

# COAL IN SIOUXLAND:

MidAmerican Energy's Legacy of  
Air Pollution and Health Impacts



Iowa  
Environmental  
Council

Authored By:  
**Cody Smith, MPA**  
*Senior Policy Advocate*  
Iowa Environmental Council

**Published May 2024**

**REPORT CONTRIBUTORS:****John Rachow, MD, PhD***Past President*

Physicians for Social Responsibility

**David Osterberg, MS, MA***Emeritus Clinical Professor*Department of Occupational and  
Environmental Health, University of Iowa**Kristina Hamilton, MPH***Iowa Advocacy Director*

American Lung Association

**Linda Santi***Planning and Development*Winnebago Tribe of Nebraska's Winnebago  
Comprehensive Healthcare System

# TABLE OF CONTENTS

<b>PART 1: SIOUXLAND'S COMPLICATED COAL LEGACY.....</b>	<b>3</b>
<b>PART 2: THE HUMAN COST OF COAL IN SIOUXLAND .....</b>	<b>4</b>
2.1 Coal Ash and Waste Management.....	4
2.2 Harmful Air Pollutants Released by Siouxland Coal Plants.....	5
2.3 Areas Most Harmed by the Coal Plants .....	6
<b>PART 3 SIOUXLAND HEALTH IMPACTS FROM COAL .....</b>	<b>7</b>
3.1 Premature Deaths.....	7
3.2 Asthma .....	7
3.3 Chronic Obstructive Pulmonary Disease .....	10
3.4 Coronary Heart Disease.....	11
3.5 Lung Cancer .....	11
<b>PART 4: SAME POLLUTION, DIFFERENT IMPACTS .....</b>	<b>13</b>
4.1 Sociodemographic Indicators and Disease in Siouxland.....	13
4.2 Pursing Equitable Outcomes in Siouxland.....	15
4.3 Reviewing Economic Security.....	15
<b>CONCLUSION .....</b>	<b>16</b>

# PART ONE:

## SIouxLAND'S COMPLICATED COAL LEGACY

*Siouxland is home to hard-working people, known for their strong work ethic and commitment to pragmatic solutions to collective problems. Consisting of three counties situated at the border of Iowa, Nebraska, and South Dakota, Siouxland has been home to energy production for decades.*

In the latter half of the 20<sup>th</sup> century, coal dominated the energy sector as the primary fuel for electricity production. In 1977, coal-fired power plants provided more than 45% of the nation's electricity.<sup>1</sup> Providing reliable electricity to Siouxland and the surrounding area for such a long period of time, the smokestacks on the banks of the Missouri River have become a landmark of the region.

The remaining coal plants in Siouxland: George Neal North (also called George Neal Unit 3) and George Neal South (also called George Neal Unit 4), are owned and operated by MidAmerican Energy Company, Iowa's largest investor-owned utility. Today these coal plants' power contributions are declining, yet they continue their legacy of contributing to negative health outcomes for residents. This report contains a comprehensive overview of the negative health outcomes associated with Siouxland's coal plants, highlighting the consequential impact they have on the health of the region's residents.

From the moment operations began at Siouxland's first coal plant in 1964, pollutants, including sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), fine particulate matter (PM 2.5), mercury, and other hazardous air pollutants (HAPs) and volatile organic compounds (VOCs) have blanketed the surrounding area.<sup>2</sup> These pollutants contribute to the development of heart and lung diseases, such as heart disease, asthma, chronic obstructive pulmonary disease, lung cancer, and increased likelihood of respiratory and cardiac symptoms. These harmful toxins also contribute to greater numbers of emergency room visits, hospital admissions, and premature deaths.<sup>3</sup>

**“ IN THE CENSUS TRACT LESS THAN TWO MILES DIRECTLY NORTH OF THE GEORGE NEAL NORTH AND SOUTH COAL PLANTS, RESIDENTS RANK IN THE 91<sup>ST</sup> PERCENTILE NATIONALLY FOR LOW LIFE EXPECTANCY. ”**

Scientific research has shown that these pollutants, and their ability to create higher levels of smog, ozone, and fine particulate pollution, cause disproportionate harm to all who live in the area. This especially affects vulnerable populations such as those with a low income, the elderly, young children, those with existing health conditions, and Indigenous communities.<sup>5</sup> As home to the Winnebago Tribe of Nebraska and the Omaha Nation of Nebraska, Siouxland also has a large population of Native Americans. Other traditionally marginalized communities, including Black or African American and Latino residents are present throughout Siouxland in higher numbers than surrounding areas and grapple with these negative health outcomes every day.

MidAmerican Energy continues to operate their Siouxland coal plants without apparent regard to their known harm to public health. To date, the utility has also failed to communicate meaningful, transparent plans for plant retirement. Instead, they have only made a weak statement that they intend to retire their coal generation by 2049, 25 years in the future.<sup>6</sup>

1 National Research Council. (1980). Energy in Transition, 1985-2010: Final Report of the Committee on Nuclear and Alternative Energy Systems (p. 11771). National Academies Press. Retrieved March 8, 2024, from <https://doi.org/10.17226/11771>

2 Global Energy Monitor. (2021, April 29). Coal plant retirements. Global Energy Monitor Wiki. Retrieved March 8, 2024, from [https://www.gem.wiki/Coal\\_plant\\_retirements](https://www.gem.wiki/Coal_plant_retirements)

3 US EPA. (2021, January 24). Power Plants and Neighboring Communities [Data and Tools]. Retrieved March 8, 2024, from <https://www.epa.gov/power-sector/power-plants-and-neighboring-communities>

4 Council on Environmental Quality. (2023). Climate and Economic Justice Screening Tool. Climate and Economic Justice Screening Tool. Retrieved March 8, 2024, from <https://screeningtool.geoplatform.gov>

5 US EPA. (2021, January 24). Power Plants and Neighboring Communities [Data and Tools]. Retrieved March 8, 2024, from <https://www.epa.gov/power-sector/power-plants-and-neighboring-communities>

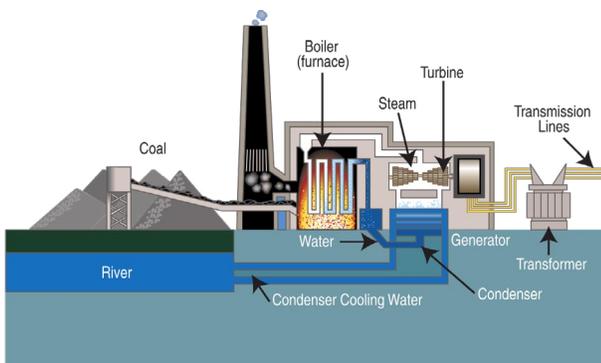
6 Berkshire Hathaway Energy. (n.d.). Exhibit 99.1 Coal Unit Retirements. Retrieved March 8, 2024, from <https://www.sec.gov/Archives/edgar/data/75594/000119312521149268/d167240dex991.htm>

# PART TWO: THE HUMAN COST OF COAL IN SIOUXLAND

*The coal combustion process includes several points at which the outcomes can negatively impact human health and the environment through contamination of air and water. The process starts by burning coal in a boiler to produce steam which turns a generator to produce electricity.*

There are two major categories of pollutants from coal plants: air pollutants and solid and liquid pollutants that include coal ash and the coal dust that is produced from coal being delivered to plants via railway. This report primarily focuses on the impact of air pollutants, but a brief description of coal ash and waste management can be found in the next section.

**Figure 1: Coal-Fired Electricity Generation Process**



## 2.1 COAL ASH AND WASTE MANAGEMENT

The residue of the burnt coal, referred to as coal ash, is disposed of through several methods, including storing it on site at the power plants in lined or unlined landfills or impoundments called coal ash ponds, or discharging it into a nearby waterway. MidAmerican Energy uses several of these practices at the George Neal coal plants and groundwater near both plants exceed federal health standards for arsenic.<sup>7</sup> See Figures 2 and 3.

Coal plants and associated ash ponds typically sit near sources of groundwater and rivers, creating risks that these contaminants will end up in our drinking water. In 2023, MidAmerican Energy proposed piping bottom water (leachate) from its coal ash pond directly into the Missouri

River to prevent flooding of the pond. It has since opted to continue to haul excess wastewater by truck to a local treatment plant for processing.<sup>8</sup>

While discharge of coal ash leachate directly into rivers is allowable under the Clean Water Act, public health experts have recognized that this source of industrial waste, constituting 30% of industrial water pollution across the U.S., is a threat to public health and have proposed new rules to limit releases.<sup>9</sup> Coal ash contains several toxic substances, including heavy metals such as mercury, cadmium and arsenic that have been proven to negatively impact human health.<sup>10</sup> Coal ash also contains radioactive uranium and thorium, posing a uniquely dangerous threat to human health.<sup>11</sup>

**Figure 2: George Neal North Coal Ash Management Structures**



<sup>7</sup> Earthjustice. (2010). Iowa and Coal Ash Disposal in Ponds and Landfills. Retrieved March 8, 2024, from <https://earthjustice.org/wp-content/uploads/ia-coal-ash-fact-sheet-0412.pdf>

<sup>8</sup> Sioux City Journal. (2023). MidAmerican proposal for Missouri River discharges raise environmental concerns. Retrieved March 8, 2024, from [https://siouxcityjournal.com/news/local/midamerican-proposal-for-missouri-river-discharges-raise-environmental-concerns/article\\_6cc08713-2402-5ecf-81f1-5b95b2cae0e7.html](https://siouxcityjournal.com/news/local/midamerican-proposal-for-missouri-river-discharges-raise-environmental-concerns/article_6cc08713-2402-5ecf-81f1-5b95b2cae0e7.html)

<sup>9</sup> Crunden, E. A. (2023, March 8). EPA proposes "strongest ever" limits on coal plant discharges. E&E News by POLITICO. Retrieved March 8, 2024, from <https://www.eenews.net/articles/epa-proposes-strongest-ever-limits-on-coal-plant-discharges/>

<sup>10</sup> US EPA. (2014, December 11). Coal Ash Basics [Overviews and Factsheets]. Retrieved March 8, 2024, from <https://www.epa.gov/coalash/coal-ash-basics>

<sup>11</sup> US EPA. (2018, November 30). Radioactive Wastes From Coal-fired Power Plants [Overviews and Factsheets]. Retrieved March 8, 2024, from <https://www.epa.gov/radtown/radioactive-wastes-coal-fired-power-plants>

Figure 3: George Neal South Coal Ash Management Structures



## 2.2 HARMFUL AIR POLLUTANTS RELEASED BY SIOUXLAND COAL PLANTS

The specific air pollutants associated with MidAmerican's George Neal North and South coal plants and resulting human health damages are laid out in Figures 4 and 5 below<sup>12</sup>. The pollutants from these plants can cause and exacerbate respiratory and cardiological conditions – illnesses that impair the lungs and heart.

Figure 4: George Neal North Emissions

George Neal North				
Year	Plant annual NOx emissions (tons)	Plant annual SO2 emissions (tons)	Plant annual CH4 emissions (lbs)	Plant annual N2O emissions (lbs)
2018	2,498	4,336	565,390	82,214
2019	1,836	3,113	413,147	60,074
2020	1,047	1,660	218,645	31,781
2021	1,963	3,328	440,162	63,995
<b>Total</b>	<b>7,345 tons</b>	<b>12,437 tons</b>	<b>1,637,345 lbs</b>	<b>238,065 lbs</b>
Proven to Cause Cardiological Impacts	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
Proven to Cause Respiratory Impacts	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>

Figure 5: George Neal South Emissions

George Neal South				
Year	Plant annual NOx emissions (tons)	Plant annual SO2 emissions (tons)	Plant annual CH4 emissions (lbs)	Plant annual N2O emissions (lbs)
2018	2,610	5,341	731,823	106,505
2019	1,331	2,521	369,079	53,724
2020	577	1,103	160,030	23,307
2021	1,243	2,280	335,545	48,855
<b>Total</b>	<b>5,760 tons</b>	<b>11,244 tons</b>	<b>1,596,478 lbs</b>	<b>232,391 lbs</b>
Proven to Cause Cardiological Impacts	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
Proven to Cause Respiratory Impacts	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>

<b>Total Emissions</b>	<b>13,105 tons</b>	<b>23,681 tons</b>	<b>3,233,822 lbs</b>	<b>470,456 lbs</b>
------------------------	--------------------	--------------------	----------------------	--------------------

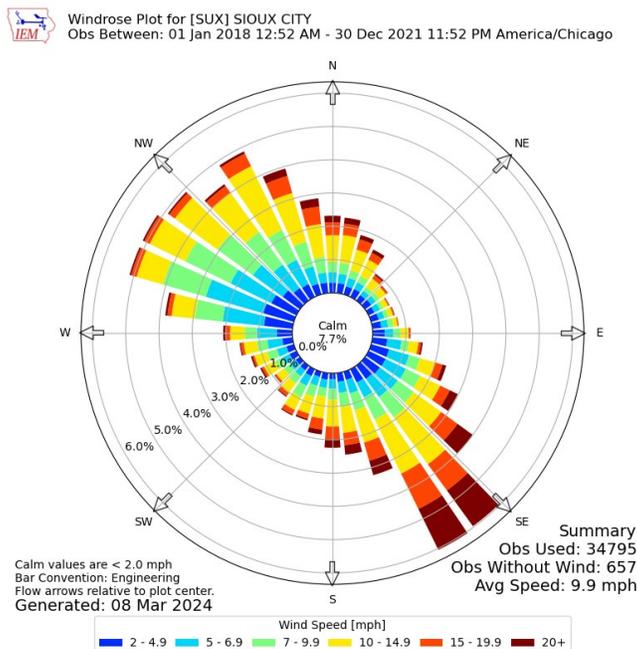
<sup>12</sup> US EPA, O. (2018, 2021). Emissions & Generation Resource Integrated Database (eGRID) [Data and Tools]. Retrieved March 8, 2024, from: <https://www.epa.gov/egrid/historical-egrid-data>

MidAmerican Energy emits tens of thousands of tons of nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), carbon dioxide (CO<sub>2</sub>), and tens of thousands of pounds of methane gas (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) from the smokestacks of the George Neal coal plants every year. These pollutants are detrimental to human health, causing and exacerbating acute and chronic heart and lung conditions in Siouxland. Some of these pollutants, including NO<sub>x</sub> and volatile organic compounds (including CH<sub>4</sub>), can interact with one another and moisture in the atmosphere to create smog and ground-level ozone. Inhaling ground-level ozone can worsen health conditions including bronchitis, asthma, and emphysema, and cause chest pain, coughing, throat irritation, and congestion.<sup>13</sup> Repeated exposure can reduce lung function, inflame the lining of the lungs, or scar lung tissue.<sup>14</sup>

### 2.3 AREAS MOST HARMED BY THE COAL PLANTS

The wind carries these pollutants from the smokestacks at the Neal plants to surrounding homes, farms, and businesses with LARGER AND heavier particulate matter falling first. Reviewing the direction and speed of prevailing winds during the same time period as the harmful emissions outlined above demonstrates which communities in the region are most likely to receive these pollutants after they leave the plant. A wind rose plot created from wind speed and direction data collected at the nearby Sioux City Gateway Airport between 2018 and 2021 reveals the prevailing winds blew to the southeast and northwest most often. See Figure 6.

**Figure 6: Wind Rose Analysis Near Siouxland Coal Plants**



The wind rose demonstrates that communities to the northwest and southeast, including Dakota City, NE, Sloan, IA, and the Winnebago Reservation, are grappling with the brunt of pollution from the smokestacks of the Neal plants. The pollution from the plants does not only affect Iowans but travels across state lines into Nebraska and South Dakota, bringing with it the associated health risks.

<sup>13</sup> Iowa Department of Natural Resources. (n.d.). Effects of Ground Level Ozone. Retrieved March 8, 2024, from <https://www.iowadnr.gov/Environmental-Protection/Air-Quality/Air-Pollutants/Effects-Ozone>

<sup>14</sup> Iowa Department of Natural Resources. (n.d.). Effects of Ground Level Ozone. Retrieved March 8, 2024, from <https://www.iowadnr.gov/Environmental-Protection/Air-Quality/Air-Pollutants/Effects-Ozone>

# PART THREE:

## SIouxLAND HEALTH IMPACTS FROM COAL

*The coal-fired power plants operating in Siouxland cause negative health outcomes and exacerbate existing health conditions and chronic diseases including asthma, chronic obstructive pulmonary disorder (COPD), and coronary heart disease, especially for vulnerable populations like children and the elderly.*

Data from the Centers for Disease Control and Prevention (CDC) show the age-adjusted, modeled prevalence of these diseases in adults aged 18 years or older across the region. Lung cancer incidence and death rates are also evidence of elevated health risks in Siouxland.

A recent peer-reviewed study found that coal plant emissions, particularly PM 2.5 (which is created by some of the pollutants noted previously) was associated with 460,000 early deaths in the U.S. between 1999 and 2020.<sup>15</sup> Furthermore, exposure to coal PM 2.5 emissions was associated with a 2.1 times greater risk of mortality compared to other sources of PM 2.5 emissions, showing its exceptional risk to human health.<sup>16</sup> Between 2018 and 2021 alone, the George Neal plants emitted 23,681 tons of sulfur dioxide, one of the precursor emissions that form pm 2.5 and a pollutant in its own right. Sulfur dioxide affects lung function, worsens asthma attacks, and worsens existing heart disease among vulnerable populations.<sup>17</sup>

### 3.1 PREMATURE DEATHS

Evidence of severe health damage goes far beyond a general association between coal pollution and health. The same peer-reviewed study also highlighted the premature

deaths associated with individual coal plants, including George Neal South and George Neal North. The study found 5,800 total early deaths could be attributed to PM 2.5 pollution from coal plants in Iowa. Strikingly, 3,700 of those early deaths come specifically from MidAmerican Energy coal plants that are still operating today.<sup>18</sup> In Iowa, the Siouxland coal plants were directly associated with 92 premature deaths during that time frame. These statistics represent real years taken off a person's life. Years when they are not around to support their families or see their grandchildren grow up. The ability to provide economic and social support to family and community is also seriously impacted by chronic health conditions in individuals.

### 3.2 ASTHMA

Woodbury County, home to Sioux City, has the highest age-adjusted rate of asthma prevalence in adults aged 18 years or older in the state of Iowa.<sup>19</sup> See Figure 7. Asthma is a chronic respiratory condition that damages the lungs and results in the inflammation and narrowing of airways at times that restricts breathing.<sup>20</sup> In 2021, 39 Iowans died due to asthma complications and 224,466 adults in Iowa suffered from the condition.<sup>21</sup>

**MidAmerican Energy's Siouxland coal plants were found to have led to 1,400 premature deaths between 1999 and 2020, with 610 deaths (CI: 560-670) directly attributed to George Neal South and 790 deaths (CI: 720-870) directly attributed to George Neal North.<sup>22</sup>**

15 Henneman, L., Choirat, C., Dedoussi, I., Dominici, F., Roberts, J., & Zigler, C. (2023). Mortality Risk from United States Coal Electricity Generation. *Science*, 382(6673), 941-946. Retrieved March 8, 2024, from <https://doi.org/10.1126/science.adf4915> and <https://cpieatgt.github.io/cpie/>

16 Henneman, L., Choirat, C., Dedoussi, I., Dominici, F., Roberts, J., & Zigler, C. (2023). Mortality Risk from United States Coal Electricity Generation. *Science*, 382(6673), 941-946. Retrieved March 8, 2024, from <https://doi.org/10.1126/science.adf4915> and <https://cpieatgt.github.io/cpie/>

17 U.S. National Park Service. (2023). Sulfur Dioxide Effects on Health—Air. Retrieved March 8, 2024, from <https://www.nps.gov/subjects/air/humanhealth-sulfur.htm>

18 Henneman, L., Choirat, C., Dedoussi, I., Dominici, F., Roberts, J., & Zigler, C. (2023). Mortality Risk from United States Coal Electricity Generation. *Science*, 382(6673), 941-946. Retrieved March 8, 2024, from <https://doi.org/10.1126/science.adf4915> and <https://cpieatgt.github.io/cpie/>

19 Centers for Disease Control and Prevention. (2023, August 25). PLACES: Local Data for Better Health, County Data 2023 release. Retrieved March 8, 2024, from [https://data.cdc.gov/500-Cities-Places/PLACES-Local-Data-for-Better-Health-County-Data-20/swc5-untb/about\\_data](https://data.cdc.gov/500-Cities-Places/PLACES-Local-Data-for-Better-Health-County-Data-20/swc5-untb/about_data)

20 National Heart, Lung, and Blood Institute, National Institutes of Health. (2022, March 24). Asthma - What Is Asthma? | NHLBI, NIH. Retrieved March 8, 2024, from <https://www.nhlbi.nih.gov/health/asthma>

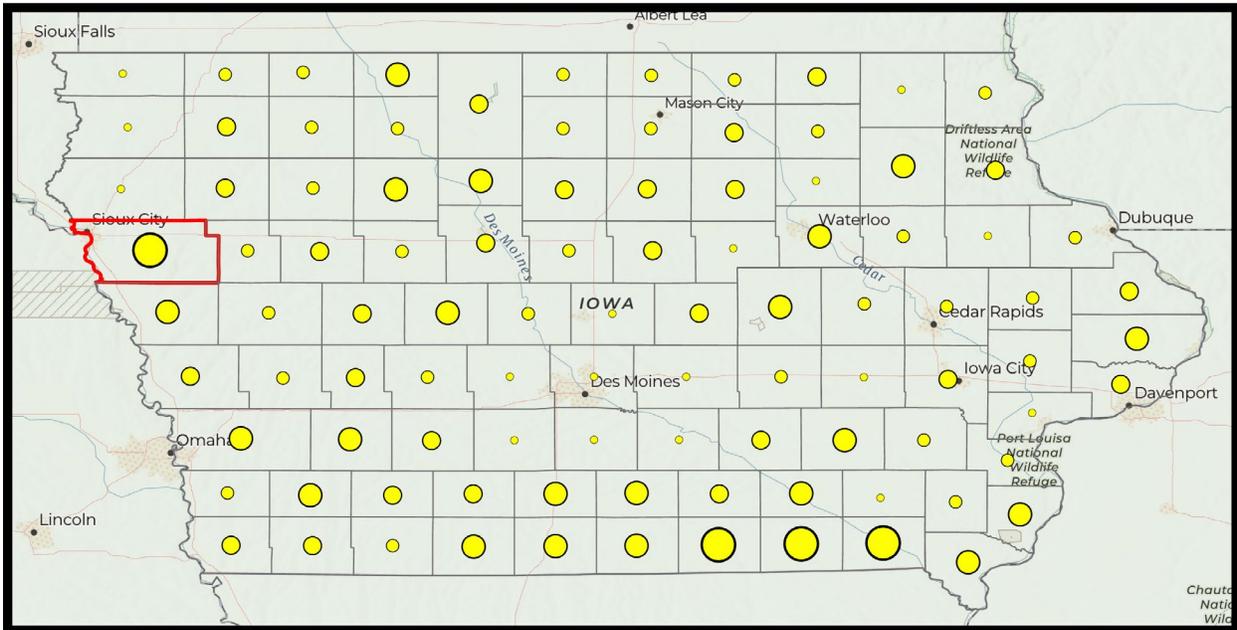
21 Centers for Disease Control and Prevention. (2023, June 23). Most Recent Asthma State Data. Retrieved March 8, 2024, from [https://www.cdc.gov/asthma/most-recent\\_data\\_states.htm](https://www.cdc.gov/asthma/most-recent_data_states.htm)

22 Henneman, L., Choirat, C., Dedoussi, I., Dominici, F., Roberts, J., & Zigler, C. (2023). Mortality Risk from United States Coal Electricity Generation. *Science*, 382(6673), 941-946. Retrieved March 8, 2024, from <https://doi.org/10.1126/science.adf4915> and <https://cpieatgt.github.io/cpie/>

Figure 7: Iowa County-Level Asthma Rates (Per 10,000 People)

Asthma Prevalence in Adults Aged 18 years or older

- 0.9395 - 0.9638
- 0.9639 - 0.9731
- 0.9732 - 0.9823
- 0.9824 - 0.9956
- 0.9957 - 1.013



23

Further demonstrating the serious threat that asthma poses to residents in Siouxland, Iowa Department of Public Health data reveal that Woodbury County surpasses the state average for the number of asthma-related emergency department visits per 10,000 people in several age groups. Between 2018 and 2022, Woodbury County had higher average rates for asthma-related emergency department visits when compared to statewide rates for 5- to 14-year-olds, 15- to 34-year-olds, and 35- to 64-year-olds.<sup>24</sup> The 15- to 34-year-old age group in Woodbury County averaged 37 visits per 10,000 people between 2018 and 2020; this was consistently higher than the state average of 33 visits per 10,000 people.<sup>25</sup> See Figures 8 and 9.<sup>26</sup>

**Woodbury County has the Highest Asthma Rates in Iowa**



<sup>23</sup> Centers for Disease Control and Prevention. (2023, August 25). PLACES: Local Data for Better Health, County Data 2023 release. Retrieved March 8, 2024, from [https://data.cdc.gov/500-Cities-Places/PLACES-Local-Data-for-Better-Health-County-Data-20/swc5-untb/about\\_data](https://data.cdc.gov/500-Cities-Places/PLACES-Local-Data-for-Better-Health-County-Data-20/swc5-untb/about_data)

<sup>24</sup> Iowa Department of Public Health. (2022). Workbook: Asthma ED Visits. Retrieved March 8, 2024, from <https://data.idph.state.ia.us/t/IDPH-DataViz/views/AsthmaED-Visits/RatebyAgeGroup?%3Aembed=y&%3AisGuestRedirectFromVizportal=y>

<sup>25</sup> Iowa Department of Public Health. (2022). Workbook: Asthma ED Visits. Retrieved March 8, 2024, from <https://data.idph.state.ia.us/t/IDPH-DataViz/views/AsthmaED-Visits/RatebyAgeGroup?%3Aembed=y&%3AisGuestRedirectFromVizportal=y>

<sup>26</sup> \*County data was not available for people aged 65 years and older during 2022, making the average for that age group difficult to calculate.

Figure 8: Woodbury County Asthma Emergency Department Visits by Age Group (Per 10,000 People)

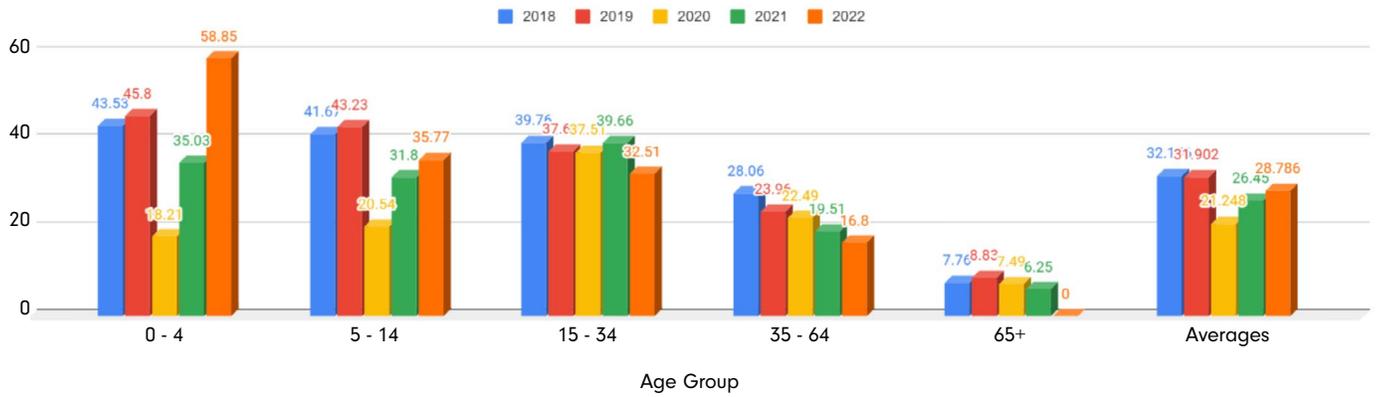
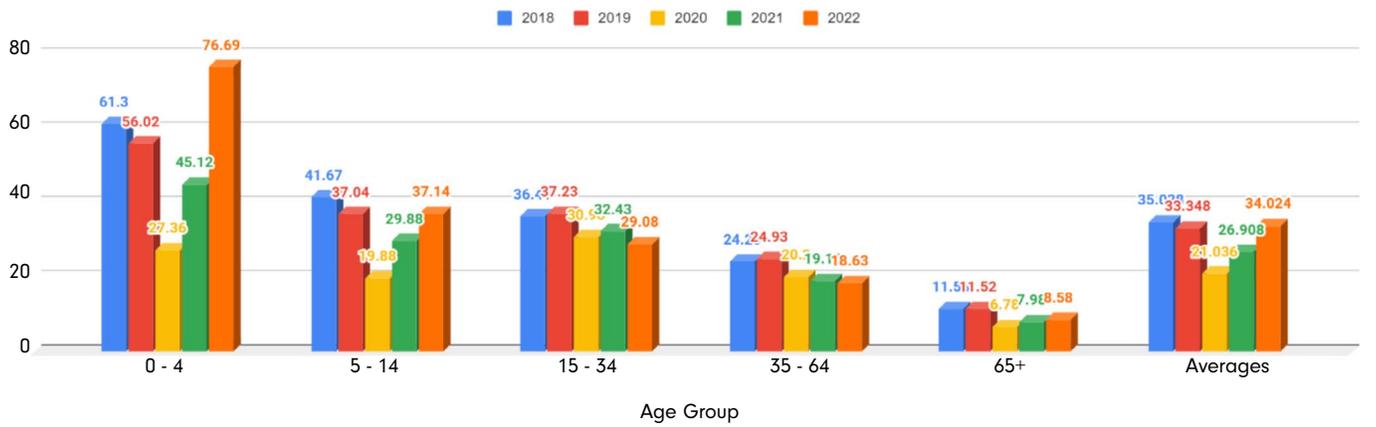


Figure 9: Iowa Asthma Emergency Department Visits by Age Group (Per 10,000 People)



### 3.3 CHRONIC OBSTRUCTIVE PULMONARY DISEASE

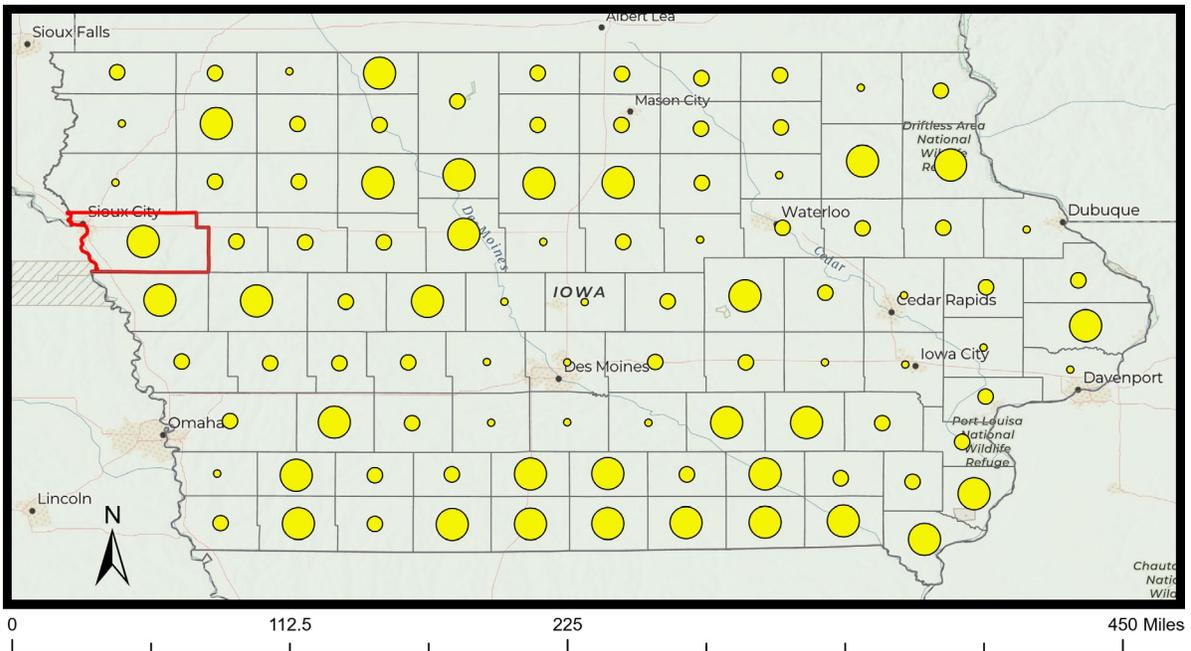
Another common chronic respiratory illness in the Siouxland area is COPD. COPD is a condition caused by damage to the airways or other parts of the lung that blocks airflow and makes it harder to breathe.<sup>27</sup> The sixth leading cause of death in the U.S., COPD can cause coughing, breathing problems, shortness of breath, chest tightness, and other symptoms that can limit a person’s ability to do routine activities such as walking, cooking, or taking care of themselves.<sup>28</sup> Though smoking is the largest cause of COPD, more than half of all cases worldwide are not related to tobacco use and air pollution plays a large role.<sup>29</sup> The World Health Organization attributes about 25% of COPD deaths to outdoor air pollution.<sup>30</sup>

While COPD is also associated with agriculture, Woodbury County is an urban area. The COPD rates in Woodbury County are higher than several other counties with much larger cities, such as Polk County (home to Des Moines), Linn County (home to Cedar Rapids), and Scott County (which incorporates Davenport)–Iowa’s largest cities. See Figure 10.

Figure 10: COPD Rates in Iowa (Per 10,000 People)

COPD Prevalence  
in Adults Aged 18 Years or Older

- 0.6435 - 0.7634
- 0.7635 - 0.8195
- 0.8196 - 0.8976



27 National Heart, Lung, and Blood Institute, National Institutes of Health. (2023, October 25). COPD - What Is COPD? Retrieved March 8, 2024, from <https://www.nhlbi.nih.gov/health/copd>

28 National Heart, Lung, and Blood Institute, National Institutes of Health. (2023, October 25). COPD - What Is COPD? Retrieved March 8, 2024, from <https://www.nhlbi.nih.gov/health/copd>

29 National Heart, Lung, and Blood Institute, National Institutes of Health. (2023, October 25). COPD - What Is COPD? Retrieved March 8, 2024, from <https://www.nhlbi.nih.gov/health/copd>

30 World Health Organization. (n.d.). Ambient air pollution. Retrieved March 8, 2024, from <https://www.who.int/data/gho/data/themes/topics/indicator-groups/indicator-group-details/GHO/ambient-air-pollution>

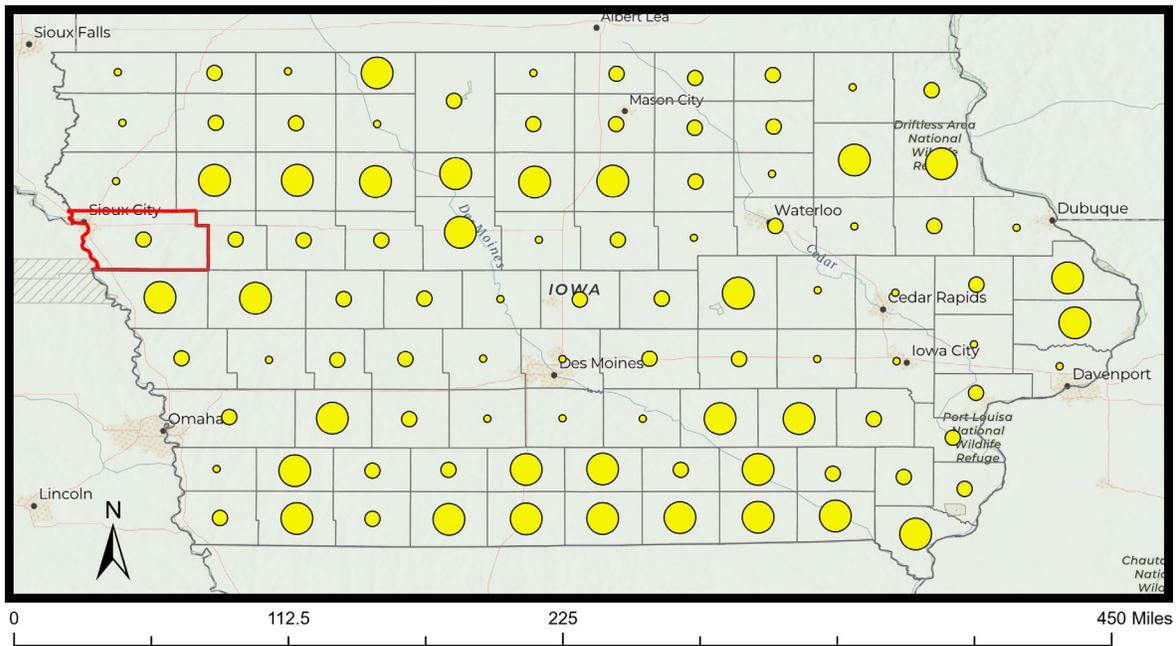
31 Centers for Disease Control and Prevention. (2023, August 25). PLACES: Local Data for Better Health, County Data 2023 release. Retrieved March 8, 2024, from [https://data.cdc.gov/500-Cities-Places/PLACES-Local-Data-for-Better-Health-County-Data-20/swc5-unltb/about\\_data](https://data.cdc.gov/500-Cities-Places/PLACES-Local-Data-for-Better-Health-County-Data-20/swc5-unltb/about_data)

### 3.4 CORONARY HEART DISEASE

Another prevalent condition in Siouxland that is exacerbated by coal-fired power plant emissions is coronary heart disease. Coronary heart disease restricts the delivery of oxygen-rich blood to the heart.<sup>32</sup> Coronary heart disease is the leading cause of death in the U.S.<sup>33</sup> Research shows that short- and long-term exposure to particulate pollution are both linked to an increased risk of heart attacks and other forms of heart disease.<sup>34</sup> Again, Woodbury County displays higher rates than counties with much larger cities, such as Linn and Scott Counties. See Figure 11.

**Figure 11: Coronary Heart Disease Rates in Iowa (Per 10,000 People)**

Coronary Heart Disease  
in Adults Aged 18 Years or Older



32 National Heart, Lung, and Blood Institute, National Institutes of Health. (2023, December 20). Coronary Heart Disease—What Is Coronary Heart Disease? Retrieved March 8, 2024, from <https://www.nhlbi.nih.gov/health/coronary-heart-disease>

33 National Heart, Lung, and Blood Institute, National Institutes of Health. (2023, December 20). Coronary Heart Disease—What Is Coronary Heart Disease? Retrieved March 8, 2024, from <https://www.nhlbi.nih.gov/health/coronary-heart-disease>

34 Centers for Disease Control and Prevention. (2023, March 21). Million Hearts® Particle Pollution and Heart Disease. Centers for Disease Control and Prevention. Retrieved March 8, 2024, from <https://millionhearts.hhs.gov/about-million-hearts/building-communities/particle-pollution.html>

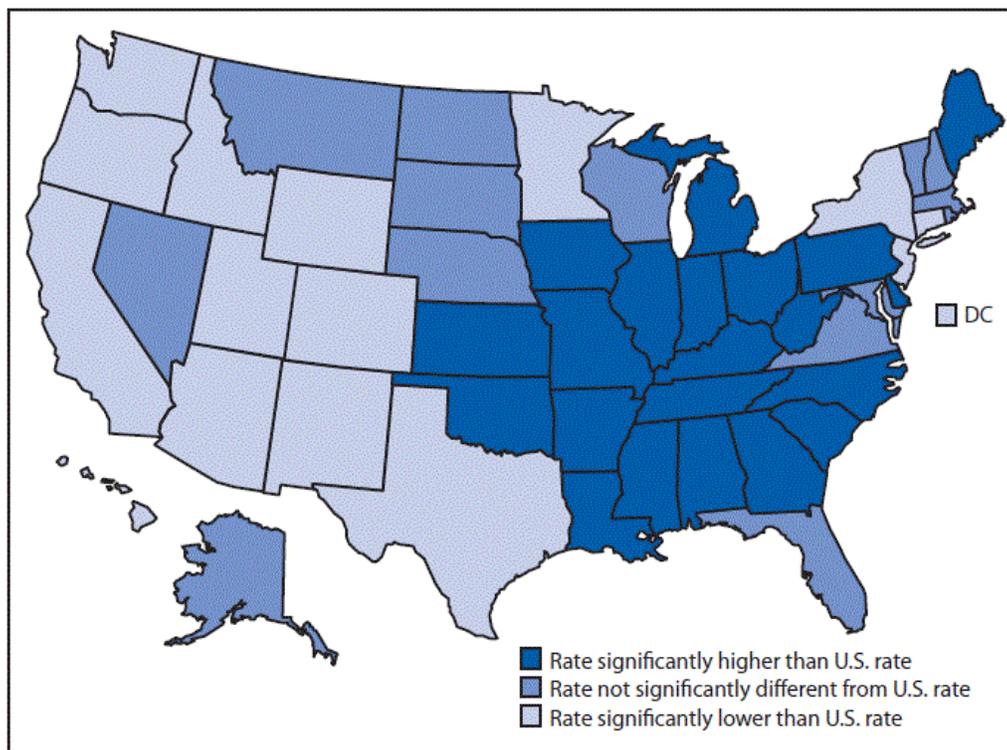
35 Centers for Disease Control and Prevention. (2023, August 25). PLACES: Local Data for Better Health, County Data 2023 release. Retrieved March 8, 2024, from [https://data.cdc.gov/500-Cities-Places/PLACES-Local-Data-for-Better-Health-County-Data-20/swc5-unth/about\\_data](https://data.cdc.gov/500-Cities-Places/PLACES-Local-Data-for-Better-Health-County-Data-20/swc5-unth/about_data)

### 3.5 LUNG CANCER

According to the World Health Organization, outdoor air pollution causes about 16% of lung cancer deaths worldwide, primarily driven by high levels of particulate matter in polluted air.<sup>36</sup> Smoking is likely the largest cause of lung cancer in the region, but particulate matter pollution can also cause lung cancer or exacerbate existing diseases. Iowa's rate of lung cancer cases is 61.1 per 100,000 people, significantly higher than the national rate of 54.6.<sup>37</sup> A review of age-adjusted lung cancer death rates also shows that Iowa has a lung cancer death rate that is significantly higher than the national average. See Figure 12. Locally, Union County has the 12<sup>th</sup> highest rate of lung cancer in South Dakota (63.6 per 100,000 people) out of 66 counties, significantly higher than the state rate of 55.9 per 100,000 people.<sup>38</sup>

Each of these dangerous health conditions are prevalent in Siouxland, highlighting the acute health consequences resulting from MidAmerican Energy's continued coal-fired electricity production in the region. These impacts are not experienced evenly in the population but burden communities already facing health and economic barriers.

Figure 12: Age-Adjusted Lung Cancer Death Rates by State



<sup>36</sup> World Health Organization. (n.d.). Ambient air pollution. Retrieved March 8, 2024, from <https://www.who.int/data/gho/data/themes/topics/indicator-groups/indicator-group-details/GHO/ambient-air-pollution>

<sup>37</sup> American Lung Association. (2023). State of Lung Cancer | State Data | Iowa. Retrieved March 8, 2024, from <https://www.lung.org/research/state-of-lung-cancer/states/iowa>

<sup>38</sup> National Cancer Institute, National Institutes of Health, & Centers for Disease Control and Prevention. (2020). State Cancer Profiles > Incidence Rates Table. Retrieved March 8, 2024, from <https://statecancerprofiles.cancer.gov/incidencerates/index.php?stateFIPS=46&areatype=county&cancer=047&race=00&sex=0&age=001&stage=999&type=incd&sortVariableName=rate&sortOrder=default&output=0#results>

# PART FOUR: SAME POLLUTION, DIFFERENT IMPACTS

*Health impacts from air pollution have been shown across many studies to have disparate impacts.<sup>39</sup>*

Very young and elderly people are more vulnerable to pollution impacts. People who are members of racial and ethnic minorities and people with a low income often face both higher pollution levels and worse health outcomes when exposed to pollution.<sup>40</sup> In Siouxland, it is important to recognize that people in the latter groups may not be as prepared to respond to pollution from coal-fired electricity production and that they experience it differently than Iowans with more access to better economic and social resources.

## 4.1 SOCIODEMOGRAPHIC INDICATORS AND DISEASE IN SIOUXLAND

Siouxland has a more diverse population than those of the overall populations of the states they call home. Historically marginalized communities, including Native American, Black or African American, and Latino residents are represented at higher levels than their respective states. In fact, two of the region's three counties represent more racial diversity for those groups than Iowa, Nebraska, and South Dakota as a whole, whose collective populations are 87% white on average. See Figure 13.



Figure 13: Racial Diversity by Siouxland County and State

Woodbury County, IA		
Race	County Percent	State Percent
White alone	84.6%	89.8%
Black or African American	5.6%	4.4%
American Indian or Alaska Native	3.2%	0.6%
Asian	2.9%	2.8%
Native Hawaiian and Other Pacific Islander	0.8%	0.2%
Two or More Races	3.0%	2.2%
Hispanic or Latino	19.2%	6.9%
White alone, not Hispanic or Latino	68.3%	83.7%

39 Jbaily, A., Zhou, X., Liu, J., Lee, T.-H., Kamareddine, L., Verguet, S., & Dominici, F. (2022). Air Pollution Exposure Disparities Across US Population and Income Groups. *Nature*, 601(7892), 228–233. Retrieved March 8, 2024, from <https://doi.org/10.1038/s41586-021-04190-y>

40 Josey, K. P., Delaney, S. W., Wu, X., Nethery, R. C., DeSouza, P., Braun, D., & Dominici, F. (2023). Air Pollution and Mortality at the Intersection of Race and Social Class. *New England Journal of Medicine*, 388(15), 1396–1404. Retrieved March 8, 2024, from <https://doi.org/10.1056/NEJMsa2300523>

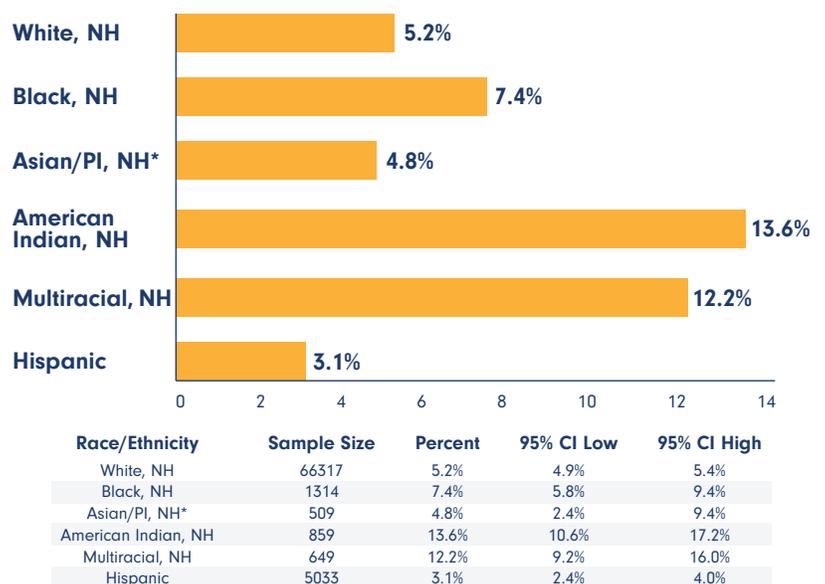
Dakota County, NE		
Race	County Percent	State Percent
White alone	80%	87.5%
Black or African American	8.6%	5.4%
American Indian or Alaska Native	4.5%	1.6%
Asian	3.5%	2.8%
Native Hawaiian and Other Pacific Islander	0.9%	0.1%
Two or More Races	2.5%	2.5%
Hispanic or Latino	40.6%	12.3%
White alone, not Hispanic or Latino	43.2%	76.9%

Union County, SD		
Race	County Percent	State Percent
White alone	93.9%	84.2%
Black or African American	1.4%	2.6%
American Indian or Alaska Native	1%	8.5%
Asian	1.6%	1.8%
Native Hawaiian and Other Pacific Islander	0.2%	0.1%
Two or More Races	1.9%	2.8%
Hispanic or Latino	4.8%	4.9%
White alone, not Hispanic or Latino	89.8%	80.7%

In many instances, data show that the prevalence of respiratory and cardiological conditions is higher in marginalized communities. Data from the Nebraska Department of Health and Human Services show a wide disparity between COPD prevalence in Native Americans and other racial groups. Even though Native Americans make up only 1.6% of the state's population, they accounted for 13.6% of COPD cases in the state between 2016 and 2020.<sup>41</sup> While causation is difficult to link directly to the Neal plants, especially when considering smoking rates and mold presence in homes, coal plant pollution can greatly exacerbate the symptoms of people with existing cases of COPD. See Figure 14.

Further health data for Native Americans on both the Omaha and Winnebago Reservations are, if available at all, difficult to locate and are evidence of another barrier to having the appropriate information needed to understand the true cost of coal pollution on Native American communities in Siouxland.

Figure 14: Disparity in Nebraska COPD Prevalence for Native Americans



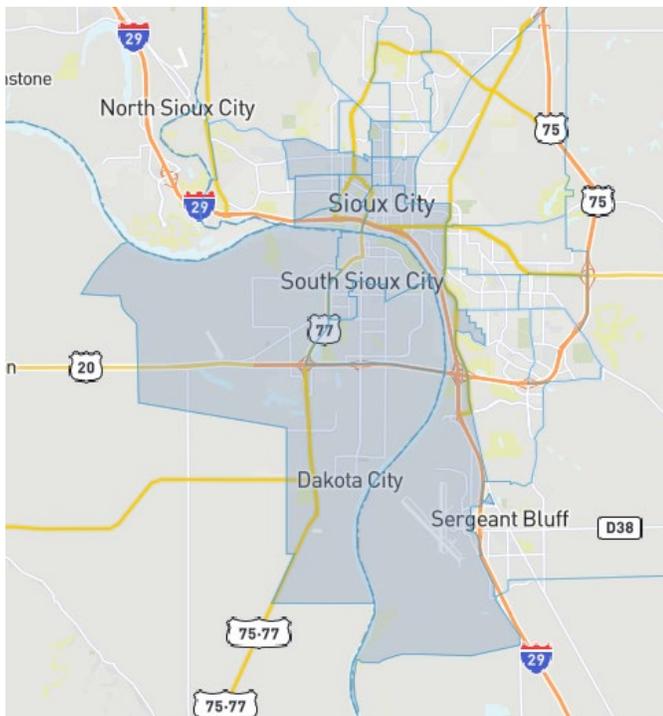
41 Nebraska Department of Health and Human Services. (2020). Nebraska Behavioral Risk Factor Surveillance System (BRFSS) Dashboard. Nebraska Public Health Atlas. Retrieved March 8, 2024, from <https://atlas-dhhs.ne.gov/Atlas/BRFSS>

## 4.2 PURSUING EQUITABLE OUTCOMES IN SIOUXLAND

For the purposes of ensuring the benefits of federal funding available from the Inflation Reduction Act and other legislation flow to communities that have seen the most historical harm from pollution and barriers to economic development, the federal government created a designation referred to as a “disadvantaged community.” Such communities receive special consideration for federal funding under the Justice 40 Initiative, an administration-wide goal to ensure that at least 40% of the benefits of federal programs flow to disadvantaged communities.<sup>42</sup> Justice 40 includes programs totaling \$118 billion in federal investment, including in funding for climate and energy projects

A community is defined as disadvantaged if it is in a census tract that is (1) at or above the threshold for one or more environmental, climate, or other burdens, (such as energy burden or flood risk) and (2) at or above the threshold for an associated socioeconomic burden (such as people in poverty). Several census tracts within Siouxland are classified as disadvantaged communities, including much of Sioux City and all of South Sioux City and Dakota City. These designations indicate the level of vulnerability in Siouxland regarding environmental justice concerns and overall economic security. See Figure 15.

**Figure 15: Disadvantaged Communities in Siouxland**



Meeting the qualifications set for a “disadvantaged community” means that portions of Siouxland become eligible for tax credits, low-interest loans, grant funds, and other financial incentives from the federal government related to energy production. Given the diversity of the Siouxland region and the evidence of health impacts related to MidAmerican Energy’s operation of coal plants in the region, there is a clear incentive for people in the region to consider how federal funding could support mitigating current health impacts.

## 4.3 REVIEWING ECONOMIC SECURITY

When coal-fired electricity production causes or exacerbates health conditions like COPD and asthma, those with less financial security are less equipped to handle those challenges. There are approximately 17,000 people in Siouxland living in poverty, or about 12% of the region’s 143,776 residents.<sup>43</sup> Some areas of Sioux City rank in the 95<sup>th</sup>, 94<sup>th</sup>, and 87<sup>th</sup> percentile nationally for low-income residents.<sup>44</sup> If a person has a low income or lacks access to affordable healthcare, they may not be able to afford visits to a specialist or primary care provider. This lack of access to primary and preventative healthcare can lead to more cost and worse health outcomes, such as more frequent emergency department visits, disease progression, and an increased risk of premature death. Therefore, the health of Siouxland’s residents is directly tied to their financial security and provides important insights into the actual cost of coal plant pollution. See Figure 16.

42 The White House. (2023). Justice40 Initiative Covered Programs List. Retrieved March 8, 2024, from [https://cdn.vox-cdn.com/uploads/chorus\\_asset/file/25120529/Justice40\\_Initiative\\_Covered\\_Programs\\_List\\_v2.0\\_11.23\\_FINAL\\_1\\_.pdf](https://cdn.vox-cdn.com/uploads/chorus_asset/file/25120529/Justice40_Initiative_Covered_Programs_List_v2.0_11.23_FINAL_1_.pdf)

43 United States Census Bureau. (2023). U.S. Census Bureau QuickFacts: Woodbury County, Iowa; Union County, South Dakota; Dakota County, Nebraska. Retrieved March 8, 2024, from <https://www.census.gov/quickfacts/fact/table/woodburycountyiowa,unioncountysouthdakota,dakotacountynebraska/PST045222>

44 Council on Environmental Quality. (2023). Climate and Economic Justice Screening Tool. Climate and Economic Justice Screening Tool. Retrieved March 8, 2024, from <https://screeningtool.geoplatform.gov>

Figure 16: Economic Disadvantages in Siouxland by County

Indicator	Woodbury County, IA	Dakota County, NE	Union County, SD
Persons in Poverty	13%	11.7%	6.0%
	13,737 People	2,461 People	1,023 People
Uninsured Residents <65 Years of Age	8.8%	13.5%	8.2%
	9,299 People	2,840 People	1,399 People
Unemployment Rate	3.0%	2.3%	2.5%

\*Census estimates are shown above, but the Dakota County, NE Department of Public Health estimates that the uninsured rate in that county is 29.0%, or 6,159 people.<sup>45</sup>

## CONCLUSION

*The damage to Siouxland residents caused by MidAmerican Energy's continued operation of the George Neal coal plants is clear. Each day these plants operate is another day the region's most vulnerable residents must grapple with chronic health conditions including asthma, COPD, coronary heart disease, lung cancer, and an accelerated risk of early death. MidAmerican Energy's choice to ignore these life-altering impacts continues to pose a serious threat to the health of Siouxland residents.*

These findings are not hypothetical. Being home to the county with the highest incidence of asthma in Iowa, the consequences of continued operation and resulting pollution create significant risk factors that harm residents. The information presented in this report makes it difficult to dispute the role of these plants in creating conditions in the surrounding communities that lead them to be rated as having some of the lowest life expectancy in the entire country. "The George Neal plants have already been associated with the early death of at least 92 Iowans, 61 Nebraskans, and 12 South Dakotans since 1999."<sup>46</sup>

Though the amount of harmful pollution coming from the plants may appear to be a uniform number, the impacts are not felt the same. Both racial minorities and low-income residents often lack adequate resources to manage these impacts to their wellbeing; Siouxland has increased representation from both groups. Native Americans should not make up more than 13% of COPD cases logged between 2016 and 2020 in Nebraska despite being less than 2% of the population. The 13,538 uninsured residents of Siouxland cannot reasonably be expected to have adequate access to the level of health care needed to manage the life-altering health conditions most impacted by coal pollution.

MidAmerican Energy's weak statement of intent to retire their entire coal generation fleet by 2049, 25 years in the future, is both a failure to prioritize the health of the region and an unstated acknowledgement that they are causing harm to the surrounding region.<sup>47</sup> MidAmerican Energy needs to take swift action to retire these plants while federal incentives are available. Siouxland deserves a transparent plant retirement process and MidAmerican Energy must work with the community to recognize the complicated legacy of these plants and chart a path forward that puts the region on the best possible path for the health of the region.



45 Nebraska Department of Health and Human Services. (2020). Nebraska Behavioral Risk Factor Surveillance System (BRFSS) Dashboard. Nebraska Public Health Atlas. Retrieved March 8, 2024, from <https://atlas-dhhs.ne.gov/Atlas/BRFSS>

46 Henneman, L., Choirat, C., Dedoussi, I., Dominici, F., Roberts, J., & Zigler, C. (2023). Mortality Risk from United States Coal Electricity Generation. *Science*, 382(6673), 941-946. Retrieved March 8, 2024, from <https://doi.org/10.1126/science.adf4915> and <https://cpieatgt.github.io/cpie/>

47 Berkshire Hathaway Energy. (n.d.). Exhibit 99.1 Coal Unit Retirements. Retrieved March 8, 2024, from <https://www.sec.gov/Archives/edgar/data/75594/000119312521149268/d167240dex991.htm>



505 Fifth Ave, Ste. 850 • Des Moines, IA 50309

**Phone:** 515-244-1194

**Web:** [iaenvironment.org](http://iaenvironment.org)

**Email:** [iecmail@iaenvironment.org](mailto:iecmail@iaenvironment.org)

---

**Connect With IEC**

---

-  [@IAEnvironmentalCouncil](#)
-  [@iaenvironmentalcouncil](#) and [@iowawaterwatch](#)
-  [@Iowa\\_Env](#)
-  [Iowa Environmental Council](#)
-  [@IowaEnviro](#)