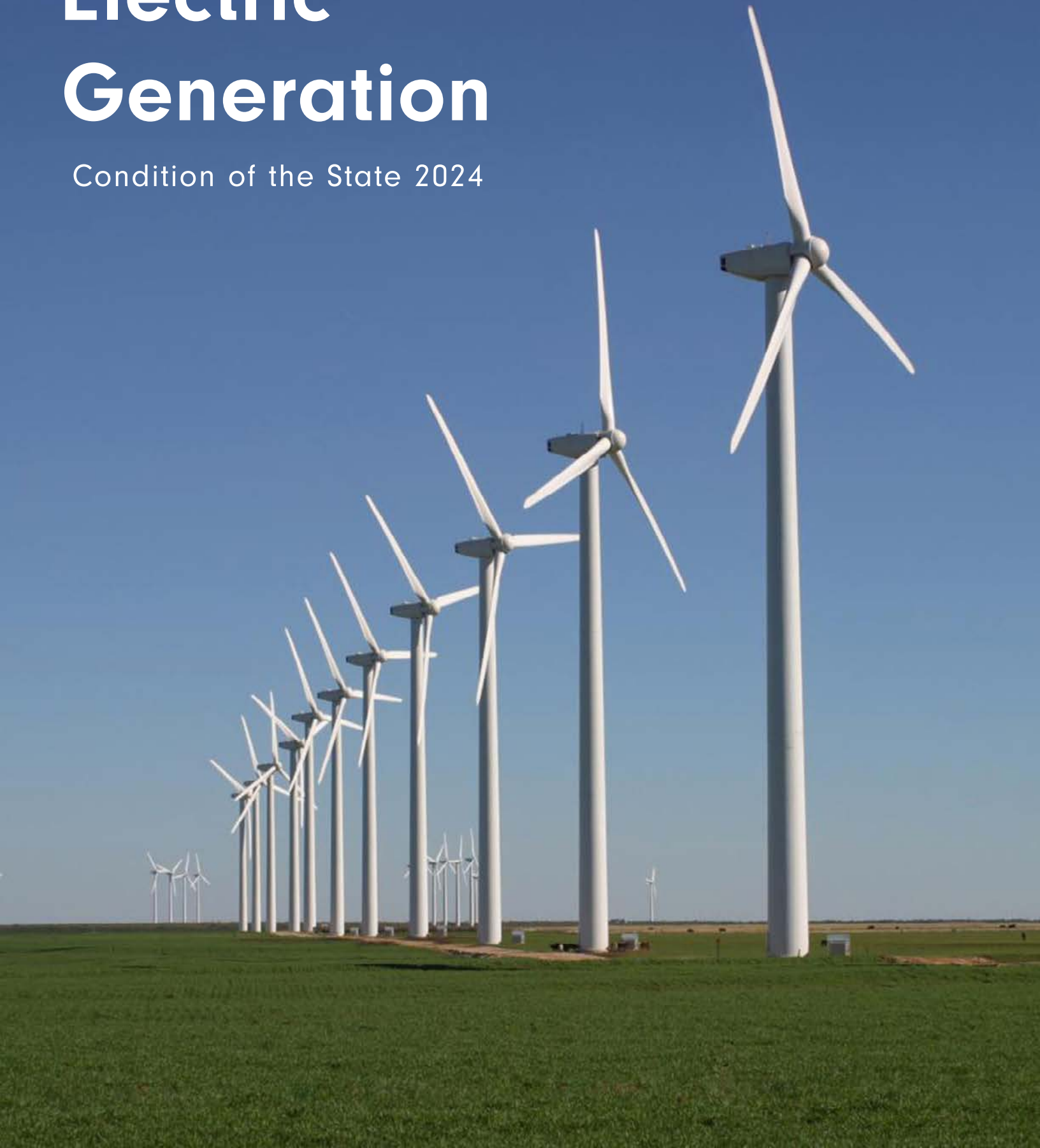


# Iowa Electric Generation

Condition of the State 2024



Iowa  
Environmental  
Council



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## Introduction

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On April 22, 2021, the U.S. announced a long-term national policy to ensure the U.S. achieves a carbon-free electricity sector by 2035, effectively eliminating electricity produced using coal and fossil gas.<sup>1</sup> Consistent with this national policy, the Intergovernmental Panel on Climate Change (IPCC) issued [Climate Change 2022: Mitigation of Climate Change](#) in April of 2022.<sup>2</sup>

The IPCC report makes clear that in order to limit warming to 1.5°C, **ALL global greenhouse gases** from all sources released into the atmosphere must equal the amount of greenhouse gases removed by 2050 (net zero).<sup>3</sup> Importantly, the IPCC report shows that the delay or failure to achieve timely reductions in one sector increases the burden to reduce in other sectors.<sup>4</sup>

The IPCC report and the U.S. national policy recognize that achieving net zero by 2050 requires a carbon-free electricity sector by 2035. While the transportation, agricultural, and building sectors will require more time and innovation to be net zero by 2050, a carbon-free electricity sector by 2035 is achievable and necessary.

To put the U.S. on a pathway to achieve net zero by 2050, the Inflation Reduction Act (IRA) was signed on August 16, 2022. The IRA creates significant tax credits and incentives through 2032 to move to a clean energy economy. Among the incentives for utilities, the Energy Infrastructure Reinvestment (EIR) Program guarantees loans to projects that retool, repower, repurpose, or replace energy infrastructure that has ceased operations; or to enable operating energy infrastructure to avoid, reduce, utilize, or sequester air pollutants or anthropogenic emissions of greenhouse gases. These incentives are time-limited and would substantially reduce the costs of transitioning to clean energy for Iowans. To reduce climate pollution appropriately and provide maximum benefit to Iowa customers, all Iowa utilities must rapidly implement plans to fully utilize the IRA in order to prioritize and accelerate this transition.

In April of 2020, the Iowa Environmental Council released *Iowa's Road to 100% Renewable*, which summarized various pathways for Iowa to meet a 100% renewable energy goal based on a dozen regional and national studies. We found that this goal is achievable and desirable. In fact, wind energy surpassed coal as Iowa's primary source of electricity in 2019 for the first time ever, and provided 63% of Iowa's electricity in 2022.

Yet, at this time, none of the utilities in Iowa are taking adequate steps to achieve a carbon-free electricity sector by 2035. **MidAmerican Energy holds outsized responsibility for this inaction as the majority owner of the remaining coal plants in Iowa.** Their stubborn insistence on the status quo fails to recognize the reduction timelines called for by the IPCC, and **breaks MidAmerican's promise to accelerate the transition to a low-carbon economy.**

MidAmerican Energy, Alliant Energy, Iowa municipal utilities, and Iowa electric cooperatives must make serious commitments to reach a zero-carbon electricity system by 2035. The needed energy transition starts with plans to retire their expensive, dirty, and unnecessary coal generation.

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1 [Fact Sheet: Biden Sets Greenhouse Gas Reduction Targets; Fossil gas also referred to as methane or natural gas.](#)

2 [Climate Change 2022; Mitigation of Climate Change.](#)

3 Id.

4 Id.

## Coal Generation and Climate Change

Of coal's many environmental impacts, none are as harmful, long term, and irreversible as climate change. Climate change is driven by emissions of heat-trapping gases, primarily from human activities, that rise into the atmosphere and act like a blanket, warming the earth's surface.



**Carbon dioxide** (CO<sub>2</sub>) emissions from combusting fossil fuels are the main driver of climate change. CO<sub>2</sub> is also the main byproduct of coal combustion: nearly four grams of CO<sub>2</sub> are produced for every gram of carbon burned (depending on its type, coal can contain as much as 60 to 80 percent carbon). Coal generation produces approximately one ton of CO<sub>2</sub> per megawatt hour (MWh) of energy.

Consequences of climate change include rising temperatures and accelerating sea level rise as well as growing risks of drought, heat waves, heavy rainfall from intensified storms, and species loss. Left unchecked, climate change will lead to profound human and ecological disruption. We are already seeing impacts from climate change today in Iowa.

These impacts are costing Iowa businesses, families, governments, and taxpayers billions of dollars. For example, the August 10, 2020 derecho<sup>5</sup> damaged millions of acres of corn and soybeans, devastated the Cedar Rapids tree canopy, and crippled portions of the MidAmerican and Alliant electric system. The resulting damages to Iowans and Midwesterners totaled \$12 billion in just one event.<sup>6</sup> Then on December 15, 2021, a derecho<sup>7</sup> in Iowa totaled \$1 billion in damages.<sup>8</sup> It also marked the first ever derecho recorded in the month of December in the U.S., and was accompanied by at least 63 tornadoes, the largest outbreak in state history.<sup>9</sup> Insurance companies, unhappy about extreme losses in Iowa in recent years, are pulling out of the state altogether or significantly increasing premiums, creating issues with housing affordability.<sup>10</sup>

5 [Iowa derecho in August was most costly U.S. thunderstorm disaster](#) - The Washington Post

6 "Events | Billion-Dollar Weather and Climate Disasters," NOAA, available at [https://www.ncei.noaa.gov/access/billions/events/US/2020?disasters\[\]=severe-storm](https://www.ncei.noaa.gov/access/billions/events/US/2020?disasters[]=severe-storm) (last visited June 20, 2023).

7 <https://www.kcrg.com/2021/12/17/initial-analysis-shows-wednesday-severe-weather-meets-derecho-criteria/>

8 "Events | Billion-Dollar Weather and Climate Disasters," NOAA, available at [https://www.ncei.noaa.gov/access/billions/events/US/2021?disasters\[\]=severe-storm](https://www.ncei.noaa.gov/access/billions/events/US/2021?disasters[]=severe-storm) (last visited June 20, 2023).

9 "Severe Storms and Extreme Winds - December 15, 2021," NOAA, available at <https://www.weather.gov/dmx/StormyandWindyWednesdayDecember152021> (last visited June 20, 2023).

10 <https://www.desmoinesregister.com/story/news/2023/07/31/iowa-rural-insurers-threatened-recent-derechos-natural-disasters-big-firms-leave-farmers-mutual/7047775007/>

# Iowa's Contribution to Climate Change

The Iowa Department of Natural Resources must report annual greenhouse gas inventories to the legislature and governor each year. The most recent report calculated greenhouse gas emissions for calendar year 2022.

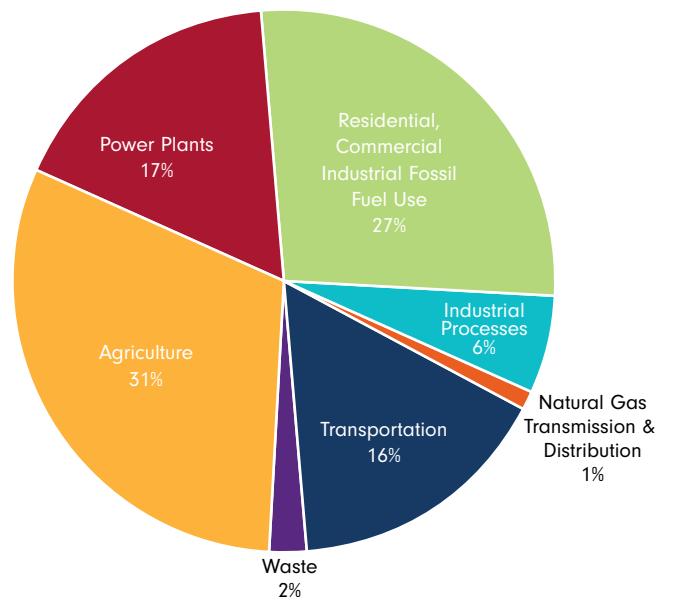


The 2022 GHG Inventory is a "top-down" inventory based on statewide activity data from agriculture, fossil fuel combustion, industrial processes, natural gas transmission and distribution, transportation, solid waste, and wastewater treatment. It also includes carbon sequestered or emitted from land use, land use change, and forestry. GHGs included in the inventory are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), perfluorocarbons (PFC), hydrofluorocarbons (HFC), and sulfur hexafluoride (SF<sub>6</sub>).

The majority of GHG emissions in Iowa in 2022 were from the agriculture sector (31%), followed by emissions from the residential/commercial/industrial (RCI) sector (27%), and fossil fuel use by power plants (17%), as shown in Chart 1.<sup>11</sup>

In 2022, total gross Iowa greenhouse gas emissions were 124.22 million metric tons of carbon dioxide equivalent (MMtCO<sub>2</sub>e).<sup>12</sup> The trend in Iowa from 2005 through 2022 for each of the sectors is shown in Chart 2.<sup>13</sup>

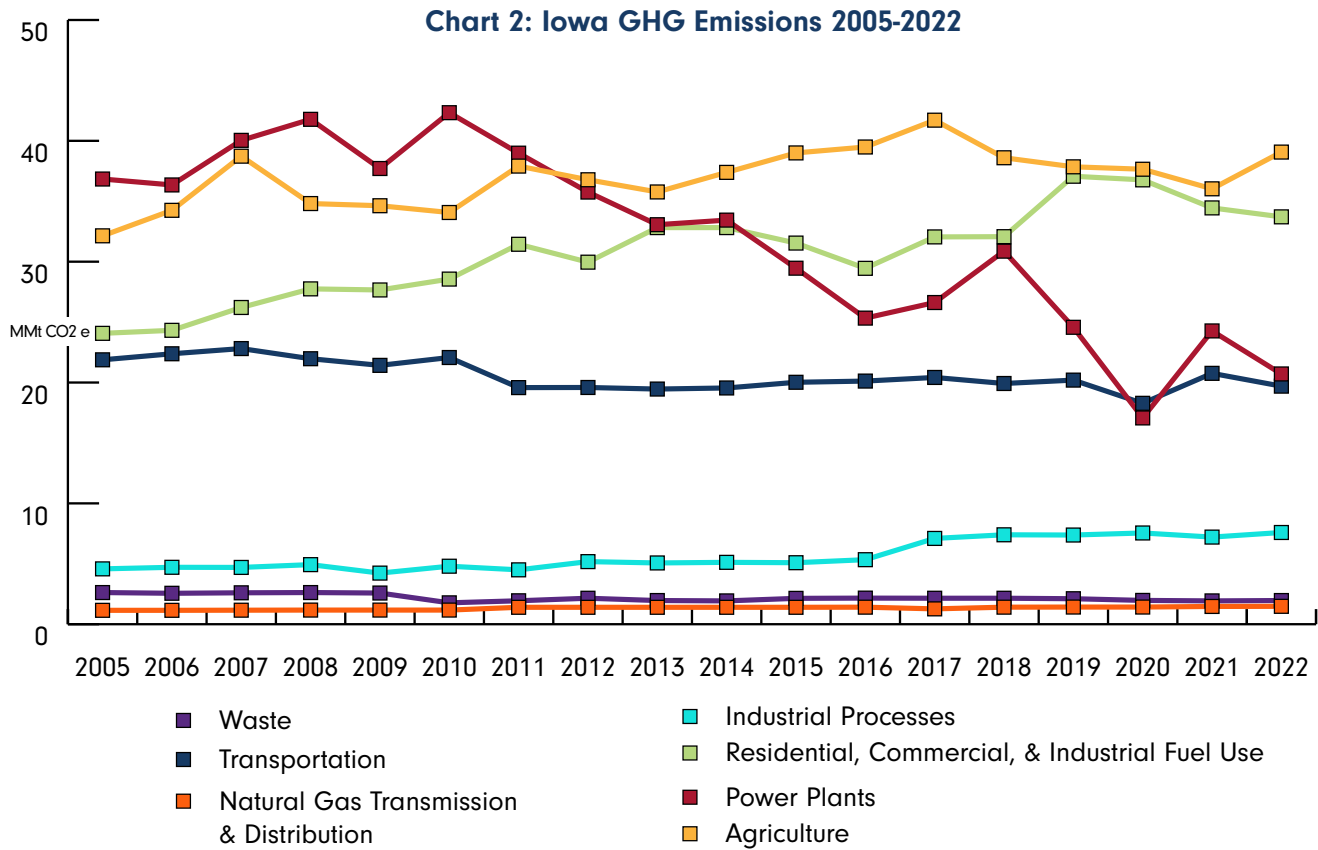
**Chart 1:**  
**2022 Iowa GHG Emissions by Sector**



<sup>11</sup> Iowa Department of Natural Resources, "2022 Iowa Statewide Greenhouse Gas Emissions Inventory Report," Dec. 28, 2023, available at [https://www.iowadnr-rhttps://www.iowadnr.gov/Portals/idnr/uploads/air/ghgemissions/2022\\_GHG\\_Report.pdf](https://www.iowadnr-rhttps://www.iowadnr.gov/Portals/idnr/uploads/air/ghgemissions/2022_GHG_Report.pdf), page 7.

<sup>12</sup> Id., page 3.

<sup>13</sup> Id., page 6.



Although power plant emissions have declined in the past 15 years, no other sector has made much progress and in fact the agriculture, RCI (residential, commercial, and industrial fuel use), and industrial process use sectors have increased over the same time frame. **It is critical to note that the sectors do not operate independently and that in order to achieve net zero by 2050, the RCI and transportation sectors depend on electrification and a carbon-free electricity sector to provide them clean power by 2035.** Our utilities must get on board with this timeline.

While both MidAmerican<sup>14</sup> and Alliant<sup>15</sup> have touted that their goals to be net zero by 2050 are consistent with the Paris Agreement and U.S. policy, however, that is not true. The national and international net zero goals apply to **all global greenhouse gases from all sources**, not only coal plants. MidAmerican and Alliant appear to have applied the net

zero goal only to their electric generation, and conveniently ignored their fossil gas operations. They have also decided to operate their coal plants well beyond the U.S. policy to have **a carbon-free electricity sector by 2035.**<sup>16 17</sup>

Both companies need to immediately recognize that a business-as-usual approach will harm customers with both short-term and long-term consequences. Iowa is already experiencing the impacts from climate change, and a failure to take actions to eliminate fossil generation by 2035 is a breach of social responsibility, a likely breach of fiduciary responsibility, and in the case of MidAmerican, a breach of its 2015 Climate Pledge.<sup>18</sup> Iowa industrial, agriculture, business, residential, and transportation sectors cannot and will not meet the necessary greenhouse gas reductions if the utilities fail to meet the 2035 target.

14 [MidAmerican Energy Net Zero](#)

15 [Alliant Energy - Alliant Energy Responsibility Report | Clean Energy Vision and Goals](#)

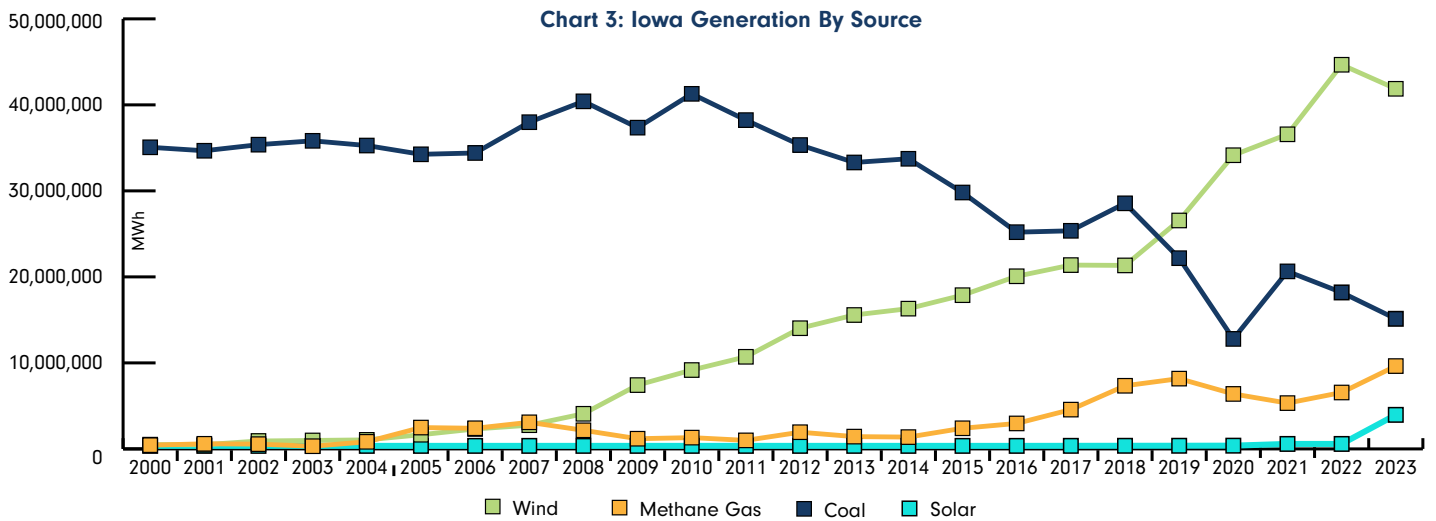
16 [EX-99.1 \(sec.gov\)](#)

17 [Alliant Energy - Alliant Energy Responsibility Report | Clean Energy Vision and Goals](#)

18 [As Berkshire signs Obama climate pledge, subsidiary MidAmerican targets 57% wind in Iowa | Utility Dive](#)

# Iowa Generation Since 2000

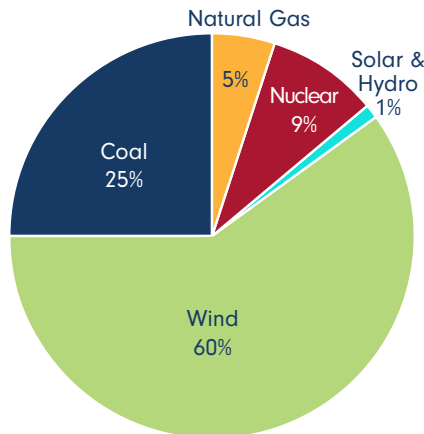
Iowa’s progress in developing renewable energy over the past twenty years has resulted in a significant reduction in carbon emissions in the electric generation or power sector. Iowa has made progress in reducing generation from coal-fired power plants since 2000 and has seen a significant increase in generation from wind.



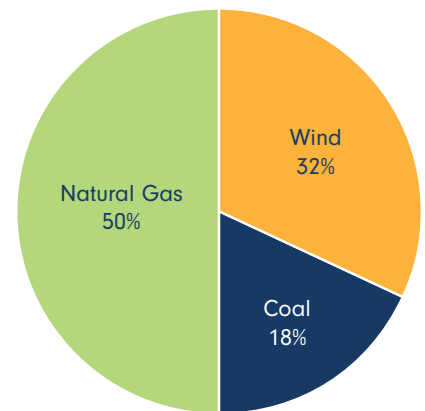
Source: Net Generation by State by Type of Producer by Energy Source (EIA-906, EIA-920, and EIA-923)

The 2016 to 2023 timeframe is especially noteworthy because renewable generation from wind and solar not only exceeded coal generation for the first time, but rose to 64% of Iowa’s generation in 2023 – the most of any state in the U.S. **Fossil fuel generation in Iowa decreased from 41% in 2021 to 35% in 2023 while wind generation was 59% in 2023 and solar generation increased to 5% in 2023.** The trend is clear in Iowa and across the country - wind and solar power is affordable and reliable, and we should be transitioning away from coal long before 2040 (Alliant’s goal for ending coal use in Iowa) or 2049 (MidAmerican’s goal).

**Chart 4: 2023 MidAmerican Resource Mix**



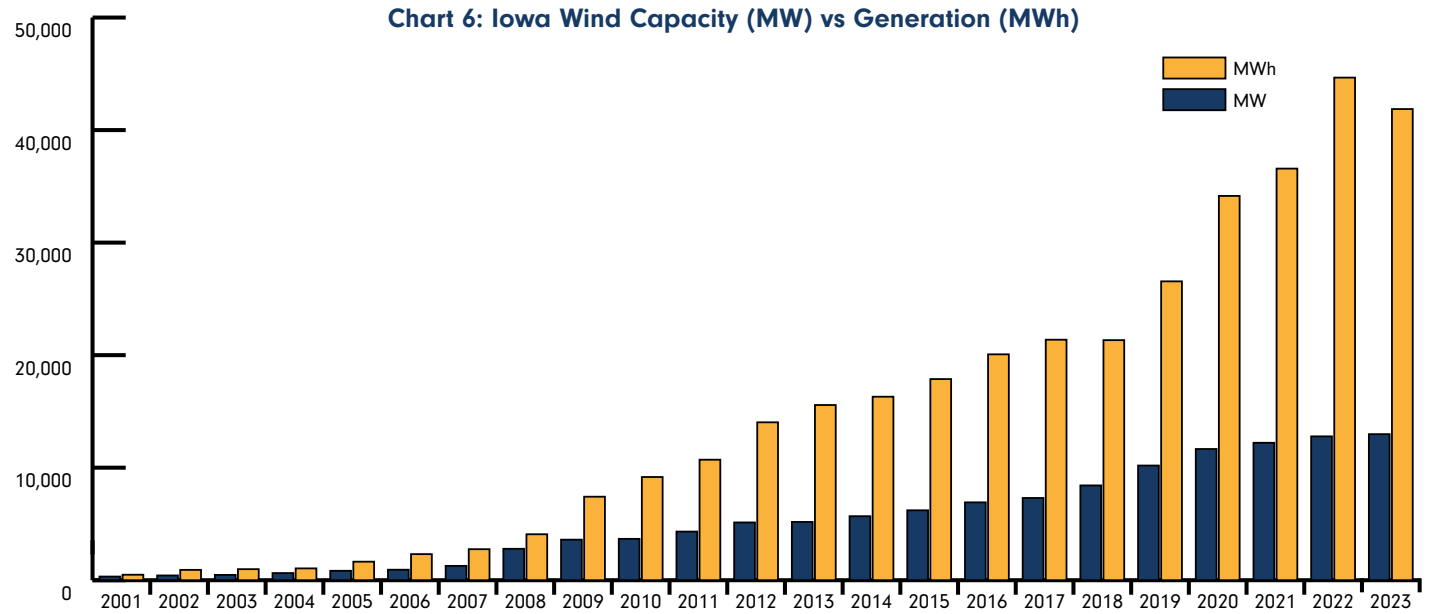
**Chart 5: 2023 Alliant Resource Mix**



The 2023 Iowa resource mixes for Iowa’s two largest utilities, Alliant Energy and MidAmerican Energy, are shown in Charts 4 and 5.<sup>19</sup> Wind represented 60% of the MidAmerican Energy generation and 32% of the Alliant Energy generation.

Chart 6 shows the total wind capacity (MW) in Iowa since 2001, and the generation (MWh) from those wind turbines, including the notable 2016 to 2023 timeframe.<sup>20 21</sup>

From 2016 to 2023, wind capacity increased by over 88% (an additional 6,062 MW) in Iowa, and wind generation increased by over 109%. Note: The wind generation decline from 2022 to 2023 was attributed to 2022 being an above average year for wind.



## Fossil Generation

Six coal plants in Iowa are operated by MidAmerican and Alliant, with four of the plants jointly owned with cooperatives and municipal utilities. Cooperatives and municipal utilities own portions of Neal South, Louisa, Walter Scott 3, and Walter Scott 4.<sup>22</sup> The plant ownership interests are shown in Table 1 on the following page.



20 "U.S. Installed and Potential Wind Power Capacity and Generation," U.S. Department of Energy Office of Energy Efficiency and Renewable Energy, available at <https://windexchange.energy.gov/maps-data/321>.

21 U.S. Energy Information Administration, "Electricity Data Browser," available at <https://www.eia.gov/electricity/data/browser/>.

22 The Economic, Fiscal, and Social Impacts of Utility-Owned Coal-Fired Power Plants in Iowa, <https://www.iaenvironment.org/webres/File/Power%20Plant%20Economic%20Impact%20-%20Final.pdf>, page 8.



**Table 1 Utility-Owned Coal-Fired Power Plants**

NAME	CAPACITY MW (MEGAWATTS)	COUNTY	OWNERSHIP
<b>George Neal #3 (North)</b>	584.1	Woodbury	<ul style="list-style-type: none"> <li>• MidAmerican Energy (72%);</li> <li>• Alliant (28%)</li> </ul>
<b>George Neal #4 (South)</b>	695.9	Woodbury	<ul style="list-style-type: none"> <li>• MidAmerican Energy (40.57%)</li> <li>• Alliant (25.695%)</li> <li>• Corn Belt Power Cooperative (8.695%)</li> <li>• Northwestern Public Service Company (8.681%)</li> <li>• Northwest Iowa Power Cooperative (4.86%;</li> <li>• Algona Municipal Utilities (2.937%)</li> <li>• Webster City Municipal Utilities (2.604%)</li> <li>• Cedar Falls Utilities (2.50%)</li> <li>• Remaining 3.46% is held by other municipal utilities including the Cities of Bancroft, Coon Rapids, Graettinger, Grundy Center, Laurens, Milford, and Spencer.</li> </ul>
<b>Louisa Generating Station</b>	811.9	Louisa	<ul style="list-style-type: none"> <li>• MidAmerican Energy (88%);</li> <li>• Central Iowa Power Cooperative (4.6%);</li> <li>• Alliant (4%);</li> <li>• City of Waverly, Iowa (1.1%);</li> <li>• City of Harlan, Iowa (0.8%);</li> <li>• City of Tipton, Iowa (0.5%);</li> <li>• City of Eldridge, Iowa (0.5%);</li> <li>• City of Geneseo, Illinois (0.5%)</li> </ul>
<b>Ottumwa Generating Station</b>	725.9	Wapello	<ul style="list-style-type: none"> <li>• MidAmerican Energy (52%);</li> <li>• Alliant (48%)</li> </ul>
<b>Walter Scott Energy Center Unit #3</b>	725.8	Pottawattamie	<ul style="list-style-type: none"> <li>• MidAmerican Energy (79.1%);</li> <li>• Central Iowa Power Cooperative (11.5%);</li> <li>• Cedar Falls Utilities (2.88%);</li> <li>• Corn Belt Power Cooperative (3.58%);</li> <li>• Atlantic Municipal Utilities (2.38%)</li> </ul>
<b>Walter Scott Energy Center Unit #4</b>	922.5	Pottawattamie	<ul style="list-style-type: none"> <li>• MidAmerican Energy (60.67%);</li> <li>• Lincoln Electric Systems (12.66%);</li> <li>• Municipal Energy Agency of Nebraska (6.92%);</li> <li>• Central Iowa Power Cooperative (9.55%);</li> <li>• Corn Belt Power Cooperative (4.88%);</li> <li>• Cedar Falls Utilities (1.73%)</li> </ul>

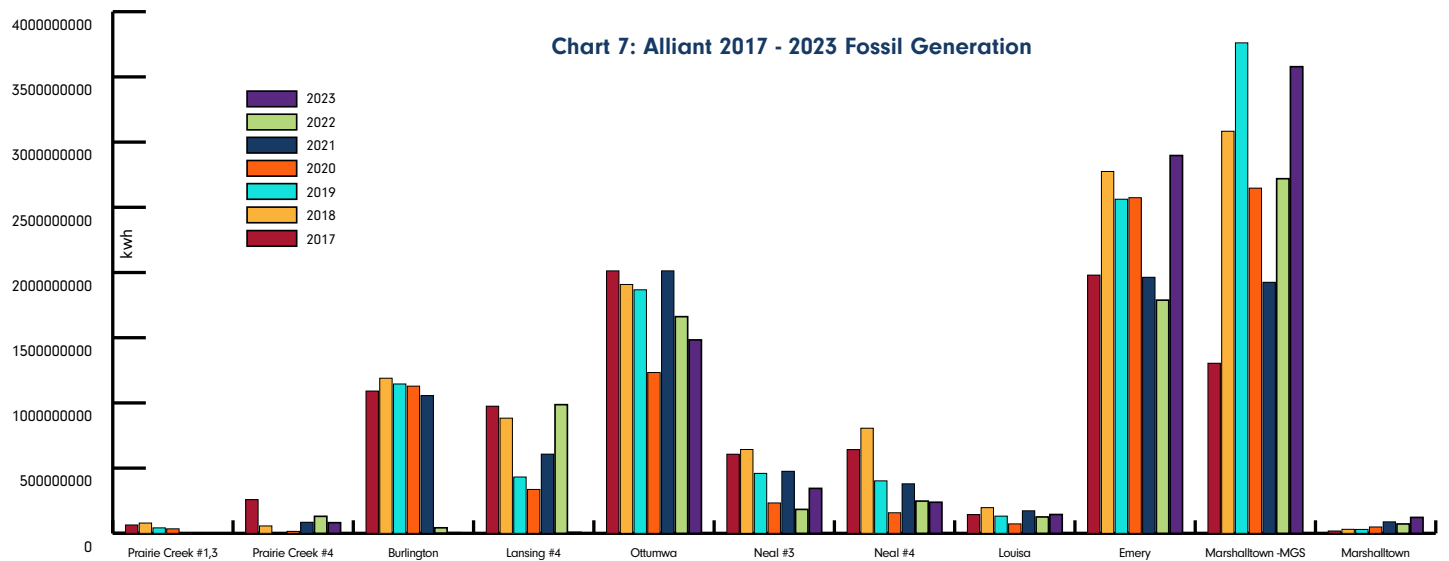
Based on the ownership interest in each of the coal plants, the megawatts of coal generation owned by each of the investor-owned electric utilities, power cooperatives, and municipal utilities is shown in Table 2.

The Electric Cooperatives and Municipal Utilities combined own 760 MW, which is larger than 4 of the 6 plants (Neal North, Neal South, Ottumwa, and Walter Scott #3).

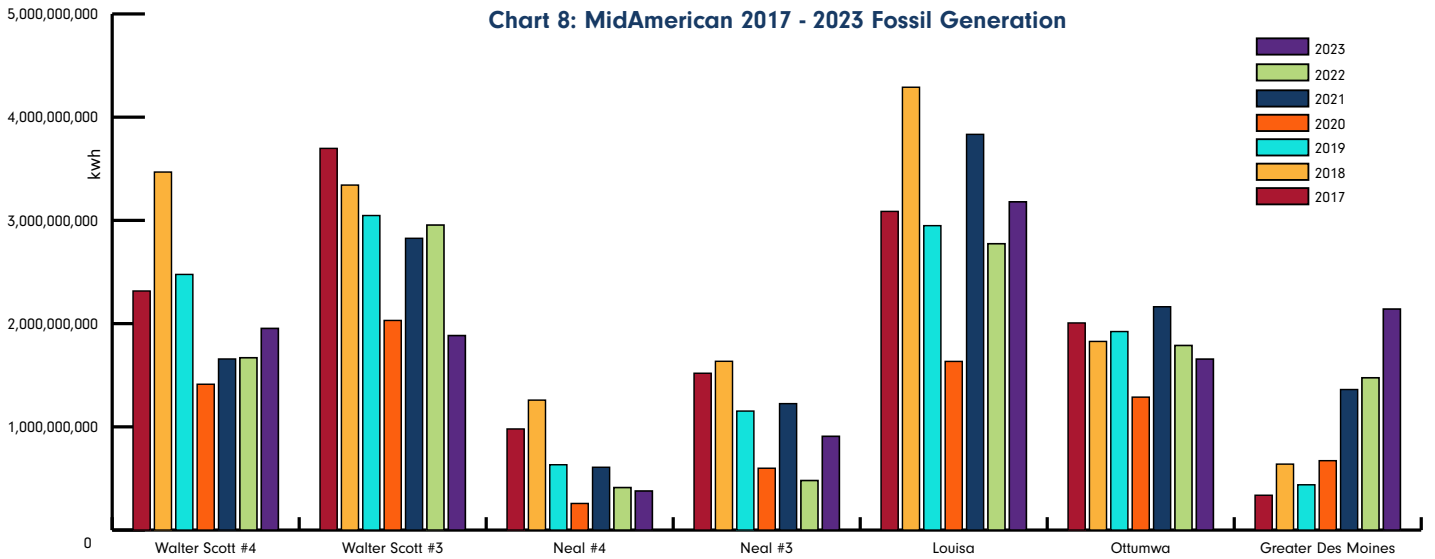
As wind and solar continue to meet more of the energy demand, the coal plants are operating less. From 2017 to 2023, while Alliant reduced its electricity production from coal by 60%, it has only reduced its fossil electricity production by 2%. Over the same time period, MidAmerican reduced its electricity production from coal by 27%, and reduced its fossil electricity production by 13%. In 2023, fossil generation represented 30% of MidAmerican generation and 68% of Alliant generation. (Although Alliant ceased operation of Lansing at the end of 2022, generation from natural gas from 2022 to 2023 increased by 44%.) Charts 7 and 8 offer a comparison of the generation from each fossil power plant over time; it is easy to see both the variability in deployment of fossil resources but also the clear increased use of coal and natural gas plants since 2020.<sup>23</sup>

**Table 2**

UTILITY	MW
MidAmerican Energy	2929
Alliant	723
Central Iowa Power Cooperative	191
Corn Belt Power Cooperative	131
Lincoln Electric Systems, Nebraska	117
Municipal Energy Agency of Nebraska	64
Northwestern Public Service Company	60
Cedar Falls Utilities	54
Northwest Iowa Power Cooperative	34
Cities of Bancroft, Coon Rapids, Graettinger, Grundy Center, Laurens, Milford, and Spencer	24
Algona Municipal Utilities	20
Webster City Municipal Utilities	18
Atlantic Municipal Utilities	17
City of Waverly	9
City of Harlan	6
City of Tipton	4
City of Eldridge	4
City of Geneseo, Illinois	4



<sup>23</sup> 2017, 2018, 2019, 2020, 2021 and 2022 Q4 FERC Form 1, Alliant and MidAmerican.



## Iowa Retail Load

To meet a 100% renewable goal, the understanding of most people is that you will use renewable generation to provide all of your electricity in every hour of the day, year-round. However, as described in detail in [Iowa Electric Generation, Condition of the State, October 2020](#),<sup>24</sup> this is not how MidAmerican is defining its goal to deliver 100% renewable energy to Iowa customers.

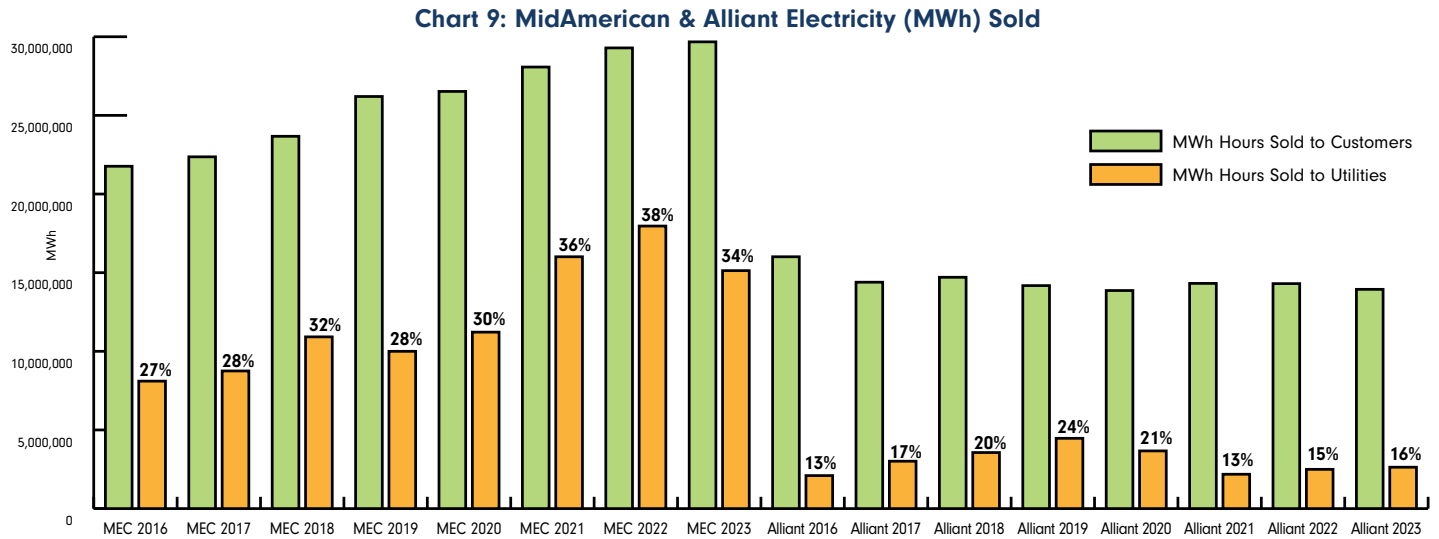
MidAmerican’s goal is simply to create enough renewable energy credits to “offset” 100% of its Iowa retail customer load overall, regardless of when the electricity is produced and when it is consumed. In addition, MidAmerican and Alliant also sell electricity to other utilities across the region, not just Iowa customers, and these sales are not accounted for in MidAmerican’s renewable energy goal. This is, in practice, a shell game where MidAmerican claims the “green” credibility while Iowans are stuck with all of the pollution and other costs of the coal plants. MidAmerican’s goal allows them to appear fossil-free while continuing to burn coal and to build generation to maximize profits instead of building what will best serve the needs of Iowans as a whole.

By looking at the electric generation produced in Iowa by MidAmerican and Alliant for the years 2016 through 2023, Chart 9 shows what portion of their generation is serving Iowa customers, and what portion is serving the financial interests of MidAmerican and Alliant.<sup>25</sup> From 2016 to 2023, MidAmerican sales to utilities increased by 87% while customer sales increased by 36%. Over the same time frame, Alliant sales to utilities increased by 25% while customer sales decreased by 4%.



<sup>24</sup> Iowa Electric Generation, Condition of the State, October 2020.

<sup>25</sup> 2016, 2017, 2018, 2019, 2020, 2021 and 2022 Q4 FERC Form 1, Alliant and MidAmerican.



For 2023, MidAmerican sold 29.7 million MWh to its customers and Alliant sold 13.9 million MWh to its Iowa customers. For MidAmerican and Alliant, the portion of the electricity they generate in Iowa being sold to other utilities is substantial, with 34% of MidAmerican’s 2023 generation being sold to utilities and 16% of the Alliant 2023 generation being sold to utilities. MidAmerican sold 15 million MWh to utilities in 2023 for \$558 million, while Alliant sold almost 2.6 million MWh to utilities for \$139 million.

As noted above, the electricity sold to Iowa customers (retail load) was only a portion of the 2023 generation in Iowa. Given that the utilities – MidAmerican in particular – export a significant portion of their generation, the timing is ideal to consider what actually makes the most sense for Iowa customers. It is well-understood that coal is the most environmentally damaging fuel to use for electricity generation due to air and water pollution and high carbon emissions. If we consider the true cost of environmental externalities from health impacts and a changing climate, as well as the overall cost, coal should be the last resort.

**In total, MidAmerican and Alliant generated the following in 2023, categorized by the type of generation:**

**Table 3: MidAmerican 2023 Generation**

	MidAmerican 2023 MWh
<b>Coal</b>	9,961,081
<b>Fossil Gas</b>	2,183,958
<b>Nuclear</b>	3,789,844
<b>Solar</b>	281,488
<b>Hydro &amp; Other</b>	21,558
<b>Wind</b>	24,574,497
<b>Total</b>	<b>40,812,426</b>

**Table 4: Alliant 2023 Generation**

	Alliant 2023 MWh
<b>Coal</b>	2,289,668
<b>Fossil Gas</b>	6,559,202
<b>Solar</b>	11,160
<b>Wind</b>	4,256,908
<b>Total</b>	<b>13,156,938</b>



## Impacts to Iowans from Coal Generation

Unlike renewable generation, all fossil electricity generation impacts Iowa’s environment. Coal generation degrades the air we breathe and drives climate change, and also produces a substantial amount of solid waste that is landfilled in Iowa, primarily near major waterways.

In 2023, the coal generation from the coal plants operated by MidAmerican and Alliant was 12,250,749 MWh, resulting in harmful emissions released into the air we breathe. Table 5 shows the Alliant, MidAmerican and total emissions from the coal plants in 2023. Air pollution from coal-fired power plants is linked with asthma, cancer, heart and lung ailments, neurological problems, acid rain, climate change, and other severe environmental and public health impacts.

**Table 5: Alliant & MidAmerican 2023 Emissions from Coal Generation<sup>26</sup>**

2023	Sulfur Dioxide (tons)	Nitrogen Oxides (tons)	Mercury (lbs)	Carbon Dioxide (tons)
Alliant	1,016	1,003	28	3,756,421
MidAmerican	16,339	10,006	44	12,812,542
<b>Total</b>	<b>17,355</b>	<b>11,010</b>	<b>72</b>	<b>16,568,69</b>

## Coal Generation and Public Health

The Iowa Environmental Council released a health impact report on May 7, 2024, [Coal in Siouxland: MidAmerican Energy’s Legacy of Air Pollution and Health Impacts](#).<sup>27</sup> As discussed in the report, in addition to the significant health impacts associated with the coal plants, 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>28</sup> Between 1999 and 2020, the coal plants in Iowa have contributed to the premature deaths of 340 Iowans and 5,460 premature deaths in surrounding states.<sup>29</sup>

Coal plant emissions significantly impact our health and are the largest source of air emissions in Iowa.<sup>30</sup> Emissions from the fossil fuel generating facilities in Iowa were responsible for an overwhelming majority of several categories of dangerous emissions in our state including 80% of the sulfur dioxide, 53% of the nitrogen oxide, 52% of the carbon monoxide, 49% of the lead, and 31% of the particulate matter pollution in Iowa in 2022.<sup>31</sup>

The impact of MidAmerican and Alliant burning coal can be quantified in terms of the impacted population and the economic impact using the EPA CO-Benefits Risk Assessment (COBRA)<sup>32</sup> screening tool. When the EPA model is run for the coal plants in Iowa, the results are shown in Table 6.

**Table 6: COBRA Results for Iowa Coal Generation**

	Monetary Value*** (dollars, annual)	
	Low	High
<b>Total Iowa Health Effects</b>	<b>\$270,000,000</b>	<b>\$400,000,000</b>

When the economic impacts of coal burned by MidAmerican, Alliant, rural electric cooperatives and municipal utilities are quantified, Iowans are being burdened with health care costs ranging from **\$270,000,000** to **\$400,000,000** per year.

<sup>26</sup> EPA Air Market Program Data.

<sup>27</sup> coal in siouxland - final report.pdf (iaenvironment.org), available at <https://www.iaenvironment.org/webres/file/coal%20in%20siouxland%20-%20final%20report.pdf>

<sup>28</sup> 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 April 30, 2024, from <https://doi.org/10.1126/science.adf4915> and <https://cpieatgt.github.io/cpie/>

<sup>29</sup> Id.

<sup>30</sup> Microsoft Word - 2022 Iowa Point Source Emissions Summary-FINAL (iowadnr.gov)

<sup>31</sup> Id.

<sup>32</sup> CO-Benefits Risk Assessment (COBRA)

## Coal Generation and Crop Yields

As covered in more depth in [Iowa Electric Generation, Condition of the State, October 2020](#),<sup>33</sup> another potentially significant consequence of MidAmerican and Alliant’s decision to keep these coal plants burning fossil fuels for decades is the negative impact on crop yields. A study published in 2020 looked at the increases in crop yields that occurred when coal plants shut down.<sup>34</sup> The study found that counties in the U.S. that experienced a coal plant closure in their immediate vicinity not only reduced mortality rates, but increased corn yields by 1.1% over the study period of 2005 to 2016. The yield increase was attributed to reduced emissions of SO<sub>2</sub>, NO<sub>x</sub>, and PM pollution, which allowed better access to sunlight. The study then estimated the impacts of the remaining coal-fired units still operating, assuming that their impacts are the same as those that have been decommissioned.

The study concluded that corn production would increase. More than two-thirds of Iowa counties experienced annual production losses ranging from 1 million bushels to 5 million bushels due to the continued operation of the MidAmerican and Alliant coal plants. The estimated annual corn production loss from the remaining 4,486 MW of coal is quantified in Table 7.

**Table 7: Estimated Annual Iowa Corn Loss tied to Operating 4,486 MW of Coal**

	Ten Year Corn Production Loss (MBu)	Annual Loss/County (MBu)	2/3 of Iowa Counties	Annual Statewide Corn Loss (Bu)	Value Based on 2023 Avg of \$6.01/bu <sup>35</sup>
<b>Minimum Loss</b>	10	1	66	66 Million	\$396,660,000
<b>Average Loss</b>	50	5	66	330 Million	\$1,983,300,000

Iowans are paying with their lives, health, and safety and farmers are paying a significant corn production penalty from coal plant pollution. As covered in [Iowa Electric Generation, Condition of the State, October 2020](#), the case is clear that shutting down Iowa’s remaining coal plants and replacing them with wind and solar would be a net positive for corn production even when accounting for land that will shift into producing renewable energy. Such a shift would result in net increased corn production of between 21 and 285 million bushels statewide annually. The increase in corn production and farm revenue makes the retirement of MidAmerican and Alliant’s remaining coal fleet a no-brainer for Iowa’s agricultural economy.<sup>36</sup>



## Social Cost of Greenhouse Gases

The social cost of greenhouse gases<sup>37</sup> is a measure of the economic harm from greenhouse gas pollution, expressed as the dollar value of the total damages from emitting one metric ton each of carbon dioxide, methane, and nitrous oxide into the atmosphere. The social cost of greenhouse gases as published by the Environmental Protection Agency in November 2023 is shown in table 8.<sup>38</sup>

In 2023, MidAmerican and Alliant coal generation in Iowa emitted **15.54 million metric tons**<sup>39</sup> of carbon dioxide and **9.9 thousand metric tons**<sup>40</sup> of nitrous oxides into the atmosphere representing economic harm ranging from **\$2.3 billion to \$6.2 billion dollars**.

**Table 8: Social Cost of Greenhouse Gases**

Dollars per metric ton emitted in 2023	CO <sub>2</sub>	N <sub>2</sub> O
<b>Minimum (2.5% discount rate)</b>	125	38,076
<b>Maximum (1.5% discount rate)</b>	351	92,040

<sup>33</sup> [Iowa Electric Generation, Condition of the State, October 2020](#)

<sup>34</sup> “The downstream air pollution impacts of the transition from coal to natural gas in the United States”, Jennifer A. Burney, School of Global Policy and Strategy, University of California, San Diego., <https://www.nature.com/articles/s41893-019-0453-5>; “Author Correction: The downstream air pollution impacts of the transition from coal to natural gas in the United States”, <https://www.nature.com/articles/s41893-020-0548-z>

<sup>35</sup> [Iowa Cash Corn and Soybean Prices \(iastate.edu\)](#)

<sup>36</sup> [Iowa Electric Generation, Condition of the State, October 2020, page 15](#)

<sup>37</sup> <https://news.climate.columbia.edu/2021/04/01/social-cost-of-carbon/>

<sup>38</sup> [https://www.epa.gov/system/files/documents/2023-12/epa\\_scghg\\_2023\\_report\\_final.pdf](https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf), page 154

<sup>39</sup> Based on Acid Rain Program Continuous Emissions Monitors at Iowa Coal Plants for 2023

<sup>40</sup> Id.

# The True Cost of Coal Generation

As discussed previously, the decision to continue burning coal by MidAmerican, Alliant, Iowa municipal utilities, and the Iowa electric cooperatives negatively impacts the financial well-being of every Iowan and does not account for the impacts on Iowans' health and wealth – the externalities of burning coal.

These impacts are real and quantifiable. The financial impact to Iowans' health, crop loss, and climate impact is summed in Table 9. The true costs of production at the MidAmerican and Alliant operated coal plants are shown in Chart 10, and contrasted with the cost of production from the wind and solar farms.

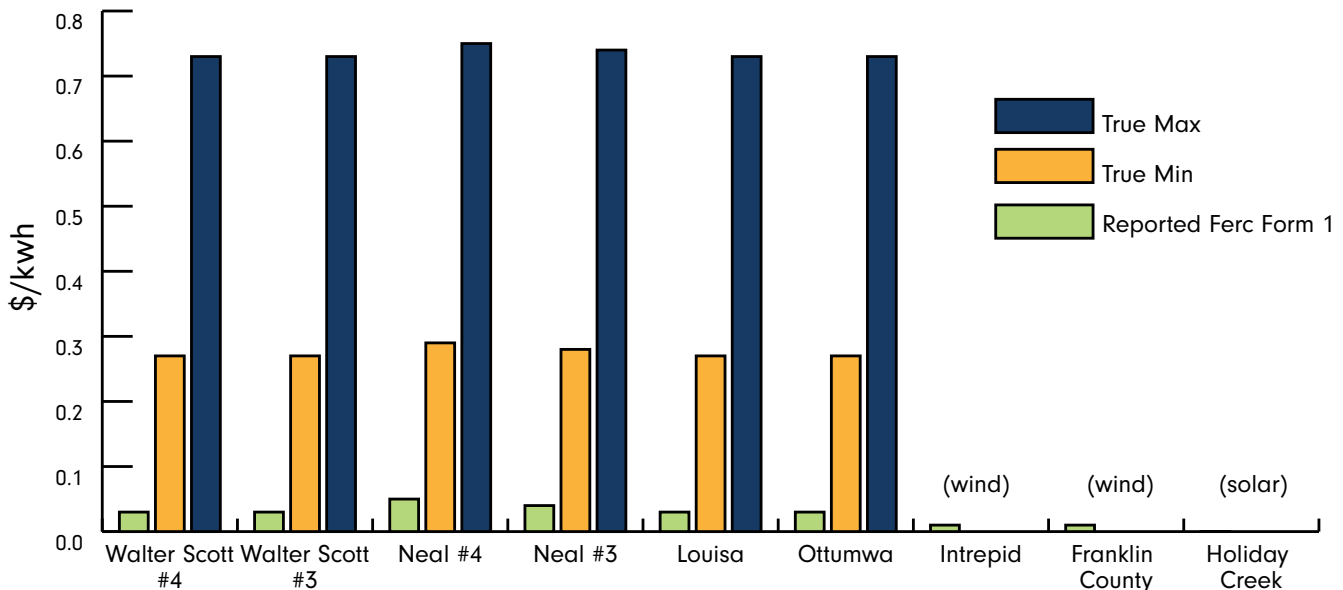
**Table 9: Cost of Externalities from Operating 4,486 MW of Coal**

	Minimum	Maximum
Iowan's Health Costs	\$270,000,000	\$400,000,000
Corn Loss Costs	\$396,660,000	\$1,983,300,00
Social Cost of CO <sub>2</sub> & NO <sub>2</sub>	\$2,259,165,34	\$6,195,139,18
<b>TOTAL</b>	<b>\$2,925,825,342</b>	<b>\$8,578,439,183</b>
<b>\$/kwh*</b>	<b>\$0.24</b>	<b>\$0.70</b>

\*The total costs of the externalities divided by the 12,250,749,272 KWh of coal generation.



**Chart 10: 2023 Iowa True Cost of Production**



A true and transparent accounting by MidAmerican, Alliant, the municipal utilities and the rural electric cooperatives would consider the broader range of costs borne by their captive customers of generating power using coal. The MidAmerican and Alliant coal plants are clearly not cost-competitive when compared to the MidAmerican and Alliant renewable generation. Solar and wind are the lowest-cost sources of generation even without accounting for health impacts and crop losses. The cost of renewables is dramatically lower than the true costs of the MidAmerican and Alliant coal plants and represents an unrecognized and unreasonable financial burden on captive utility customers.<sup>41</sup> In fact, the true cost of Iowa coal generation is 70 times more expensive than wind. There is simply no justification to continue to expose Iowans to that kind of expense.

Whether you are a MidAmerican, Alliant, rural electric cooperative, or municipal utility customer, your utility bill is just a fraction of what you are paying every year because of the continued operation of the six jointly owned coal plants. And though the impacts of these plants on air, water, and reduced crop yields fall to us in Iowa to pay for with our health, quality of life, and hard-earned paychecks, remember that both MidAmerican and Alliant Energy are shipping vast amounts of this energy out of state. Iowans are paying with our lives and our wallets for power being shipped to Minneapolis, Milwaukee, and Fargo to profit monopoly utilities in our state.

## Inflation Reduction Act Supports a Cost-Effective Transition for Iowa

**As noted previously, wind and solar generation provided 64% of Iowa's generation in 2023, more than any other state. Iowa utilities are uniquely positioned to achieve 100% carbon-free electricity by 2035, but must aggressively act to take full advantage of the Inflation Reduction Act. The IRA creates significant tax credits and incentives through 2032 to move to a clean energy economy.**

### Investment Tax Credit and Production Tax Credit

Among the incentives are two tax credits available for wind and solar through 2032. MidAmerican, Alliant, rural electric cooperatives, and the municipal utilities have significant incentives to move to 100% carbon-free electricity.

- The investment tax credit (ITC) is a tax credit that reduces the federal income tax liability for a percentage of the cost of a solar system that is installed during the tax year.
- The production tax credit (PTC) is a per kilowatt-hour (KWh) tax credit for electricity generated by solar and other qualifying technologies for the first 10 years of a system's operation. It reduces the federal income tax liability and is adjusted annually for inflation.

A 30% ITC is available for solar, wind, and storage that meets federal labor requirements, and bonus credits of 10% are available for meeting domestic content requirements with 10% additional bonus for a project in an energy community (more information on energy communities is provided below). Because the credits are additive, a utility project meeting labor requirements and domestic content in an energy community qualifies for an ITC of 50%, cutting project costs in half.



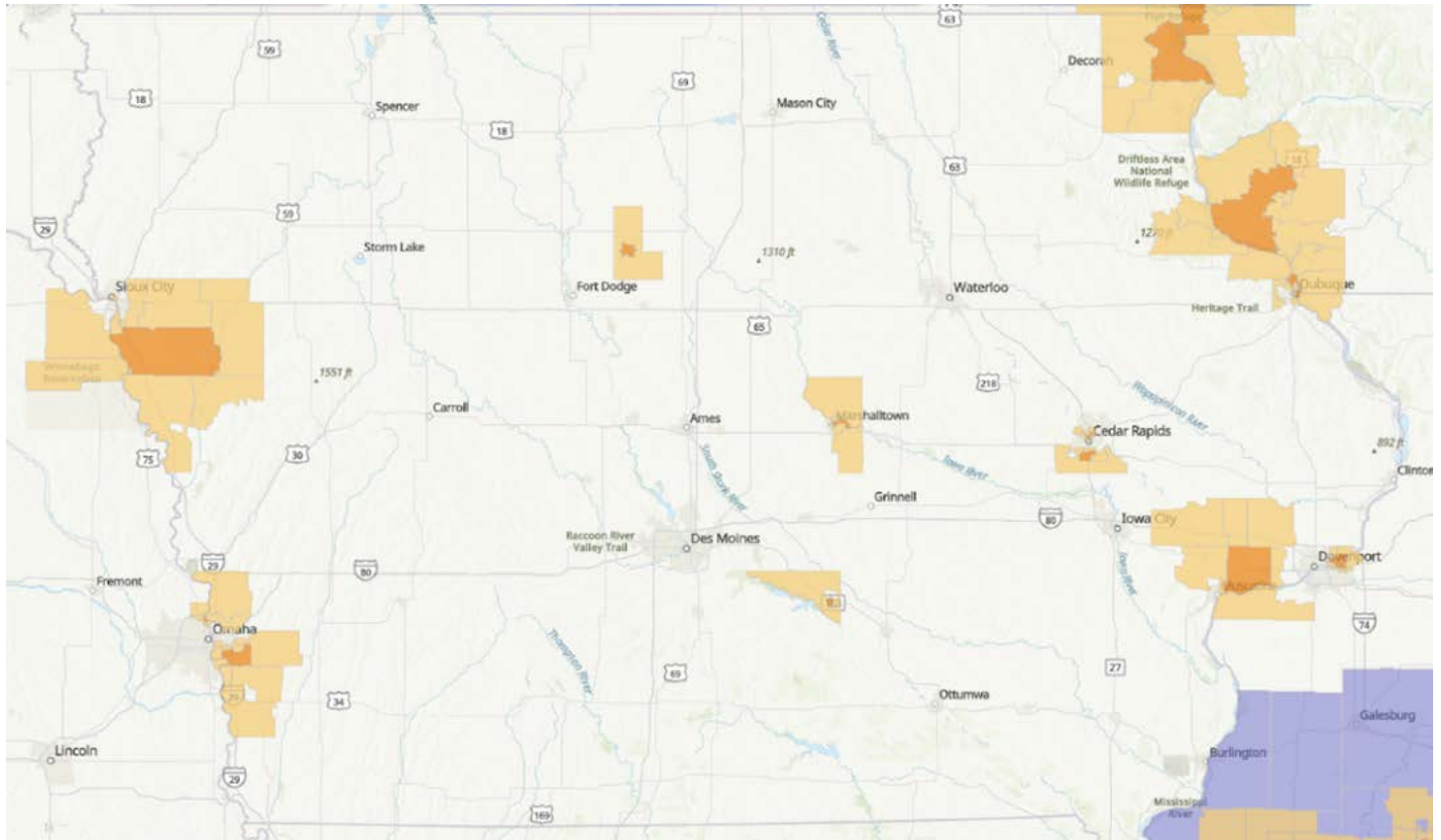
<sup>41</sup> Vibrant Clean Energy, Energy Innovation, The Coal Cost Crossover: Economic Viability of Existing Coal Compared to New Local Wind and Solar Resources (2019) at [https://energyinnovation.org/wp-content/uploads/2019/03/Coal-Cost-Crossover\\_Energy-Innovation\\_VCE\\_FINAL.pdf](https://energyinnovation.org/wp-content/uploads/2019/03/Coal-Cost-Crossover_Energy-Innovation_VCE_FINAL.pdf).



Similarly, a PTC of 2.75¢ per KWh is available for wind and solar that meets the labor requirements, and bonus credits of 0.3¢ per KWh are available for meeting domestic content requirements and 0.3¢ per KWh for a project in an energy community. Again, these credits are additive so a qualifying utility project meeting labor requirements and domestic content in an energy community qualifies for a PTC of 3.35¢ per KWh adjusted annually for inflation and available for 10 years.

To qualify for the energy communities bonus, the project must be located in census tracts, or adjoining census tracts, where a coal plant closed after 2009, or Metropolitan Statistical Areas (MSAs) and non-MSAs that met the Fossil Fuel Employment threshold and the unemployment rate requirement for calendar year 2022. See Chart 11 that shows Iowa Energy Communities.<sup>42</sup>

**Chart 11: Iowa Energy Communities**



**Coal Closure Communities**

Tract Status:

- Census tract directly adjoining a census tract with a coal closure
- Census tract with a coal closure

**MSAs/Non-MSAs that are Energy Communities**

Status:

- MSAs/non-MSAs that meet both the Fossil Fuel Employment (FEE) threshold and the unemployment rate requirement

The utilities cannot claim both the ITC and the PTC for the same project, but they can claim different credits for co-located systems, like solar and storage or wind and storage. For example, a solar and storage project could qualify for a PTC of 3.35¢ per KWh adjusted annually for inflation and available for 10 years of solar generation. The same solar and storage project could also qualify for a 50% ITC of the storage cost if the storage meets labor requirements and domestic content in an energy community. A summary from RMI of ITC and PTC rates is shown in Table 10 on the following page.<sup>43</sup>

<sup>42</sup> [IRA Energy Community Tax Credit Bonus \(doe.gov\)](https://www.doe.gov)

<sup>43</sup> [Federal Solar Tax Credits for Businesses | Department of Energy](https://www.doe.gov)

**Table 10: Summary of Investment Tax Credit (ITC) and Production Tax Credit (PTC) Values Over Time**

			Start of Construction						
			2006 to 2019	2020 to 2021	2022	2023 to 2033	The later of 2034 (or two years after applicable year <sup>a</sup> )	The later of 2035 (or three years after applicable year <sup>a</sup> )	The later of 2036 (or four years after applicable year <sup>a</sup> )
<b>ITC</b>	<b>Full rate</b> (if project meets labor requirements <sup>b</sup> )	Base Credit	30%	26%	30%	30%	22.5%	15%	0%
		Domestic Content Bonus				10%	7.5%	5%	0%
		Energy Community Bonus				10%	7.5%	5%	0%
	<b>Base rate</b> (if project does not meet labor requirements <sup>b</sup> )	Base Credit	30%	26%	6%	6%	4.5%	3%	0%
		Domestic Content Bonus				2%	1.5%	1%	0%
		Energy Community Bonus				2%	1.5%	1%	0%
	<b>Low-income bonus</b> (1.8 GW/yr cap)	<5 MW projects in LMI communities or Indian land				10%	10%	10%	10%
		Qualified low-income residential building project / Qualified low-income economic benefit project				20%	20%	20%	20%
	<b>PTC for 10 years (\$2022)</b>	<b>Full rate</b> (if project meets labor requirements <sup>b</sup> )	Base Credit			2.75 ¢	2.75 ¢	2.0 ¢	1.3 ¢
Domestic Content Bonus						0.3 ¢	0.2 ¢	0.1 ¢	0.0 ¢
Energy Community Bonus						0.3 ¢	0.2 ¢	0.1 ¢	0.0 ¢
<b>Base rate</b> (if project does not meet labor requirements <sup>b</sup> )		Base Credit			0.55 ¢	0.55 ¢	0.4 ¢	0.3 ¢	0.0 ¢
		Domestic Content Bonus				0.1 ¢	0.0 ¢	0.0 ¢	0.0 ¢
		Energy Community Bonus				0.1 ¢	0.0 ¢	0.1 ¢	0.0 ¢

<sup>a</sup> “Applicable year” is defined as the later of (i) 2032 or (ii) the year the Treasury Secretary determines that there has been a 75% or more reduction in annual greenhouse gas emissions from the production of electricity in the United States as compared to the calendar year of 2022.

<sup>b</sup> “Labor requirements” entail certain prevailing wage and apprenticeship conditions being met.

The IRA provides Iowa utilities the ability to take advantage of the ITC and PTC even if they don’t have sufficient tax liability to use the tax credits, or are tax-exempt organizations. Iowa rural electric cooperatives and municipal utilities can receive a direct payment in an amount equal to the tax credits for a project, and MidAmerican and Alliant can sell their tax credits to tax-paying entities with sufficient tax liability.

## Energy Infrastructure Reinvestment

The Energy Infrastructure Reinvestment (EIR) Program is an incentive for utilities designed to guarantee long-term loans priced just above the yield of US Treasury bonds to projects that retool, repower, repurpose, or replace energy infrastructure that has ceased operations; or enable operating energy infrastructure to avoid, reduce, utilize, or sequester air pollutants or anthropogenic emissions of greenhouse gases. EIR has the potential to revitalize local communities historically dependent on fossil fuel infrastructure while saving electricity ratepayers money and building new clean energy resources – a triple win for communities, customers, and the climate.

To understand the potential impact of the EIR program, RMI evaluated utilizing the EIR to refinance the remaining Lansing generating plant balance (a facility owned by Alliant Energy) as well as a portion of the planned renewable generation additions that Alliant is planning through 2030. RMI determined that using EIR in this way could save Iowa ratepayers \$124 million in NPV terms.<sup>44</sup>

With an application approval deadline set for the end of September 2026 and a disbursement deadline at the close of 2031, Iowa utilities have a critical opportunity to refinance their retiring coal plants, build new clean energy, and increase their earnings, all while reducing costs to ratepayers. Given the savings available to ratepayers, as well as the time-constrained authority of the EIR program, Alliant and MidAmerican should move quickly to take advantage of this program.

## Conclusion

The truth is that Iowa utilities have a long way to go to achieve a true 100% renewable vision and, in the meantime, the continued use of coal generation has consequences that impact every Iowan. The threats to air quality, groundwater, and surface waters posed by burning fossil fuels and coal in particular are known, quantifiable, and unnecessary. The direct damages to agricultural productivity are just beginning to be understood. The severe threats we face from climate change in our state are already evident and cannot be allowed to expand unchecked. A true and transparent accounting by MidAmerican, Alliant, Iowa municipal utilities, and Iowa electric cooperatives would consider the full range of costs borne by their captive customers of generating power using coal.

Iowa has been a leader on clean energy over the past 20 years, deploying significant amounts of wind energy and, as a result, reducing electric-sector greenhouse gas emissions. We have the natural wind and solar resources to reach 100% renewable energy<sup>45</sup> and Iowa utilities are uniquely positioned to achieve this by 2035. However, Iowa utilities must aggressively act to take full advantage of the Inflation Reduction Act incentives that will provide for a low-cost transition for ratepayers.

Right now, Iowa utilities are burning coal for profit at the cost of Iowans' health, livelihoods and our children's future while relying on misleading marketing and greenwashing to cover their dirty tracks. An accelerated switch to clean energy would reduce pollution and consumer costs, while increasing farm income and productivity. The pursuit of 100% renewable energy starts with an honest accounting of the costs of coal, an acknowledgement that we can transition to 100% renewable energy, and the complete elimination of coal generation by 2030. Only then can Iowa move forward on the path we're blazing toward 100% renewable energy.



<sup>44</sup> The Energy Infrastructure Reinvestment Program: Federal financing for an equitable, clean economy - [RMhttps://rmi.org/the-energy-infrastructure-reinvestment-program-federal-financing-for-an-equitable-clean-economy/](https://rmi.org/the-energy-infrastructure-reinvestment-program-federal-financing-for-an-equitable-clean-economy/)

<sup>45</sup> [Reaching 100% renewable energy.](#)



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