

# CHAPTER 4:

## Air Quality Division

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The objectives of the Air Quality Division are to achieve and maintain the ambient air quality standards, to protect the quality of the air in the state, including areas that have air cleaner than the standards, and to implement federal and state air quality rules and regulations. Thousands of tons of air pollutants are emitted into the air in Nebraska each year from industrial and other man-made activities. Air pollutants can affect human health, reduce visibility, cause property damage and harm the environment. The regulated air pollutants of most concern are particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, ozone, lead and 187 listed hazardous air pollutants.



This solar-powered monitor near Weeping Water, is one of two NDEQ air monitoring sites that are powered totally through renewable energy sources. See page 26 for more information.

The primary air quality programs which help assure healthy air quality are: the construction permit program, operating permit program, emission inventory program, ambient air quality monitoring program, inspection and compliance program, air toxics program, and planning and development program.

Three local agencies -- Lincoln/Lancaster County Health Department, Omaha Air Quality Control and Douglas County Health Department -- have accepted, through agreement with NDEQ and direct delegation from the U.S. Environmental Protection Agency (EPA), responsibility for various facets of the air quality program. These responsibilities include air quality monitoring, permitting and enforcement within their areas of jurisdiction.

### **Permitting Section**

During FY15, the NDEQ proposed revisions to Title 129 to allow for the implementation of General Construction Permits (the proposed revisions were approved and became effective in July 2015). The NDEQ has continued its permitting of Title V and Prevention of Significant Deterioration (PSD) sources in accordance with EPA's July 24, 2014, memorandum in response to the June 23, 2014 U.S. Supreme Court decision (*Utility Air Regulatory Group v. Environmental Protection Agency*). This memorandum states that greenhouse gases should only be regulated under Title V and PSD if the facility triggers permitting due to emissions of other pollutants (e.g., sulfur dioxide, nitrogen oxides, particulate matter).

### Construction Permit Program

NDEQ has maintained a construction permit program for air contaminant sources since the 1970s. Facilities are required to obtain a construction permit before they construct, reconstruct, or modify any air contaminant source or emission unit where there is a net increase in the potential to emit above specified thresholds. The table below provides information relating to construction permit applications received, processed and pending:

| Pending July 1, 2014 | Applications Received | Applications Processed | Pending June 30, 2015 |
|----------------------|-----------------------|------------------------|-----------------------|
| 51                   | 59                    | 55                     | 55                    |

Nebraska also implements the federal construction permit program, Prevention of Significant Deterioration (PSD). The purpose of the program is to protect areas of the state which are cleaner than the ambient air quality standards, while still allowing industrial and economic growth. The PSD program applies to sources of air pollution that emit significant levels of certain types of emissions. If a source is regulated under the program, the NDEQ conducts additional, more rigorous reviews of their construction permit application to ensure that best available control technology will be used. Best available controls are employed to minimize impacts on the environment. Before issuing a permit, the NDEQ must also assure that the source will not cause or contribute significantly to any deterioration of air quality that could make the area potentially vulnerable to violations of the ambient air quality standards. The PSD program also ensures that visibility in nearby national parks and wilderness areas is protected. The NDEQ notifies federal land managers of pending PSD decisions. Lastly, the program requires that permitting authorities advise nearby States and Tribes of pending PSD decisions so they may express any concerns they have with potential downwind impacts in their areas.

As a part of its state program, the NDEQ requires significant sources of hazardous air pollutants to control emissions with the best available control technology (Toxics BACT).

During FY06-08, NDEQ received an increasing number of air quality construction permit applications largely due to new or expanded business ventures across the state, including ethanol plants, power plants and grain processing facilities. Applications declined during the slower economy of FY09 through FY12 and then increased during FY13 through FY15.

|   | FY09 | FY10 | FY11 | FY12 | FY13 | FY14 | FY15 |
|---|------|------|------|------|------|------|------|
| Construction Permit Applications Received | 53   | 55   | 52   | 54   | 61   | 64   | 59   |

In FY15 the Construction Permits Unit began evaluating source groups to determine which might be suitable for general construction permits. The initial source groups chosen for general permits were primarily construction-related industries and include: concrete batch plants; hot mix asphalt plants; aggregate crushing and sorting operations; diesel-fired emergency engines;

and incinerators. The construction permitting group will focus efforts in FY16 on general construction permits. The Department also started work on an online application process. This combination will greatly shorten the permitting timeframe for eligible sources for those covered construction related activities, providing the affected industries an avenue to more rapidly respond to a growing economy.

### Operating Permit Program

The air quality operating permit program is the result of the Federal Clean Air Act Amendments of 1990 and the passage of LB1257 (1992) by the Nebraska Legislature. Operating permits authorized by this legislation are issued for both large and small sources of air pollution. These permits have a five year renewable term.

The Nebraska operating permit program offers an innovative alternative for sources which have taken measures to keep their emissions very low. This program is called the Low Emitter Program. NDEQ also has general operating permits and permits by rule available for certain source categories. The table below provides statistics relating to all applications received, processed and pending under the operating permit program:

| Pending as of June 2014 | Operating Permit Applications Received | Operating Permit Applications Processed | Pending as of June 2015 |
|-------------------------|--|---|-------------------------|
| 123                     | 32                                     | 28                                      | 127                     |

Air operating permits are issued for five-year terms. This has resulted in correspondingly wide variations in the numbers of operating permits up for renewal each year. The following table summarizes air operating permit applications received from FY09 through FY15 (applications for all application types, including applications for permit revisions, general operating permits, permit-by-rule, etc.).

|   | FY09 | FY10 | FY11 | FY12 | FY13 | FY14 | FY15 |
|---|------|------|------|------|------|------|------|
| <b>Number of Operating Permit Applications Received</b> | 75   | 61   | 32   | 43   | 60   | 71   | 32   |

## Compliance Section

### Ambient Air Quality Monitoring Program

The State of Nebraska operates an ambient air-monitoring network to determine compliance with the National Ambient Air Quality Standards (NAAQS) and State Ambient Air Quality Standards (SAAQS). In addition, the Nebraska network includes two sites for

monitoring regional haze impacts that are part of a national program to help protect visibility in our National Parks and Monuments.

Three agencies are involved in the day-to-day operation of the network: NDEQ, Lincoln/Lancaster County Health Department and Douglas County Health Department. The Omaha Air Quality Control (part of the Omaha Public Works Department) also provides technical support for network-related activities.

National standards have been established by the Environmental Protection Agency for the following six pollutants, to protect both public health and welfare:

- Particulate Matter
  - With a diameter of 10 micrometers or less (PM<sub>10</sub>)
  - With a diameter of 2.5 micrometers or less (PM<sub>2.5</sub>)
- Sulfur Dioxide (SO<sub>2</sub>)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Carbon Monoxide (CO)
- Ozone (O<sub>3</sub>)
- Lead (Pb)

Nebraska has an additional ambient air quality standard for Total Reduced Sulfur (TRS). The TRS standard was adopted by the Environmental Quality Council in 1997 and is a public health-based standard. The Department currently monitors TRS in Dakota City.

The Nebraska monitoring network includes sites at which air quality is monitored to evaluate attainment with the standards and other health and welfare associated priorities. NDEQ evaluates the adequacy of its monitoring network in accordance with federal regulations each year. Changes may be made to the network due to monitoring regulation changes, updates to the ambient standards, perceived changes in pollution trends and/or funding issues. Loss of site access is another consideration that occasionally affects the network.

Most of the sites in the monitoring network evaluate pollutants for which standards are established (i.e., PM<sub>2.5</sub>, PM<sub>10</sub>, CO, SO<sub>2</sub>, Lead, Ozone or TRS). There are two additional types of sites in the network: Interagency Monitoring of Protected Visual Environments (IMPROVE) and National Atmospheric Deposition Program/National Trends Network (NADP/NTN) sites. (See maps on pages 24 and 25 for locations.)

IMPROVE monitors provide information for studying regional haze that may impact the visibility in listed federal Class I National Park and Wilderness Areas. There are two IMPROVE monitoring sites in Nebraska at Halsey National Forest and Crescent Lake National Wildlife Refuge. These sites provide data on pollution trends and transport.

The National Trends Network (NTN) of the National Atmospheric Deposition Program (NADP) is a nationwide network of sites that monitor for deposition constituents in precipitation. The deposition constituents examined include acidity, sulfates, nitrates, ammonium chloride and base-cations (e.g., calcium, magnesium, potassium and sodium). There are two NADP/NTN sites in Nebraska: one near Mead and one near North Platte. Both have been operational for over 20 years. These sites are operated by the University of Nebraska, with analytical and data

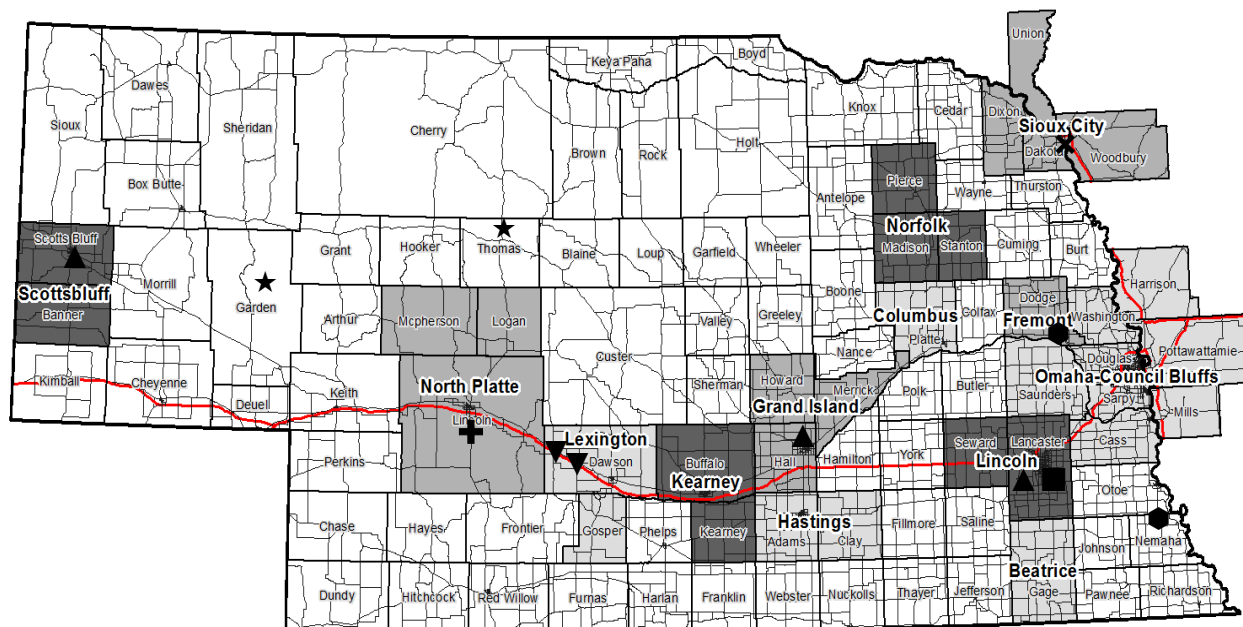
development support from the NADP. The Mead site was upgraded to include mercury (Hg) deposition monitoring and was part of the NADP/Mercury Deposition Network (MDN). Both sites maintain the NADP monitoring. The monitoring in Mead is made possible through cooperative efforts of the NDEQ and the University of Nebraska. Additional information about the NADP/NTN can be found at: <http://nadp.sws.uiuc.edu/NADP/>

### **Monitoring Information On-Line**

Ozone and continuous PM<sub>2.5</sub> data from Lincoln and Omaha is reported hourly to the EPA AirNow system, which makes contemporaneous air quality information available to the public on web at <http://www.airnow.gov/>. The Douglas County Health Department also participates in the ENVIROFLASH program that allows members of the public to sign up to receive air quality alerts via email.

Both the Douglas County Health Department and the Lincoln/Lancaster County Health Department also report daily Air Quality Index (AQI) evaluations on the Omaha and Lincoln web sites. The AQI is a numeric rating of the current air quality in each city and provides the public with a quick and simple means to evaluate current air quality in each metro area.

**Nebraska Monitoring Sites Outside the Omaha Metropolitan Statistical Area**



- ▲ **PM<sub>2.5</sub>**
- ▼ **PM<sub>10</sub>**
- **Ozone**
- × **TRS**
- **Lead**
- ★ **IMPROVE**
- ⊕ **NADP/NTN**

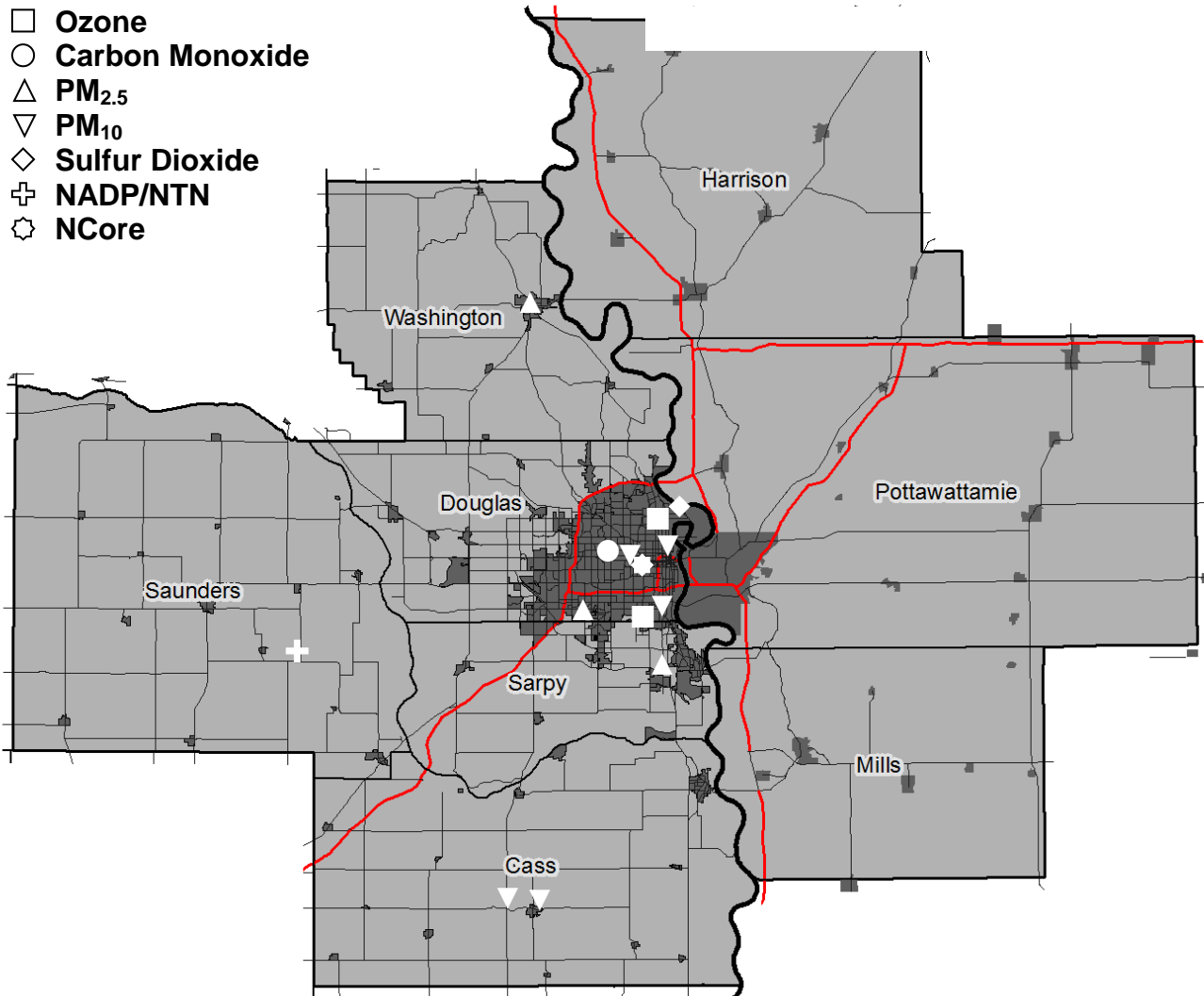
- PM<sub>2.5</sub>**  
Lincoln, 3140 N Street
- PM<sub>10</sub>**  
Grand Island, 2124 North Lafayette Avenue
- Ozone**  
Scottsbluff, Highway 26 & 5th Avenue
- PM<sub>10</sub>**  
Gothenburg, 9<sup>th</sup> Street
- Ozone**  
1st & Maple Street (Davey)
- TRS**  
Dakota City, 501 Pine Street

- Lead**  
Fremont  
Auburn
- NADP/NTN**  
Maxwell, North Platte Agricultural Experiment Station
- IMPROVE**  
Garden County, Crescent Lake Wildlife Refuge  
Thomas County, Nebraska National Forest

The state map above shows the 12 monitoring sites located outside of the Omaha Metropolitan Statistical Area. Nine of these sites are operated by the NDEQ, either directly or under contract. The two sites in Lancaster County are operated by the Lincoln-Lancaster County Health Department with NDEQ oversight. The National Atmospheric Deposition Program site near North Platte is operated by the University of Nebraska.

The Omaha Metropolitan Statistical Area map on the next page shows the location of the 14 monitoring sites located in the Nebraska portion of the Omaha Metropolitan Statistical Area. Eleven of these sites, located in Douglas, Sarpy and Washington Counties, are operated by the Douglas County Health Department with NDEQ oversight. The two PM<sub>10</sub> sites near Weeping Water in Cass County are operated by the NDEQ. The National Atmospheric Deposition Program site at Mead is operated by the University of Nebraska.

Omaha-Council Bluffs Metropolitan Area Monitor Locations



- Ozone
- Carbon Monoxide
- △ PM<sub>2.5</sub>
- ▽ PM<sub>10</sub>
- ◇ Sulfur Dioxide
- ⊕ NADP/NTN
- ☆ NCore

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li>○ <b>Carbon Monoxide</b><br/>4102 Woolworth Avenue (NCore Trace Monitor)<br/>7747 Dodge Street, Omaha</li> <li>◇ <b>Sulfur Dioxide</b><br/>4102 Woolworth Avenue (NCore Trace Monitor)<br/>1616 Whitmore Street</li> <li>⊕ <b>NADP/NTN</b><br/>Mead, Saunders County</li> </ul> | <ul style="list-style-type: none"> <li>△ <b>PM<sub>2.5</sub></b><br/>4102 Woolworth Avenue (NCore)<br/>9225 Berry Street<br/>2912 Coffey Avenue (Bellevue)<br/>2242 Wright Street (Blair)</li> <li>□ <b>Ozone</b><br/>4102 Woolworth Avenue (NCore)<br/>1616 Whitmore<br/>2411 O Street</li> </ul> | <ul style="list-style-type: none"> <li>▽ <b>PM<sub>10</sub></b><br/>4102 Woolworth Avenue (NCore)<br/>19<sup>th</sup> &amp; Burt Streets<br/>46<sup>th</sup> &amp; Farnam Streets<br/>2411 O Street<br/>102 P Street (Weeping Water)<br/>5102 Highway 2 (Weeping Water)</li> <li>☆ <b>NCore</b><br/>4102 Woolworth Avenue</li> </ul> |
|--|--|--|

### Renewable Powered Monitoring Sites

The NDEQ operates two monitoring sites that are powered totally through renewable energy sources: a solar-powered site near Weeping Water and a solar/wind turbine-powered site at the Scottsbluff High School. Both sites have successfully operated on renewable energy and are examples of energy conservation. The Scottsbluff site was designed to be portable so that it could be easily set up in any location within the state where sufficient solar and/or wind resources exist. The Scottsbluff site also allows an opportunity for NDEQ to partner with the local high school to educate the students about air quality and renewable energy.

### Inspections and Facility Compliance

The Compliance Program is responsible for conducting compliance inspections of air pollution sources, responding to citizen complaints, observing and evaluating emission tests and the acid rain program.

Consistent with the Nebraska Environmental Protection Act, the Air Division attempts to obtain compliance with environmental regulations first through voluntary efforts. Voluntary compliance has helped bring about a better working relationship with the regulated community without sacrificing environmental quality. However, enforcement actions are pursued by the Agency when compliance issues are serious, chronic, or cannot otherwise be resolved. To further the Department's goals to protect and enhance public health and the environment, in certain instances, environmentally beneficial projects, or Supplemental Environmental Projects, may be part of an enforcement settlement.

### 2015 Compliance Activity Summary

| Compliance Activity                             | NDEQ | LLCHD* | OAQC* |
|---|------|--------|-------|
| On-site Inspections                             | 216  | 73     | 41    |
| Facility Stack Tests Conducted                  | 94   | 4      | 0     |
| On-site Observations Conducted                  | 51   | 4      | 0     |
| Continuous Emission Monitoring Audits Conducted | 40   | 2      | 0     |
| On-site Observations Conducted                  | 21   | 1      | 0     |
| Complaints Received                             | 30   | 129**  | 81    |
| Burn Permits Issued                             | 183  | 106    | 56    |
| Burn Permits Denied                             | 1    | 5      | 0     |

\*LLCHD – Lincoln Lancaster County Health Department; OAQC – Omaha Air Quality Control

\*\*Includes LLCHD complaints re: noise, open burning, fugitive dust, and odors



### **Grants, Planning, and Outreach Unit**

The Air Quality Division's Grants, Planning, and Outreach Unit provides support and training resources to permitting and compliance staff, provides outreach and training to the regulated and general public, and provides information and analyses to the Department and other policy makers. The Unit includes the air dispersion modeling and emissions inventory functions for the Air Division. It is also responsible for maintaining state air quality regulations, updating the state implementation plan, providing expert information on National Emissions Standards for Hazardous Air Pollutants (NESHAPS, also known as Air Toxics), New Source Performance Standards (NSPS) and National Ambient Air Quality Standards (NAAQS). The Unit coordinates local agency activities, as well as negotiates work plans with the EPA. The Unit also administers the Nebraska Clean Diesel Grant Program.

The Air Toxics Notebook and the New Source Performance Standards NSPS Notebook continue to be valuable online resources for staff and regulated sources. The Grants, Planning, and Outreach Unit has also maintained the AirNews Page (<http://deq.ne.gov/AirDates.nsf/AirNewsMain.xsp>), which is designed to provide easy access to information about the NDEQ Air Division, including important dates and deadlines, access to the AirNews Listserv archive and links to other important forms and documents on the NDEQ website.

### **Emission Inventory and Emission Fees**

Each year, the Department conducts an inventory of emissions from major industrial sources and a representative sample of lower-emitting minor industrial sources. Every three years, the Department assists the EPA to prepare a comprehensive national inventory of emissions. The emissions inventory is used to support the planning efforts for national rulemaking and to assess trends in emissions. Emission inventories are due on March 31<sup>st</sup> each year. The NDEQ also uses the emission inventories to support the assessment of annual emission fees. Major sources of air pollution are required to pay emission fees for each ton of pollutant actually emitted during the calendar year. The maximum emission for which a fee is assessed is 4,000 tons per pollutant. For electrical generating facilities with a capacity of between 75 and 115 megawatts, the maximum emission for which a fee is assessed is 400 tons per pollutant. The fees generated are used to support the administration of the permitting program.

The Department attempts to set the fee rate at the minimum level needed to pay reasonable direct and indirect costs of developing and administering the air quality permit program. An analysis detailing how the Department arrived at the fee rate is made available to fee payers and is on the NDEQ's website. The rate for 2014 emissions was \$70 per ton; the rate for 2013 emissions was \$67 per ton.

### **Air Issues for Nebraska**

Under the federal Clean Air Act, the EPA issues National Ambient Air Quality Standards (NAAQS) for "criteria pollutants." These standards are intended to protect public health and the environment. States must determine whether they are in attainment of these standards

and take corrective action if needed. The standards are reviewed and revised periodically, based on the most recent scientific information available.

The sulfur dioxide (SO<sub>2</sub>) standard was changed from a 24-hour and annual primary standard to a 1-hour standard in 2010. To determine attainment with the new standard, the EPA developed an attainment demonstration that includes monitoring and modeling exercises around large SO<sub>2</sub> emitters, and which requires modeling around major emitters in Nebraska. In 2015, NDEQ made its recommendations to EPA concerning attainment designations in the areas of three major emitters; the only one of these not directly recommended for attainment – Sheldon Station in Lancaster County – was recommended as unclassifiable, with a consent decree in place assuring attainment status by the July 2016 deadline. On October 1, EPA issued its final ozone primary and secondary standards; both standards were set at 70 parts per billion. Based upon the most recent data available, it appears that all areas of Nebraska meet these standards at this time. Nebraska is currently considered in attainment with all the National Ambient Air Quality Standards.

EPA released the final rule for its Clean Power Plan on August 3, 2015. The regulation is designed to reduce carbon pollution from power plants. Each state may either develop its own plan to reduce carbon pollution, join with other states to develop multi-state plans, or defer the plan to EPA. A state plan may either directly adopt emission standards for natural gas combined cycle and coal power plants or be designed to meet a rate- or mass-based statewide goal. NDEQ is meeting with interested stakeholders and developing ongoing outreach plans as we begin to approach to this new regulation.

For more information about the Nebraska air quality program, please refer to the annual Air Quality Reports and the Ambient Air Monitoring Network Plan, both of which are available on the agency's website at <http://deq.ne.gov/> under "Air."