016, converted three of the five generating units at North Omaha Station from coal to natural gas. Measured levels have increased slightly at these sites since reaching low points in 2020-2021.

On December 10, 2024, EPA issued a final rule on secondary standards (to protect public welfare and the environment) for NO<sub>x</sub>, SO<sub>2</sub>, and PM<sub>2.5</sub>. This rule revised the previous secondary NAAQS for SO<sub>2</sub>, which was a three-hour value not to exceed 0.5 ppm more than once per year. The revised standard is based on daily averages of 1-hr data and the annual average derived from those data. The new standard of 10 parts per billion is compared to the three-year average of the annual values. EPA's analysis of the rule impacts concluded that all sites meeting the current primary SO<sub>2</sub> standard would also meet the revised secondary standard without additional emissions reductions. Figures XII-3, which plots the annual averages of SO<sub>2</sub> at the two Omaha monitoring sites from 2016 to 2024, shows that both sites have maintained annual averages less than 50% of the revised secondary NAAQS.

**Figure XII-3. Trends in Annual Average 1-hr SO<sub>2</sub> at Omaha Monitoring Sites 2016-2024 in Comparison to Revised Secondary NAAQS**



Nebraska's SO<sub>2</sub> monitoring network meets all federal requirements and shows generally low to medium concentrations well below the primary NAAQS. NDEE does not plan any changes in the network at this time.

### XIII. Nitrogen Dioxide (NO<sub>2</sub>) Monitoring

#### A. Network Assessment

Population-based federal minimum monitoring rules for NO<sub>2</sub> require monitoring in any MSA with a population greater than one million. One monitor must be in a location of expected highest concentrations representing neighborhood or larger scales, and one must be adjacent to a high-volume traffic corridor (near-road site).

There are currently no true NO<sub>2</sub> monitoring sites in Nebraska, and only the Omaha MSA now exceeds the population criterion requiring NO<sub>2</sub> monitoring. At NCore sites EPA requires measurement of reactive oxides of nitrogen (NO<sub>y</sub>) instead of NO<sub>2</sub> in order to quantify more of the oxidation products of nitric oxide (NO).

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

These additional oxidation products are relevant to the secondary formation of ozone and PM<sub>2.5</sub>. NO and NO<sub>y</sub> are therefore measured at the Omaha NCore site. The difference between measured NO<sub>y</sub> and NO (NO<sub>y</sub>-NO) generally approximates NO<sub>2</sub>, with NO<sub>y</sub>-NO being equal to or potentially higher than NO<sub>2</sub>.

With the increase in population in the Omaha MSA, area-wide and near-road true NO<sub>2</sub> monitoring are now required. As noted above, this population change will require locating a Photochemical Assessment Monitoring Station (PAMS) at the existing NCore site; the PAMS instrument array includes a true NO<sub>2</sub> monitor in addition to NO and NO<sub>y</sub> (already in place at NCore).

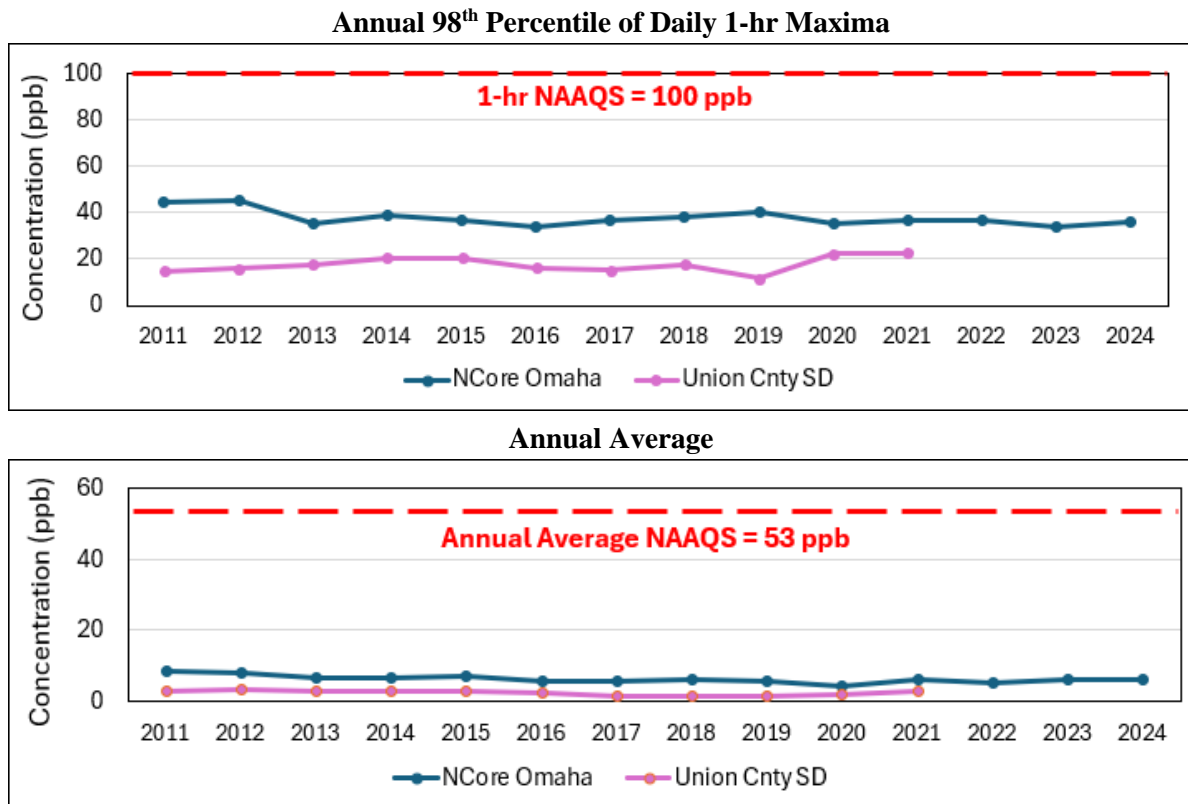
After installation of PAMS instruments, the current NCore site may serve as the area-wide NO<sub>2</sub> monitoring location for the Omaha MSA. However, a near-road NO<sub>2</sub> site will need to be located and approved.

### B. NAAQS Compliance

In 2010 EPA established a primary 1-hour NAAQS for NO<sub>2</sub> of 100 parts per billion (ppb; based on the 98th percentile of the annual distribution of daily maximum 1-hour NO<sub>2</sub> concentrations, averaged over 3 years). That rule also retained a primary and secondary annual average standard of 53 ppb. Both standards were retained in 2018, and the secondary annual average standard was retained in the 2024 final rule on secondary NO<sub>x</sub>, SO<sub>2</sub>, and PM<sub>2.5</sub>.

Nitrogen oxide monitoring data from the Omaha NCore site for 2022-2024 are presented in Appendix B, Table B-4. The design value from the 98<sup>th</sup> percentile of 1-hour NO-NO<sub>y</sub> data was 35% of the standard, and the annual average design value was 11% of the NAAQS. Figure XIII-1 plots trends in annual 1-hour and annual average data from 2011-2024 for Omaha NCore (NO-NO<sub>y</sub>) and a rural background site in Union County, South Dakota (true NO<sub>2</sub>). The Union County site was closed in 2021. Both sites show continued low values during the entire time period.

**Figure XIII-1. Trends in Nitrogen Oxide Values 2011-2024 in Omaha and Union County SD**

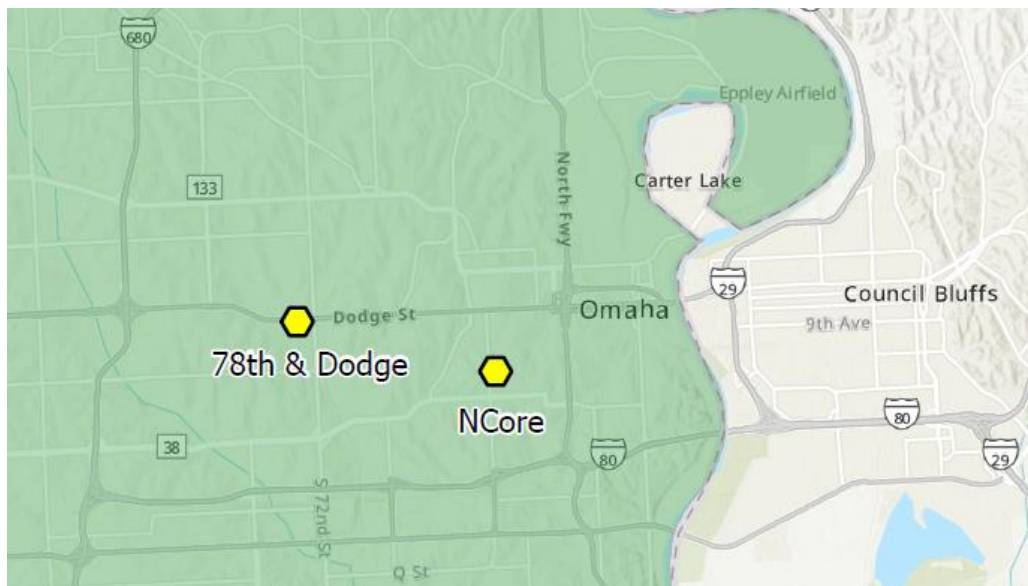


## XIV. Carbon Monoxide (CO) Monitoring

### A. Network Assessment

Federal regulations require monitoring for carbon monoxide (CO) at NCore sites and at a near-road NO<sub>2</sub> site required for a CBSA with a population of 1,000,000 or more. The Omaha NCore site includes the required neighborhood scale CO monitor. The Douglas County Health Department also operates a near-road CO monitor near 78<sup>th</sup> and Dodge Streets in Omaha. The locations of these sites are shown in Figure XIV-1.

**Figure XIV-1. Locations of CO Monitoring Sites in Omaha**



As discussed above, with the Omaha MSA population now exceeding 1,000,000, a near-road monitoring site with NO<sub>2</sub>, CO, and PM<sub>2.5</sub> monitors is now required adjacent to a roadway segment ranking highest in traffic volume. Preliminary examination of traffic count data from the Nebraska Department of Transportation and the Metropolitan Area Planning Agency indicate that the highest-ranked road segments in the Omaha area are portions of Interstate 80 in south Omaha. Traffic volumes near the current 78<sup>th</sup> and Dodge Streets near-road CO site are significantly lower, so it is not suitable as the location of the required multi-pollutant near-road site. When the new near-road site is installed, an additional CO monitor will be required unless the 78<sup>th</sup> and Dodge Streets site is closed and its equipment is relocated to the new near-road site.

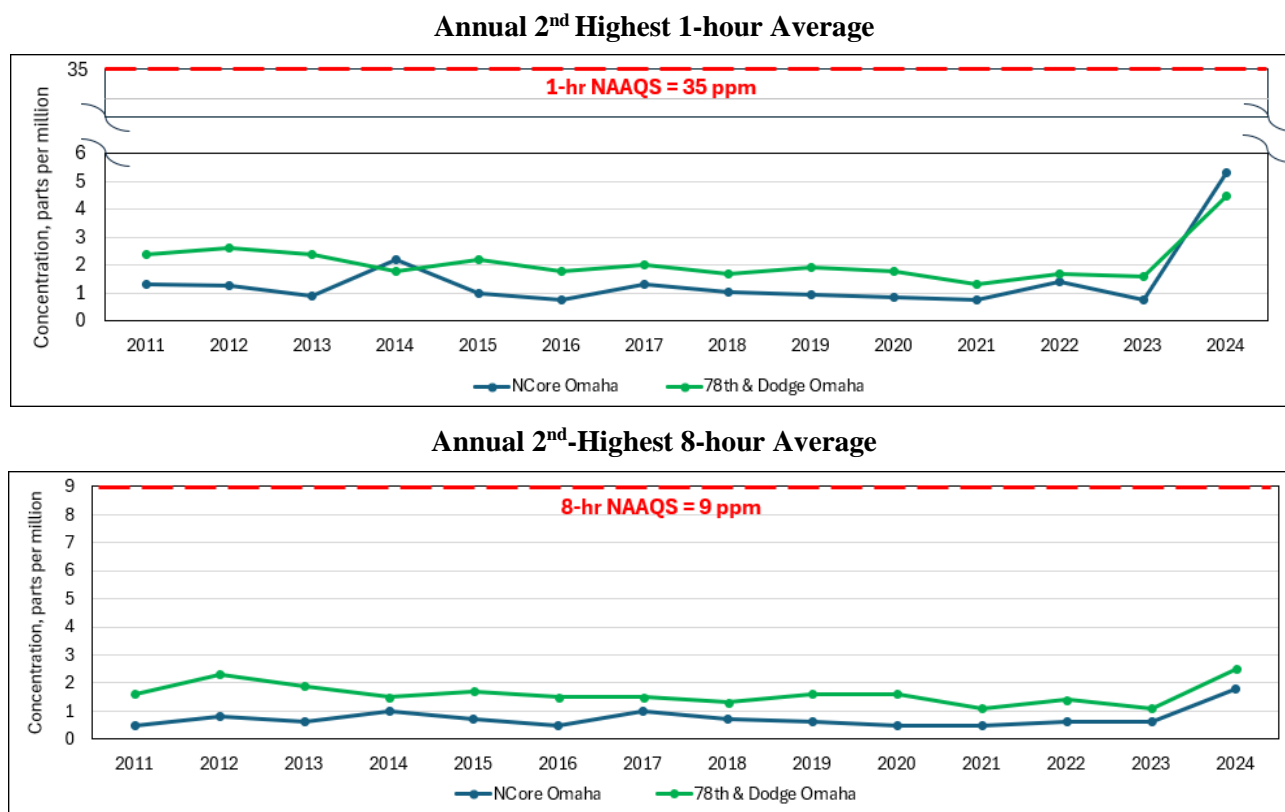
### B. NAAQS Compliance

Vehicle emissions are a primary source of carbon monoxide pollution in urban areas. EPA last reviewed the carbon monoxide NAAQS in 2011, at which time it retained a primary 1-hour average concentration standard of 35 parts per million (ppm) and a primary 8-hour average concentration standard of 9 ppm, with each standard not to be exceeded more than once per year. The annual value for each measurement duration is thus the second-highest average value for the year, and the design value is the highest annual value over the most recent three years. As shown in Table B-2 in Appendix B, during the 2022-2024 time frame both Omaha sites saw increased second-highest CO levels for both standards in 2024 compared to the prior two years. However, the 1-hour DVs at both sites were 15% or less of the NAAQS, and for the 8-hour standard both were 28% or less of the NAAQS.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Trends in the annual 2<sup>nd</sup>-highest CO values for both measurement durations are shown in Figure XIV-1 for the two Omaha monitoring sites from 2011-2024.

**Figure XIV-1. Trends in Annual 2<sup>nd</sup> Highest CO Values 2011-2024 at Omaha Monitoring Sites**



## XV. Lead Monitoring

### A. Network Assessment

Federal regulations require one source-oriented monitoring site to measure the maximum lead concentration in ambient air adjacent to each non-airport source that emits 0.50 or more tons of lead per year and each airport that emits 1.0 or more tons of lead per year based on the most recent National Emissions Inventory. 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.

No airports in Nebraska exceeded the one-ton threshold in the 2017 or 2020 National Emissions Inventory. There are currently two non-airport lead sources in Nebraska that are potentially subject to the lead monitoring requirement.

#### 1. Magnus Bearings, Fremont

Magnus Bearings in Fremont is a casting facility that produces high-leaded bronze railway traction motor support bearings. NDEE began operating a lead monitoring site at 1255 Front Street, north of this facility, 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  $\mu\text{g}/\text{m}^3$  or 93% of the NAAQS. In 2016 through 2018

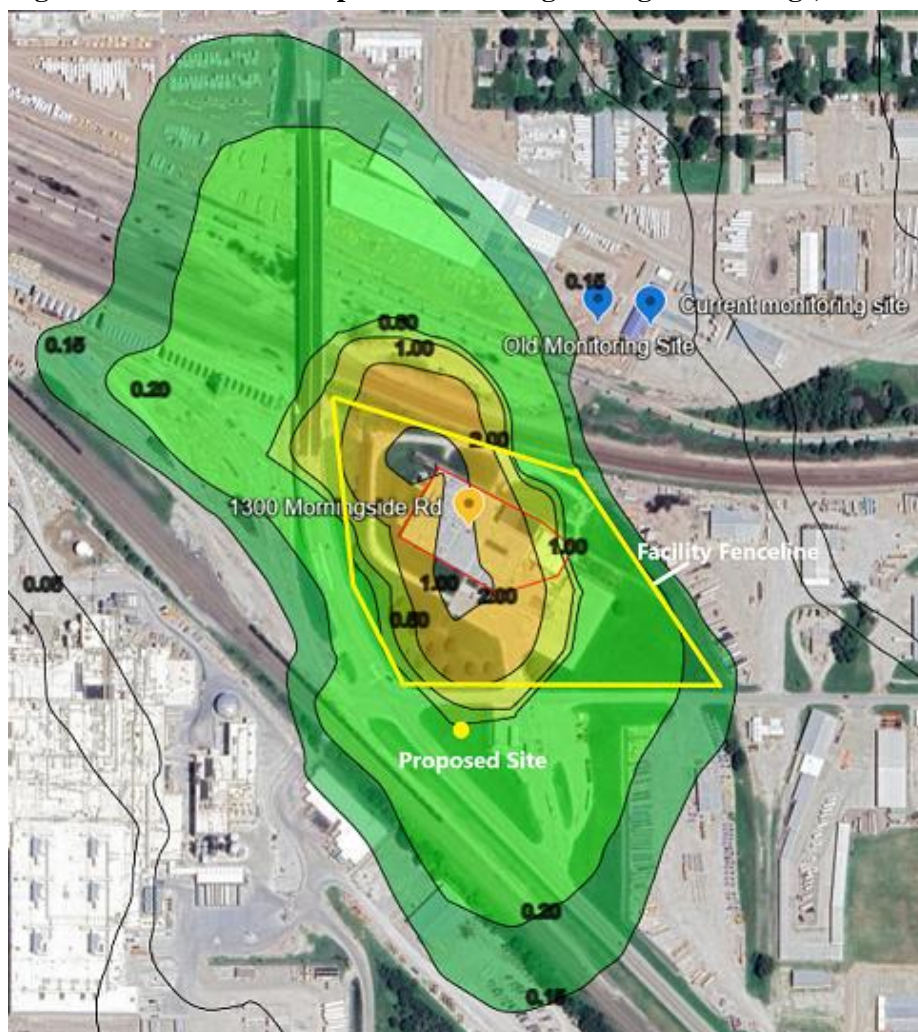
## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

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 relocation to a nearby convenience store property south of the facility as requested in Nebraska's 2019 Network Plan. However, NDEE had difficulty contacting the property owner, who subsequently put the property up for sale.

In 2022 NDEE learned that an industrial property at 1500 Front Street, immediately adjacent to the former lead monitoring site, had been sold in 2019. NDEE contacted the new owner, who agreed to host the lead monitors. A site lease agreement was signed by the new property owner in March 2023, and installation of the samplers was completed in May 2023. The site began operation July 1, 2023. EPA approved the new site as part of the approval of the 2023 Network Plan.

**Figure XV-1. EPA Air Dispersion Modeling of Magnus Bearings, Fremont**



However, subsequent EPA air dispersion modeling of Magnus Bearings lead emissions showed that the new monitoring site lies outside of the maximum concentration area beyond the facility fence line (see Figure XV-1). EPA staff have proposed an alternate site on the convenience store property south of the facility, where previous contacts with the property owner were unsuccessful. NDEE is currently

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

investigating that site and a small adjacent parcel owned by the City of Fremont. Due to the location of this plant in an industrial area between an elevated highway causeway and railway lines, there are few options for a nearby monitoring location that would sample the maximum concentration area surrounding the facility.

### 2. Nucor Steel, Norfolk (Lead Monitoring Waiver)

Nucor Corporation's production facility in Norfolk, Nebraska, is a steel recycling facility that utilizes ferrous metal scrap material in the production of steel billets and various finished steel bar products. 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 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  $0.04 \mu\text{g}/\text{m}^3$ , or 27% of the lead NAAQS. EPA Region 7 approved this waiver as part of the 2019 Network Plan on 4 October 2019. The five-year waiver expired in April 2024.

Nebraska's 2024 Ambient Air Quality Monitoring Network Plan included a request to renew the waiver for an additional five years. Reported annual lead emissions, emissions testing, and air dispersion modeling all demonstrated that Nucor Steel is not emitting lead in amounts equal to or greater than 0.5 tons per year, and maximum concentrations are well below 50% of the lead NAAQS. EPA Region 7 approved this waiver as part of the 2024 Network Plan on 22 November 2024. However, EPA subsequently notified NDEE that lead monitoring waiver requests are required to be submitted as part of the Five-Year Assessment. As a result, this lead monitoring waiver request is included again in this document as Appendix F to extend the term of waiver to 2030, when the next Five-Year Assessment will be due.

### B. NAAQS Compliance

The lead NAAQS was last changed in 2008, when it was tightened from a concentration of  $1.5 \mu\text{g}/\text{m}^3$  to  $0.15 \mu\text{g}/\text{m}^3$  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. In 2020 EPA initiated a review of the air quality criteria for the health and welfare effects of lead and the primary and secondary NAAQS. As part of this review, EPA published the Integrated Science Assessment for Lead in January 2024. Final action on the review of the lead NAAQS has not been completed as of April 2025.

Since lead monitoring resumed at the Magnus Bearing facility in July 2023, the highest three-month average concentration recorded was  $0.03 \mu\text{g}/\text{m}^3$ , or 20% of the NAAQS. Because the data do not cover a full three-year period, they do not meet completeness requirements for a valid design value.

## XVI. Funding

Air monitoring is supported by a combination of fees and other federal, state, and local funding sources. Table XVI-1 provides a summary of the primary funding sources used for air monitoring in Nebraska. Federal CAA §105 funding supports operation of the Nebraska SLAMs network, and Federal CAA §103 funding supports operation of  $\text{PM}_{2.5}$  and IMPROVE monitors. Current funding levels are adequate to continue the operation of the existing and planned Nebraska air monitoring network, provided that major new equipment purchases are not required to be covered under existing funding levels.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

<b>Table XVI-1: Primary Funding Sources Used to Support Air Monitoring in Nebraska</b>	
<b>Nebraska Department of Environment and Energy (NDEE)</b>	
<b>Funding Source</b>	<b>Comments</b>
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 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 negotiated EPA-NDEE work plan. This money is currently limited to funding PM <sub>2.5</sub> 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.
<b>Douglas County Health Department (DCHD) and Omaha Air Quality Control (OAQC)</b>	
Local County Funds	At a minimum must be sufficient to meet minimum federal match requirements
City of Omaha Title V funds	See <i>State Title V Funds</i> 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 <sub>2.5</sub> related monitoring activities. There is no state/local match requirement.
<b>Lincoln Lancaster County Health Department (LLCHD)</b>	
Local County Funds	At a minimum must be sufficient to meet minimum federal match requirements
Lancaster County Title V funds	See <i>State Title V Funds</i> 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 <sub>2.5</sub> related monitoring activities. There is no state/local match requirement.

**XVII. Anticipated and Potential Nebraska Ambient Air Monitoring Network Modifications**

Requirements for the minimum number of air monitoring sites for criteria pollutants are specified in 40 CFR Part 58, Appendix D, for each pollutant. As is summarized in the Network Assessment sections above, for many years NDEE has maintained an ambient air monitoring network that has met or exceeded all federal requirements for the minimum number of sites needed for each pollutant. The few sites in excess of the required minimum number serve the needs of local populations.

Most of the minimum monitoring requirements for Metropolitan Statistical Areas include population thresholds that specify use of the latest available census figures. On March 12, 2025 the U.S. Census Bureau released county-level population estimates for mid-year 2024 that are presented in Appendix C. Using these new estimates, both the Lincoln and Omaha MSAs now exceed population thresholds that trigger additional air monitoring requirements. In addition to changes related to these new requirements, several site relocation efforts are underway.

**A. Lincoln MSA: Additional Ozone Monitoring Site Required**

The Lincoln MSA (Lancaster and Seward Counties) currently has one ozone monitoring site near the village of Davey in northern Lancaster County. This is an urban-scale site designed to measure high concentrations downwind of the area having highest precursor emissions.

The 2024 estimated population of the Lincoln MSA of 350,626 exceeds 350,000 for the first time. As set forth in 40 CFR Part 58, Appendix D, section 4.1, an MSA with population between 350,000 and 4 million must have at least one ozone monitoring site, but it must have at least two sites if the latest three-year Design Value (DV) is equal to or greater than 85% of the National Ambient Air Quality Standard (NAAQS) for ozone (0.070 ppm). Table XVII-1 below shows ozone design values for the Davey site from 2017 through 2024.

	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
<b>O<sub>3</sub> DV</b>	0.060	0.060	0.060	0.57	0.56	0.56	0.060	0.060
<b>%NAAQS</b>	85.7%	85.7%	85.7%	81.4%	80%	80%	85.7%	85.7%

The ozone DV for 2023 and 2024 (and 2017 through 2019) was 0.060 ppm, or 85.7% of the NAAQS, slightly exceeding the 85% NAAQS threshold. Given the recent increase in estimated population, the Lincoln MSA will now require an additional ozone monitoring site. The existing Davey site meets the requirement that at least one monitoring site be designed to record the maximum concentration for the metropolitan area. NDEE will work with EPA and the Lincoln-Lancaster County Health Department to evaluate whether the Health Department building, which currently hosts PM<sub>2.5</sub> monitoring, is a suitable location for ozone monitoring, or if other sites need to be considered.

**B. Omaha MSA: New Monitoring Requirements**

The 2024 estimated population of the Omaha MSA (including five Nebraska counties and three Iowa counties) of 1,001,010 has surpassed the one million population threshold for the first time. This change triggers several new monitoring requirements. Air quality monitoring in the Nebraska portion of the Omaha MSA is administered by the Douglas County Health Department (DCHD). NDEE will work with EPA Region 7 and DCHD to determine the technical requirements, timeline, funding, and location details associated with the following new minimum monitoring requirements.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### 1. Photochemical Assessment Monitoring Station (PAMS)

Photochemical Assessment Monitoring Stations (PAMS) measure ozone precursors (nitrogen oxides and volatile organic compounds) and meteorological conditions to support ozone model development and to track the trends of important ozone precursor concentrations. As set forth in 40 CFR Part 58, Appendix D, section 5, state and local monitoring agencies are required to collect and report PAMS measurements at each NCore site located in a CBSA with a population of 1,000,000 or more. Nebraska's required NCore multipollutant monitoring site is maintained on the campus of the DCHD facility in Omaha. Some indoor space may need to be repurposed at this facility to accommodate the PAMS instruments.

### 2. Near-Road NO<sub>2</sub> Monitoring

As set forth in 40 CFR Part 58, Appendix D, section 4.3.2, a CBSA with a population of 1,000,000 or more is required to have at least one microscale near-road NO<sub>2</sub> monitoring site with Federal Reference Monitors measuring NO, NO<sub>2</sub>, and NO<sub>x</sub>. The site shall be selected by ranking all road segments by annual average daily traffic (AADT) count and then identifying a location adjacent to the highest-ranked segments. According to Appendix E of 40 CFR Part 58, section 2.5.4, the monitor probe must be within 50 meters of the outside edge of the traffic lanes, and where possible, within 20 meters of the edge of the target road segment.

Preliminary examination of traffic count data from the Nebraska Department of Transportation and the Metropolitan Area Planning Agency indicate that the highest-ranked road segments in the Omaha area are portions of Interstate 80 in south Omaha.

### 3. Near-Road CO Monitoring

Section 4.2 of 40 CFR Part 58, Appendix D states that one CO monitor is required to operate collocated with one required near-road NO<sub>2</sub> monitor in CBSAs having a population of 1,000,000 or more. The existing near-road CO monitor in north Omaha could be relocated to a new near-road NO<sub>2</sub> site.

### 4. Near-Road PM<sub>2.5</sub> Monitoring

Section 4.7.1 of 40 CFR Part 58, Appendix D states that for CBSAs with a population of 1,000,000 or more, at least one PM<sub>2.5</sub> monitor is to be collocated at a required near-road NO<sub>2</sub> station.

## C. Omaha MSA: Relocation of Ozone and PM<sub>10</sub> Monitors from 2411 O Street, Omaha

Douglas County Health Department (DCHD) operated an ozone and PM<sub>10</sub> monitoring site at 2411 O Street in south Omaha beginning in 1978. As discussed in sections IX.A and XI.A 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), while PM<sub>10</sub> monitoring continued until the site was closed at the end of March 2021. DCHD has worked for several years to locate a new ozone and PM<sub>10</sub> monitoring site (or sites) in south Omaha or the surrounding area but have been unable to find a willing property owner at a suitable site. Nebraska continues to meet minimum monitoring requirements in the Omaha MSA for both ozone and PM<sub>10</sub> without the South Omaha site.

## D. Relocation of Fremont Lead Monitors

As discussed in section XV.A.1, in 2023 NDEE re-established source-oriented lead monitoring northeast of the Magnus Bearings facility in Fremont after the previous monitoring site was closed in 2018 at the landowner's request. The new location was approved by EPA with the approval of Nebraska's 2023 Network Plan.

## **Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

Subsequent EPA air dispersion modeling of Magnus Bearings lead emissions showed that the new monitoring site lies outside of the maximum concentration area beyond the facility fence line. EPA staff have proposed an alternate site on a convenience store property south of the facility, a property where NDEE was unsuccessful in negotiating siting with a previous property owner. NDEE is currently investigating that property and a small adjacent parcel owned by the City of Fremont. Due to the location of this plant in an industrial area between an elevated highway causeway and railway lines, there are few options for a monitoring location that would sample the maximum concentration area surrounding the facility.

### **E. Request for Renewal of Nucor Steel Lead Monitor Waiver**

As noted in section XV.A.2 above, Nebraska's 2024 Ambient Air Quality Monitoring Network Plan included a request to renew the lead monitoring waiver for the Nucor Steel facility in Norfolk, Nebraska. EPA Region 7 approved this waiver as part of the 2024 Network Plan on 22 November 2024. However, EPA subsequently notified NDEE that lead monitoring waiver requests are required to be submitted as part of the Five-Year Assessment. As a result, this lead monitoring waiver request is included again in this document as Appendix F to extend the term of waiver to 2030, when the next Five-Year Assessment will be due.

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

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

**Omaha NCore Site Operated by DCHD**

<b>Site Name: Omaha NCore</b> <sup>(1)</sup>		<b>AIRS ID: 31-055-0019</b> <sup>(1)</sup>	
<b>Location: 4102 Woolworth Ave., Omaha</b>		Latitude: 41.246792° Longitude: -95.973964°	
Operating Agency: Douglas County Health Department			
Purpose: NCore		Scale: Neighborhood	
<b>Monitor/Pollutant: Carbon Monoxide (CO) - Trace Level</b>			
Type/POC: Primary / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 48i-TLE		EPA Method: RFCA-0981-054 (AQS 554)	
Start-Up Date: 1/20/2011		Closure Date: Currently operating	
Data used for NAAQS comparison: Yes			
Meets applicable provisions of 40 CFR Part 58 Appendices A thru E: Yes, App B not applicable			
<b>Monitor/Pollutant: Ozone (O<sub>3</sub>)</b>			
Type/POC: Primary / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 49iQ		EPA Method: EQOA-0880-047	
Start-Up Date: 4/1/2011		Closure Date: Currently operating	
Data used for NAAQS comparison: Yes			
Meets applicable provisions of 40 CFR Part 58 Appendices A thru E: Yes, App B not applicable			
<b>Monitor/Pollutant: Nitrogen Oxides (NO/NO<sub>y</sub>)</b>			
Type/POC: Primary / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 42i NO/NO <sub>2</sub> /NO <sub>x</sub>		EPA Method: RFNA-1289-074	
Start-Up Date: 1/20/2011		Closure Date: Currently operating	
Data used for NAAQS comparison: Not Applicable. Monitors for NO & NO <sub>y</sub> , but not NO <sub>2</sub>			
Meets applicable provisions of 40 CFR Part 58 Appendices A thru E: Yes, App B not applicable			
<b>Monitor/Pollutant: Sulfur Dioxide (SO<sub>2</sub>) – Trace Level</b>			
Type/POC: Primary / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 43i-TLE		EPA Method: EQSA-0486-060 (AQS 560)	
Start-Up Date: 1/20/2011		Closure Date: Currently operating	
Data used for NAAQS comparison: Yes			
Meets applicable provisions of 40 CFR Part 58 Appendices A thru E: Yes, App B not applicable			
<b>Monitor/Pollutant: PM<sub>2.5</sub></b> <sup>(2)</sup>			
Type/POC: Primary Continuous / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One BAM-1020 <sup>(2)(3)</sup>		EPA Method: EQPM-0308-170	
Start-Up Date: 1/1/2011 <sup>(2)</sup>		Closure Date: Currently operating	
Data used for NAAQS comparison: Yes			
Meets applicable provisions of 40 CFR Part 58 Appendices A thru E: Yes, App B not applicable			
<b>Monitor/Pollutant: PM<sub>2.5</sub></b> <sup>(2)</sup>			
Type/POC: POC 02		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: Met One E-SEQ-FRM <sup>(2)</sup>		EPA Method: RFPS-0717-245	
Start-Up Date: 1/1/1999 <sup>(2)</sup>		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 Appendices A thru E: Yes, App B not applicable			
Continued on next page			

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

**Omaha NCore Site Operated by DCHD - continued**

<b>Site Name: Omaha NCore</b>		AIRS ID: 31-055-0019 (See Comment 1)	
<b>Location: 4102 Woolworth Ave., Omaha</b>		Latitude: 41.246792° Longitude: -95.973964°	
Operating Agency: Douglas County Health Department		(continued from previous page)	
<b>Monitor/Pollutant: PM<sub>2.5</sub> Speciation</b>			
Type/POC: Speciation / POC 05		Monitoring Frequency: Once every 3 days	
Analyzer/Sampler: PM <sub>2.5</sub> Speciation		Sampler Type: SASS and a 3000 URG <sup>(3)</sup>	
Start-Up Date: 5/25/2001		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			
<b>Monitor/Pollutant: PM<sub>10</sub> – STP &amp; Local Conditions</b>			
Type/POC: Continuous / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One BAM-1020 <sup>(3)</sup>		EPA Method: EQPM-0798-122	
Start-Up Date: 1/1/2011 <sup>(3)</sup>		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			
<b>Monitor/Pollutant: PM<sub>10-2.5</sub> – Local Conditions</b>			
Type/POC: Continuous / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One BAM-1020 <sup>(3)</sup>		EPA Method: EQPM-0709-185	
Start-Up Date: 1/1/2011 <sup>(3)</sup>		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			
<b>Meteorological Parameters – Manufacturer &amp; Model – Start Date</b>			
Wind Direction & Velocity – MetOne 50.5 Sonic - 5/13/11			
Temperature - MetOne Model 083D – 4/12/2011		Barometric Pressure – MetOne Model 090D – 4/12/2011	
Relative Humidity – MetOne 083D – 4/12/2011		Solar Radiation – MetOne Model 096-1 – 4/12/2011	
Closure Date: Currently operating			
<b>Atmospheric Radiation – RadNet Air Monitor</b>			
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:			
<ol style="list-style-type: none"> <li>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<sub>2.5</sub> 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.</li> <li>2. On 1/1/99 PM<sub>2.5</sub> sampling was initiated using primary and collocated R&amp;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&amp;P 2025 FRM samplers through September 2009. Beginning 10/1/09, the MetOne BAM was designated the primary sampler and an R&amp;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.</li> <li>3. Two Met One BAM-1020 samplers operate as a paired PM<sub>10-2.5</sub> monitoring system. The paired units comprising the PM<sub>10-2.5</sub> monitoring system were put on-line on 1/1/11.</li> </ol>			

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

**Carbon Monoxide Sites in the Omaha MSA Operated by DCHD**

<b>Site Name: 78<sup>th</sup> &amp; Dodge – Omaha</b>		AIRS ID: 31-055-0056	
<b>Location: 78<sup>th</sup> St and W Dodge Rd, Omaha</b>		Latitude: 41.259175°	Longitude: -96.028628°
Operating Agency: Douglas County Health Department			
<b>Monitor Information</b>		<b>Pollutant: Carbon Monoxide (CO)</b>	
Type/POC: Primary / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 48c		EPA Method: RFCA-0981-054 (AQS 554)	
Purpose: Highest Concentration		Scale: Microscale	
Start-Up Date: 10/01/2007		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**

<b>Site Name: Whitmore – Omaha</b>		AIRS ID: 31-055-0053	
<b>Location: 1616 Whitmore St, Omaha<sup>(1)</sup></b>		Latitude: 41.297778°	Longitude: -95.937500°
Operating Agency: Douglas County Health Department			
<b>Monitor Information</b>		<b>Pollutant: Sulfur Dioxide (SO<sub>2</sub>)</b>	
Type/POC: Primary / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 43c-TLE		EPA Method: EQSA-0486-060 (AQS 560)	
Purpose: High Conc. & Population Oriented <sup>(1)</sup>		Scale: Neighborhood <sup>(1)</sup>	
Start-Up Date: 7/1/1999		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			
<b>Monitor Information</b>		<b>Pollutant: Ozone (O<sub>3</sub>)<sup>(2)</sup></b>	
Type/POC: Primary / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Thermo 49C		EPA Method: EQOA-0880-047	
Purpose: Population Oriented <sup>(1)</sup>		Scale: Neighborhood <sup>(1)</sup>	
Start-Up Date: 4/1/2015		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 30 <sup>th</sup> & Fort Street site was re-located to this site in 2015.			

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

**Temporarily Closed Combined Ozone & PM10 Site in the Omaha MSA Operated by DCHD**

<b>Site Name: South Omaha – Ozone</b>		AIRS ID: 31-055-0028	
<b>Location: 2411 O Street, Omaha</b>		Latitude: 41.207500°	Longitude: -95.947500°
Operating Agency: Douglas County Health Department			
<b>Monitor Information</b>		<b>Pollutant: Ozone (O<sub>3</sub>)</b>	
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: 7/1/1978		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			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>10</sub></b>	
Type/POC: Primary / POC 01		Monitoring Frequency: Once every 6 days	
Analyzer/Sampler: SA / GMW Hi-Vol Filter		EPA Method: RFPS 1287-063	
Purpose: Population & Source Oriented		Scale: Neighborhood	
Start-Up Date: 6/1/2006 <sup>(1)</sup>		Closure Date: 3/31/2021	
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 <sub>10</sub> sampler was initially set-up as a SPAM at 25 <sup>th</sup> & 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. PM <sub>10</sub> sampling was allowed to continue until the end of March 2021. As of May 2024 a new site has not been located.			

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

**PM<sub>10</sub> Site in the Omaha MSA Operated by DCHD**

<b>Site Name: 19<sup>th</sup> &amp; Burt, Omaha</b>		AIRS ID: 31-055-0054	
<b>Location: 701 Florence Blvd, Omaha</b>		Latitude: 41.26604°	Longitude: -95.93993°
Operating Agency: Douglas County Health Department			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>10</sub></b>	
Type/POC: Primary / POC 01		Monitoring Frequency: Once every 3 days	
Analyzer/Sampler: SA / GMW Hi-Vol Filter		EPA Method: RFPS 1287-063	
Purpose: Population & Source Oriented		Scale: Middle	
Start-Up Date: 6/1/2001		Closure Date: 3/31/2024	
Data used for NAAQS comparison: Yes			
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>10</sub></b>	
Type/POC: Collocated / POC 02		Monitoring Frequency: Once every 6 days <sup>(1)</sup>	
Analyzer/Sampler: SA / GMW Hi-Vol Filter		EPA Method: RFPS 1287-063	
Purpose: Population & Source Oriented		Scale: Middle	
Start-Up Date: 6/1/2001		Closure Date: 3/31/2024	
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			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>10</sub></b>	
Type/POC: Primary / POC 03		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One E-BAM Plus		EPA Method: EQPM-1215-226	
Purpose: Population & Source Oriented		Scale: Middle	
Start-Up Date: 4/1/2024		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			
<p>Comments: The 19<sup>th</sup> &amp; Burt Streets site was originally located at 1909 Burt Streets on the rooftop of a building owned by Creighton University. Due to building demolition the site was moved on March 10, 2021, one and one-half blocks to the east to a new location at 723 North 18<sup>th</sup> Streets. The collocated Hi-Vol Filter samplers were replaced by a Met One E-BAM Plus continuous monitor on April 1, 2024. Due to additional building demolition the site was moved again on October 1, 2024 to the rooftop of the Creighton Univ. recreation center at the present address.</p>			

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

**PM<sub>2.5</sub> Sites in the Omaha MSA Operated by DCHD**

<b>Site Name: Berry Street Omaha</b>		<b>AIRS ID: 31-055-0052</b>	
<b>Location: 9225 Berry Street, Omaha</b>		Latitude: 41.19812°	Longitude: -96.00562°
Operating Agency: Douglas County Health Department			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Primary / POC 01	Analyzer/Sampler: Thermo 2025 Sequential	Monitoring Frequency: Once every 3 days	EPA Method: RFPS-0498-118
Purpose: Population & Source Oriented	Start-Up Date: 1/1/1999	Scale: Neighborhood	Closure Date: 9/30/2024
Data used for NAAQS comparison: Yes			
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Collocated / POC 02	Analyzer/Sampler: R&P/Thermo 2025 Sequential	Monitoring Frequency: Once every 6 days	EPA Method: RFPS-0498-118
Purpose: Population & Source Oriented	Start-Up Date: 10/1/2014	Scale: Neighborhood	Closure Date: 9/30/2024
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			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Primary / POC 03	Analyzer/Sampler: Met One BAM 1020	Monitoring Frequency: Continuous	EPA Method: EQPM-0308-170
Purpose: Population & Source Oriented	Start-Up Date: 10/1/2024	Scale: Neighborhood	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: The Thermo 2025 Sequential samplers at this site were replaced with a single BAM 1020 monitor on 10/1/2024.			

<b>Site Name: Bellevue</b>		<b>AIRS ID: 31-153-0007</b>	
<b>Location: 2912 Coffey Ave., Bellevue</b>		Latitude: 41.166944°	Longitude: -95.923889°
Operating Agency: Douglas County Health Department			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Primary Continuous / POC 01	Analyzer/Sampler: Met One BAM-1020 <sup>(1)</sup>	Monitoring Frequency: Continuous	EPA Method: EQPM-0308-170
Purpose: Population & Source Oriented	Start-Up Date: 3/1/1999	Scale: Neighborhood	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.			

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

<b>Site Name: Blair</b>		AIRS ID: 31-177-0002	
<b>Location: 2242 Wright St., Blair</b>		Latitude: 41.551136°	Longitude: -96.146753
Operating Agency: Douglas County Health Department			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Primary / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One BAM-1020 <sup>(1)</sup>		EPA Method: EQPM-0308-170	
Purpose: Population & Source Oriented		Scale: Neighborhood	
Start-Up Date: 4/6/1999		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 operated with a 2025 sequential sampler from 4/6/99 thru 3/31/22 (RFPS-0498-118). On 4/1/22 a Met One BAM monitor began operating.			

**PM<sub>10</sub> 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<sub>10</sub> monitoring conducted here is for evaluation of air quality in the vicinity of Weeping Water, and not the Omaha MSA as a whole.

<b>Site Name: Weeping Water City <sup>(1)</sup></b>		AIRS ID: 31-025-0002	
<b>Location: 102 P Street, Weeping Water</b>		Latitude: 40.866228	Longitude: -96.137678
Operating Agency: Nebraska Department of Environment and Energy			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>10</sub></b>	
Type/POC: Primary / POC 01		Monitoring Frequency: Continuous	
Analyzer/Sampler: Met One BAM <sup>(2)</sup>		EPA Method: EQPM-0798-122	
Purpose: Population & Source Oriented		Scale: Neighborhood	
Start-Up Date: 01/01/1985		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.			

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

**Sites in the Lincoln MSA Operated by LLCHD**

<b>Site Name: Davey</b>		AIRS ID: 31-109-0016	
<b>Location: 1<sup>st</sup> &amp; Maple Sts., Davey</b>		Latitude: 40.984722°	Longitude: -96.677222°
Operating Agency: Lincoln Lancaster County Health Department			
<b>Monitor Information</b>		<b>Pollutant: Ozone</b>	
Type/POC: Primary / POC 01	Monitoring Frequency: Continuous		
Analyzer/Sampler: Teledyne API T400E	EPA Method: EQOA-0992-087		
Purpose: Population Oriented	Scale: Urban		
Start-Up Date: 1/1/1985	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.			

<b>Site Name: LLCHD Building</b>		AIRS ID: 31-109-0022	
<b>Location: 3140 N St., Lincoln</b>		Latitude: 40.812590°	Longitude: -96.683020°
Operating Agency: Lincoln Lancaster County Health Department			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Primary / POC 01 <sup>(1)</sup>	Monitoring Frequency: Once every 3 days		
Analyzer/Sampler: Thermo 2025i Seq. Filter	EPA Method: RFPS 0498-118		
Purpose: Population Oriented	Scale: Neighborhood		
Start-Up Date: 1/1/1999	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			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Collocated / POC 02	Monitoring Frequency: Once every 6 days		
Analyzer/Sampler: Thermo 2025i Seq. Filter	EPA Method: RFPS 0498-118		
Purpose: Population Oriented	Scale: Neighborhood		
Start-Up Date: 1/1/1999	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			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Continuous / POC 03 <sup>(2)</sup>	Monitoring Frequency: Continuous		
Analyzer/Sampler: Met One BAM-1020	EPA Method: EQPM-0308-170		
Purpose: Population Oriented	Scale: Neighborhood		
Start-Up Date: 7/1/2006	Closure Date: Currently operating		
Data used for NAAQS comparison: No. Reports to AirNow, but not AQS <sup>(1)</sup>			
Meets applicable provisions of 40 CFR Part 58 Appendixes A thru E: Yes, App B not applicable			
Comment:			
(1) The Thermo 2025i sampler replaced an R&P 2025 sampler in March 2023. The Thermo sampler previously operated in Scottsbluff, Nebraska but was replaced with a MetOne BAM in 2020.			
(2) The MetOne BAM monitor reports data to AirNow, but not AQS. Data from the MetOne BAM is not used for NAAQS comparison. The MetOne BAM data typically demonstrate a negative bias when compared to same day FRM data. In 2022, there was a -8.5% bias on same-day annual average data, and a -7.1% bias for the same-day 98 <sup>th</sup> percentile.			

Nebraska 2025 Ambient Air Monitoring Network Plan

Appendix A: Ambient Air Monitoring Sites in Nebraska

Combined PM<sub>2.5</sub> & Ozone Site Operated by NDEE

<b>Site Name: Grand Island NDOT</b>		AIRS ID: 31-079-0005	
<b>Location: 3305 W Old Potash Hwy, Grand Island</b>		Latitude: 40.915555°	Longitude: -98.378889°
Operating Agency: Nebraska Department of Environment and Energy			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Primary Continuous/ POC 01	Analyzer/Sampler: Met One BAM-1020	Monitoring Frequency: Continuous	EPA Method: EQPM-0308-170
Purpose: Background & Transport	Start-Up Date: 11/26/2019	Scale: Regional	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			
<b>Monitor Information</b>		<b>Pollutant: Ozone (O<sub>3</sub>)</b>	
Type/POC: Primary Continuous/ POC 02	Analyzer/Sampler: Teledyne T400	Monitoring Frequency: Continuous	EPA Method: EQOA-0992-087
Purpose: Population Oriented	Start-Up Date: 3/1/2025	Scale: Regional	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			

PM<sub>2.5</sub> Sites Operated by NDEE

<b>Site Name: Homestead National Historical Park</b>		AIRS ID: 31-067-0005	
<b>Location: 24405 SW 75 Rd, Beatrice</b>		Latitude: 40.28506°	Longitude: -96.82431°
Operating Agency: Nebraska Department of Environment and Energy			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Primary Continuous/ POC 01	Analyzer/Sampler: Met One BAM-1020	Monitoring Frequency: Continuous	EPA Method: EQPM-0308-170
Purpose: Background Surveillance	Start-Up Date: 06/02/2021	Scale: Regional	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			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Collocated / POC 02	Analyzer/Sampler: Thermo 2025i Sequential	Monitoring Frequency: Once every 6 days	EPA Method: RFPS-0498-118
Purpose: Background Surveillance	Start-Up Date: 06/02/2021	Scale: Regional	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			
Comments: None			

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

<b>Site Name: Scottsbluff Senior High School</b>		AIRS ID: 31-157-0004	
<b>Location: Hwy 26 &amp; 5<sup>th</sup> Ave, Scottsbluff <sup>(1)</sup></b>		Latitude: 41.875556°	Longitude: -103.658056°
Operating Agency: Nebraska Department of Environment and Energy			
<b>Monitor Information</b>		<b>Pollutant: PM<sub>2.5</sub></b>	
Type/POC: Primary Continuous/ POC 01	Monitoring Frequency: Continuous		
Analyzer/Sampler: Met One BAM-1020	EPA Method: EQPM-0308-170		
Purpose: Population Oriented & Transport	Scale: Regional & Neighborhood		
Start-Up Date: 3/24/2020	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 until 3/24/20, when a continuous sampler was installed. Due to AQS software issues a new AIRS ID (31-157-0006) was assigned at that time. In April 2022 the site reverted back to the original AIRS ID.			

**Source-Oriented Lead (Pb) Site Operated by NDEE**

<b>Site Name: Fremont</b>		AIRS ID: 31-053-0005	
<b>Location: 1500 Front St., Fremont, NE</b>		Latitude: 41.425°	Longitude: -96.48°
Operating Agency: Nebraska Department of Environment and Energy			
<b>Monitor Information</b>		<b>Pollutant: Lead (Pb)</b>	
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 <sup>(1)</sup>	Scale: Microscale		
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			
<b>Monitor Information</b>		<b>Pollutant: Lead (Pb)</b>	
Type/POC: Collocated / POC 02	Monitoring Frequency: Once every 12 days		
Analyzer/Sampler: Hi-Vol TSP-Pb (ICP-MS)	EPA Method: EQL-0310-189		
Purpose: Source Oriented	Scale: Microscale		
Start-Up Date: 3/9/10	Closure Date: Currently operating		
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			
Comment: Source-oriented with respect to Magnus LLC facility. Monitoring at this site was suspended in September 2018 at the request of the landowner. The site was moved a short distance to an adjacent property and resumed sampling on July 1, 2023.			

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

**(1) Nucor Steel in Norfolk, NE:** Five-year waiver first approved by the EPA R7 Administrator in April 2014 and effective through April 2019. Renewal of this waiver was requested and approved in the Nebraska 2019 Network Plan and again in the 2024 Nebraska Network Plan. The waiver remains in effect until April 2029.

## Nebraska 2025 Ambient Air Monitoring Network Plan

### Appendix A: Ambient Air Monitoring Sites in Nebraska

#### Interagency Monitoring of Protected Visual Environments (IMPROVE) Site \*

\* 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.

<b>Site Name: NE National Forest IMPROVE</b>	AIRS ID: Not applicable, See Comments
<b>Location: Nebraska National Forest, Thomas Co.</b>	Latitude: 41.8888°      Longitude: -100.3387°
Operating Agency: Nebraska Department of Environment and Energy / US Forest Service	
<b>Monitor Information</b>	<b>Pollutant: IMPROVE (See Comments)</b>
Type/POC: IMPROVE	Monitoring Frequency: Every 3 days
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: Samplers, shelter, and electrical supply line were destroyed by a wildfire in October 2022. Sampling resumed at the site in fall 2024.	

#### 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.

<b>Site Name: Mead NADP</b>	AIRS ID: Not applicable, See Comments
<b>Location: U of NE Field Lab, Saunders Co.</b>	Latitude: 41.1528°      Longitude: -96.4912
Operating Agency: University of Nebraska	
<b>Monitor Information</b>	<b>Pollutant: TNT/MDN</b>
Type/POC: NTN/MDN	Monitoring Frequency: Weekly
Method Description: NTN/MDN	EPA Method: Not applicable
Purpose: Background & Transport	Scale: Regional
Start-Up Date: 7/25/1978	Closure Date: Currently operating
<p>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.</p> <ul style="list-style-type: none"> <li>• Monitoring methods are specific to this program and are not Federal Reference or Equivalent Methods (FRM/FEM).</li> <li>• 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).</li> <li>• Mercury Deposition Network (MDN) sites collect mercury deposition data.</li> <li>• The NADP oversees both NTN and MDN sites and provides analytical and data processing support.</li> <li>• 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.</li> </ul>	

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

**National Atmospheric Deposition Program (NADP) Sites (continued)**

<b>Site Name: North Platte NADP</b>		AIRS ID: Not applicable, See Comments	
<b>Location: U of Ne Ag Station, Lincoln, Co.</b>		Latitude: 41.0592°	Longitude: -100.7464°
Operating Agency: University of Nebraska			
<b>Monitor Information</b>		<b>Pollutant: NTN</b>	
Type/POC: NTN		Monitoring Frequency: Weekly	
Method Description: NTN		EPA Method: Not applicable	
Purpose: Background & Transport		Scale: Regional	
Start-Up Date: 9/24/1985		Closure Date: Currently operating	
<p>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.</p> <ul style="list-style-type: none"> <li>Monitoring methods are specific to this program and are not Federal Reference or Equivalent Methods (FRM/FEM).</li> <li>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).</li> <li>Mercury Deposition Network (MDN) data was collected at this site from October 2009 thru October 2011 using Nebraska Environmental Trust funding.</li> <li>The NADP oversees both NTN and MDN sites and provides analytical and data processing support.</li> </ul>			

<b>Site Name: Homestead NADP</b>		AIRS ID: Not applicable, See Comments	
<b>Location: Homestead Nat. Historic Park</b>		Latitude: 40.2850°	Longitude: -96.8244°
Operating Agency: National Park Service			
<b>Monitor Information</b>		<b>Pollutant: Ammonia</b>	
Type/POC: AMoN		Monitoring Frequency: Weekly	
Method Description: AMoN		EPA Method: Not applicable	
Purpose: Background & Transport		Scale: Regional	
Start-Up Date: 7/26/2016		Closure Date: Currently operating	
<p>Comments: The Homestead National Atmospheric Deposition Program (NADP) site is operated by the National Park Service. 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.</p> <ul style="list-style-type: none"> <li>Monitoring methods are specific to this program and are not Federal Reference or Equivalent Methods (FRM/FEM).</li> <li>The Ammonia Monitoring Network (AMoN) sites measure ammonia concentrations in ambient air at rural location.</li> <li>The NADP oversees the AMoN sites and provides analytical and data processing support.</li> </ul>			

**Nebraska 2025 Ambient Air Monitoring Network Plan**

**Appendix A: Ambient Air Monitoring Sites in Nebraska**

**National Atmospheric Deposition Program (NADP) Sites (continued)**

<b>Site Name: Santee Sioux NADP</b>		AIRS ID: Not applicable, See Comments	
<b>Location: 52948 Hwy 12, Niobrara, NE</b>		Latitude: 42.7475°	Longitude: -97.9282°
Operating Agency: EPA			
<b>Monitor Information</b>		<b>Pollutant: Ammonia</b>	
Type/POC: AMoN		Monitoring Frequency: Weekly	
Method Description: AMoN		EPA Method: Not applicable	
Purpose: Background & Transport		Scale: Regional	
Start-Up Date: 4/26/2011		Closure Date: Currently operating	
<p>Comments: The Santee Sioux National Atmospheric Deposition Program (NADP) site is operated by the U.S. EPA. 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.</p> <ul style="list-style-type: none"> <li>Monitoring methods are specific to this program and are not Federal Reference or Equivalent Methods (FRM/FEM).</li> <li>The Ammonia Monitoring Network (AMoN) sites measure ammonia concentrations in ambient air at rural location.</li> <li>The NADP oversees the AMoN sites and provides analytical and data processing support.</li> </ul>			

**Clean Air Status and Trends Network (CASTNET) Site**

<b>Site Name: Santee Sioux CASTNET</b>		AIRS ID: 31-107-9992	
<b>Location: 52948 Hwy 12, Niobrara, NE</b>		Latitude: 42.7475°	Longitude: -97.9282°
Operating Agency: EPA			
<b>Monitor Information</b>		<b>Pollutant: CASTNET, Ozone</b>	
Type/POC: CASTNET		Monitoring Frequency: Weekly/Continuous (O <sub>3</sub> )	
Method Description: CASTNET		EPA Method: Not applicable	
Purpose: Background & Transport		Scale: Regional	
Start-Up Date: 7/5/2006		Closure Date: Currently operating	
<p>Comments: The Santee Sioux CASTNET site is operated by the U.S. EPA. CASTNET 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.</p> <p>Except for ozone, monitoring methods are specific to this program and are not Federal Reference or Equivalent Methods (FRM/FEM).</p>			

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**  
**Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS**

This appendix compares ambient air quality data from 2022 through 2024 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**

<b>Comparison of 3-Year Design Values for 8-hour Ozone to NAAQS <sup>(1)</sup></b>						
<b>Site</b>	<b>Operator</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>DV</b>	<b>% NAAQS</b>
<b>Omaha MSA and Near-By Montgomery Co., IA</b>						
<b>Omaha NCore</b>	DCHD	0.063	0.078	0.064	0.068	97.1%
<b>1616 Whitmore St, Omaha</b>	DCHD	0.059	0.082	0.055	0.065	92.9%
<b>Pisgah, Harrison Co., IA</b>	IA DNR	0.060	0.077	0.064	0.067	95.7%
<b>Montgomery County, IA</b>	IA DNR	0.057	0.072	0.058	0.062	88.6%
<b>Lincoln MSA</b>						
<b>First &amp; Maple, Davey</b>	LLCHD	0.055	0.068	0.059	0.060	85.7%
<b>Sioux City MSA</b>						
<b>1005 N Crawford Rd., Clay Co., SD <sup>(2)</sup></b>	SD DANR	0.062	0.070	0.059	0.063	90.0%
<b>5001 Talbot Rd., Sioux City, IA <sup>(2)</sup></b>	IA DNR			0.063		
<b>Nebraska Non-MSA</b>						
<b>Santee Sioux Indian Reservation</b>	US EPA	0.066	0.077	0.053	0.065	92.9%
<b>Sites in Surrounding States</b>						
<b>Emmetsburg, IA</b>	IA DNR	0.059	0.075	0.060	0.064	91.4%
<b>Des Moines, IA</b>	IA DMR	0.055	0.077	0.059	0.063	90.0%
<b>Savannah, MO</b>	MO DNR	0.059	0.072	0.063	0.064	91.4%
<b>Kansas City Metro (Max DV site)</b>	MO DNR	0.069	0.074	0.068	0.070	100.0%
<b>Topeka KS</b>	KS DHE	0.059	0.074	0.066	0.066	94.3%
<b>Cedar Bluff Reservoir, KS</b>	KS DHE	0.063	0.069	0.070	0.067	95.7%
<b>Denver, CO Metro (Max DV site)</b>	CO DPHE	0.078	0.076	0.088	0.080	114.3%
<b>Greeley, CO</b>	CO DPHE	0.070	0.068	0.081	0.073	104.3%
<b>Cheyenne, WY (Max DV site)</b>	WY DEQ	0.062	0.059	0.071	0.064	91.4%
<b>Newcastle, WY</b>	WY BLM	0.058	0.062	0.058	0.059	84.3%
<b>Sioux Falls, SD</b>	SD DANR	0.065	0.082	0.060	0.069	98.6%
<b>Wind Cave NP, Custer Co., SD</b>	SD DANR	0.063	0.065	0.073	0.067	95.7%
<b>Badlands NP, Jackson Co., SD</b>	SD DANR	0.065	0.068	0.075	0.069	98.6%
Notes and Explanations:						
(1) EPA AQS data retrieval 3/07/25. Concentrations are in units of ppm. Annual values are the 4 <sup>th</sup> highest daily maximum 8-hour concentrations (ppm). The Design Value (DV) is the truncated 3-year average of the 4 <sup>th</sup> highest maximum values. The NAAQS = 0.070 ppm (promulgated 10/1/2015). Values shown in red indicate insufficient data.						
(2) A Union Co., SD site was operated in the Sioux City MSA by the South Dakota Department of Agriculture & Natural Resources and closed in October 2021. In 2022 the site was relocated to Clay County, 10 miles from the Union Co. site and just outside the Sioux City MSA. In 2024 Iowa DNR established a site in Sioux City as the required ozone monitoring location within the Sioux City MSA.						

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**  
**Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS**

**Table B-2: Carbon Monoxide Data**

<b>Comparison of 3-Year Maximum Annual Values for 1-Hour Carbon Monoxide to NAAQS <sup>(1) (2)</sup></b>					
<b>Site</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>Design Value <sup>(2)</sup></b>	<b>% NAAQS</b>
<b>Omaha MSA</b>					
<b>78<sup>th</sup> &amp; Dodge Streets, Omaha</b>	1.69	1.59	4.48	4.48	13%
<b>Omaha NCore <sup>(4)</sup></b>	1.39	0.75	5.32	5.32	15%
<b>Comparison of 3-Year Maximum Annual Values for 8-Hour Carbon Monoxide to NAAQS <sup>(1) (3)</sup></b>					
<b>Site</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>Design Value <sup>(3)</sup></b>	<b>% NAAQS</b>
<b>Omaha MSA</b>					
<b>78<sup>th</sup> &amp; Dodge Streets, Omaha</b>	1.4	1.1	4.1	2.5	28%
<b>Omaha NCore <sup>(4)</sup></b>	0.6	0.6	1.8	1.8	20%
Notes and Explanations:					
(1) EPA AQS data retrieval 3/11/25. The carbon monoxide 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 annual values shown are the 2 <sup>nd</sup> highest maximum values. The Design Value is the highest annual 2 <sup>nd</sup> highest maximum value over the last 3 years. Concentrations are in units of ppm.					
(3) The 8-hour NAAQS = 9 ppm. The annual values shown are the 2 <sup>nd</sup> highest 8-hour maximum values. The Design Value is the highest annual 2 <sup>nd</sup> highest maximum value over the last 3 years. 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**

<b>Comparison of Daily Maximum 1-Hour Sulfur Dioxide Levels to the Primary NAAQS <sup>(1)</sup></b>					
<b>Site</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>Design Value <sup>(1)</sup></b>	<b>% NAAQS</b>
<b>Omaha MSA</b>					
<b>1616 Whitmore St., Omaha</b>	0.046	0.039	0.038	0.041	55%
<b>Omaha NCore <sup>(2)</sup></b>	0.018	0.016	0.020	0.018	24%
Notes and Explanations:					
(1) EPA AQS data retrieval 3/11/25. 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 99 <sup>th</sup> percentile of the daily maximum values in ppm units. The Design Value is the three-year average of the annual 99 <sup>th</sup> percentile daily maximum values. Annual values and Design Values that do not meet data completeness requirements are shown in red.					
(2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.					

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**  
**Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS**

**Table B-4: Nitrogen Oxide Data from the Omaha NCore Site <sup>(1)(2)</sup>**

Parameter	2022	2023	2024	Approx. DV <sup>(3)</sup>	Max % NAAQS
<b>1-Hour Data: 98<sup>th</sup> Percentile <sup>(3)</sup></b>					
<b>NO<sub>y</sub>-NO <sup>(5)(6)(7)</sup></b>	0.037	0.034	0.036	0.036	35%
<b>Annual Average Data <sup>(4)</sup></b>					
<b>NO<sub>y</sub>-NO</b>	0.0051	0.0062	0.0062	0.0062	11%
Footnotes:					
(1) EPA AQS data retrieval 3/11/24. All concentrations expressed in ppm units.					
(2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.					
(3) The 1-hour NO <sub>2</sub> 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.					
(4) The Annual Average NO <sub>2</sub> 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.					
(5) NO <sub>y</sub> – Reactive oxides of nitrogen, which include NO, NO <sub>2</sub> and other nitrogen oxides, including organic nitrogen oxide compounds.					
(6) NO – Nitrogen oxide					
(7) NO <sub>y</sub> -NO provides an approximation of nitrogen dioxide (NO <sub>2</sub> ), with some possibility of over-estimating the true NO <sub>2</sub> concentration. For this reason, the NO <sub>y</sub> -NO parameter can be used to demonstrate attainment, but not non-attainment.					

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**  
**Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS**

**Table B-5a: PM<sub>10</sub> – Annual Number of Exceedances**<sup>(1) (2)</sup>

Site	2022	2023	2024	Design Value <sup>(1)</sup>
<b>Omaha MSA Sites</b>				
<b>Omaha NCore, 4102 Woolworth St.</b> <sup>(3)</sup>	0	0	0	0.0
<b>2411 O St, Omaha</b> <sup>(4)</sup>	ND	ND	ND	
<b>19th &amp; Burt Streets, Omaha</b>	0	0	0	0.0
<b>3130 C Ave, Council Bluffs, IA</b> <sup>(5)</sup>	0	0	ND	
<b>Weeping Water City</b> <sup>(6)</sup>	0	0	0	0.0
<p>Notes and Explanations:</p> <p>(1) EPA AQS data retrieval 3/11/25. The PM<sub>10</sub> NAAQS is an exceedance-based standard with a 24-hour averaging time and 150 µg/m<sup>3</sup> 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 µg/m<sup>3</sup> or more. Sites with 3-year average of exceedances of 1.0 or less are in attainment with the NAAQS. ND = No data.</p> <p>(2) NAAQS History: The primary 24-hour NAAQS was initially set at 150 µg/m<sup>3</sup> in 1987 and was retained at this level in the 1997, 2006 and 2012 PM NAAQS reviews.</p> <p>(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.</p> <p>(4) The 2411 O Street site was closed for relocation 3/31/2021.</p> <p>(5) The Council Bluffs, IA site was operated by the IA DNR until closure on 7/1/2023.</p> <p>(6) 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.</p>				

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**  
**Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS**

**Table B-5b: PM<sub>10</sub> – Annual Maximum 24-Hour Data** <sup>(1) (2)</sup>

Site	2022	2023	2024	4 <sup>th</sup> Highest Value <sup>(1)</sup>	% NAAQS
<b>Omaha MSA Sites</b> <sup>(6)</sup>					
<b>Omaha NCore, 4102 Woolworth St.</b> <sup>(3)</sup>	79	77	88	77	51%
<b>2411 O St, Omaha</b> <sup>(4)</sup>	ND	ND	ND		
<b>19th &amp; Burt Streets, Omaha</b> <sup>(5)</sup>	75	56	84	75	50%
<b>3130 C Ave, Council Bluffs, IA</b> <sup>(6)</sup>	63	59	ND	59	39%
<b>Weeping Water City</b> <sup>(7)</sup>	127	85	90	92	61%
<p>Notes and Explanations:</p> <p>(1) EPA AQS data retrieval 3/11/25. Year columns show annual maximum 24-hour average values of PM<sub>10</sub>. NAAQS = 150 µg/m<sup>3</sup>, 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<sup>3</sup> or more. Annual values that do not meet completeness requirements are shown in red; ND = No data. The 4<sup>th</sup>-highest 24-hour average value in the three-year period is shown for informal comparison to the NAAQS.</p> <p>(2) NAAQS History: The primary 24-hour NAAQS was initially set at 150 µg/m<sup>3</sup> in 1987, and was retained at this level in the 1997, 2006 and 2012 PM NAAQS reviews.</p> <p>(3) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.</p> <p>(4) The 2411 O Street site was closed for relocation 3/31/2021 at the request of the landowner. A new site has not yet been determined.</p> <p>(5) The 19<sup>th</sup> &amp; Burt Streets site operated with sequential samplers with three-day and six-day sample intervals until 3/31/2024. On 4/1/2024 a continuous E-BAM monitor began operations. The higher maximum value for 2024 (based on 24-hour maxima) compared with earlier years may be a result of the increase in sampling rate.</p> <p>(6) The Council Bluffs, IA site was operated by the IA DNR until closure on 7/1/2023.</p> <p>(7) 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. This is a source-oriented site not considered representative of the MSA.</p>					

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**  
**Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS**

**Table B-5c: PM<sub>10</sub> - Annual Average Data <sup>(1)</sup>**

Site	2022	2023	2024	3-Year Average	% Old Std
<b>Omaha MSA <sup>(4)</sup></b>					
<b>Omaha NCore, 4102 Woolworth St. <sup>(2)</sup></b>	21.0	20.9	21.9	21.3	43%
<b>2411 O St, Omaha <sup>(3)</sup></b>	ND	ND	ND		
<b>19th &amp; Burt Streets, Omaha <sup>(4)</sup></b>	25.4	23.3	26.9	25.2	50%
<b>3130 C Ave, Council Bluffs, IA <sup>(5)</sup></b>	21.4	20.5	ND		
<b>Weeping Water City <sup>(6)</sup></b>	24.1	21.2	21.7	22.3	45%

Notes and Explanations:

- (1) EPA AQS data retrieval 3/11/25. There is currently no NAAQS for the annual average PM<sub>10</sub> concentration. An annual average NAAQS of 50 µg/m<sup>3</sup> 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; ND = No data. Comparison to the rescinded NAAQS is provided for informational purposes only. Concentrations are in units of µg/m<sup>3</sup>.
- (2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.
- (3) The 2411 O Street site was closed for relocation 3/31/2021 at the request of the landowner. A new site has not yet been determined.
- (4) The 19<sup>th</sup> & Burt Streets site operated with sequential samplers with three-day and six-day sample intervals until 3/31/2024. On 4/1/2024 a continuous E-BAM monitor began operations. The annual average value shown for this site is based on the nine months of continuous monitoring.
- (5) The Council Bluffs IA site was operated by the IA DNR until closure on 7/1/2023.
- (6) 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. This is a source-oriented site not considered representative of the MSA.

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**  
**Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS**

**Table B-6a: PM<sub>2.5</sub> - 98<sup>th</sup> Percentile 24-Hour Data <sup>(1)</sup>**

Site	2022	2023	2024	Design Value <sup>(1)</sup>	% NAAQS
<b>Omaha MSA &amp; Montgomery Co., IA <sup>(4)</sup></b>					
<b>Omaha NCore <sup>(2)</sup></b>	12.7	22.0	17.0	17.2	49%
<b>9225 Berry St.; Omaha</b>	14.5	33.8	16.8	21.7	62%
<b>2912 Coffey Ave., Bellevue</b>	16.0	24.6	19.1	19.9	57%
<b>2242 Wright St., Blair</b>	13.0	24.3	18.0	18.4	53%
<b>3130 C Ave., Council Bluffs, IA <sup>(3)</sup></b>	19.0	33.1	17.7	23.3	66%
<b>Montgomery Co., IA (outside Omaha MSA) <sup>(3) (4)</sup></b>	15.5	19.7	14.5	16.6	47%
<b>Lincoln MSA</b>					
<b>3140 N Street, Lincoln</b>	14.6	29.3	16.8	20.2	58%
<b>Sioux City MSA</b>					
<b>901 Floyd Blvd, Sioux City, IA <sup>(3)</sup></b>	13.4	27.8	18.8	20.0	57%
<b>1005 N Crawford Rd., Clay Co., SD <sup>(5)</sup></b>	13.8	41.3	15.9	23.7	68%
<b>Other Nebraska Sites</b>					
<b>Beatrice <sup>(6)</sup></b>	16.3	22.9	17.3	18.8	54%
<b>Grand Island</b>	15.5	22.9	18.8	19.1	54%
<b>Scottsbluff</b>	9.3	19.6	21.1	16.7	48%
Notes and Explanations:					
<p>(1) EPA AQS data retrieval 3/11/25. The Design Values are the 3-year average of the annual 98<sup>th</sup> percentile values. To determine attainment status, the Design Values are compared to the 35 µg/m<sup>3</sup> NAAQS. Concentrations are in units of µg/m<sup>3</sup>. Annual values and Design Values that do not meet data completeness requirements are shown in red; ND = No data.</p> <p>(2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.</p> <p>(3) The Council Bluffs, Montgomery Co., and Sioux City IA sites are operated by the IA DNR</p> <p>(4) 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.</p> <p>(5) A Union Co., SD site was operated in the Sioux City MSA by the South Dakota Department of Agriculture &amp; Natural Resources and closed in October 2021. In 2022 the site was relocated to Clay County, 10 miles from the Union Co. site and just outside the Sioux City MSA.</p> <p>(6) The Beatrice site is located at Homestead National Historical Park, 3 miles west of town. Monitoring at the site began in 2021.</p>					

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**  
**Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS**

**Table B-6b: PM<sub>2.5</sub> - Annual Average Data <sup>(1)</sup>**

Site	2022	2023	2024	Design Value <sup>(1)</sup>	% NAAQS
<b>Omaha MSA &amp; Montgomery Co., IA <sup>(4)</sup></b>					
<b>Omaha NCore <sup>(2)</sup></b>	5.9	7.8	6.7	6.8	76%
<b>9225 Berry St.; Omaha</b>	6.6	9.1	7.0	7.6	84%
<b>2912 Coffey Ave., Bellevue</b>	6.7	8.0	7.6	7.4	83%
<b>2242 Wright St., Blair</b>	4.4	7.6	7.1	6.4	71%
<b>3130 C Ave., Council Bluffs, IA <sup>(3)</sup></b>	7.5	9.7	7.9	8.4	93%
<b>Montgomery Co., IA (outside Omaha MSA) <sup>(3) (4)</sup></b>	6.1	8.1	6.0	6.7	75%
<b>Lincoln MSA</b>					
<b>3140 N Street, Lincoln</b>	6.0	8.5	6.8	7.1	79%
<b>Sioux City MSA</b>					
<b>901 Floyd Blvd, Sioux City, IA <sup>(3)</sup></b>	7.0	9.7	7.6	8.1	90%
<b>1005 N Crawford Rd., Clay Co., SD <sup>(5)</sup></b>	6.0	8.7	6.5	7.1	79%
<b>Other Nebraska Sites</b>					
<b>Beatrice <sup>(6)</sup></b>	5.3	7.2	6.3	6.3	70%
<b>Grand Island</b>	5.7	7.5	6.6	6.6	73%
<b>Scottsbluff</b>	3.2	5.4	4.2	4.3	47%
Notes and Explanations:					
<p>(1) EPA AQS data retrieval 3/11/25. The Design Values are the 3-year average of the annual average values. To determine attainment status, the Design Values are compared to the 9 µg/m<sup>3</sup> NAAQS. Concentrations are in units of µg/m<sup>3</sup>. Annual values and Design Values that do not meet completeness requirements are shown in red; ND = No data.</p> <p>(2) Omaha NCore is a multi-pollutant monitoring site located at 4102 Woolworth Street.</p> <p>(3) The Council Bluffs, Montgomery Co., and Sioux City IA sites are operated by the IA DNR</p> <p>(4) 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.</p> <p>(5) A Union Co., SD site was operated in the Sioux City MSA by the South Dakota Department of Agriculture &amp; Natural Resources and closed in October 2021. In 2022 the site was relocated to Clay County, 10 miles from the Union Co. site and just outside the Sioux City MSA.</p> <p>(6) The Beatrice site is located at Homestead National Historical Park, 3 miles west of town. Monitoring at the site began in 2021.</p>					

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**  
**Appendix B: Comparison of Ambient Air Monitoring Data to NAAQS**

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

<b>Annual Maximum Rolling 3-Month Average Values</b> <sup>(1) (2)</sup>					
<b>Site</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>DV</b> <sup>(1)</sup>	<b>% NAAQS</b>
<b>Fremont</b> <sup>(3)</sup>	ND	0.02	0.03	0.03	20%
<p>Notes and Explanations:</p> <p>(1) Concentrations are in units of <math>\mu\text{g}/\text{m}^3</math>. The 3-month average NAAQS = <math>0.15 \mu\text{g}/\text{m}^3</math>. The DV or Design Value is the highest 3-month average in the last 3 years. Annual values and Design Values that do not meet completeness requirements are shown in red; ND = No data.</p> <p>(2) NAAQS History: The initial NAAQS was promulgated in 1978 and was set at <math>1.5 \mu\text{g}/\text{m}^3</math> calendar quarter average. In 2008, it was modified to <math>0.15 \mu\text{g}/\text{m}^3</math> 3-month running average.</p> <p>(3) The Fremont lead monitor was temporarily closed 9/31/2018 pending relocation at the request of the site host. A new location was located on an adjacent property, and sampling resumed 7/1/2023. EPA subsequently determined that the new site is not within the modeled area of maximum concentration, so a new monitor location is being sought.</p>					

# Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

## Appendix C: Population Data

### Population Data

Population related 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 and higher potential for exposure to air pollutants; and
- some 40 CFR Part 58 requirements are based on population and/or federally-defined metropolitan statistical definitions.

### U.S. Census Bureau & U.S. Office of Management and Budget Basics

The U.S. Census Bureau conducts a comprehensive population census every 10 years, referred to as a decennial census. The last decennial census was completed in 2020. In addition, the US Census Bureau conducts annual surveys to provide population estimates as of July 1 for each interim year. This appendix presents the 2024 population estimates for Nebraska and population changes since 2020. The Census Bureau established an April 1, 2020 population base for these estimates by integrating data from the 2020 Decennial Census, 2020 population estimates, and 2020 demographic analysis estimates. The Census Bureau's 2024 midyear population estimate for Nebraska is 2,005,645, an increase of 43,469 from the 2020 base estimate of 1,961,996.

The U.S. Office of Management and Budget (OMB) uses the decennial census data to categorize urbanized areas by population and business inter-connections. These Core-Based Statistical Areas (CBSA) consist of one or more whole counties that center on an urban area of at least 10,000 people and adjacent areas that are socioeconomically tied to the urban center by commuting.

Three such statistical area categories are:

- Metropolitan Statistical Area (MSA), which consists of a central county containing at least one urban area with 50,000 or more people and any adjacent counties with strong socioeconomic ties;
- Micropolitan Statistical Area (MiSA), which consists of one or more counties associated with one or more urban areas with a population of 10,000 to 49,999.
- Combined Statistical Area (CSA), which consists of two or more adjacent Core-Based Statistical Areas with significant employment interchange.

These designations are important from an ambient monitoring perspective because:

- they are sometimes used in defining minimum monitoring requirements, and
- they are often used as the default boundary when defining non-attainment areas.

### Core-Based Statistical Areas in Nebraska

Nebraska contains all or part of four MSAs along with nine MiSAs. Figure C-1 (below) shows the location and boundaries of MSAs and MiSAs in Nebraska as revised by the Office of Management and Budget in 2023 based on the 2020 decennial census. The 2023 delineation changed the makeup of four Nebraska MiSAs. Colfax county was added to the Columbus MiSA, while Clay and Webster counties were added to the Hastings MiSA. In contrast, McPherson County was removed from the North Platte MiSA, and Sioux County was removed from the Scottsbluff MiSA. In addition, Dixon County, Nebraska, was removed from the Sioux City MSA.

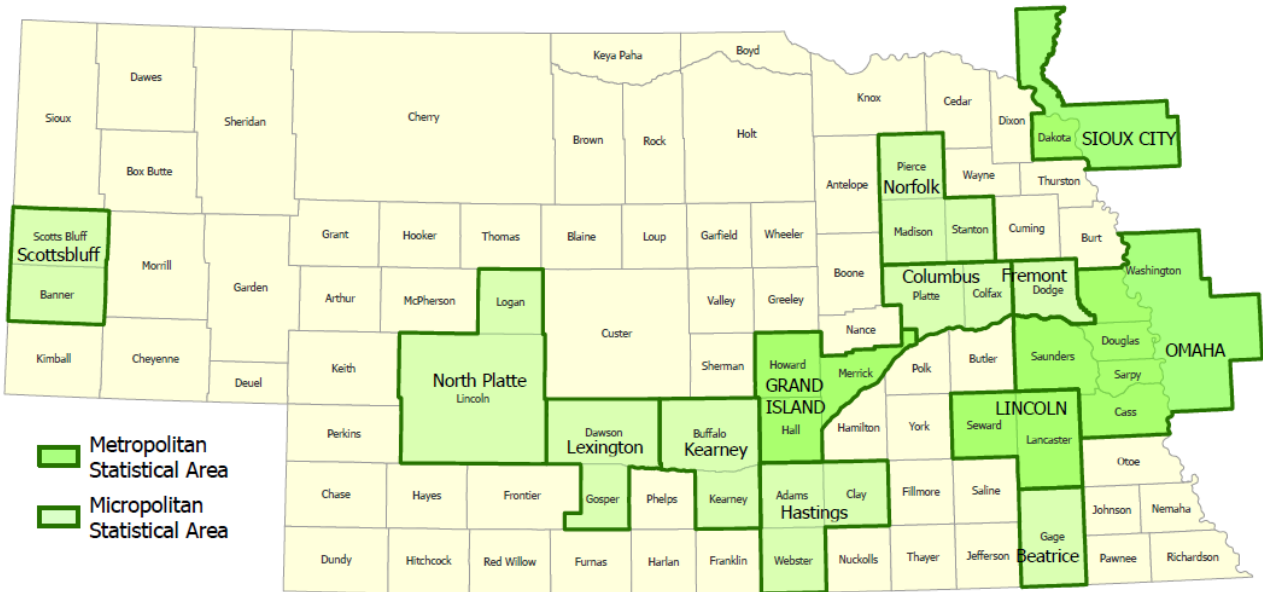
There are also three CSAs within NE:

- Lincoln-Beatrice CSA (Lincoln MSA plus Beatrice MiSA),
- Omaha-Fremont CSA (Omaha MSA plus Fremont MiSA);
- Sioux City-Le Mars IA-NE-SD CSA, (Sioux City MSA plus Le Mars, IA MiSA).

# Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

## Appendix C: Population Data

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



\* Areas as defined by the U.S. Office of Management and Budget, July 2023.

**Table C-1. 2024 Estimated Population within Nebraska MSAs and MiSAs**

	Population 2024 <sup>(1)</sup>	Nebraska Portion Pop.	Nebraska Portion Pop. Percent	Percent of Nebraska Population	Cumulative Percent Neb. Pop.	Population 2020 <sup>(2)</sup>	Pop. Change 2020-2024	Percent Pop. Change 2020-2024
Nebraska	2,005,465					1,961,996	43,369	2.24%
Omaha MSA	1,001,010	878,138	87.7%	43.8%	43.8%	967,595	33,272	3.9%
Lincoln MSA	350,626	350,626	100%	17.5%	61.3%	340,210	10,416	3.1%
Grand Island MSA	77,278	77,278	100%	3.9%	65.1%	77,036	242	0.3%
Sioux City MSA	171,819	21,335	12.4%	1.1%	66.2%	170,074	1,745	1.0%
Kearney MiSA	57,905	57,905	100%	2.9%	69.1%	56,778	1,127	2.0%
Norfolk MiSA	48,669	48,669	100%	2.4%	71.5%	48,749	-80	-0.2%
Columbus MiSA	46,325	46,325	100%	2.3%	73.8%	44,877	1,448	3.2%
Hastings MiSA	40,625	40,625	100%	2.0%	75.8%	40,704	-79	-0.2%
Fremont MiSA	37,884	37,884	100%	1.9%	77.7%	37,175	709	1.9%
Scottsbluff MiSA	36,399	36,399	100%	1.8%	79.5%	36,766	-367	-1.0%
North Platte MiSA	34,013	34,013	100%	1.7%	81.2%	35,397	-1,384	-3.9%
Lexington MiSA	26,362	26,362	100%	1.3%	82.6%	25,999	363	1.4%
Beatrice MiSA	21,687	21,687	100%	1.1%	83.6%	21,702	-15	-0.1%

(1) Mid-year (July 1) estimate by U.S. Census Bureau, March 2025.

(2) Estimated population base as of April 1, 2020.

# Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

## Appendix C: Population Data

Out of Nebraska's 93 counties, 29 are included in Core-Based Statistical Areas: 11 in Metropolitan Statistical Areas and 18 in Micropolitan Statistical Areas. Population data for these areas are listed in Table C-1. The counties in the four MSAs accounted for 66.2% of the state's 2024 total population, while those in the MiSAs accounted for another 17.4%. Altogether, counties in CBSAs include 83.6% of the state's population in 2024, with the other 64 counties including only 16.4% of the population.

The Omaha MSA includes five Nebraska counties and three Iowa counties (Figure C-2). Douglas County (which includes the City of Omaha) and Sarpy County rank first and third in 2024 population, respectively, among Nebraska counties. The estimated population of the Omaha MSA in 2024 was 1,001,010, the first time its population exceeded one million people. The five Nebraska counties made up 87.7% of the population of the MSA in 2024. The Omaha MSA experienced 3.5% population growth from 2020 to 2024, almost all of which was in the Nebraska portion of the area.

The Lincoln MSA (Figure C-3) includes Lancaster County (home of the capitol city, Lincoln), and Seward County, and tallied an estimated 2024 population of 350,626. Lancaster County includes 94.9% of the MSA population, with the City of Lincoln making up 85.1% of the population (based on the latest available estimate in 2023). Lancaster County grew more (3.2%) than Seward County (0.9%) between 2020 and 2024, while the aggregate population of the MSA grew by 3.1%.

The Sioux City MSA (Figure C-4) includes two Iowa Counties, one South Dakota County, and one Nebraska County (Dakota). (Dixon County was removed from the MSA in the 2023 delineation.) Sioux City, Iowa, in Woodbury County, is the principal city in the area. Dakota County's 2024 population (including South Sioux City) was 10.1% of the MSA population. Although the population of the MSA as a whole increased by 1.0% from 2020 to 2024, the population of Dakota County declined by 251 persons, or by 1.2%.

The City of Grand Island is the urban core of the Grand Island MSA, which includes, Hall, Howard, and Merrick Counties. Hall County includes 81.4% of the 2024 population, with the City of Grand Island accounting for 68.4% of the MSA population in 2023. The Grand Island MSA experienced the lowest growth percentage of the four Nebraska MSAs, at 0.3%. Hall County experienced a very small decline in population (31 persons, or 0.05%), whereas the two smaller counties in the MSA experienced small increases.

Table C-2 lists population data for the nine Micropolitan Statistical Areas in Nebraska.

Table C-3 provides population trend data for urban and rural areas of Nebraska from 2010 through 2024, with aggregated population figures for the state as a whole, for all MSAs, all MiSAs, and for the mostly rural area outside of MSAs and MiSAs.

### County-Level Population Data

Table C-4 lists 2020-2024 population data for the seven most-populous Nebraska counties outside of MSAs and MiSAs, along with data for their principal towns. Each of these counties has a 2024 population of at least 10,000 people.

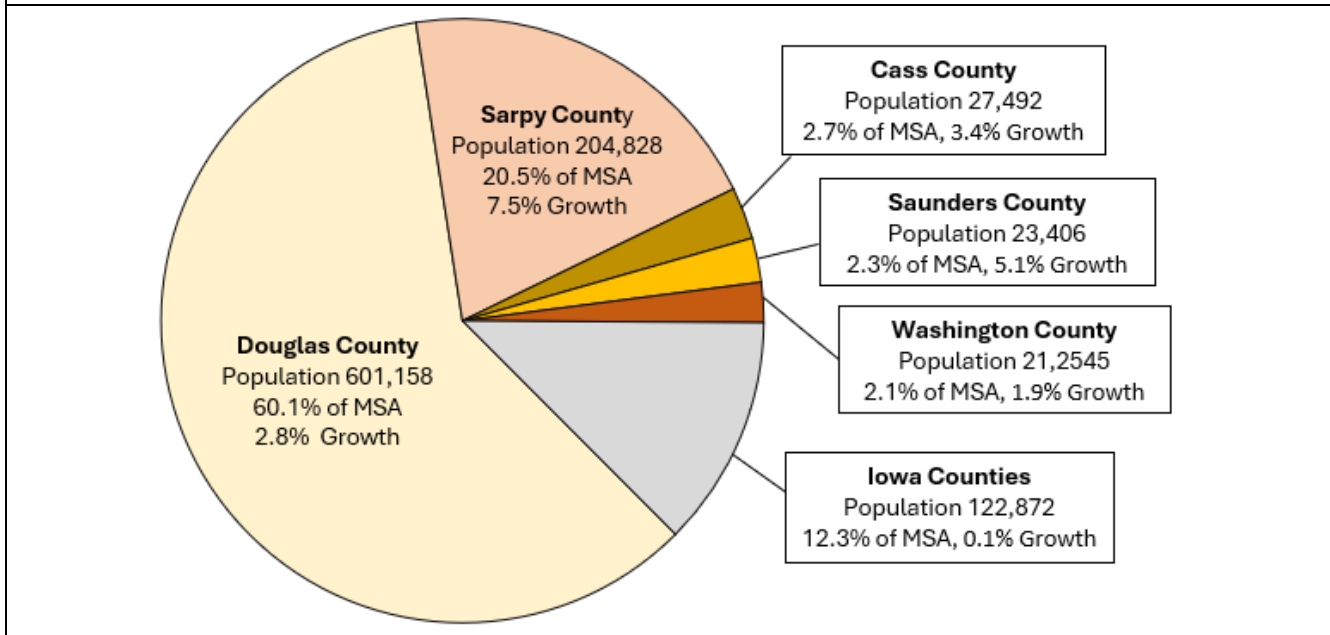
Table C-5 summarizes population data for the eighteen most populous Nebraska counties in 2010, 2020, and 2024, while Table C-6 provides data for the top ten counties for 2024 population, 2020-2024 population growth, and 2010-2024 population growth.

Table C-7 provides 2020-2024 population and population growth data for all Nebraska counties.

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix C: Population Data

Figure C-2: Omaha MSA Population Distribution Chart and Table



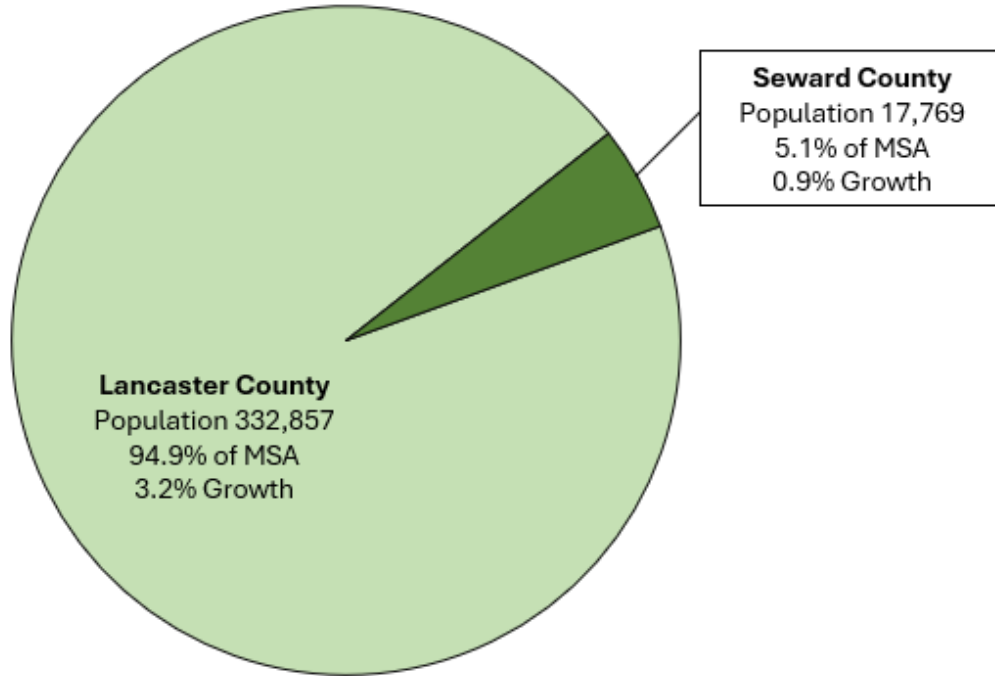
	April 1, 2020 Population	2023 Estimated Population	% MSA Pop. 2023	2024 Estimated Population	% MSA Pop. 2024	Pop. Change 2020-2024	% Pop. Change 2020-2024
<b>Omaha MSA</b>	<b>967,595</b>	<b>988,866</b>		<b>1,001,010</b>		<b>33,415</b>	<b>3.5%</b>
<b>NE Counties</b>	<b>844,866</b>	<b>866,233</b>	<b>87.6%</b>	<b>878,138</b>	<b>87.7%</b>	<b>33,272</b>	<b>3.9%</b>
Douglas	584,526	593,645	60.0%	601,158	60.1%	16,632	2.8%
Omaha (city)	491,870	483,335	48.9%				
Sarpy	190,603	200,477	20.3%	204,828	20.5%	14,225	7.5%
Bellevue (city)	65,068	63,922	6.5%				
Papillion (city)	24,168	23,791	2.4%				
La Vista (city)	16,749	16,346	1.7%				
Cass	26,600	27,458	2.8%	27,492	2.7%	892	3.4%
Plattsmouth (city)	6,601	6,808	0.7%				
Saunders	22,277	23,471	2.4%	23,406	2.3%	1,129	5.1%
Wahoo (city)	4,816	4,987	0.5%				
Washington	20,860	21,182	2.1%	21,254	2.1%	394	1.9%
Blair (city)	7,793	7,967	0.8%				
<b>Iowa Counties</b>	<b>122,729</b>	<b>122,633</b>	<b>12.4%</b>	<b>122,872</b>	<b>12.3%</b>	<b>143</b>	<b>0.1%</b>
Pottawattamie	93,647	93,353	9.4%	93,529	9.3%	-118	-0.1%
Council Bluffs (city)	62,792	62,399	6.3%				
Carter Lake (city)	3,792	3,759	0.4%				
Mills	14,503	14,642	1.5%	14,717	1.5%	214	1.5%
Glenwood (city)	5,073	5,175	0.5%				
Harrison	14,579	14,638	1.5%	14,626	1.5%	47	0.3%
Missouri Valley (city)	2,683	2,656	0.3%				

Observation: Most of the population growth is in Douglas and Sarpy Counties, Nebraska.

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix C: Population Data

Figure C-3: Lincoln MSA Population Distribution Chart and Table



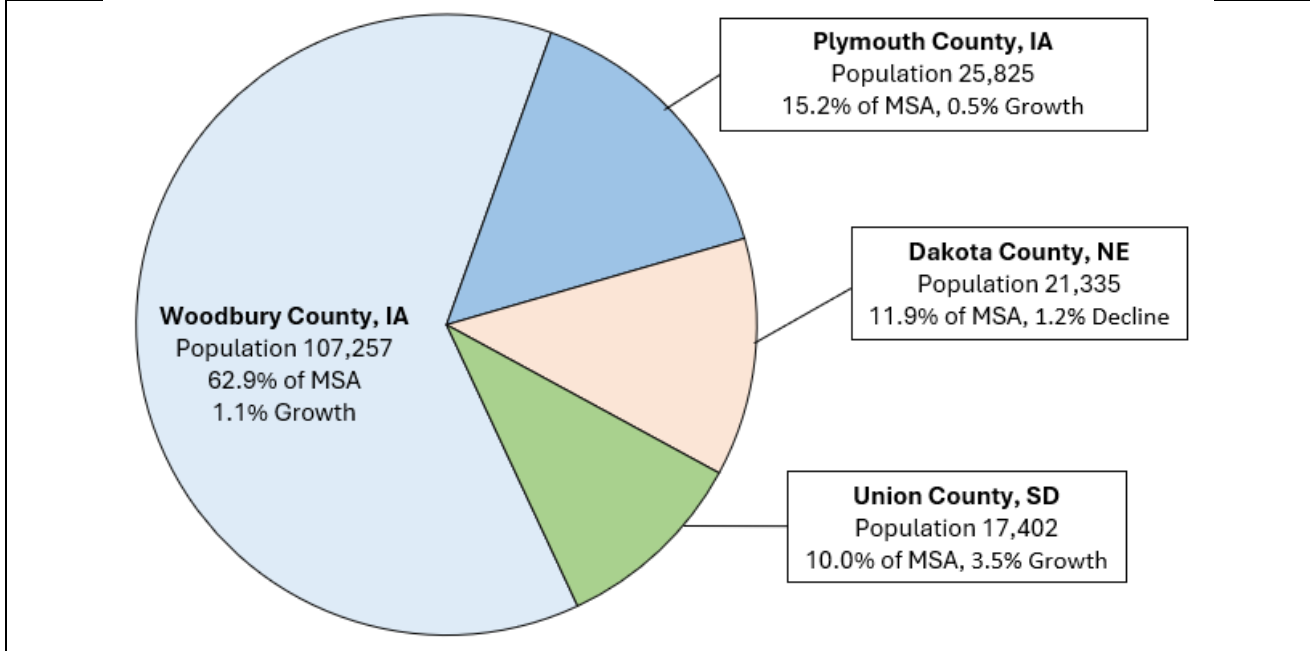
	April 1, 2020 Population	2023 Estimated Population	% MSA Pop. 2023	2024 Estimated Population	% MSA Pop. 2024	Population Change 2020-2024	% Pop. Change 2020-2024
<b>Lincoln MSA</b>	<b>340,210</b>	<b>346,563</b>		<b>350,626</b>		<b>10,416</b>	<b>3.1%</b>
Lancaster	322,608	328,794	94.9%	332,857	94.9%	10,249	3.2%
Lincoln (city)	291,138	294,757	85.1%				
Waverly (city)	4,277	4,458	1.3%				
Seward	17,602	17,769	5.1%	17,769	5.1%	167	0.9%
Seward (city)	7,644	7,672	2.2%				

Observation: Most of the population and growth is in Lancaster County and the cities of Lincoln and Waverly.

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix C: Population Data

Figure C-4: Sioux City MSA Population Distribution Chart and Table



	April 1, 2020 Population	2023 Estimated Population	% MSA Pop. 2023	2024 Estimated Population	% MSA Pop. 2024	Population Change 2020-2024	% Pop. Change 2020-2024
<b>Sioux City MSA</b>	<b>170,074</b>	<b>170,835</b>		<b>171,819</b>		<b>1,745</b>	<b>1.0%</b>
<b>Iowa Counties</b>	<b>131,674</b>	<b>132,309</b>	<b>77.4%</b>	<b>133,082</b>	<b>77.5%</b>	<b>1,408</b>	<b>1.1%</b>
Woodbury	105,976	106,544	62.4%	107,257	62.4%	1,281	1.2%
Sioux City	85,784	85,727	50.2%				
Sergeant Bluff (city)	5,014	5,274	3.1%				
Plymouth	25,698	25,765	15.1%	25,825	15.0%	127	0.5%
Le Mars (city)	10,578	10,618	6.0%				
<b>Nebraska Counties</b>	<b>21,586</b>	<b>21,340</b>	<b>12.5%</b>	<b>21,335</b>	<b>12.4%</b>	<b>-251</b>	<b>-1.2%</b>
Dakota	21,586	21,340	12.5%	21,335	12.4%	-251	-1.2%
South Sioux City	14,043	13,856	8.1%				
Dakota City	2,085	2,047	1.2%				
<b>South Dakota Counties</b>	<b>16,814</b>	<b>17,186</b>	<b>10.1%</b>	<b>17,402</b>	<b>10.1%</b>	<b>588</b>	<b>3.5%</b>
Union	16,814	17,186	10.1%	17,402	10.1%	588	3.5%
North Sioux City	3,044	3,048	1.8%				
Elk Point (city)	2,146	2,075	1.2%				
Beresford (city)	2,175	2,103	1.2%				

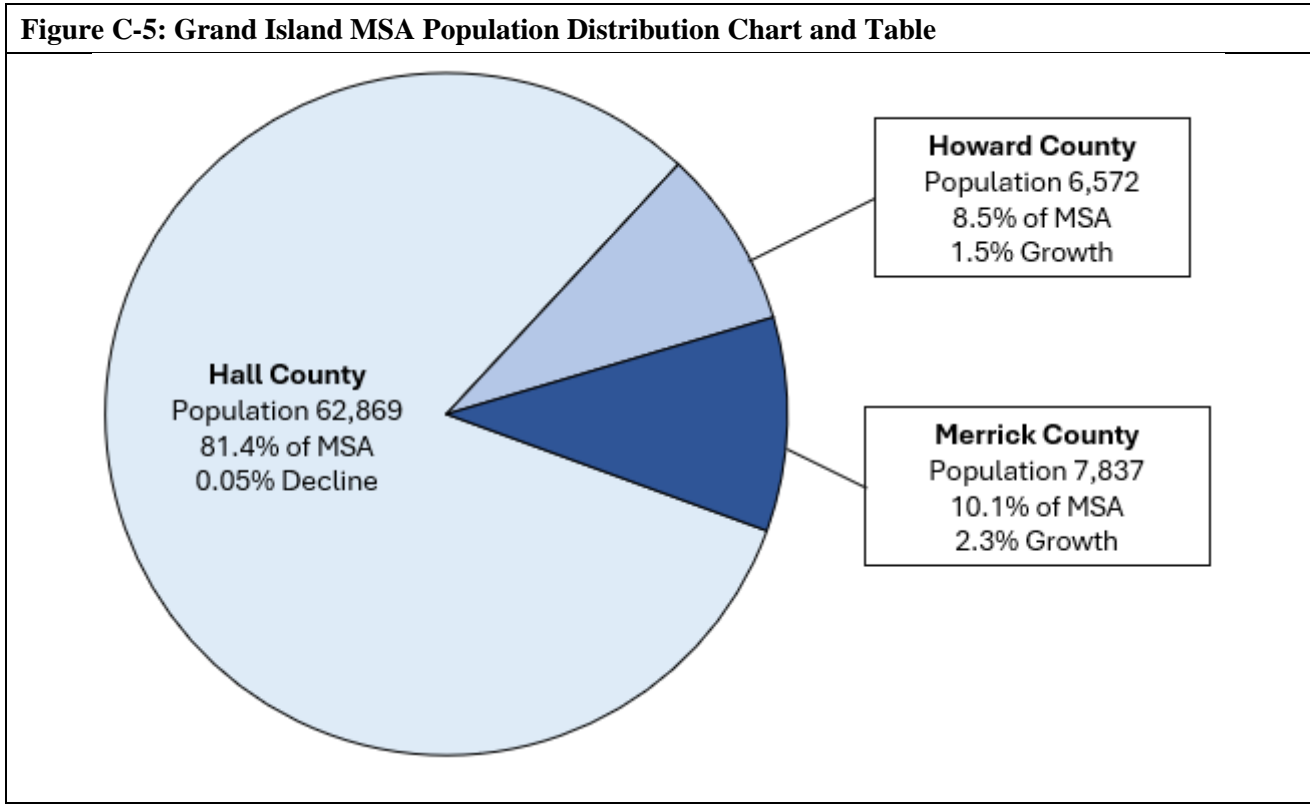
Observations:

- Most of the population is in Woodbury County, Iowa and Sioux City, Iowa
- There was minimal overall population growth in the Sioux City MSA from 2020 to 2024. Growth occurred primarily in the Iowa and South Dakota counties. Populations declined in the Nebraska counties and cities in the Sioux City MSA.

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix C: Population Data

Figure C-5: Grand Island MSA Population Distribution Chart and Table



	April 1, 2020 Population	2023 Estimated Population	% MSA Population 2023	2024 Estimated Population	% MSA Pop. 2024	Population Change 2020-2024	% Pop. Change 2020-2024
<b>Grand Island MSA</b>	<b>77,036</b>	<b>76,968</b>		<b>77,278</b>		<b>242</b>	<b>0.3%</b>
Hall	62,900	62,658	81.4%	62,869	81.4%	-31	-0.05%
Grand Island (city)	53,139	52,622	68.4%				
Howard	6,473	6,564	8.5%	6,572	8.5%	99	1.5%
St. Paul (city)	2,416	2,427	3.2%				
Merrick	7,663	7,746	10.1%	7,837	10.1%	174	2.3%
Central City	3,027	3,090	4.0%				

Observations: Most of the population of the Grand Island MSA is in Hall County and the City of Grand Island.

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix C: Population Data

MiSA/ Counties & Cities	April 1, 2020 Population	2023 Estimated Population	% MSA Pop. 2023	2024 Estimated Population	% MSA Pop. 2024	Pop. Change 2020-2024	% Pop. Change 2020-2024
<b>Kearney MiSA</b>	<b>56,778</b>	<b>57,423</b>		<b>57,905</b>		<b>1,127</b>	<b>2.0%</b>
Buffalo	50,092	50,696	88.3%	51,156	88.3%	1,064	2.1%
Kearney (city)	33,798	34,362	59.8%				
Kearney	6,686	6,727	11.7%	6,749	11.7%	63	0.9%
<b>Norfolk MiSA</b>	<b>48,749</b>	<b>48,856</b>		<b>48,669</b>		<b>-80</b>	<b>-0.2%</b>
Madison	35,588	35,727	73.1%	35,579	73.1%	-9	-0.03%
Norfolk (city)	25,911	26,147	53.5%				
Pierce	7,318	7,304	15.0%	7,334	15.1%	16	0.2%
Stanton	5,843	5,825	11.9%	5,756	11.8%	-87	-1.5%
<b>Columbus MiSA</b>	<b>44,877</b>	<b>45,730</b>		<b>46,325</b>		<b>1,448</b>	<b>3.2%</b>
Platte	34,298	35,034	76.6%	35,499	76.6%	1,201	3.5%
Columbus (city)	24,029	24,464	53.5%				
Colfax	10,579	10,696	23.4%	10,826	23.4%	247	2.3%
Schuyler (city)	6,545	6,529	14.3%				
<b>Hastings MiSA</b>	<b>40,704</b>	<b>40,380</b>		<b>40,625</b>		<b>-79</b>	<b>-0.2%</b>
Adams	31,197	30,892	76.5%	31,196	76.8%	-1	0.0%
Hastings (city)	25,144	24,896	61.7%				
Clay	6,109	6,144	15.2%	6,103	15.0%	-6	-0.1%
Webster	3,398	3,344	8.3%	3,326	8.2%	-72	-2.1%
<b>Fremont MiSA</b>	<b>37,175</b>	<b>37,477</b>		<b>37,884</b>		<b>709</b>	<b>1.9%</b>
Dodge	37,175	37,477	100.0%	37,884	100.0%	709	1.9%
Fremont (city)	27,128	27,602	73.7%				
<b>Scottsbluff MiSA</b>	<b>36,766</b>	<b>36,392</b>		<b>36,399</b>		<b>-367</b>	<b>-1.0%</b>
Scotts Bluff	36,091	35,721	98.2%	35,734	98.2%	-357	-1.0%
Scottsbluff (city)	14,444	14,305	39.3%				
Gering (city)	8,623	8,531	23.4%				
Banner	675	671	1.8%	665	1.8%	-10	-1.5%
<b>North Platte MiSA</b>	<b>35,397</b>	<b>34,118</b>		<b>34,013</b>		<b>-1,384</b>	<b>-3.9%</b>
Lincoln	34,676	33,457	98.1%	33,319	98.0%	-1,357	-3.9%
North Platte (city)	23,405	22,523	66.0%				
Logan	721	661	1.9%	694	2.0%	-27	-3.7%
<b>Lexington MiSA</b>	<b>25,999</b>	<b>26,230</b>		<b>26,362</b>		<b>363</b>	<b>1.4%</b>
Dawson	24,105	24,393	93.0%	24,554	93.1%	449	1.9%
Lexington (city)	10,662	10,816	41.6%				
Cozad (city)	3,991	3,933	15.1%				
Gothenburg (city)	3,486	3,430	13.2%				
Gosper	1,894	1,837	7.0%	1,808	6.9%	-86	-4.5%
<b>Beatrice MiSA</b>	<b>21,702</b>	<b>21,637</b>		<b>21,687</b>		<b>-15</b>	<b>-0.1%</b>
Gage	21,702	21,637	100.0%	21,687	100.0%	-15	-0.1%
Beatrice (city)	12,257	12,262	56.7%				

Observations: Four of the Nebraska MiSAs (Kearney, Columbus, Fremont, and Lexington) had population growth (up to 3.2%) from 2020 to 2024. The other five MiSAs had population declines of from -0.1 to 3.9%.

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

**Appendix C: Population Data**

<b>Table C-3. Urban and Rural Population Trends 2010-2024*</b>				
	<b>Nebraska</b>	<b>MSA</b>	<b>MiSA</b>	<b>Rural</b>
2010	1,830,194	1,068,815	345,683	415,696
2011	1,843,937	1,082,588	346,184	415,165
2012	1,859,140	1,097,671	346,698	414,771
2013	1,873,681	1,112,858	347,273	413,550
2014	1,890,242	1,129,380	347,230	413,632
2015	1,904,766	1,144,216	347,752	412,798
2016	1,921,616	1,160,367	348,820	412,429
2017	1,934,551	1,174,099	349,316	411,136
2018	1,945,483	1,187,252	349,026	409,205
2019	1,954,962	1,198,689	348,532	407,741
2020	1,963,387	1,208,873	347,849	406,665
2021	1,964,537	1,212,538	346,649	405,350
2022	1,972,246	1,220,131	346,576	405,539
2023	1,987,864	1,234,013	348,243	405,608
2024	2,005,465	1,250,099	349,869	405,497
Net Change	175,271	181,284	4,186	-10,199
Percent Change	9.6%	17.0%	1.2%	-2.5%
* Mid-year population estimates from the U.S. Census Bureau				

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

**Appendix C: Population Data**

<b>Table C-4: Nebraska Counties Outside of MSAs and MiSAs with Populations Greater Than 10,000</b>					
Counties & Cities	April 1, 2020 Population	2023 Estimated Population	2024 Estimated Population	Pop. Change 2020-2024	% Pop. Change 2020-2024
Otoe County	15,912	16,448	16,591	679	4.3%
Nebraska City	7,218	7,414			
Otoe County is adjacent to the Omaha and Lincoln MSAs.					
Saline County	14,762	14,651	14,740	-22	1.8%
Crete (city)	7,587	7,488			
Saline County lies southwest of and is adjacent to the Lincoln MSA and is also adjacent to the Beatrice MiSA.					
York County	14,127	14,386	14,375	248	1.8%
York (city)	8,065	8,180			
York County lies between the Lincoln and Grand Island MSAs.					
Box Butte County	10,833	10,705	10,703	-130	-1.2%
Alliance (city)	8,164	8,056			
Alliance is the largest Nebraska city outside of an MSA or MiSA. Box Butte County is adjacent to the Scottsbluff MiSA.					
Custer County	10,540	10,612	10,487	-53	-0.5%
Broken Bow (city)	3,529	3,542			
Custer County is adjacent to the North Platte, Lexington, and Kearney MiSAs.					
Red Willow County	10,702	10,512	10,409	-293	-2.7%
McCook (city)	7,428	7,253			
Red Willow County is on the southwest border of Nebraska.					
Holt County	10,128	10,152	10,120	-8	-0.1%
O'Neill (city)	3,580	3,575			
Atkinson (city)	1,308	1,310			
Holt County is in north-central Nebraska.					
<b>Observations:</b> <ul style="list-style-type: none"> <li>• Three of these eight counties experienced population growth between 2020 and 2024: Otoe, Saline, and York, with the highest growth rate (4.3%) in Otoe County, which is adjacent to the Omaha and Lincoln MSAs.</li> <li>• Micropolitan Statistical Areas (MiSAs) have a core urban area with a population of 10,000 to 49,999. None of these counties appear to have urban areas approaching this population threshold.</li> </ul>					

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix C: Population Data

**Table C-5: Eighteen Most Populated Nebraska Counties, 2010, 2020, and 2024<sup>(a)(b)</sup>**

2010			2020			2024					
Rank	County	Census 2010 Population	Rank	County	April 1 2020 Population	Rank	County	Estimated 2024 Population	% State Pop.	Cum. % State Pop	MSA Or MiSA
1	Douglas	517,110	1	Douglas	584,526	1	Douglas	601,158	29.98	29.98	Omaha NE-IA
2	Lancaster	285,407	2	Lancaster	322,608	2	Lancaster	332,857	16.60	46.57	Lincoln
3	Sarpy	158,840	3	Sarpy	190,603	3	Sarpy	204,828	10.21	56.79	Omaha NE-IA
4	Hall	58,607	4	Hall	62,900	4	Hall	62,869	3.13	59.92	Grand Island
5	Buffalo	46,102	5	Buffalo	50,092	5	Buffalo	51,156	2.55	62.47	Kearney
6	Scotts Bluff	36,970	6	Dodge	37,175	6	Dodge	37,884	1.89	64.36	Fremont
7	Dodge	36,691	7	Scotts Bluff	36,091	7	Scotts Bluff	35,734	1.78	66.14	Scottsbluff
8	Lincoln	36,288	8	Madison	35,588	8	Madison	35,579	1.77	67.92	Norfolk
9	Madison	34,876	9	Lincoln	34,676	9	Platte	35,499	1.77	69.69	Columbus
10	Platte	32,237	10	Platte	34,298	10	Lincoln	33,319	1.66	71.35	North Platte
11	Adams	31,364	11	Adams	31,197	11	Adams	31,196	1.56	72.90	Hastings
12	Cass	25,241	12	Cass	26,600	12	Cass	27,492	1.37	74.28	Omaha NE-IA
13	Dawson	24,326	13	Dawson	24,105	13	Dawson	24,554	1.22	75.50	Lexington
14	Gage	22,311	14	Saunders	22,277	14	Saunders	23,406	1.17	76.67	Omaha NE-IA
15	Dakota	21,006	15	Gage	21,702	15	Gage	21,687	1.08	77.75	Beatrice
16	Saunders	20,780	16	Dakota	21,586	16	Lincoln	21,335	1.06	78.81	Omaha NE-IA
17	Washington	20,234	17	Washington	20,860	17	Washington	21,254	1.06	79.87	Sioux City, IA-NE
18	Seward	16,750	18	Seward	17,602	18	Seward	17,769	0.89	80.76	Lincoln
	Nebraska	1,826,341		Nebraska	1,961,996		Nebraska	2,005,465			

Footnotes:

(a) The population data used in this table were obtained from the U.S. Census Bureau in March 2025.

(b) Counties that maintained the same ranking throughout this time period are shown with the orange background color.

Observations:

- The 18 most populated Nebraska counties are all within Metropolitan or Micropolitan Statistical Areas (MSAs/MiSAs).
- All 13 of Nebraska’s MSAs/MiSAs are represented in this list.
- Over half of the people in Nebraska (56.8%) live in the 3 most populated counties, and 80.8% live in the 18 most populated counties.
- The same counties were in the top 18 throughout this period, with only minor changes in ranking.

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix C: Population Data

2024 Population				Population Growth 2020-2024					Population Growth 2010-2024				
R a n k	County	Estimated 2024 Population	% State Pop.	R a n k	County	April 1 2020 Population	Pop. Growth 2020- 2024	% Pop. Growth	R a n k	County	Census 2010 Population	Pop. Growth 2010- 2024	% Pop. Growth
1	<b>Douglas</b>	601,158	30.0	1	<b>Douglas</b>	584,526	16,632	2.8	1	<b>Douglas</b>	517,110	84,048	16.3
2	<b>Lancaster</b>	332,857	16.6	2	<b>Sarpy</b>	190,603	14,225	7.5	2	<b>Lancaster</b>	285,407	47,450	16.6
3	<b>Sarpy</b>	204,828	10.2	3	<b>Lancaster</b>	322,608	10,249	3.2	3	<b>Sarpy</b>	158,840	45,988	29.0
4	Hall	62,869	3.1	4	<b>Platte</b>	34,298	1,201	3.5	4	<b>Buffalo</b>	46,102	5,054	11.0
5	<b>Buffalo</b>	51,156	2.6	5	Saunders	22,277	1,129	5.1	5	Hall	58,607	4,262	7.3
6	<b>Dodge</b>	37,884	1.9	6	<b>Buffalo</b>	50,092	1,064	2.1	6	<b>Platte</b>	32,237	3,262	10.1
7	Scotts Bluff	35,734	1.8	7	Cass	26,600	892	3.4	7	Saunders	20,780	2,626	12.6
8	Madison	35,579	1.8	8	<b>Dodge</b>	37,175	709	1.9	8	Cass	25,241	2,251	8.9
9	<b>Platte</b>	35,499	1.8	9	Otoe	15,912	679	4.3	9	<b>Dodge</b>	36,691	1,193	3.3
10	Lincoln	33,319	1.7	10	Dawson	24,105	449	1.9	10	Washington	20,234	1,020	5.0
	Nebraska	2,005,465	100		Nebraska	1,961,996	43,469	2.2		Nebraska	1,826,341	179,124	9.8

**Observations** from the data above and from additional data in Table C-1:

- (1) The six counties identified with **Bold font** and the orange highlight (**Buffalo, Dodge, Douglas, Lancaster, Platte, and Sarpy**) appear in the top 10 for population, population growth 2020 to 2024, and population growth 2010 to 2024.
- (2) Nebraska’s three most populous counties (Douglas, Lancaster, and Sarpy), have a total population of 1,1387,843 in 2024, or 56.8% of the state population.
- (3) The three most-populous counties also were the counties with the highest population growth from 2020 to 2024 and 2010 to 2024. The aggregate population growth 2010-2024 in these three counties was 177,486, which was 99% of Nebraska’s total population gain over this period.

The population data used in this table were obtained from the U.S. Census Bureau in March 2025.

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

**Appendix C: Population Data**

<b>Table C-7: Population and Population Change Data for Nebraska and Nebraska Counties</b>						
<b>Ordered by Percent Population Change 2020 to 2024<sup>(a)</sup></b>						
R a n k	Nebraska	1,961,996	2,005,465	43,469	2.2%	26.1
	County	Apr. 1, 2020 Population	Estimated Population 7/1/2024	Population Change 2020-2024	% Change 2020-2024	Population Density <sup>(b)</sup> 2024
1	Sarpy	190,603	204,828	14,225	7.5	857.1
2	Keya Paha	769	819	50	6.5	1.1
3	Blaine	429	454	25	5.8	0.6
4	Saunders	22,277	23,406	1,129	5.1	31.2
5	Wheeler	772	808	36	4.7	1.4
6	Otoe	15,912	16,591	679	4.3	26.9
7	Platte	34,298	35,499	1,201	3.5	52.7
8	Cass	26,600	27,492	892	3.4	49.3
9	Lancaster	322,608	332,857	10,249	3.2	397.4
10	Deuel	1,839	1,892	53	2.9	4.3
11	Douglas	584,526	601,158	16,632	2.8	1830.2
12	Colfax	10,579	10,826	247	2.3	26.3
13	Merrick	7,663	7,837	174	2.3	16.2
14	Buffalo	50,092	51,156	1,064	2.1	52.8
15	Dodge	37,175	37,884	709	1.9	71.7
16	Washington	20,860	21,254	394	1.9	54.5
17	Dawson	24,105	24,554	449	1.9	24.2
18	Cherry	5,458	5,558	100	1.8	0.9
19	York	14,127	14,375	248	1.8	25.1
20	Wayne	9,703	9,870	167	1.7	22.3
21	Howard	6,473	6,572	99	1.5	11.5
22	Hamilton	9,426	9,564	138	1.5	17.6
23	Cheyenne	9,467	9,602	135	1.4	8.0
24	Polk	5,214	5,269	55	1.1	12.0
25	Antelope	6,292	6,358	66	1.0	7.4
26	Seward	17,602	17,769	167	0.9	31.1
27	Kearney	6,686	6,749	63	0.9	13.1
28	Phelps	8,968	9,042	74	0.8	16.8
29	Butler	8,370	8,439	69	0.8	14.4
30	Frontier	2,517	2,536	19	0.8	2.6
31	Greeley	2,189	2,197	8	0.4	3.9

Footnotes:  
 (a) This table contains 2024 population estimates published by the U.S. Census Bureau in March 2025.  
 (b) Population Density is the population divided by the county area in square miles: persons per square mile.

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

**Appendix C: Population Data**

<b>Table C-7: Population and Population Change Data for Nebraska and Nebraska Counties</b>						
<b>Ordered by Percent Population Change 2020 to 2024<sup>(a)</sup></b>						Page 2 of 3
<b>R a n k</b>	<b>County</b>	<b>Apr. 1, 2020 Population</b>	<b>Estimated Population 7/1/2024</b>	<b>Population Change 2020-2024</b>	<b>% Change 2020-2024</b>	<b>Population Density<sup>(b)</sup> 2024</b>
32	Pierce	7,318	7,334	16	0.2	12.8
33	Adams	31,197	31,196	-1	0.0	55.4
34	Nuckolls	4,095	4,094	-1	0.0	7.1
35	Madison	35,588	35,579	-9	0.0	62.1
36	Burt	6,729	6,727	-2	0.0	13.7
37	Hall	62,900	62,869	-31	0.0	115.1
38	Gage	21,702	21,687	-15	-0.1	25.5
39	Holt	10,128	10,120	-8	-0.1	4.2
40	Clay	6,109	6,103	-6	-0.1	10.7
41	Saline	14,762	14,740	-22	-0.1	25.7
42	Sherman	2,956	2,949	-7	-0.2	5.2
43	Boone	5,374	5,354	-20	-0.4	7.8
44	Nemaha	7,075	7,046	-29	-0.4	17.3
45	Custer	10,540	10,487	-53	-0.5	4.1
46	Valley	4,058	4,032	-26	-0.6	7.1
47	Cuming	9,012	8,952	-60	-0.7	15.7
48	Hayes	852	846	-6	-0.7	1.2
49	Fillmore	5,554	5,512	-42	-0.8	9.6
50	Brown	2,902	2,877	-25	-0.9	2.4
51	Scotts Bluff	36,091	35,734	-357	-1.0	48.3
52	Knox	8,401	8,306	-95	-1.1	7.5
53	Pawnee	2,550	2,521	-29	-1.1	5.8
54	Dakota	21,586	21,335	-251	-1.2	80.7
55	Box Butte	10,833	10,703	-130	-1.2	10.0
56	Johnson	5,288	5,219	-69	-1.3	13.9
57	Dixon	5,601	5,526	-75	-1.3	11.6
58	Cedar	8,378	8,262	-116	-1.4	11.2
59	Jefferson	7,240	7,136	-104	-1.4	12.5
60	Banner	675	665	-10	-1.5	0.9
61	Stanton	5,843	5,756	-87	-1.5	13.5
62	Morrill	4,559	4,485	-74	-1.6	3.1

Footnotes:  
 (a) This table contains 2024 population estimates published by the U.S. Census Bureau in March 2025.  
 (b) Population Density is the population divided by the county area in square miles: persons per square mile.

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix C: Population Data

R a n k	County	Apr. 1, 2020 Population	Estimated Population 7/1/2024	Population Change 2020-2024	% Change 2020-2024	Population Density <sup>(b)</sup> 2024
63	Rock	1,263	1,241	-22	-1.7	1.2
64	Harlan	3,073	3,018	-55	-1.8	5.5
65	Hooker	711	698	-13	-1.8	1.0
66	Thurston	6,774	6,637	-137	-2.0	16.9
67	Webster	3,398	3,326	-72	-2.1	5.8
68	Keith	8,331	8,148	-183	-2.2	7.7
69	Arthur	433	423	-10	-2.3	0.6
70	Dawes	8,199	8,003	-196	-2.4	5.7
71	Franklin	2,890	2,817	-73	-2.5	4.9
72	Richardson	7,870	7,666	-204	-2.6	13.9
73	Red Willow	10,702	10,409	-293	-2.7	14.5
74	Perkins	2,859	2,779	-80	-2.8	3.1
75	Sioux	1,132	1,099	-33	-2.9	0.5
76	Thayer	5,036	4,870	-166	-3.3	8.5
77	Chase	3,896	3,764	-132	-3.4	4.2
78	Nance	3,380	3,262	-118	-3.5	7.4
79	Furnas	4,638	4,468	-170	-3.7	6.2
80	Garden	1,874	1,804	-70	-3.7	1.1
81	Logan	721	694	-27	-3.7	1.2
82	Kimball	3,435	3,305	-130	-3.8	3.5
83	Loup	605	582	-23	-3.8	1.0
84	Lincoln	34,676	33,319	-1,357	-3.9	13.0
85	Sheridan	5,133	4,927	-206	-4.0	2.0
86	Dundy	1,654	1,581	-73	-4.4	1.7
87	Gosper	1,894	1,808	-86	-4.5	3.9
88	Thomas	672	634	-38	-5.7	0.9
89	McPherson	399	376	-23	-5.8	0.4
90	Garfield	1,813	1,707	-106	-5.8	3.0
91	Hitchcock	2,615	2,460	-155	-5.9	3.5
92	Boyd	1,811	1,700	-111	-6.1	3.1
93	Grant	614	573	-41	-6.7	0.7

Footnotes:  
 (a) This table contains 2024 population estimates published by the U.S. Census Bureau in March 2025.  
 (b) Population Density is the population divided by the county area in square miles: persons per square mile.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### Appendix D: Compliance Verification with 40 CFR Part 58

This appendix reviews compliance with applicable requirements in 40 CFR Part 58, Appendices A through E. Nebraska ambient air monitoring activities and the ambient air monitoring 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 Revision 3.0* (approved by EPA in October 2022) was developed to comply with Part 58 requirements and the provisions of the EPA *Quality Assurance Handbook for Air Pollution Measurement Systems Volume II* (January 2017). The Douglas County Health Department (DCHD) and Lincoln-Lancaster County Health Department (LLCHD) also 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 particulate monitoring (PM<sub>2.5</sub>, PM<sub>10</sub>, PM<sub>10-2.5</sub> and lead). Table D-1 summarizes the collocated sites in Nebraska. All PM and lead sub-networks operated by DCHD, LLCHD and NDEE either currently meet collocation requirements or will do so after network changes outlined in this 2025 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 40 CFR Part 58 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.)

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

**Appendix D: Compliance Verification with 40 CFR Part 58**

<b>Table D-1: Compliance Summary: Particulate Sampling Collocation Requirements of 40 CFR Part 58 Appendix A<sup>(1)</sup></b>								
Parameter	Primary Measurement Method FRM = Federal Reference Method FEM = Federal Equivalent Method	Percent Collocation Required	NDEE/LLCHD <sup>(2)</sup>			DCHD <sup>(2)</sup>		
			# of Sites	# Collocated	% Collocated	# of Sites	# Collocated	% Collocated
PM <sub>10</sub>	Hi-Vol Sampler (FRM)	15%	0	0	na	0 <sup>(3)</sup>	0	na
PM <sub>10</sub>	Met One E-BAM Plus Continuous (FEM)	None	0	0	na <sup>(4)</sup>	1	0	na <sup>(4)</sup>
PM <sub>10</sub>	Met One BAM Continuous (FEM)	None	1	0	na <sup>(4)</sup>	1	0	na <sup>(4)</sup>
PM <sub>2.5</sub>	Met One BAM Continuous (FEM)	15%	3 <sup>(5)</sup>	1 <sup>(5)</sup>	33%	4	1	25%
PM <sub>10-2.5</sub>	Met One BAM Continuous (FEM)	None	0	0	na	1	0	na <sup>(6)</sup>
TSP-Lead	Hi-Vol Sampler (FRM)	15% except NCore	1 <sup>(7)</sup>	1	100%	0	0	0

Footnotes:

- Collocation Requirements: 40 CFR Part 58 Appendix A requires 15% of the particulate monitoring sites in each parameter/method category to have collocated monitors with the exception of primary PM<sub>10</sub> continuous monitors. Listed site counts incorporate any network changes outlined in this Network Plan.
- Collocation requirements apply to each Primary Quality Assurance Organization (PQAO) separately. There are two PQAO's in Nebraska: DCHD and NDEE/LLCHD.
- Does not include the South Omaha site currently closed for relocation.
- Collocated monitors are not required for continuous PM<sub>10</sub> monitors.
- LLCHD operates a Met One BAM PM<sub>2.5</sub> sampler for AirNow and AQI reporting. It is collocated with the primary and collocated sequential samplers at the Lincoln site but is not used for NAAQS comparison.
- DCHD operates 2 Met One BAM samplers at the NCore site. One is set up to sample PM<sub>2.5</sub> and the other samples PM<sub>10</sub>. PM<sub>10-2.5</sub> is calculated using the results from these 2 samplers. There is a sequential PM<sub>2.5</sub> collocated sampler at the NCore site, but not a collocated PM<sub>10</sub> sampler. Collocated PM<sub>10</sub> samplers are not required in Appendix A for continuous PM<sub>10</sub> samplers. EPA has designated some NCore sites to have collocated samplers for PM<sub>10-2.5</sub>; the Omaha NCore site is not one of them.
- Fremont lead site was closed at the request of the property owner in 2018 and reopened at a nearby site in July 2023.

<b>Network Descriptions:</b>
NDEE Continuous PM <sub>10</sub> : Weeping Water City (collocation not required)
NDEE Met One BAM Continuous PM <sub>2.5</sub> : Grand Island and Scottsbluff
NDEE Met One BAM Continuous and collocated sequential 2025i PM <sub>2.5</sub> : Homestead
LLCHD Primary and collocated sequential 2025i PM <sub>2.5</sub> : Lincoln
NDEE TSP-Lead: Fremont (collocated)
DCHD Hi-Vol PM <sub>10</sub> : South Omaha (currently closed)
DCHD Met One BAM Continuous PM <sub>10</sub> : NCore Omaha
DCHD Met One E-BAM Plus Continuous PM <sub>10</sub> : 19 <sup>th</sup> & Burt St Omaha
DCHD Met One BAM Continuous and collocated sequential 2025 PM <sub>2.5</sub> : NCore
DCHD Met One BAM Continuous PM <sub>2.5</sub> : Bellevue, Berry St. Omaha, and Blair
DCHD Met One BAM Continuous PM <sub>10-2.5</sub> : NCore (collocation not required)

## Appendix D: Compliance Verification with 40 CFR Part 58

### III. 40 CFR Part 58 Appendix D Review

40 CFR Part 58 Appendix D sets forth monitoring objectives, spatial scales, design criteria, and minimum monitoring site requirements for air pollutants. The review that follows demonstrates that the Nebraska ambient air monitoring network meets the current Appendix D requirements.

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

- 40 CFR Part 58 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<sub>2.5</sub> NAAQS was lowered from 15 µg/m<sup>3</sup> to 12 µg/m<sup>3</sup>, 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<sub>2.5</sub> 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. Current Air Quality Index values are posted for public view by DCHD and LLCHD for their respective jurisdictions. The AQI information is made available on their respective agency websites.
- c. Monitoring data from continuous particulate, ozone, and CO monitors in the Omaha, Lincoln, and Grand Island MSAs and the Beatrice and Scottsbluff MiSAs report directly to the EPA AirNow system. The general public can access air quality index information online at [www.airnow.gov](http://www.airnow.gov). Since 2019 NDEE has replaced sequential PM<sub>2.5</sub> samplers in Grand Island and Scottsbluff with continuous monitors reporting to AirNow, and the Department added a new PM<sub>2.5</sub> continuous monitoring site at Homestead National Historic Park near Beatrice to increase public access to real-time particulate monitoring data. In 2024 the Douglas County Health Department replaced sequential samplers at the Berry Street site in Omaha with a continuous monitor reporting to AirNow.

##### 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, the results of which are 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

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### Appendix D: Compliance Verification with 40 CFR Part 58

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<sub>2.5</sub> values through the AirNow Tech website when needed. When elevated ozone or PM<sub>2.5</sub> 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. Prescribed fire is an important range management tool in Nebraska and surrounding states, both to encourage growth of favored grass species and to reduce the spread of woody species such as eastern red cedar. In March and April each year, ranchers in the Flint Hills area of eastern Kansas and northeast Oklahoma conduct extensive prescribed burns on grazing lands. Depending on wind conditions, smoke from these fires can move northward and remain close to the ground, raising PM<sub>2.5</sub> and ozone levels in populated areas in Nebraska.

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. NDEE organizes and coordinates roundtable meetings 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 forecasts of fire activity and impacts along with summaries of burn activity in the Flint Hills and the resulting smoke impacts during the previous week.

- b. In 2021 NDEE established a new PM<sub>2.5</sub> monitoring site at Homestead National Historical Park near Beatrice, Nebraska. The site has co-located continuous and sequential monitors, with continuous data provided to AirNow. Located north of the Flint Hills and south of the urban centers of southeastern Nebraska, the real-time data provided by this site provides advance warning of potential impacts from Flint Hills burn activity in the spring.
- c. NDEE has partnered with the National Weather Service and the Nebraska Department of Health and Human Services (DHHS) to establish a smoke impact working group to assess potential smoke impacts from prescribed fires and wildfires and to issue smoke advisories and air quality alerts when needed. These advisories are relayed to relevant local health departments in Nebraska and disseminated to the public by DHHS, and air quality alerts are issued by the National Weather Service. 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 from prescribed burning and wildfires. This communication framework has been instrumental in addressing smoke

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### Appendix D: Compliance Verification with 40 CFR Part 58

and air quality impacts from nearby and distant wildfires and has provided timely communication to the public regarding those impacts and related health concerns.

#### 3. Support for air pollution research studies – Met

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 Region 7 provides oversight to ensure that regulatory requirements are met with respect to methodology and QA.

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

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

#### B. 40 CFR Part 58 Appendix D Review – Minimum Monitoring Site Requirements for MSAs

40 CFR Part 58 Appendix D sets the minimum number of monitoring sites required for each criteria air pollutant. These requirements are set by Core Based Statistical Area (CBSA), which include Metropolitan Statistical Areas (MSAs) and Micropolitan Statistical Areas (MiSAs). The minimum monitoring site requirements and compliance status for each of the four MSAs in Nebraska are examined and documented in Tables D-2.a through D-2.d 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...".

As detailed in Tables D-2.a and D-2.b, increases in estimated population from 2023 to 2024 in the Omaha and Lincoln MSAs have triggered additional monitoring requirements in both areas.

With the population of the Omaha MSA surpassing the 1,000,000 threshold, the following new monitoring requirements are now in effect (relevant sections of Appendix D shown in parentheses):

- 1) A Photochemical Assessment Monitoring Station (PAMS) for ozone precursors is required to operate at the NCore site during June, July, and August each year (Section 5).
- 2) A microscale near-road NO<sub>2</sub> monitoring station must be sited near a major road with highest annual average daily traffic counts. Measurements must be made of NO, NO<sub>2</sub>, and NO<sub>x</sub> (Section 4.3.2).
- 3) A CO monitor must be collocated at the required near-road NO<sub>2</sub> monitoring site (Section 4.2).
- 4) A PM<sub>2.5</sub> monitor must be collocated at the required near-road NO<sub>2</sub> monitoring site (Section 4.7.1).

With the population of the Lincoln MSA exceeding 350,000, and the most recent ozone Design Value exceeding 85% of the NAAQS, two ozone monitors are required for this area (Section 4.1). A new location to supplement the existing monitoring site at Davey will thus be required.

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

**Appendix D: Compliance Verification with 40 CFR Part 58**

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

<b>Table D-2a: 40 CFR Part 58 Appendix D Review: Omaha MSA (MSA Population ~ 1,001,010) *</b>					
<b>Pollutant</b>	<b>App. D Citation</b>	<b>Review Criteria &amp; Comments</b>	<b>Sites Required</b>	<b>NE Sites Operated</b>	<b>Criteria Met?</b>
<b>Ozone</b>	Sec. 4.1 Table D-2	The Omaha MSA population is between 350,000 and 4M and latest O <sub>3</sub> design values are ≥ 85% of NAAQS ( <i>See Design Values in Attachment B</i> ).	2	2** <small>Includes NCore</small>	Y
<b>CO</b>	Sec. 4.2	The population threshold for requiring a near-road CO monitoring site in a CBSA is 1 million. The midyear 2024 estimated population of the Omaha MSA is now above this threshold.	1	2 <small>Includes NCore</small>	Y
<b>NO<sub>2</sub></b>	Sec. 4.3.2	One near-road NO <sub>2</sub> monitoring site is required in a CBSA with population > 1,000,000. The midyear 2024 estimated population of the Omaha MSA is now above this threshold.	1	0	N
	Sec.4.3.3	Area-Wide monitoring is required if CBSA ≥ 1M; Omaha MSA population is now > 1 M)	1	1 @ NCore	Y
	Sec. 4.3.4	Regional Administrator required monitoring: None at this time.	0	0	Y
<b>SO<sub>2</sub></b>	Sec. 4.4	The need for SO <sub>2</sub> sites is based on the <i>Population Weighted Emissions Index</i> (PWEI). Omaha's PWEI = 12,617, which falls within the 5,000 to 100,000 range requiring 1 site (see Table D-3 below for PWEI calculation data).	1	2 <small>Includes NCore</small>	Y
		Regional Administrator required monitoring: None at this time.	0	0	Y
<b>Lead</b>	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
<b>PM<sub>10</sub></b>	Sec. 4.6 Table D-4	The Omaha MSA has a population over 1,000,000 and a low PM <sub>10</sub> concentration range with max values < 80% of NAAQS; 2 to 4 monitoring sites required. (No sites in the MSA have exceeded the 80% NAAQS threshold since 2017. See Appendix B for PM <sub>10</sub> data.)	2-4	3** <small>Includes NCore &amp; 1 site @ Weeping Water</small>	Y
<b>PM<sub>2.5</sub></b>	Sec 4.7 Table D-5	The Omaha MSA has a population over 1,000,000 and PM <sub>2.5</sub> levels < 85% of NAAQS range at all but one monitor location ( <i>See Design Values in Appendix B</i> ).	2	4 <small>Includes NCore</small>	Y
	Sec 4.7.2	Continuous monitor required.	1	4 <small>Includes NCore</small>	Y
	Sec. 4.7.4	PM <sub>2.5</sub> Speciation Trends Network monitoring required (included SASS and URG samplers as one)	1	1 @ NCore	Y
	Sec. 4.7.1 (b)(2)	For CBSA with population over 1,000,000, at least one monitor collocated at a near-road NO <sub>2</sub> station. Omaha MSA population > 1 M	1	0	N
<b>PAMS</b>	Sec. 5	Required at NCore site in CBSA with population over 1,000,000. Omaha MSA population > 1 M.	1	0	N
<b>NCore</b>	Sec. 3	Omaha has been designated to operate an NCore site with NO <sub>x</sub> /NO <sub>y</sub> 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<sub>2.5</sub>.

\*\* Counts do not include the South Omaha Ozone-PM<sub>10</sub> site that is currently closed for relocation.

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

**Appendix D: Compliance Verification with 40 CFR Part 58**

<b>Table D-2b: 40 CFR Part 58 Appendix D Review: Lincoln MSA (Population ~ 350,626)</b>					
<b>Pollutant</b>	<b>App. D Citation</b>	<b>Review Criteria &amp; Comments</b>	<b>Sites Required</b>	<b>Sites Operated</b>	<b>Criteria Met?</b>
<b>Ozone</b>	Sec. 4.1 Table D-2	The Lincoln MSA population is between 350,000 and 4 million and latest O <sub>3</sub> design value is ≥ 85% of NAAQS ( <i>See Design Values in Attachment B</i> ).	2	1	N
<b>CO</b>	Sec. 4.2	Near-road monitoring: No requirement for CBSA < 1 M.	0	0	Y
<b>NO<sub>2</sub></b>	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 ≥ 1M (Lincoln MSA population < 1 M).	0	0	Y
	Sec. 4.3.4	Regional Administrator required monitoring: none.	0	0	Y
<b>SO<sub>2</sub></b>	Sec. 4.4	The number of SO <sub>2</sub> sites required is based on the <i>Population Weighted Emissions Index (PWEI)</i> . Lincoln’s PWEI = 592, which falls below 5,000 (see Table D-3 below for PWEI calculation data). Thus no sites are required.	0	0	Y
		Regional Administrator required monitoring: none.	0	0	Y
<b>Lead</b>	Sec. 4.5 (a)	There are no sources emitting ≥ 0.5 tpy of lead.	0	0	Y
	Sec. 4.5 (b)	Community-based monitoring not required.	0	0	Y
	Sec. 4.5 (c)	Regional Administrator required monitoring: none.	0	0	Y
<b>PM<sub>10</sub></b>	Sec. 4.6 Table D-4	The Lincoln MSA population is between 250K and 500K. Monitoring is only required if current monitoring indicates PM <sub>10</sub> ≥ 85% of NAAQS.	0-1	0	Y
<b>PM<sub>2.5</sub></b>	Sec 4.7 Table D-5	The Lincoln MSA population is between 50K – 500K and PM <sub>2.5</sub> levels < 85% of NAAQS ( <i>See Design Values in Appendix B</i> ).	0	1	Y
	Sec 4.7.2	Continuous monitor not required.	0	1	Y
	Sec. 4.7.4	PM <sub>2.5</sub> Speciation Trends Network monitoring not required.	0	0	Y
<b>PAMS</b>	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O <sub>3</sub> .	0	0	Y
<b>NCore</b>	Sec. 3	Lincoln has not been designated to operate an NCore site.	0	0	Y

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

**Appendix D: Compliance Verification with 40 CFR Part 58**

<b>Table D-2c: 40 CFR Part 58 Appendix D Review: Sioux City MSA (Population ~ 171,819) *</b>					
<b>Pollutant</b>	<b>App. D Citation</b>	<b>Review Criteria &amp; Comments</b>	<b>Sites Required</b>	<b>NE Sites Operated</b>	<b>Criteria Met?</b>
<b>Ozone</b>	Sec. 4.1 Table D-2	The Sioux City MSA population is between 50K and 350K, with one ozone site required if the DV $\geq$ 85% of the NAAQS. Until 9/31/2021 there was one ozone monitor in the MSA located in a rural area of Union County, SD. The latest 3-year DV from the Union County site is 64 ppb or 91% of the NAAQS. In 2024 Iowa DNR established a new ozone monitoring site in Sioux City to satisfy this requirement for the MSA.	1	0	Y See comment
<b>CO</b>	Sec. 4.2	Near-road monitoring: No requirement for CBSA < 1 M.	0	0	Y
<b>NO<sub>2</sub></b>	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
<b>SO<sub>2</sub></b>	Sec. 4.4	The number of SO <sub>2</sub> sites required is based on the <i>Population Weighted Emissions Index</i> (PWEI). Sioux City MSA's PWEI = 515, which falls below the 5,000 to 100,000 range requiring 1 site (see Table D-3 below for PWEI calculation data).	0	0	Y See comment
		Regional Administrator required monitoring: none	0	0	Y
<b>Lead</b>	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
<b>PM<sub>10</sub></b>	Sec. 4.6 Table D-4	The Sioux City MSA population is between 100K – 250K and PM <sub>10</sub> levels are < 80% of NAAQS ( <i>See Design Values in Attachment B</i> ).	0	0	Y
<b>PM<sub>2.5</sub></b>	Sec 4.7 Table D-5	The Sioux City MSA population is between 50K and 500K and PM <sub>2.5</sub> levels are < 85% of NAAQS, thus no monitor is required. ( <i>See Design Values in Appendix B</i> ).	0	0	Y
	Sec 4.7.2	Continuous monitor not required	0	0	Y
	Sec. 4.7.4	PM <sub>2.5</sub> Speciation Trends Network monitoring not required	0	0	Y
<b>PAMS</b>	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O <sub>3</sub>	0	0	Y
<b>NCore</b>	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.					

**Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment**

**Appendix D: Compliance Verification with 40 CFR Part 58**

<b>Table D-2d: 40 CFR Part 58 Appendix D Review: Grand Island MSA (Population ~ 77,278)</b>					
<b>Pollutant</b>	<b>App. D Citation</b>	<b>Review Criteria &amp; Comments</b>	<b>Sites Required</b>	<b>Sites Operated</b>	<b>Criteria Met?</b>
<b>Ozone</b>	Sec. 4.1 Table D-2	Grand Island MSA population is between 50K -350K. Monitoring is only required if current monitoring finds O <sub>3</sub> > 85% of NAAQS as set forth in Part 58 Appendix D Table D-2.	0	1	Y
<b>CO</b>	Sec. 4.2	Near-road monitoring: No requirement for CBSA < 1 M.	0	0	Y
<b>NO<sub>2</sub></b>	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 ≥ 1M (Grand Island MSA population < 1 M)	0	0	Y
	Sec. 4.3.4	Regional Administrator required monitoring: none	0	0	Y
<b>SO<sub>2</sub></b>	Sec. 4.4	<i>Population Weighted Emissions Index (PWEI) = 32, which falls below 5,000 (see Table D-3 below for PWEI calculation data). No monitoring sites required.</i>	0	0	Y
		Regional Administrator required monitoring: none	0	0	Y
<b>Lead</b>	Sec. 4.5 (a)	There are no sources emitting ≥ 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
<b>PM<sub>10</sub></b>	Sec. 4.6 Table D-4	PM <sub>10</sub> monitoring is not required if MSA population < 100,000	0	0	Y
<b>PM<sub>2.5</sub></b>	Sec 4.7 Table D-5	Grand Island’s CBSA population is between 50K – 500K and PM <sub>2.5</sub> levels are < 85% of NAAQS <i>(See Design Values in Appendix B)</i>	0	1 <sup>(1)</sup>	Y
	Sec 4.7.2	Continuous monitoring is not required	0	0	Y
	Sec. 4.7.4	PM <sub>2.5</sub> Speciation Trends Network monitoring is not required	0	0	Y
<b>PAMS</b>	Sec. 5	Only required for areas classified as serious, severe, or extreme non-attainment for O <sub>3</sub>	0	0	Y
<b>NCore</b>	Sec. 3	The Grand Island MSA has not been designated to operate a NCore site	0	0	Y
Footnote: (1) The PM <sub>2.5</sub> site operated in Grand Island is one of Nebraska’s transport and background monitoring sites.					

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix D: Compliance Verification with 40 CFR Part 58

Table D-3: SO <sub>2</sub> Population Weighted Emissions Index (PWEI) Data for Nebraska Core Based Statistical Areas (CBSAs) <sup>(a) (b) (c)</sup> <span style="float: right;">Page 1 of 2</span>							
CBSA	County	Population 7/1/2024 <sup>(c)</sup>	SO <sub>2</sub> Emissions (tons/year)		SO <sub>2</sub> Emissions % Change	PWEI <sup>(a) (b)</sup>	
			2017 EI	2020 EI		2017 EI	2020 EI
Omaha MSA	Douglas	601,158	8,951	5,691	-36%	20,617	12,617
	Sarpy	204,828	267	79	-70%		
	Cass	27,492	749	702	-6%		
	Saunders	23,406	46	13	-72%		
	Washington	21,254	63	95	52%		
	Pottawattamie, IA	93,529	10,430	5,983	-43%		
	Mills, IA	14,717	30	10	-68%		
	Harrison, IA	14,626	60	32	-47%		
	<b>Totals</b>	<b>1,001,010</b>	<b>20,596</b>	<b>12,605</b>	<b>-39%</b>		
Lincoln MSA	Lancaster	332,857	2,626	1,654	-37%	946	592
	Seward	17,769	73	33	-54%		
	<b>Totals</b>	<b>350,626</b>	<b>2,699</b>	<b>1,687</b>	<b>-37%</b>		
Sioux City MSA <sup>(d)</sup>	Woodbury, IA	107,257	9,316	2,900	-69%	1,690	515
	Plymouth, IA	25,825	331	12	-96%		
	Dakota	21,335	138	20	-86%		
	Union, SD	17,402	50	66	33%		
	<b>Totals</b>	<b>171,819</b>	<b>9,835</b>	<b>2,998</b>	<b>-70%</b>		
Grand Island MSA	Hall	62,869	621	395	-36%	54	32
	Howard	6,572	27	13	-53%		
	Merrick	7,837	52	12	-77%		
	<b>Totals</b>	<b>77,278</b>	<b>700</b>	<b>419</b>	<b>-40%</b>		
Observation: The EPA’s emission inventory data indicates that SO <sub>2</sub> emissions from the four Nebraska MSAs decreased by 37% to 70% from 2017 to 2020.							
Footnotes: (a) Population Weighted Emission Index (PWEI) = (CBSA Population) x (SO <sub>2</sub> Emissions (tpy))/1,000,000. (b) SO <sub>2</sub> Emission data were obtained from the EPA National Emission Inventory (EI) database for 2017 and 2020. The 2020 NEI data are the most recent available from EPA at the time this table was created (March 26, 2025). (c) U.S. Census population estimate data for 7/1/2024 were used in this table and the PWEI calculations. (d) Prior to July 2023, the Sioux City MSA also included Dixon County, Nebraska. The PWEI calculated with 2020 Emission Inventory data is currently applicable. The PWEI was also calculated with 2017 EI data to document changes that have occurred.							

Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

Appendix D: Compliance Verification with 40 CFR Part 58

Table D-3 (continued): SO <sub>2</sub> Population Weighted Emissions Index (PWEI) Data for Nebraska Core Based Statistical Areas (CBSAs) <sup>(a) (b) (c)</sup> <span style="float: right;">Page 2 of 2</span>							
CBSA	County	Population 7/1/2022 <sup>(c)</sup>	SO <sub>2</sub> Emissions (tons/year)		SO <sub>2</sub> Emissions (% Change)	PWEI <sup>(a) (b)</sup>	
			2017 EI	2020 EI		2017 EI	2020 EI
Kearney MiSA	Buffalo	51,156	136	37	-73%	8.8	2.3
	Kearney	6,749	16	3	-79%		
	<b>Totals</b>	<b>57,905</b>	<b>152</b>	<b>40</b>	<b>-73%</b>		
Norfolk MiSA	Madison	35,579	102	13	-87%	16	12
	Pierce	7,334	37	23	-37%		
	Stanton	5,756	188	216	15%		
	<b>Totals</b>	<b>48,669</b>	<b>327</b>	<b>252</b>	<b>-23%</b>		
Hastings MiSA	Adams	31,196	2,604	2,235	-14%	107	92
	Clay	6,103	16	9	-43%		
	Webster	3,326	6	10	81%		
	<b>Totals</b>	<b>40,625</b>	<b>2,626</b>	<b>2,254</b>	<b>-14%</b>		
Scottsbluff MiSA <sup>(e)</sup>	Banner	674	1	52	5058%	8.2	7.8
	Scotts Bluff	35,699	224	162	-27%		
	<b>Totals</b>	<b>36,373</b>	<b>225</b>	<b>214</b>	<b>-5%</b>		
North Platte MiSA <sup>(f)</sup>	Lincoln	33,319	21,346	18,332	-14%	726	624
	Logan	694	4	24	503%		
	<b>Totals</b>	<b>34,013</b>	<b>21,350</b>	<b>18,356</b>	<b>-14%</b>		
Fremont MiSA	Dodge	37,884	1,032	935	-9%	39	35
Columbus MiSA	Platte	35,499	516	411	-20%	30	22
	Colfax	10,826	123	56	-55%		
	<b>Totals</b>	<b>46,325</b>	<b>639</b>	<b>467</b>	<b>-27%</b>		
Lexington MiSA	Dawson	24,554	114	23	-80%	3.3	0.7
	Gosper	1,808	11	3	-70%		
	<b>Totals</b>	<b>26,362</b>	<b>125</b>	<b>26</b>	<b>-79%</b>		
Beatrice MiSA	Gage	21,687	93	41	-56%	2.0	0.9

Footnotes:  
 (e) Prior to July 2023, the Scottsbluff MiSA also included Sioux County.  
 (f) Prior to July 2023, the North Platte MiSA also included McPherson County.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### Appendix D: Compliance Verification with 40 CFR Part 58

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

The review for non-MSA areas of the state was performed on a pollutant-specific basis, as detailed below.

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

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<sub>3</sub>)** – (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. The 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<sub>2</sub>)** – (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<sub>2</sub> monitoring outside the MSAs.

**Sulfur Dioxide (SO<sub>2</sub>)** – (40 CFR Part 58 App. D Sec. 4.4) No sites required or operated.

There are no Part 58 requirements to operate SO<sub>2</sub> 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<sub>2</sub> NAAQS. NDEE has no current plans for SO<sub>2</sub> monitoring in non-MSA areas.

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

Two source-oriented monitoring sites required; 1 currently active 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: Nucor Steel in Norfolk, Magnolia Metals in Auburn, and Magnus LLC in Fremont.

Part 58 Appendix D Section 4.5(a)(ii) stipulates that the Regional Administrator may grant a waiver from lead monitoring if the state or local agency can demonstrate that the source will not contribute to maximum lead concentration in ambient air in excess of 50% of the NAAQS (based on historical monitoring data, modeling, or other means). NDEE first requested a waiver from EPA Region 7 for Nucor Steel in April 2014. This waiver must be renewed every five years. NDEE sought a renewal of this waiver in the 2019 and 2024 Network Plans. The current waiver was approved by EPA Region 7 in November 2024 and remains in force until April 2029.

Monitoring near the Magnolia Metals facility in Auburn was initiated in 2010. 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 LLC facility in Fremont currently is the only Nebraska facility that requires lead monitoring. Monitoring on a property north of this facility began in 2010 but was discontinued in September 2018 at the request of the site host. NDEE identified an alternative site on a nearby commercial property; this location was approved by EPA Region 7 during a site visit on December 5, 2019. However, negotiations with the property owner stalled. An alternative site was located in 2022 and a site lease agreement was signed by the

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### Appendix D: Compliance Verification with 40 CFR Part 58

new property owner in March 2023. NDEE requested EPA approval of the new site in the 2023 Network Plan, and installation of the samplers at the new site was completed at the beginning of July 2023. However, modeling conducted by EPA Region 7 in 2024 showed that the relocated site is not in the area of expected maximum lead concentration as required. NDEE is working to identify a property owner in the required area willing to allow the monitoring equipment to be sited on their property.

**Coarse Particulate Matter (PM<sub>10</sub>):** (40 CFR Part 58 App. D Sec. 4.6) No sites required. No sites operated. There are no minimum PM<sub>10</sub> monitoring requirements for areas outside of MSAs.

**Fine Particulate Matter (PM<sub>2.5</sub>):** (40 CFR Part 58 Appendix D Section 4.7 & 4.7.3) Two (2) sites required and three operated.

States are required to operate a background site and a transport site for PM<sub>2.5</sub>. The Homestead (Beatrice MSA) location is a background site, Scottsbluff is a transport site, and the Grand Island monitor serves as both a background and transport site.

**Coarse Particulate Matter (PM<sub>10-2.5</sub>):** (40 CFR Part 58 App D Sec 4.8) No sites required or operated.

#### IV. 40 CFR Part 58 Appendix E Review

Appendix E 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.

# Nebraska Department of Environment and Energy

## 2025 Annual Report on Modeled Facilities (Data Requirements Rule, 2010 SO<sub>2</sub> NAAQS)



**Jesse Bradley, Director**  
**June 11, 2025**

**Nebraska 2025 Ambient Air Monitoring Network Plan**  
**Appendix E**

## **Introduction**

The Data Requirements Rule (DRR) for the 2010 1-hour SO<sub>2</sub> Primary National Ambient Air Quality Standards (NAAQS) was issued in August 2015 and describes ongoing requirements for states with areas designated as attainment based on air quality modeling. Of the three areas in Nebraska subject to the rule, two 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 in this report.

## **Areas Subject to Ongoing Requirements**

The following pages address three areas in Nebraska subject to the ongoing requirements described in 40 CFR Part 51.1205. Modeling analyses used to characterize these areas utilized actual emissions data and these areas have no subsequent “nonattainment” designations.

**Nebraska 2025 Ambient Air Monitoring Network Plan  
Appendix E**

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

Nebraska Public Power District (Lincoln County)

The modeling analysis<sup>1</sup> used to characterize this area was performed in September 2015 and utilized actual facility emissions from 2012-2014. This analysis indicated the SO<sub>2</sub> impact (99<sup>th</sup> percentile 1-hour SO<sub>2</sub> concentration) on the area to be 144.8 µg/m<sup>3</sup>, or 55.3 parts per billion (ppb). This impact value equates to 73.7% of the 1-hour SO<sub>2</sub> 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 2022-2024, are included for comparison. The SO<sub>2</sub> emissions reported for 2024 indicate an 1.7% decrease from 2023, with overall facility SO<sub>2</sub> emissions decreasing on average by about 1.9% annually since 2012. The 2022-2024 average actual emissions are 21.1% lower than the 2012-2014 modeled three-year average. Therefore, NDEE asserts that the area surrounding GGS continues to be in attainment with the 1-hour SO<sub>2</sub> NAAQS, and additional modeling is not necessary at this time.

GGS participates in the Cross-State Air Pollution Rule (CSAPR) trading program for SO<sub>2</sub>, and actual 2024 facility emissions are below the SO<sub>2</sub> allocations of 13,780 tons (Unit 1) and 15,116 tons (Unit 2).<sup>2</sup>

<b>Table E-1. Gerald Gentleman Station</b>						
<b>Unit</b>	<b>SO<sub>2</sub> Emissions (tons per year)</b>					
	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
GG1	14,832	13,047	12,539	10,127	10,202	8,326
GG2	11,605	15,383	11,945	11,101	10,675	12,191
<b>Total</b>	<b>26,437</b>	<b>28,430</b>	<b>24,484</b>	<b>21,228</b>	<b>20,877</b>	<b>20,517</b>
<b>Average (2012-2014)</b>	<b>26,450</b>					
<b>Average (2022-2024)</b>				<b>20,874</b>		

Emissions data were acquired from the Clean Air Markets Division, <https://campd.epa.gov/data>.

<sup>1</sup> Available via the NDEE Public Records search portal <https://ecmp.nebraska.gov/PublicAccess/index.html?MyQueryID=340>, Facility ID: 34385 – DEQ Program: Air, Document date 9/18/2015, DEQ Data, Modeling

<sup>2</sup> CSAPR Allowance Allocations <https://www.epa.gov/csapr/csapr-allowance-allocations>.

**Nebraska 2025 Ambient Air Monitoring Network Plan  
Appendix E**

**The area surrounding Gerald Whelan Energy Center (WEC)**

Hastings Utilities (Adams County)

The modeling analysis<sup>3</sup> used to characterize this area was performed in December 2016 and utilized actual facility emissions data from 2013-2015. This analysis indicated the SO<sub>2</sub> impact (99th percentile 1-hour SO<sub>2</sub> concentration) on the area to be 188.7 µg/m<sup>3</sup>, or 72.02 ppb, which equates to 96% of the NAAQS. This impact value is below the 1-hour SO<sub>2</sub> 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 is shown in **Table D-2**. Data from 2013-2015 used in the modeling analysis, and reported emissions data for 2022-2024, are included to provide comparison. The 2024 SO<sub>2</sub> emissions show a 5.5% decrease from 2023, and the 2022-2024 average is 1.9% lower than the 2013-2015 modeled three-year average. Therefore, NDEE asserts that the area surrounding WEC continues to be in attainment with the 1-hour SO<sub>2</sub> NAAQS, and additional modeling is not necessary at this time.

WEC participates in the Cross-State Air Pollution Rule (CSAPR) trading program for SO<sub>2</sub> (WEC1); actual 2024 emissions from WEC1 were below the SO<sub>2</sub> allocations<sup>4</sup> of 1,722 tons for that unit.

<b>Table E-2. Gerald Whelan Energy Center</b>						
<b>Unit</b>	<b>SO<sub>2</sub> Emissions (tons per year)</b>					
	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
WEC1	1,439	2,302	1,495	2,051	1,653	1,520
WEC2	692	598	409	619	424	489
<b>Total</b>	<b>2,131</b>	<b>2,900</b>	<b>1,904</b>	<b>2,670</b>	<b>2,126</b>	<b>2,009</b>
<b>Average (2013-2015)</b>	<b>2,312</b>					
<b>Average (2022-2024)</b>				<b>2,268</b>		

Emissions data were acquired from the Clean Air Markets Program Data, <https://campd.epa.gov/data>.

<sup>3</sup> Available via the NDEE Public Records search portal <https://ecmp.nebraska.gov/PublicAccess/index.html?MyQueryID=340>, Facility ID: 58048 – DEQ Program: Air, Document date 12/13/2016, DEQ Data, Modeling

<sup>4</sup> CSAPR Allowance Allocations <https://www.epa.gov/csapr/csapr-allowance-allocations>.

## Nebraska 2025 Ambient Air Monitoring Network Plan Appendix E

### The area surrounding Nebraska City Station (NCS)

Omaha Public Power District (Otoe County)

The modeling analysis<sup>5</sup> used to characterize this area was performed in August 2015, utilizing actual facility emissions data from 2012-2014. This analysis indicated the SO<sub>2</sub> impact (99<sup>th</sup> percentile 1-hour SO<sub>2</sub> concentration) on the area to be 78.5 ug/m<sup>3</sup> (32.7 ppb), which equates to an impact of 39.9% of the NAAQS. Pursuant to 40 CFR Part 51.1205(b)(2), a state is not subject to the requirement for annual reports if the air quality modeling demonstrates that air quality values at all receptors in the area are less than 50% of the NAAQS. The area surrounding this facility was designated “unclassifiable/attainment” on July 12, 2016 (81 FR 45039).

NCS participates in the Cross-State Air Pollution Rule (CSAPR) trading program for SO<sub>2</sub>, and actual 2024 facility emissions are below the SO<sub>2</sub> allocations of 12,313 tons (Unit 1) and 3,377 tons (Unit 2).<sup>6</sup>

Due to a 24.9% decrease in annual emissions in 2024<sup>7</sup>, the most current three-year average of emissions (2022-2024) for this facility is 42% less than the three-year average of the emissions used for modeling, thus NDEE asserts that the area surrounding NCS continues to be in attainment with the 1-hour SO<sub>2</sub> NAAQS, and that additional modeling is not necessary at this time.

### Conclusion

Emissions data analyses indicate that areas in Nebraska subject to the DRR on-going requirements continue to demonstrate attainment with the 2010 1-hour SO<sub>2</sub> NAAQS. Based on these analyses, NDEE asserts that no additional modeling is necessary at this time to further characterize these areas.

### Public Notice

This document was made available for public inspection and comment from May 6, 2025 until June 6, 2025. No comments were received during this time. A copy of the public notice is attached.

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<sup>5</sup> Available via the NDEE Public Records search portal

<https://ecmp.nebraska.gov/PublicAccess/index.html?MyQueryID=340>, Facility ID: 58343 – DEQ Program: Air, Document date 8/21/2015, DEQ Letter, Modeling

<sup>6</sup> CSAPR Allowance Allocations <https://www.epa.gov/csapr/csapr-allowance-allocations>

<sup>7</sup> Emissions data were acquired from the Clean Air Markets Program Data, <https://campd.epa.gov/data>. Facility 2024 SO<sub>2</sub> emissions were compared to emissions from 2023.

# Nebraska 2025 Ambient Air Monitoring Network Plan Appendix E

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## Draft 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

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Nebraska's Draft 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment is available for public comment. The Network Plan was developed to comply with Federal regulation 40 CFR Part 58.10.

The Network Plan describes the existing ambient air monitoring network in Nebraska, assesses its adequacy and compliance with federal regulations, and sets forth planned changes through June 2026. It also contains information on Nebraska's air quality. The Network Plan is available for download and review below.

### Written Comments

Written comments regarding this Draft Network Plan may be submitted to the Nebraska Department of Environment and Energy (NDEE) at the mail or email addresses below.

Comments should be submitted by June 6, 2025. Comments will be addressed as appropriate in the final Network Plan.

**Mail:**

Nebraska Department of Environment and Energy

Attn: Dave Adam – Monitoring Section

PO BOX 98922

Lincoln, NE 68509

**Email:**

[NDEE.airquality@nebraska.gov](mailto:NDEE.airquality@nebraska.gov) 

<b>Form Type</b>	Annual Reports
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## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### Appendix F: Request for Renewal of Nucor Steel Lead Monitor Waiver

#### Background

State air quality agencies are required to conduct source-oriented lead monitoring from each source that emits lead at a rate equal to or greater than the emission threshold of 0.50 tons per year (tpy), unless a waiver is granted as allowed by 40 CFR part 58 Appendix D, paragraph 4.5(a)(ii) for sources that will not contribute to lead concentrations in ambient air in excess of 50% of the NAAQS (based on historical monitoring data, modeling, or other means). A lead monitoring waiver is currently in place with U.S. EPA for Nucor Steel, in Norfolk, NE. The waiver was first approved by EPA on 16 April 2014 and renewed with approval of the 2019 Nebraska Ambient Air Monitoring Network Plan and the 2024 Nebraska Ambient Air Monitoring Network Plan. The waiver must be renewed every five years.

However, EPA has informed NDEE that waiver requests must be submitted as part of the Five-Year Assessment. This appendix is a request for the renewal of this waiver. Emissions inventories and stack emissions tests confirm that annual lead emissions have been less than 0.5 tpy throughout the term of the current waiver, and previous modeling results for this facility demonstrated that it does not have the potential to contribute to a maximum lead concentration greater than 50% of the NAAQS.

#### Facility Description

Nucor Steel is a steel recycling facility that utilizes ferrous metal scarp as the primary raw material in the production of steel billets and finished steel bar products. The source operates under Standard Industrial Classification (SIC) code 3312 for Blast Furnaces and Steel Mills, and under North American Industrial Classification System (NAICS) code 331110 for Iron and Steel Mills and Ferroalloy Manufacturing. The main lead emission points are in the meltshop, where scrap is melted in two electric arc furnaces and where casting operations also take place. The facility operates around the clock throughout the year (8760 hrs/yr). Although Nucor Steel's permit revision in 2013 authorized an increase in steel production to 1,350,000 tons annually, production has not exceeded the previous limit of 1,300,000 tons since 2005 and has only exceeded 1,000,000 tons in 2018 and 2021.

Lead emissions from the meltshop are controlled primarily via a canopy hood exhausted to a positive-pressure baghouse (EP-8a.1) installed in 1997 and a direct evacuation control system exhausted to a negative-pressure baghouse (EP-8a.2) installed in 2014. The facility currently operates under a facility-wide potential to emit (PTE) lead limit of 1.55 tons per year, and the combined hourly emission rate limit of lead from the two meltshop baghouses is 0.38 lbs/hr, averaged over a 3-hour test period.

#### Facility Lead (Pb) Emissions

Nucor's facility-wide Pb emissions as reported in annual emission inventories from 2012 through 2024 are shown in Table F-1 below. After the negative-pressure baghouse became fully operational during 2015, reported annual facility-wide lead emissions have not exceeded the 0.5-ton threshold, with no significant overall change in steel production level. The largest annual emissions total reported during that period was 0.362 tons in 2023.

2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
0.63	0.81	0.11	0.91	0.15	0.19	0.22	0.264	0.322	0.347	0.315	0.362	0.369

#### Emission Test Results

Nucor Steel has submitted to NDEE source emission test results for lead emission rates for the two meltshop baghouses at approximately two-year intervals since 2015. The tests report the average hourly emission rates for three test runs for each baghouse. The test data are summarized in Table F-2.

**Appendix F: Request for Renewal of Nucor Steel Lead Monitor Waiver**

<b>Table F-2. Lead Stack Emission Rate Test Results for the Nucor Meltshop Baghouses 2015 through 2023</b>						
<b>Date</b>	<b>Average Lead Emission Rate (lb/hr)</b>			<b>Permit Limit (lbs/hr)</b>	<b>Percent of Permit Limit</b>	<b>Annualized Emissions (ton)</b>
	<b>EP-8a.1</b>	<b>EP-8a.2</b>	<b>Combined</b>			
4/18/2023	0.0021	0.0110	0.0130	0.38	3.4%	0.057
4/6/2021	0.0110	0.0059	0.0170	0.38	4.5%	0.074
4/24 & 4/25/2019	0.0013	0.0006	0.0019	0.38	0.5%	0.008
4/5 & 4/6/2018	0.0077	0.0049	0.0126	0.38	3.3%	0.055
4/9 & 4/10/2017	0.0116	0.0055	0.0171	0.38	4.5%	0.075
6/6 & 6/7/2015	0.0030	0.0250	0.0280	0.38	7.4%	0.123

The emission tests since 2017 show combined hourly lead emission rates for the two meltshop baghouses have not exceeded 5% of the permit limit of 0.38 lbs/hr. Assuming year-round operation of the meltshop at the tested rates, annual lead emissions for the two meltshop baghouses would not exceed 0.075 ton in any of the test years after 2015, including the most recent test in 2023. These test results indicate that Nucor Steel’s reported annual facility-wide lead emissions are based on conservative calculations.

**Air Dispersion Modeling**

In 2019 NDEE conducted air dispersion modeling of the Nucor Steel facility using AERMOD version 18081. The model design and results were reported in NDEE’s 2019 Network Plan. The maximum monthly AERMOD results yielded a predicted 3-month rolling average lead concentration of 0.04 µg/m<sup>3</sup>, or 27% of the Pb NAAQS.

**Conclusion**

Reported annual lead emissions, emissions testing, and air dispersion modeling all demonstrate that Nucor Steel is not emitting lead in amounts equal to or greater than 0.5 tpy, and maximum concentrations are well below 50% of the lead NAAQS. NDEE requests renewal of the lead monitoring waiver for Nucor Steel for an additional 5-year period.

## Nebraska 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment

### Appendix G: Public Comment and Response

#### Comment Received from Ag Processing Inc.

*Via Electronic Mail 5/7/2025*

To Whom it May Concern - AGP is submitting the comment below in response to the draft 2025 Ambient Air Monitoring Network Plan and Five-Year Assessment.

After review of the 2025 Ambient Air Monitoring Network Plan, AGP recommends NDEE consider the addition of at least one more PM<sub>2.5</sub> monitor to the northern part of the State. The draft plan states that the current background PM<sub>2.5</sub> monitor located at Homestead National Historical Park near Beatrice was established in part to provide early detection of particulates in smoke from prescribed fires in eastern Kansas that is transported northward toward population centers in eastern Nebraska. The 2023 annual average PM<sub>2.5</sub> design values at all monitoring sites were elevated with respect to the preceding and following years due to Canadian wildfires. If the Homestead National Historical Park location was established in part to provide early detection of particulates in smoke from wildfires, then another monitor should also be established to provide early detection of particulates in smoke from wildfires from the north.

Additionally, with the lowering of the annual average PM<sub>2.5</sub> NAAQS standard to 9.0 µg/m<sup>3</sup>, additional data outside of the urban population centers will provide a clearer understanding of background PM<sub>2.5</sub> in the State. Currently, Grand Island and Homestead National Historical Park monitors are the only locations being utilized for background PM<sub>2.5</sub> monitoring and they are located in the southern half of the state, with Grand Island being one of the more populated areas of the State. The potential discrepancy across the State can be observed in the calculated PM<sub>2.5</sub> design values (DV). Scottsbluff has an annual DV concentration of 4.3 µg/m<sup>3</sup>, Beatrice/Homestead has an annual DV concentration of 6.3 µg/m<sup>3</sup>, and the Omaha-Council Bluffs MSA has an annual DV concentration of 8.4 µg/m<sup>3</sup>. This wide range of design values clearly demonstrates an additional PM<sub>2.5</sub> monitor(s) in the current rural void would be beneficial.

Thank you,

Dan Dunham | Environmental Compliance Manager  
Ag Processing Inc | 12700 West Dodge Road | Omaha, NE 68154  
Phone: 402.492.7713 | Cell: 402.619.2753

#### NDEE Response to Ag Processing Inc.

The comment author proposes that an additional PM<sub>2.5</sub> monitor site should be established in the northern part of the State to provide early detection of smoke from northern wildfires and to provide a better understanding of background values in the state.

The purpose of the Ambient Air Monitoring Network Plan is to fulfill Nebraska's obligation under 40 CFR Part 58.10(a) to assess and demonstrate that its ambient air monitoring network meets the applicable requirements of 40 CFR Part 58 and to identify any proposed network changes. Fine particulate (PM<sub>2.5</sub>) monitoring to inform the public and demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) is required in Metropolitan Statistical Areas (MSAs) that exceed certain population thresholds, with the number of monitor sites required dependent on whether the most recent PM<sub>2.5</sub> Design Values (DVs) are greater or less than 85% of any PM<sub>2.5</sub> NAAQS. Only one Nebraska MSA (Omaha) requires PM<sub>2.5</sub> monitoring according to these requirements, but NDEE maintains PM<sub>2.5</sub> monitors for regulatory purposes in three of the four MSAs that include Nebraska counties, and Iowa maintains a monitoring site in the remaining MSA (Sioux City). Nebraska also meets federal requirements to maintain at least one site to monitor regional background (Homestead) and one site to monitor regional transport (Grand Island and Scottsbluff).

## Appendix G: Public Comment and Response

The comment author cites as an example the monitoring site near Beatrice (Homestead National Historical Park) that was established in part to provide early warning of smoke moving northward from prescribed fires in eastern Kansas. Prescribed burning of rangeland is a regular spring event in the Flint Hills of eastern Kansas and Oklahoma, averaging about 2,000,000 acres burned annually. Smoke impacts in eastern Nebraska vary from year to year depending on the area burned, weather conditions, and wind directions. The burn areas lie directly south of the major population areas of eastern Nebraska, southerly spring winds are common in some years, and the northern end of the Flint Hills is less than 50 miles from the southern border of Nebraska. Overnight atmospheric temperature inversions frequently trap smoke near the ground after it has traveled into Nebraska, resulting in the risk of public health impacts. For these and other reasons, NDEE established the Homestead regulatory PM<sub>2.5</sub> monitoring site near the southern border of the state to provide early smoke detection during the spring burn season and to provide regional background values throughout the year.

The Canadian wildfires cited by the comment author occur hundreds of miles north of Nebraska, and the resulting smoke affects monitoring sites in a number of Canadian provinces and U.S. states over many hours or days before reaching Nebraska. For example, the South Dakota Department of Agriculture and Natural Resources maintains seven continuous PM<sub>2.5</sub> monitoring sites across the southern half of the state (at Rapid City, Wind Cave and Badlands National Parks, Pierre, Brookings, Sioux Falls, and Vermillion). Data from these and other regulatory monitors provide adequate advance warning of potential smoke impacts from northern wildfires.

Regulatory-level air monitors are also not required to detect far-traveled smoke. The network of regulatory air monitors is supplemented by low-cost particulate sensors (such as Purple Air sensors) deployed by other organizations and citizens. Although these sensors are not as accurate and do not undergo the rigorous quality control applied to regulatory monitors, they are capable of detecting high levels of fine particulates in the air due to smoke. EPA has also developed empirical correction factors to better align the sensor data with the Air Quality Index (AQI) values computed from regulatory monitors.

AQI values from both regulatory monitors and other air sensors are displayed on EPA's online AirNow Fire and Smoke map. This interactive map includes more than a dozen air sensor locations across northern Nebraska. NDEE staff routinely review all of the data on the AirNow Fire and Smoke map in consultation with technical experts at the National Weather Service and local air quality agencies in order to determine whether to issue smoke advisories and alerts to local health departments.

The comment author further proposes that an additional monitoring location in northern Nebraska is necessary for understanding regional background values, citing variability in PM<sub>2.5</sub> Design Values measured across the state and the lack of NDEE data from northern Nebraska. As noted above, NDEE currently meets federal requirements for background and transport monitoring sites, and three rural sites in South Dakota, close to the Nebraska border, provide additional information on regional background levels. As shown in the map in Figure X-8 of the document, the 2022-2024 annual average PM<sub>2.5</sub> Design Values for this collection of sites (in  $\mu\text{g}/\text{m}^3$ ) are: Beatrice/Homestead 6.3, Grand Island 6.6, Scottsbluff 4.3, Wind Cave SD 5.2, Badlands SD 6.0, and Vermillion SD 7.1. These values adequately sample the range of background values across this large region, and all are well below the current annual average PM<sub>2.5</sub> standard of  $9.0 \mu\text{g}/\text{m}^3$ .

NDEE believes that the current network of regulatory PM<sub>2.5</sub> monitors in Nebraska exceeds federal minimum monitoring requirements, provides vital real time data to cities and towns, and adequately monitors regional background values. In combination with air sensor data from locations in Nebraska and data from surrounding states, Nebraska's network also provides adequate information to allow the State of Nebraska to provide timely advisories and alerts to the public.