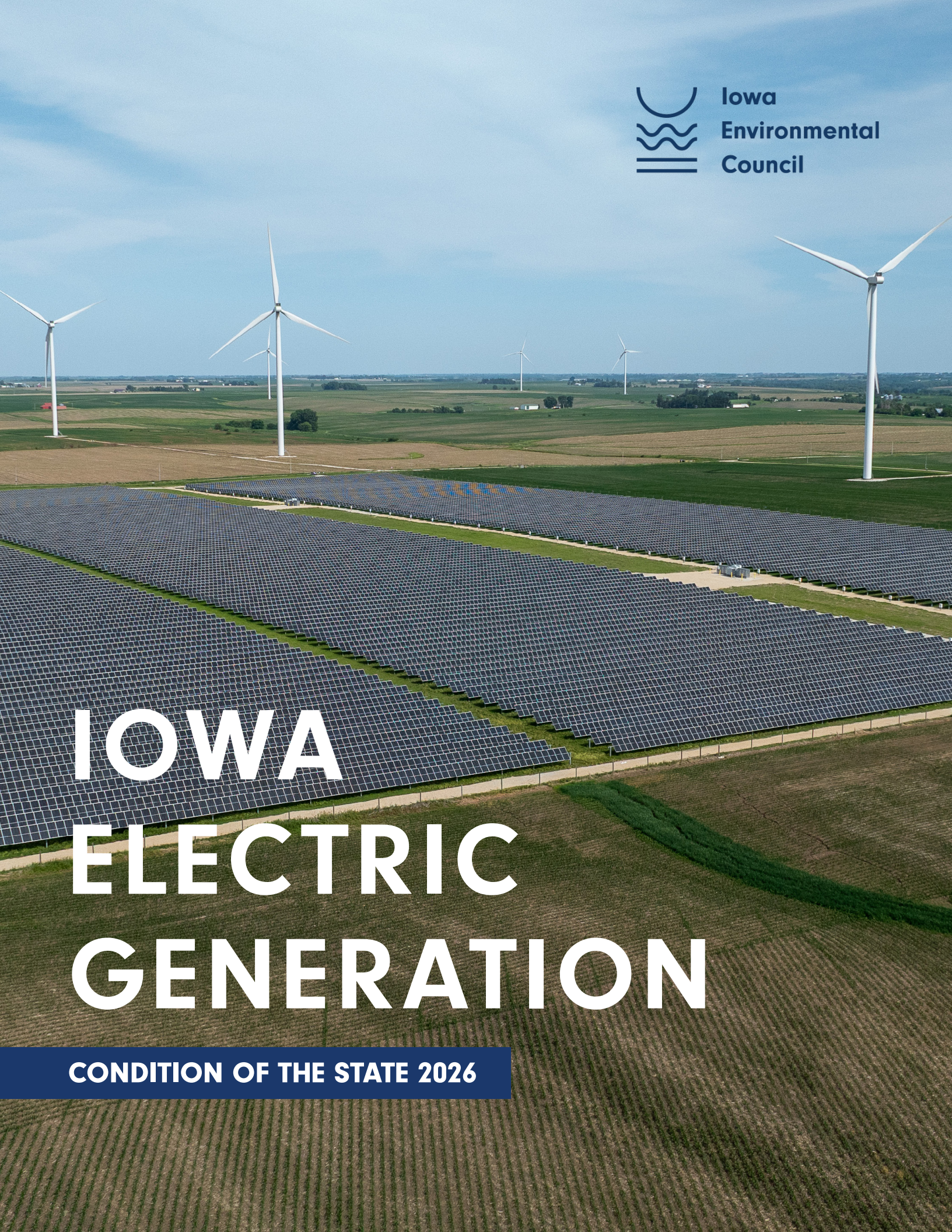

Iowa Environmental Council

IOWA ELECTRIC GENERATION

CONDITION OF THE STATE 2026

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Iowa Environmental Council

Introduction

Since 2020, the Iowa Environmental Council's annual "Condition of the State" publication has highlighted trends in Iowa's electricity generation landscape. The state has long been a leader in clean energy adoption. In fact, in 2019, the share of electricity generated by wind surpassed coal for the first time. However, in the last two years, there has been a reversal in progress toward meeting a greater share of the state's electricity demand with renewables. In 2025, the share of electricity generated from fossil fuels increased by 50% over 2024. These trends come at a time of increasing load growth in Iowa. The state is projected to experience a load growth of 23 to 69 terawatt hours (TWh) between 2026 and 2046, an increase of 31% to 93%.

This year's report includes a special section on the public health risks of coal-generated electricity. Scientific consensus shows that coal plants cause cancer, exacerbate asthma, and contribute to many other health harms. Given the cost in financial and public health terms to Iowans, the state's utilities should commit to a zero-carbon electricity system by 2035.

The transition begins with retiring their expensive, dirty, and unnecessary coal generation. A failure to do so is a breach of corporate social responsibility and fiduciary duty, a public health hazard, and a burden on Iowa ratepayers.

Wind farm in Poweshiek County, Iowa, near I-80.

Given the cost in financial and public health terms to Iowans, **the state's utilities should commit to a zero-carbon electricity system by 2035**.

Policy Landscape

On April 22, 2021, the U.S. announced a national policy to achieve a carbon-free electricity sector by 2035.[1] The Intergovernmental Panel on Climate Change (IPCC) "Climate Change 2022" report puts forth a similar timeline.[2] According to the IPCC, to limit warming to 1.5°C, ALL global greenhouse gases (GHG) from all sources released into the atmosphere must equal the amount of greenhouse gases removed by 2050 (net zero).[3]

U.S. national policy and the IPCC report 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. Importantly, the IPCC report shows that the delay or failure to achieve timely reductions in one sector (such as electricity generation) increases the burden to decrease in other sectors (such as transportation).[4]

The Inflation Reduction Act (IRA), signed on August 16, 2022, created significant tax credits and incentives through 2032 to move to a clean energy economy. Among the incentives for electricity utilities was the Energy Infrastructure Reinvestment (EIR) Program.

This program guaranteed loans to projects that retool, repower, repurpose, or replace non-operational energy infrastructure and loans to projects that reduce or sequester air pollutants and greenhouse gases. IRA incentives were time-limited and would have substantially reduced the costs of transitioning to clean energy for Iowans.

However, the One Big Beautiful Bill Act (OBBBA), signed on July 4, 2025, accelerated the phase out of incentives for wind and solar energy. Tax credits for these projects are available only if the project is placed in service before 2028, or construction began before July 4, 2026.

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_2) emissions from fossil fuel combustion are the primary driver of climate change. CO_2 is the main byproduct of coal combustion: Nearly four grams of CO_2 are produced for every gram of carbon burned. Coal generation produces approximately one ton of CO_2 per megawatt hour (MWh) of energy.

Consequences of climate change include rising temperatures, accelerating sea level rise, species loss, and growing risks of drought, heat waves, and heavy rainfall from intensified storms. Left unchecked, climate change will lead to profound human and ecological disruption.

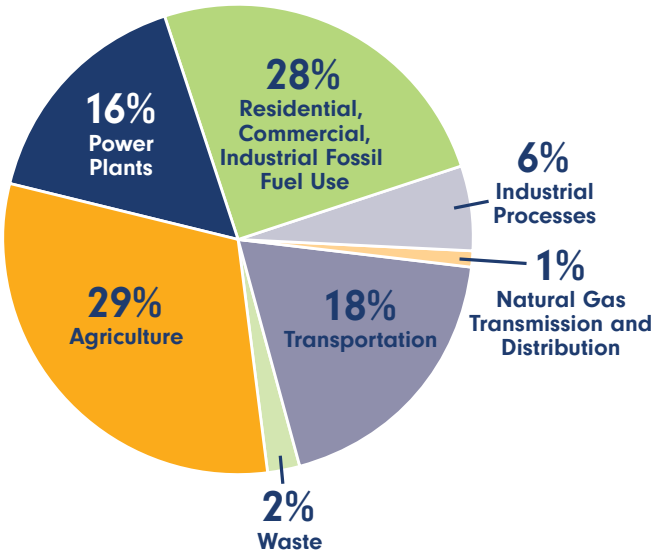
Climate Change In Iowa: Effects and Contributions

The impacts of climate change are already being felt in Iowa and are costing the state's businesses, families, governments, and taxpayers billions of dollars. Extreme weather, driven by climate change, is one of the most significant of these impacts. For example, the August 10, 2020, derecho[5] damaged millions of acres of corn and soybeans, devastated the Cedar Rapids tree canopy, and damaged portions of the MidAmerican Energy and Alliant electric system. The cost to Iowans and Midwesterners of the resulting damages reached $12 billion.[6] The December 15, 2021, derecho[7] in Iowa totaled another $1 billion in damages.[8] 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.[9] In response to extreme losses in Iowa in recent years, insurance companies are increasing premiums, and in some cases, are pulling out of the state altogether, contributing to issues with housing affordability.[10]

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 2024.

The 2024 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 accounts for carbon sequestered or emitted from land use, land use change, and forestry. GHGs included in the inventory are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFC), hydrofluorocarbons (HFC), and sulfur hexafluoride (SF_6).

CHART 1 2024 Iowa Greenhouse Gas Emissions by Sector



The majority of GHG emissions in Iowa in 2024 were from the agriculture sector (29%), followed by emissions from the residential/commercial/industrial (RCI) sector (28%), the transportation sector (18%), and fossil fuel use by power plants (16%), as shown in Chart 1.[11]

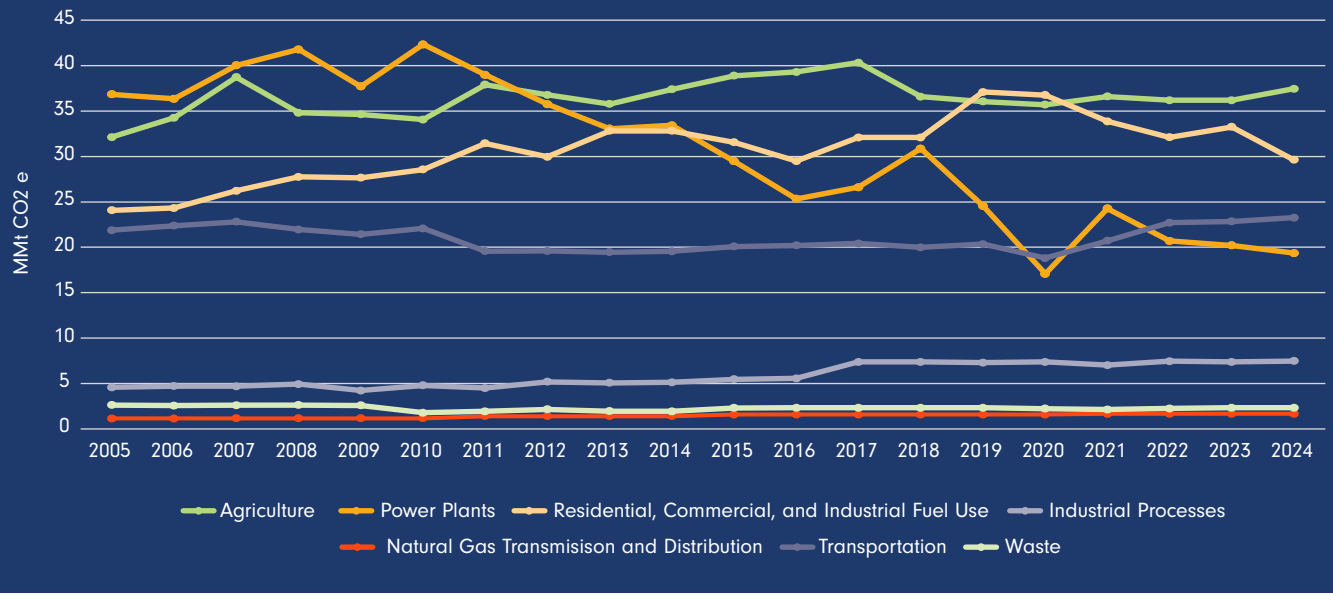
In 2024, total gross Iowa greenhouse gas emissions were 121.97 million metric tons of carbon dioxide equivalent (MMtCO2e).[12] The trend in Iowa from 2005 through 2024 for each of the sectors is shown in Chart 2.[13]

Although power plant emissions have declined in the past 20 years, other sectors have not made much progress. In fact, the agriculture, RCI, and industrial process use sectors have increased over the same time frame.

> **It is critical to note that the sectors do not operate independently: Achieving net zero by 2050 is only possible with the electrification of the RCI and transportation sectors and a carbon-free electricity sector to power them.**

Both MidAmerican[14] and Alliant[15], the state's biggest electric utilities, have touted that their goals to be net zero by 2050 are consistent with U.S. national policy and the international Paris Agreement. However, that is not true. The national and international net zero goals

CHART 2 Iowa Greenhouse Gas Emissions 2005–2024



Over the last 26 years, Iowa has seen a **significant reduction in carbon emissions** from coal-fired power plants and an increase in renewable energy, particularly wind. However, in the last year, there has been an uptick in the use of fossil fuels.

apply to all global greenhouse gases from all sources, not only coal plants. MidAmerican and Alliant have not adopted a plan to achieve company-wide net zero GHG emissions, and they plan to operate their coal plants well beyond the need to have a carbon-free electricity sector by 2035 identified in the IPCC report.[16]

A business-as-usual approach will harm customers in the short-term and the long-term. 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.[17] Iowa agriculture, RCI, and transportation sectors will be unable to meet the necessary greenhouse gas reductions if the utilities fail to meet the 2035 target.

Iowa Generation Since 2000

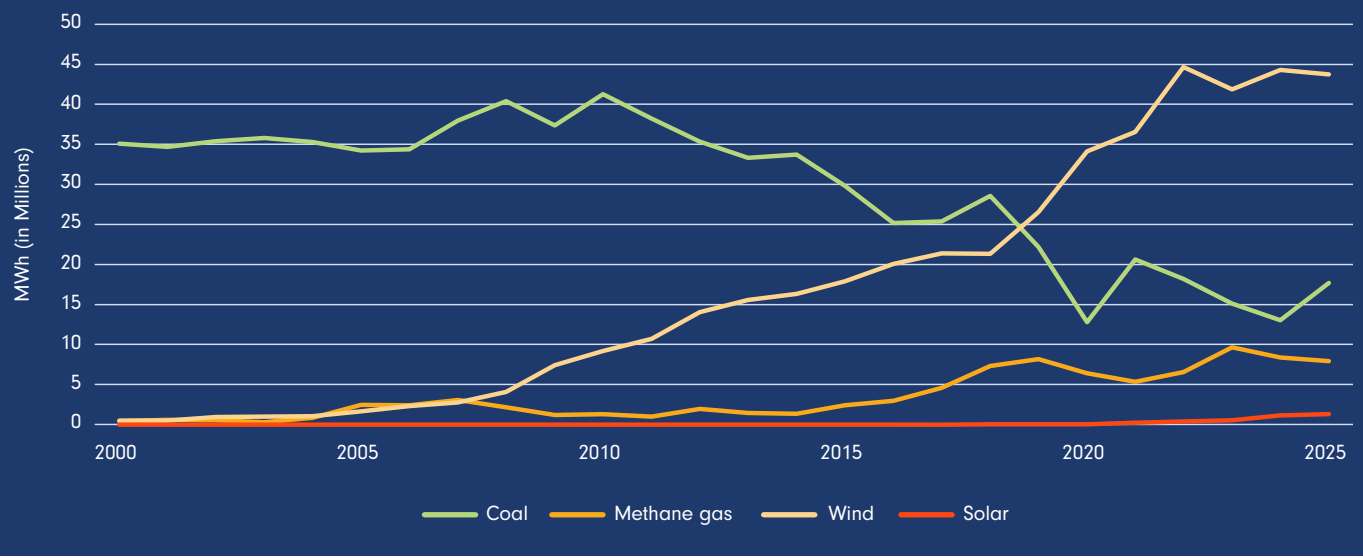
Over the last 26 years, Iowa has seen a significant reduction in carbon emissions from coal-fired power plants and an increase in renewable energy, particularly wind.

The 2016 to 2024 timeframe is especially noteworthy because renewable generation from wind and solar exceeded coal generation for the first time. In 2024, renewables accounted for 67% of Iowa's generation — the most of any state in the U.S.

> **Fossil fuel generation in Iowa decreased from 41% in 2021 to 35% in 2025 while wind generation was 61% in 2025 and solar generation was 2% in 2025.**

However, in the last year, there has been an uptick in the use of fossil fuels, as discussed in the next section.

CHART 3 Iowa Generation Sources



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

Despite this concerning reversal, the overall 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).

The 2025 resource mixes for MidAmerican and Alliant are shown in Charts 4 and 5.[18]

Wind represented 59% of the MidAmerican's generation and 32% of Alliant's 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 2025 timeframe.[19] [20]

From 2016 to 2025, wind capacity increased by over 94% (an additional 6,494 MW) in Iowa, and wind generation increased by over 118%.

CHART 4 2025 MidAmerican Resource Mix

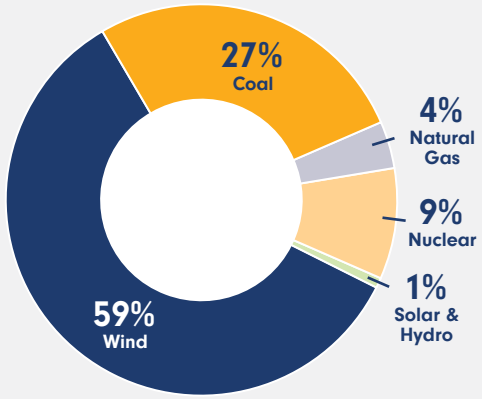


CHART 5 2025 Alliant Resource Mix

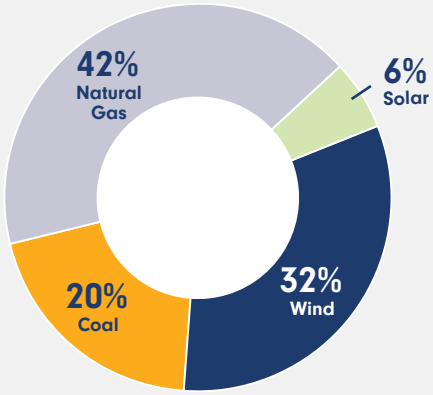
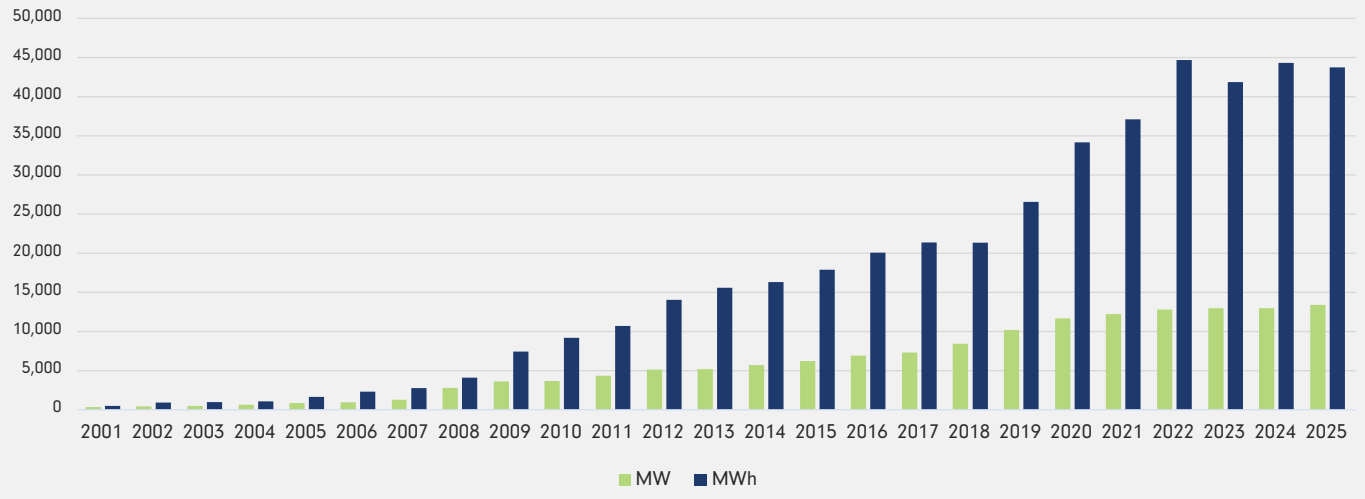


CHART 6 Iowa Wind Capacity (MW) vs. Generation (MWh)



Fossil Generation

Six coal plants still operate in Iowa. The plant ownership interests are shown in Table 1.[21]

TABLE 1 Utility-Owned Coal-Fired Power Plants

NAME	CAPACITY MW (megawatts)	COUNTY	OWNERSHIP
GEORGE NEAL #3 (NORTH)	584.1	WOODBURY	• MidAmerican Energy (72%) • Alliant (28%)
GEORGE NEAL #4 (SOUTH)	695.9	WOODBURY	• MidAmerican Energy (40.57%) • Alliant (25.695%) • Corn Belt Power Cooperative (8.695%) • Northwestern Public Service Company (8.681%) • Northwest Iowa Power Cooperative (4.86%) • Algona Municipal Utilities (2.937%) • Webster City Municipal Utilities (2.604%) • Cedar Falls Utilities (2.50%) • Remaining 3.46% is held by other municipal utilities including the Cities of Bancroft, Coon Rapids, Graettinger, Grundy Center, Laurens, Milford, and Spencer.
LOUISA GENERATING STATION	811.9	LOUISA	• MidAmerican Energy (88%) • Central Iowa Power Cooperative (4.6%) • Alliant (4%) • City of Waverly (1.1%) • City of Harlan (0.8%) • City of Tipton (0.5%) • City of Eldridge (0.5%) • City of Geneseo, Illinois (0.5%)
OTTUMWA GENERATING STATION	725.9	WAPELLO	• MidAmerican Energy (52%) • Alliant (48%)
WALTER SCOTT ENERGY CENTER UNIT #3	725.8	POTTAWATTAMIE	• MidAmerican Energy (79.1%) • Central Iowa Power Cooperative (11.5%) • Cedar Falls Utilities (2.88%) • Corn Belt Power Cooperative (3.58%) • Atlantic Municipal Utilities (2.38%)
WALTER SCOTT ENERGY CENTER UNIT #4	922.5	POTTAWATTAMIE	• MidAmerican Energy (60.67%) • Lincoln Electric Systems (12.66%) • Municipal Energy Agency of Nebraska (6.92%) • Central Iowa Power Cooperative (9.55%) • Corn Belt Power Cooperative (4.88%) • Cedar Falls Utilities (1.73%)

TABLE 2 Utility Ownership of Coal Generation

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

Investor-owned electric utilities Power cooperatives Municipal utilities

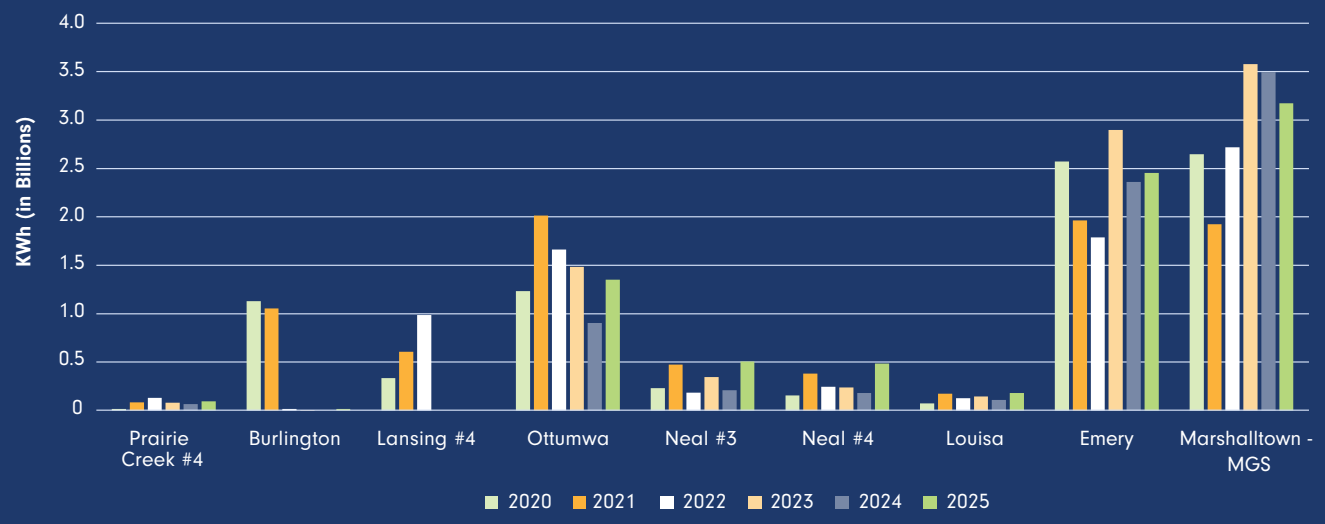
Based on the ownership interest in each of the coal plants, the megawatts of coal generation owned by each of the investor-owned electric utilities, power cooperatives, and municipal utilities is shown in Table 2 above.

MidAmerican has the largest ownership interest. But the role of smaller interests in keeping coal generation online cannot be discounted. Power cooperatives and municipal utilities combined own 760 MW, which is larger than four of the six plants (Neal North, Neal South, Ottumwa, and Walter Scott #3).

Although wind and solar continue to meet more of the energy demand, there has not been a corresponding reduction in fossil plant operation. From 2020 to 2025, Alliant increased wind and solar electricity production by 30%, while reducing its electricity production from coal by 18%; considering coal and natural gas, Alliant only reduced its fossil electricity production by 2%. Over the same period, MidAmerican increased its electricity production from wind and solar by 27%, but also increased coal electricity production by 65%; its total fossil electricity production increased by 75%. In 2025, fossil generation represented 31% of MidAmerican generation and 62% of Alliant generation.

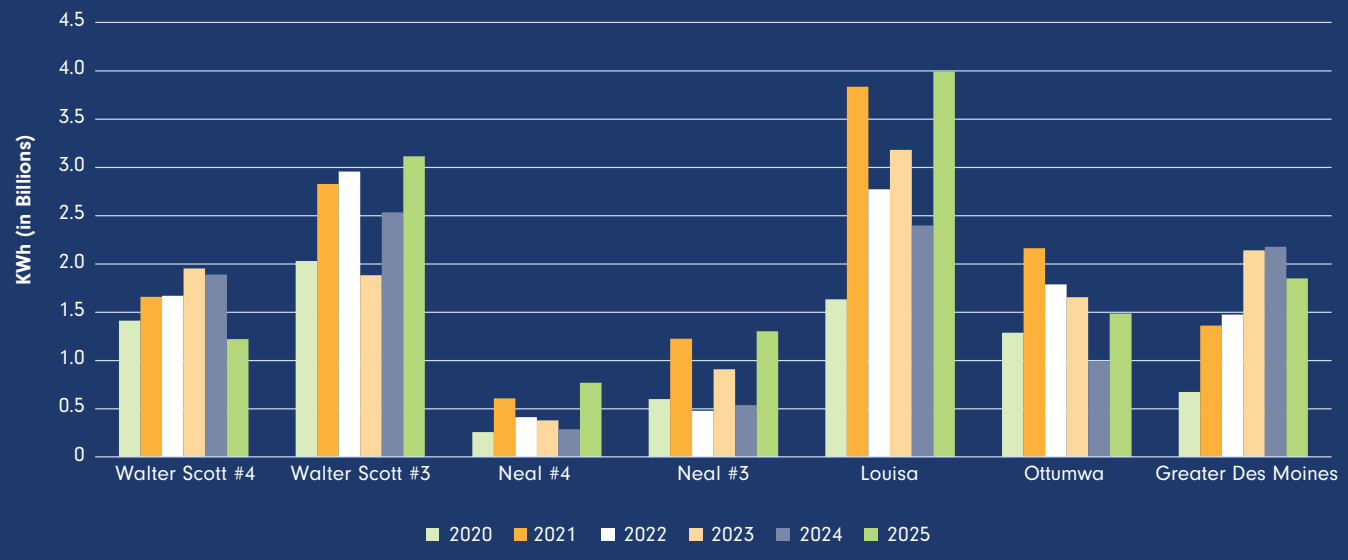
Charts 7 and 8 on the following page offer a comparison of the generation from each fossil power plant over time. While there is variability in the deployment of fossil resources, since 2020, there has been a clear trend of increasing natural gas use at the Alliant (Emery and Marshalltown MGS) generating stations, and the MidAmerican (Greater Des Moines) generating station.[22]

CHART 7 2020 – 2025 Alliant Fossil Generation



Note: Prairie Creek #4 uses natural gas and coal, and produces both steam and electricity. Burlington switched from coal to natural gas in 2022. Lansing is retired.

CHART 8 2020 – 2025 MidAmerican Fossil Generation



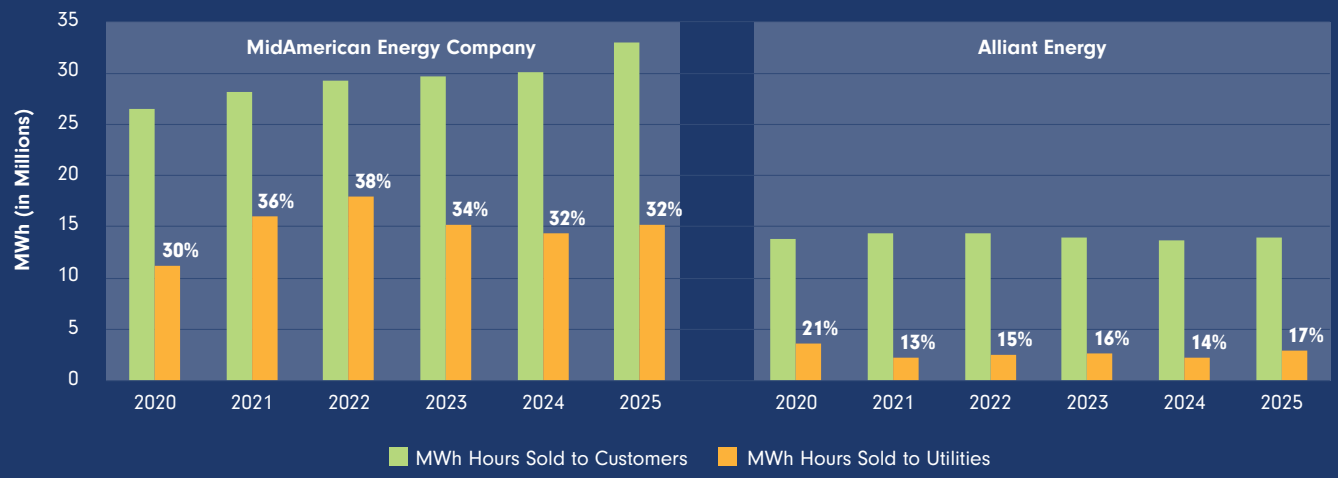
Iowa Retail Load

Most people understand a goal of 100% renewable energy to mean that renewable generation will meet electricity demand in every hour of the day, year-round. However, this is not how MidAmerican defines its goal to deliver 100% renewable energy to Iowa customers.[23] Rather, its 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 practice is, in essence, a shell game where MidAmerican claims the "green" credibility while Iowans are stuck with the pollution and other costs of the coal plants. MidAmerican then appears fossil-free while continuing to burn coal and maximizing profits, rather than serving the needs of Iowans with clean, renewable, affordable energy.

Chart 9 compares the amount of energy generated by MidAmerican and Alliant that serves customers in Iowa to the amount exported to other states, serving the financial interests of the utilities' investors and executives.[24]

From 2020 to 2025, MidAmerican sales to utilities increased by 35% while customer sales increased by 24%. Alliant sales to utilities decreased by 20% while customer sales increased by 0.4% in the same period. In 2025, MidAmerican sold 32.9 million MWh to its retail customers, and Alliant sold 13.9 million MWh to its retail customers. For MidAmerican and Alliant, the portion of the electricity they generate in Iowa being sold to other utilities is substantial, with 32% of MidAmerican's 2025 generation being sold to utilities and 17% of Alliant 2025 generation being sold to utilities. MidAmerican sold 15.1 million MWh to utilities in 2025 for $426 million, while Alliant sold almost 2.9 million MWh to utilities for $71 million.

CHART 9 MidAmerican and Alliant Electricity (MWh) Sold



Air pollution from coal-fired power plants is linked to asthma, cancer, heart and lung disease, neurological problems, acid rain, climate change, and other severe environmental and public health impacts.

In total, MidAmerican and Alliant generated the following in 2025, categorized by the type of generation:

TABLE 3 2025 MidAmerican Generation

	2025 MWH
COAL	11,881,259
FOSSIL GAS	1,954,410
NUCLEAR	3,776,270
SOLAR	286,196
HYDRO AND OTHER	22,118
WIND	25,995,669
TOTAL	43,875,923

TABLE 4 2025 Alliant Generation

	2025 MWH
COAL	2,634,139
FOSSIL GAS	5,649,627
SOLAR	739,644
WIND	4,249,153
TOTAL	13,272,564

The utilities' practice of exporting a significant portion of their generation leaves Iowans with the costs of dirty fossil fuels, while the utilities, MidAmerican in particular, profits from that generation. There is scientific consensus that coal is the most environmentally damaging fuel

The Ottumwa Generating Station, owned by MidAmerican Energy and Alliant Energy, adjacent to the Des Moines River.

to use for electricity generation due to air and water pollution and high carbon emissions. The localized pollution and health impacts add to the true cost of coal that Iowa communities bear, while utilities profit from out-of-state sales.

Impacts to Iowans from Coal Generation

Fossil electricity generation impacts Iowa's environment and harms the health of Iowans. Coal generation degrades the air we breathe, drives climate change, and produces a substantial amount of waste that is landfilled in Iowa, primarily near major waterways. Table 5 shows Alliant and MidAmerican emissions in 2025.

Mercury emissions from coal plants contaminate Iowa waterways, leading to the creation of methylmercury. Methylmercury is extremely toxic and bioaccumulates in fish tissue, and when consumed is a bioaccumulative environmental toxicant in humans.

TABLE 5 Alliant & MidAmerican 2025 Emissions from Coal Generation[25]

2025	SULFUR DIOXIDE (TONS)	NITROGEN OXIDES (TONS)	MERCURY (LBS)	CARBON DIOXIDE (TONS)
ALLIANT	854	845	27	3,388,056
MIDAMERICAN	11,453	13,078	80	15,528,414
TOTAL	12,307	13,923	107	18,916,471

It causes neurodevelopmental harm, cerebral palsy, and seizures.[26] One gram of mercury is enough to contaminate 20 acres of surface water.[27] In 2025, the 107 pounds of mercury emitted from the coal plants was enough to contaminate every Iowa surface water three times over.[28]

Coal Generation and Public Health in Iowa

In Iowa, coal plants are the leading source of air pollution.[29] Emissions from fossil fuel generating facilities in Iowa were responsible for an overwhelming majority of several categories of dangerous emissions in our state including 64% of the sulfur dioxide (SO_2), 46% of the nitrogen oxides (NOx), 52% of the carbon monoxide (CO), 55% of the lead (Pb), and 26% of the particulate matter (PM) pollution in Iowa in 2024.[30]

SO_2 and NOx are also precursors to PM2.5, a particularly dangerous type of air pollution with particles smaller than 2.5 microns in diameter. When SO_2 and NOx react in the atmosphere in the presence of water vapor and sunlight, they can form PM2.5. While larger particles are often trapped in the nose and throat, PM2.5 particles travel deep into the lungs and can cross through the air sac walls, entering directly into the bloodstream. PM2.5 from coal plants is often enriched with toxic metals and compounds, which reach lung tissue and the circulatory system.

PM2.5 LEVELS IN IOWA

In 1970, the National Ambient Air Quality Standards were established, and air pollution was regarded primarily as a threat to respiratory health. Researchers in 1993 published the landmark Six Cities Study establishing an association between fine particulate matter and mortality.[31] In 2013, air pollution was classified as a human carcinogen by the International Agency for Research on Cancer of the World Health Organization (WHO).[32]

In 2024, the EPA lowered the PM2.5 standard from 12.0 µg/m³ to 9.0 µg/m³. Figure 1 shows the annual PM2.5 values in Iowa from 2022 to 2024.[33]

As Figure 1 shows, several areas in Iowa are approaching the EPA's 9.0 µg/m³ threshold. Figure 2 shows the annual PM2.5 values in Iowa for the 2023 to 2025 timeframe.[34]

FIGURE 1 2022 – 2024 PM2.5 Annual Design Values (µg/m³)

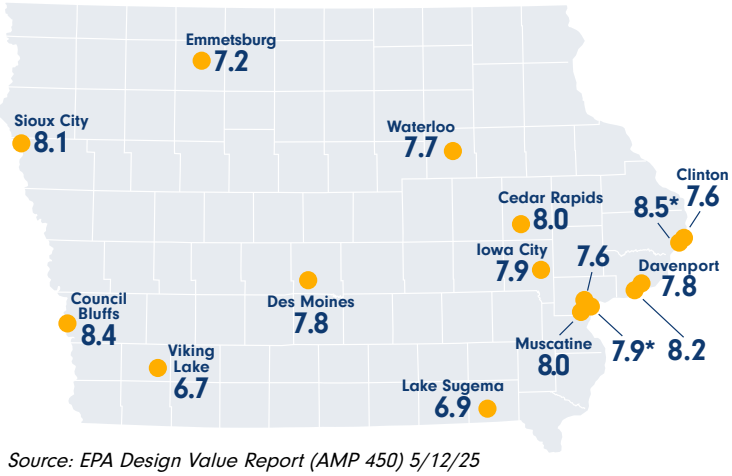
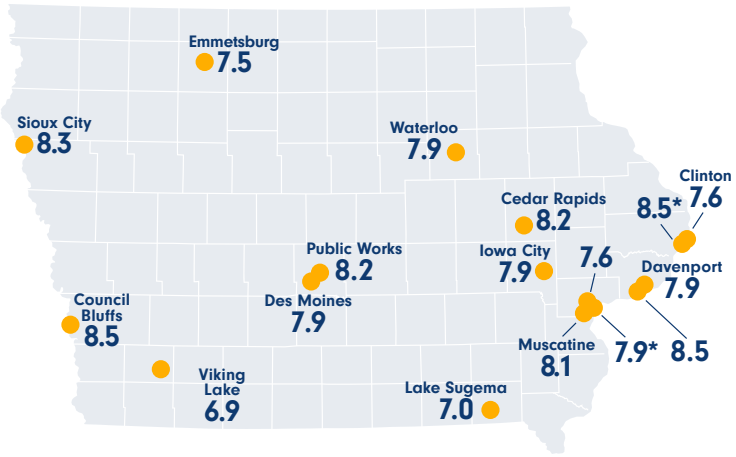


FIGURE 2 2023 – 2025 PM2.5 Annual Design Values (µg/m³)



Source: EPA Design Value Report (AMP 450) 5/12/25

Note: Asterisks indicate source-oriented sites where the annual NAAQS does not apply. (The National Ambient Air Quality annual Standard for PM2.5 is 9 µg/m³.)

A comparison of the two maps shows that PM2.5 concentrations increased at most locations in the state in 2025. In fact, not only did concentrations increase in the population centers, but the monitor in Emmetsburg measuring background levels of PM2.5, and the monitors at Lake Sugema in Southeast Iowa and Viking Lake in southwest Iowa measuring regional transport of PM2.5, all showed increased PM2.5 concentrations.

PM2.5 FROM COAL PLANTS

Coal plants are in several of areas with the highest concentration of PM2.5, including Walter Scott 3 and 4 (MidAmerican) in Council Bluffs, Neal 3 and 4 (MidAmerican) in Sioux City, and Louisa generating station (MidAmerican) and Muscatine Power in Muscatine. In 2025, the emissions, including emissions of PM2.5 precursors, increased by approximately 50% compared to 2024 as shown in Table 6.

TABLE 6 **Alliant and MidAmerican Increased 2025 Emissions from Coal Generation[35]**

	SO_2	NOx	HG	CO_2
2024	7,978	9,286	72	14,132,051
2025	12,307	13,923	107	18,916,471
INCREASE %	54	50	49	34

PM2.5 from coal plants is more dangerous other sources of PM2.5: It is higher in concentrations of sulfur dioxide, black carbon, and heavy metals.

> **Exposure to PM2.5 from coal is associated with a mortality risk twice as high as the risk from exposure to PM2.5 from all sources.[36]**

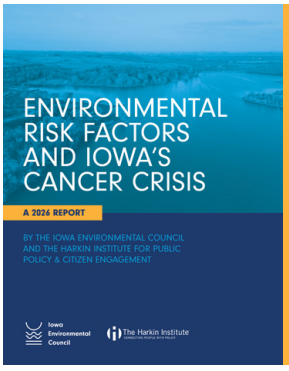
While the EPA standard is 9µg/m³, the WHO lowered its PM2.5 limit from 10 µg/m³ to 5 µg/m³ in 2021. This change reflected over a decade of new research showing significant health effects at concentrations previously considered safe. The halving of the guideline to 5 µg/m³ was not a cautious incremental change. It reflected a growing body of evidence that **there is no safe threshold for PM2.5 exposure**. The 2021 guidelines were endorsed by a broad coalition of medical societies, public health organizations, and scientific groups as a necessary response to this evidence.[37]

COAL GENERATION PM2.5 AND CANCER

People across Iowa are struggling with the impacts of Iowa's high and rising incidence of cancer. Since 2023, the Iowa Cancer Registry's annual "Cancer in Iowa" report has highlighted Iowa's position as second in the nation for new cancer cases. Iowa is also one of the only states where cancer incidence is increasing (Iowa Cancer Registry, 2023, 2024, 2025).

More than 170,000 Iowans are living with a past or current cancer diagnosis, and many more have lost loved ones to cancer (Iowa Cancer Registry, 2025a). The growing movement to address cancer in Iowa shows that Iowans are looking for real answers and serious solutions. Iowans know that what we eat, drink, breathe, and touch can potentially change our DNA, stress our immune systems, and make a cancer diagnosis more likely, especially when coupled with behavioral and genetic risk factors. Iowans deserve to know what risks we are facing.

The Iowa Environmental Council and the Harkin Institute for Public Policy released a report in 2026, "Environmental Risk Factors and Iowa's Cancer Crisis."[38] The report highlighted that "Iowa's cancer burden exists within a complex environmental context."



"Iowa is an outlier for many environmental risk factors for cancer."

While research often explores the ways that individual factors and exposures affect cancer risk, less research exists into the cumulative and compounding effects of exposure to multiple environmental pollution types. As the report demonstrates, Iowa is an outlier for many environmental risk factors, putting residents at greater risk of cancer due to cumulative exposure.[39]

A 2019 study that modeled lung cancer risk from global coal generation estimated that 1.37 million cases of lung cancer would be associated with coal power plants in 2025.[40] Similarly, a 2023 study found associations between exposures to PM2.5 and NO_2 and the risks of prostate and colorectal cancers. The study also found an increased risk of all cancers and exposures to PM2.5 and NO_2 at levels lower than WHO guidelines. **Authors of the study emphasized the need for policies and strategies to reduce air pollution.** [41]

In addition to the PM2.5 cancer burden, Iowa coal generation has also been associated with premature deaths, as discussed in the Iowa Environmental Council's 2024 report, "Coal in Siouxland."[42] A recent peer-reviewed study found that coal plant emissions, particularly PM2.5, were associated with 460,000 early deaths in the U.S. between 1999 and 2020.[43] Between 1999 and 2020, coal plants in Iowa contributed to the premature deaths of 340 Iowans and 5,460 premature deaths in surrounding states.[44]

Economic Harm of Coal Generation

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 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**.

COAL GENERATION AND PUBLIC HEALTH MONETARY COSTS

The economic impact of coal generation can be quantified in terms of the impacted population and the economic impact using the EPA CO-Benefits Risk Assessment (COBRA)[45] screening tool. Table 7 shows the model's estimates for coal plants in Iowa.

TABLE 7 COBRA Results for Iowa Coal Generation

	MONETARY VALUE (DOLLARS, ANNUAL)	
	LOW	HIGH
TOTAL IOWA HEALTH EFFECTS	$110,000,000	$140,000,000

When the economic impacts of coal burned by MidAmerican, Alliant, rural electric cooperatives, and municipal utilities are quantified, Iowans are being burdened with healthcare costs ranging from **$110,000,000** to **$140,000,000** per year.

COAL GENERATION AND CROP YIELDS

As discussed in "Iowa Electric Generation, Condition of the State, October 2020,"[46] 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.[47] The study found that counties in the U.S. increased corn yields by 1.1% over the study period of 2005 to 2016. The yield increase was attributed to reduced emissions

TABLE 8 Estimated Annual Iowa Corn Loss Tied to Operating 4,466 MW of Coal

	TEN YEAR PRODUCTION LOSS/ COUNTY (MBu)	ANNUAL LOSS/ COUNTY (MBu)	2/3 OF IOWA COUNTIES	ANNUAL STATEWIDE CORN LOSS (Bu)	VALUE BASED ON 2025 AVG OF $4.28/Bu[49]
MINIMUM LOSS	10	1	66	66 MILLION	$282,480,000
AVERAGE LOSS	50	5	66	330 MILLION	$1,412,400,000

Burning fossil fuels has a negative impact on crop yields in Iowa.

of SO_2, NOx, and particulate matter pollution, allowing 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. It concluded that corn production would increase when coal plants closed. Multiple studies have shown the correlation between cleaner air and increased crop yields.[48]

More than two-thirds of Iowa counties experienced, over the study period of 10 years, 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 4,466 MW of coal is quantified in Table 8.

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.[50]

SOCIAL COST OF GREENHOUSE GASES

The social cost of greenhouse gases[51] 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 EPA in November 2023 is shown in Table 9.[52]

TABLE 9 Social Cost of Greenhouse Gases

DOLLARS PER METRIC TON EMITTED IN 2025	CO_2	N_2O
MINIMUM (2.5% DISCOUNT RATE)	130	40,000
MAXIMUM (1.5% DISCOUNT RATE)	360	93,500

In 2025, MidAmerican and Alliant coal generation in Iowa emitted 17.2 million metric tons[53] of carbon dioxide and 12,600 metric tons[54] of nitrogen oxides into the atmosphere representing economic harm ranging from $2.7 billion to $7.4 billion dollars.

The True Cost of Coal Generation

The true cost of coal generation includes the externalities the state bears — the impacts to Iowans' health and wealth. These impacts are real and quantifiable. The financial impact to Iowans' health, crop loss, and climate impact is summed in Table 10.

TABLE 10 Cost of Externalities from Operating 4,486 MW of Coal

	MINIMUM	MAXIMUM
IOWAN'S HEALTH COSTS	$110,000,000	$140,000,000
CORN LOSS COSTS	$282,480,000	$1,412,400,000
SOCIAL COST OF CO_2 AND N_2O	$2,736,147,129	$7,358,890,077
TOTAL	$3,128,627,129	$8,911,290,077
$/KWh*	$0.22	$0.61

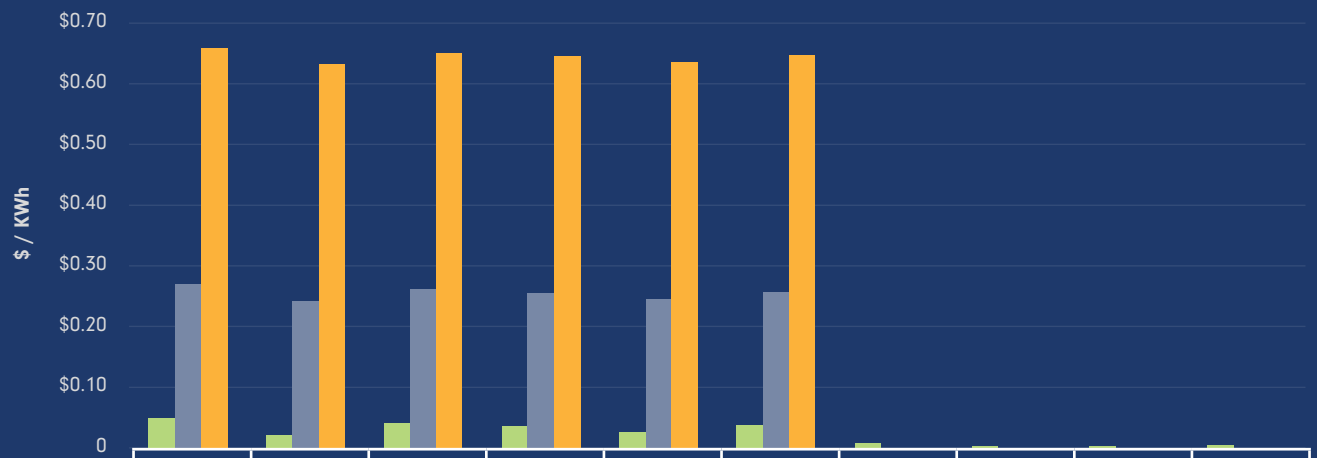
**The total costs of the externalities divided by the 14,515,398,706 KWh of coal generation.*

A true and transparent accounting by MidAmerican, Alliant, municipal utilities, and rural electric cooperatives would consider the broader range of costs borne by their captive customers of generating power using coal.

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.

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 before taking into account health impacts and crop losses.

CHART 10 2025 Iowa True Cost of Production



	WALTER SCOTT #4	WALTER SCOTT #3	NEAL #4	NEAL #3	LOUISA	OTTUMWA	INTREPID (WIND)	FRANKLIN COUNTY (WIND)	HOLIDAY CREEK (SOLAR)	WEVER (SOLAR)
REPORTED FERC FORM 1	$0.05	$0.02	$0.04	$0.04	$0.02	$0.04	$0.01	$0.003	$0.00206	$0.004
TRUE MIN	$0.27	$0.24	$0.26	$0.26	$0.24	$0.26				
TRUE MAX	$0.66	$0.63	$0.65	$0.65	$0.63	$0.65				

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.[55] In fact, the true cost of Iowa coal generation is 60 times more expensive than wind and solar.

Customers' utility bills represent just a fraction of the cost of continued operation of the six jointly owned coal plants in Iowa. While Iowans are paying with our health, quality of life, and paychecks, MidAmerican and Alliant are shipping vast amounts of this energy out of state.

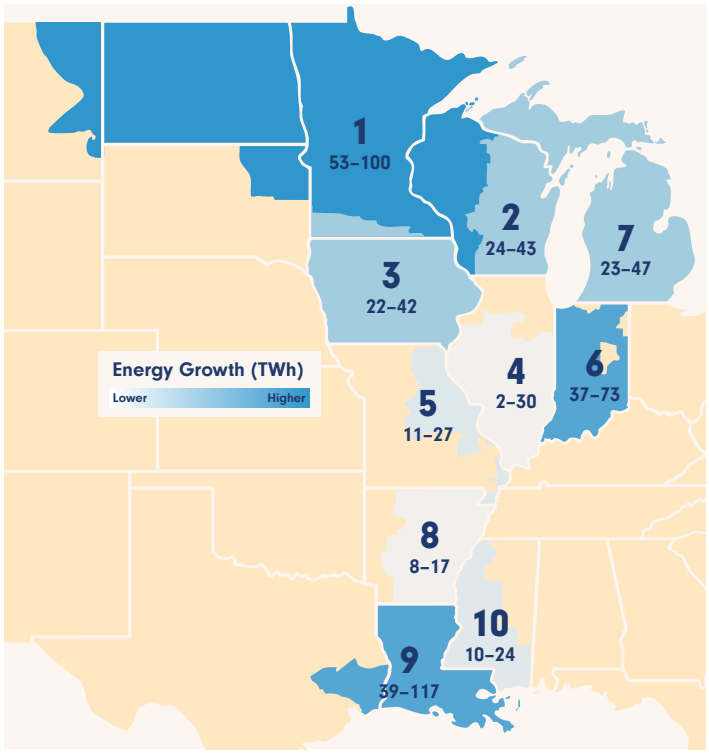
The Future of Iowa Generation

As noted previously, wind and solar generation provided 67% of Iowa's generation in 2024, more than any other state. However, although the percentage of Iowa's generation from renewables continues to increase, so does the projected growth in load. The total electric consumption in Iowa in 2025 was approximately 59 TWh.[56] Based on modeling projections from Midcontinent Independent System Operator (MISO) and shown in Figure 3, Iowa (represented as Load Resource Zone 3) is projected to experience load growth of 22 to 42 TWh between 2024 and 2044.[57]

In 2026, MISO projected that Iowa (Load Resource Zone 3) will experience load growth of 23 to 69 TWh between 2026 and 2046.[58] This represents a projected growth in load of 34% to 119% over the next 20 years. Although building electrification and electric vehicles will drive some growth, MISO projects that "Iowa will continue to attract data centers in the Des Moines area due to low construction costs, ample wind energy, and strong telecommunications infrastructure, with additional demand coming from ethanol refineries that benefit from fuel-blending requirements."[59]

Iowa currently has 101 data centers, and more are being planned and built.[60, 61] Power consumption by

FIGURE 3 2024 – 2044 Expected Load Growth by MISO Local Resource Zones (LRZs) Low-High Ranges



data centers is on course to account for almost half of the growth in electricity demand between now and 2030. The International Energy Agency expects that AI in the United States will "consume more electricity in 2030 for processing data than for manufacturing all energy-intensive goods combined, including aluminum, steel, cement and chemicals."[62]

CHANGING THE RULES

In recent years, the requirements for how utilities demonstrate they are capable of meeting demand and remaining reliable have changed. For decades, MidAmerican Energy and Alliant Energy were required to demonstrate they had sufficient accredited capacity to meet the peak demand plus a reserve margin of 15%.

With the generation mix shifting towards wind and solar, MISO, the independent grid operator, has

implemented a probability-based model. The model is intended to account for variability and seasonal differences of renewable generation. The modeling determines what generation resources are required to ensure sufficient accredited capacity is available to cover each of the seasonal demand peaks.

The "MISO Wind and Solar Capacity Credit Report" for the Planning Year 2025-2026 shows the probability model based accredited capacity values of wind in Table 11.[63]

This probabilistic approach, as shown in Table 11, means that for the summer of planning year 2025-2026 Iowa (Zone 3) had 13,348 MW of wind available to meet the summer demand, but only 2,959 MW counted towards meeting the summer accredited capacity.

Under this probability-based modeling, as more wind and solar is added, the accredited capacity values will decrease. The net result of changing the accreditation rules while experiencing significant load growth is the need to make significant investments in new generation and storage.

MIDAMERICAN ENERGY FUTURE PLANS

In 2024, MidAmerican conducted a Resource Evaluation Study (RES) to model the resources needed to meet projected increase in demand.[64] MidAmerican's RES was based on several key assumptions, including an expectation that total retail load in its service territory will grow 2.3% per year (or 658 MW) between the 2025-2026 planning year and the 2030-2031 planning year. The compound annual growth rate (CAGR) over the 20-year study horizon (2024-2044) is 1.9% (or 2,270 MW).[65]

TABLE 11 Distribution of Wind Capacity by Load Resource Zone

METRIC	MISO	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONES 5, 6, AND 10	ZONE 7
PLANNING YEAR 2025 – 2026 | SUMMER							
REGISTERED MAX (MW)	30,974	8,743	997	13,348	2,392	1,872	3,622
TOTAL SAC (MW)	6,692	2,090	174	2,959	434	340	694
AVERAGE CREDIT %	20.4%	21.5%	16.0%	21.2%	18.1%	17.0%	18.7%
WIND CPNODE COUNT	278	102	13	99	17	11	36
PLANNING YEAR 2025 – 2026 | FALL							
REGISTERED MAX (MW)	30,025	8,743	997	13,148	2,227	1,488	3,422
TOTAL SAC (MW)	9,560	2,925	249	4,793	511	345	737
AVERAGE CREDIT %	29.9%	31.0%	23.8%	34.5%	21.9%	21.3%	22.1%
WIND CPNODE COUNT	273	102	13	98	16	9	35
PLANNING YEAR 2025 – 2026 | WINTER							
REGISTERED MAX (MW)	30,790	8,743	997	13,348	2,392	1,688	3,622
TOTAL SAC (MW)	9,184	2,904	255	4,130	592	363	940
AVERAGE CREDIT %	28.7%	30.4%	24.9%	29.7%	24.0%	20.6%	26.8%
WIND CPNODE COUNT	277	102	13	99	17	10	36
PLANNING YEAR 2025 – 2026 | SPRING							
REGISTERED MAX (MW)	30,974	8,743	997	13,348	2,392	1,872	3,622
TOTAL SAC (MW)	8,263	2,678	194	3,758	532	394	706
AVERAGE CREDIT %	26.0%	28.8%	18.5%	27.4%	21.4%	21.1%	19.9%
WIND CPNODE COUNT	278	102	13	99	17	11	36

TABLE 12 MidAmerican's Planned Resource Additions Between Now and 2030

SUMMER SEASON ACCREDITATION	RES MODELING		MIDAMERICAN'S PLANS	
	SIMPLE CYCLE COMBUSTION TURBINE	SOLAR	SIMPLE CYCLE COMBUSTION TURBINE	SOLAR
2024	0	50	0	0
2025	0	300	0	0
2026	0	300	0	0
2027	0	100	0	0
2028	233	0	233	250
2029	233	0	233	500
2030	0	0	0	0

MidAmerican's load forecast shows an upcoming period of high load growth, including growth from data centers and other retail customers in the industrial class, creating a need to add capacity in the near future.[66] The RES modeling results for the near-term between 2024 and 2030 showed a need to add solar and natural gas turbines. MidAmerican developed an action plan based on the modeled results to reflect what was deemed feasible to accomplish in that time as shown in Table 12 above.[67]

MidAmerican increased the amount of feasible solar to 800 MW as part of a request for advance approval by the Iowa Utilities Commission. In addition, it has received approval for two simple cycle combustion turbines (total capacity 520 MW) to be located near Orient in Adair County and is seeking to add a third simple cycle turbine at the same site bringing the capacity to 777 MW.[68]

ALLIANT ENERGY FUTURE PLANS

In 2024, Alliant Energy conducted an RES to model future resource needs. The RES resulted in a projected 20-year portfolio and more detailed five-year action plan to meet MISO requirements and serve customer load between now and 2030.[69] As currently modeled, new wind, storage, natural gas peaking, natural gas combined cycle, short-term market purchases, and new demand response/energy efficiency would be needed to meet incremental energy and capacity requirements through 2030 and beyond. Alliant's RES was based on several key assumptions and load growth projections, resulting in projected generation additions of 6,845 MW from 2025 to 2043.

The changes in MISO accreditation, in and of themselves, increased Alliant's projected capacity needs beyond its current resource mix. In addition, the increased customer investments in Alliant service territory are also increasing the projected energy and capacity needs.[70] The RES modeling results for the near term between 2025 and 2030 showed a need to add wind, four-hour Battery Energy Storage Systems (BESS), natural gas peaking turbines, and natural gas combined cycle turbines. Alliant developed an action plan based on the modeled results as shown below:[71]

TABLE 13 Alliant's Action Plan Additions Between Now and 2030

YEAR	WIND	4-HOUR BESS	GAS PEAKING	GAS CCGT
2025		100		
2026		300		
2027	250	100	95	
2028	250		500	
2029	250			430
2030	250		250	

Alliant has received approvals from the Iowa Utilities Commission for a 280 MW BESS in Lansing, a 75 MW BESS in Kossuth County, a 75 MW BESS in Franklin County, a 94 MW natural gas reciprocating internal combustion engine (RICE) in Linn County, a 94 MW natural gas RICE in Des Moines County, a 780 MW natural gas simple cycle combustion turbine in Marshall County, and 1,000 MW of wind.[72] In addition, Alliant has initiated proceedings at the Iowa Utilities Commission for a 780 MW natural gas combined cycle facility in Linn County and a 1,100 MW natural gas simple cycle combustion turbine in Cerro Gordo County.[73]

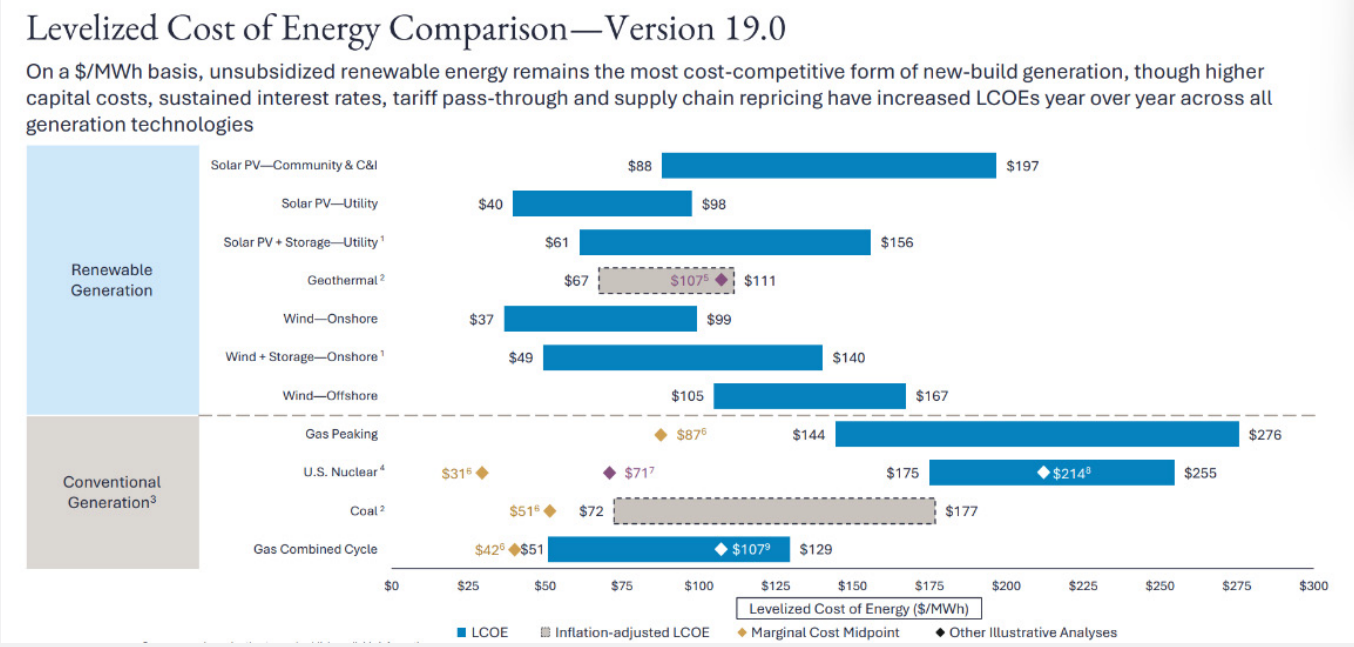
THE PATH FORWARD

Iowa utilities are uniquely positioned to achieve 100% carbon-free electricity by 2035 but must aggressively act to take full advantage of any currently approved projects that can take of the Inflation Reduction Act. To reduce climate pollution appropriately and provide maximum benefit to Iowa customers, and given the forthcoming elimination of renewable energy tax credits, all Iowa utilities must rapidly implement plans to fully utilize the IRA in order to prioritize and accelerate this transition.

Iowa utilities' plans for new generation capacity include more wind, solar, and storage. Even without factoring in IRA tax credits, renewable resources are the most cost-effective for customers, as shown in the most recent Lazard's Levelized Cost of Energy in Figure 4. Not only is conventional generation like coal and natural gas higher cost, but it also imposes additional externalities and costs on customers.

> Iowa utilities are uniquely positioned to achieve **100% carbon-free electricity** by 2035.

FIGURE 4 The Comparative Costs of Different Generation Sources



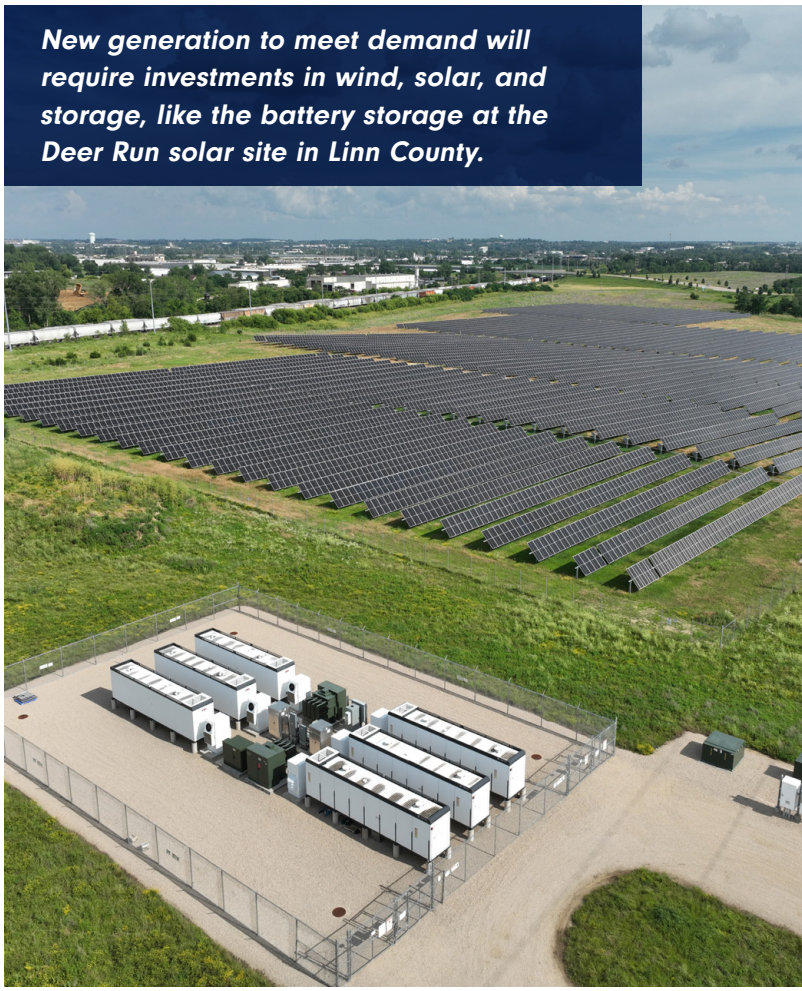
Conclusion

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. Coal plant emissions significantly impact our health and are the largest source of air emissions in Iowa. As we all struggle with the impacts of Iowa's high and rising new cases (incidence) of cancer, the scientific evidence of cancer associated with PM2.5 from coal generation cannot be ignored. The threats to air quality, groundwater, and surface waters posed by burning coal 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 power cooperatives would consider the full range of costs borne by their captive customers of generating power using coal.

Iowa has been a leader in clean energy over the past 20 years, deploying significant amounts of wind energy. We have the natural wind and solar resources to reach 100% renewable energy,[74] and Iowa utilities are uniquely positioned to achieve this by 2035. Iowa utilities must aggressively act to take full advantage of any Inflation Reduction Act incentives even as the OBBBA creates uncertainty and possible delay for a carbon-free electricity sector by 2035.

Iowa is projected to experience load growth of 31% to 93% over the next 20 years.[75] Even without tax incentives, Iowa utilities need to aggressively add solar, storage and wind to meet increased demand while providing for a low-cost clean energy transition for ratepayers.

Right now, Iowa utilities continue to burn 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, decrease the risk of cancer associated with PM2.5 emissions, and increase farm income and productivity. As shown by the Resource Evaluation Studies conducted by MidAmerican and Alliant, and based on the comparative cost of generation sources, the best way to meet projected increased customer demand is the addition of solar, storage, and wind. 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, the complete elimination of coal generation by 2030, and the addition of more solar, storage and wind.



New generation to meet demand will require investments in wind, solar, and storage, like the battery storage at the Deer Run solar site in Linn County.

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