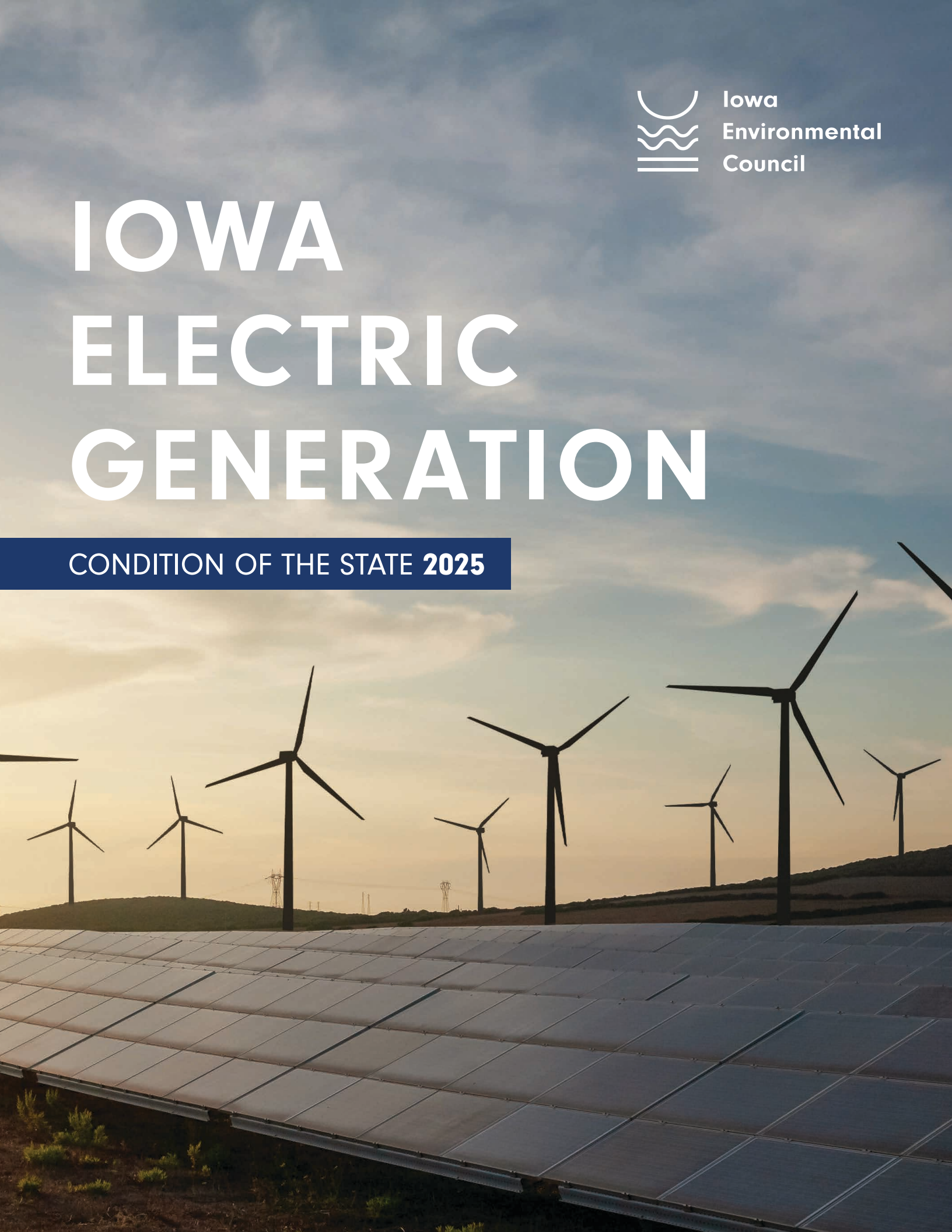
Iowa Environmental Council

IOWA ELECTRIC GENERATION

CONDITION OF THE STATE **2025**



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Introduction

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.[1] Consistent with this national policy, the Intergovernmental Panel on Climate Change (IPCC) issued *Climate Change 2022: Mitigation of Climate Change in April of 2022.*[2] 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).[3] Importantly, the IPCC report shows that the delay or failure to achieve timely reductions in one sector increases the burden to decrease in other sectors.[4]

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 created 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 to guarantee 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, and given the possibility of total or partial elimination of tax credits, all Iowa utilities must rapidly implement plans to fully utilize the IRA in order to prioritize and accelerate this transition.

> All Iowa utilities must rapidly implement plans to fully utilize the IRA in order to **prioritize** and **accelerate** this transition.

Unfortunately, the One Big Beautiful Bill Act (OBBBA) signed on July 4, 2025 accelerates the phase out for wind and solar. The tax credits will be available for wind and solar projects only if the project is placed in service before 2028, or construction begins before July 4, 2026. The Internal Revenue Service previously issued guidance for determining when a project begins construction, including the Five Percent Safe Harbor and the Physical Work Test. However, on July 7, 2025, President Trump issued an Executive Order mandating Treasury to issue new guidance within 45 days redefining when construction begins. Importantly, the mandate requires that a safe harbor only be available if a substantial portion of a subject facility has been built. At a minimum, the OBBBA will delay a carbon-free electricity sector by 2035.

Demand in Iowa is expected to increase, resulting in projected load growth between 30% and 60% over the next 20 years.

These significant changes occur at the same time that Iowa is projected to experience load growth of 22 to 42 TWh (terawatt hours) between 2024 and 2044.[5] This represents a projected growth in load of 30% to 60% over the next 20 years.

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 66% of Iowa's electricity in 2024.

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 operator or majority owner of more than 60% 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 timely retire their expensive, dirty, and unnecessary coal generation.

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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 combusting fossil fuels are the main driver of climate change. CO_2 is also the main byproduct of coal combustion: Nearly four grams of CO_2 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_2 per megawatt hour (MWh) of energy.

Emissions from combusting fossil fuels are the main driver climate change, which impacts extreme weather in Iowa.

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.

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[6] 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.[7] Then on December 15, 2021, a derecho[8] in Iowa totaled $1 billion in damages.[9] 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.[10] 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.[11]

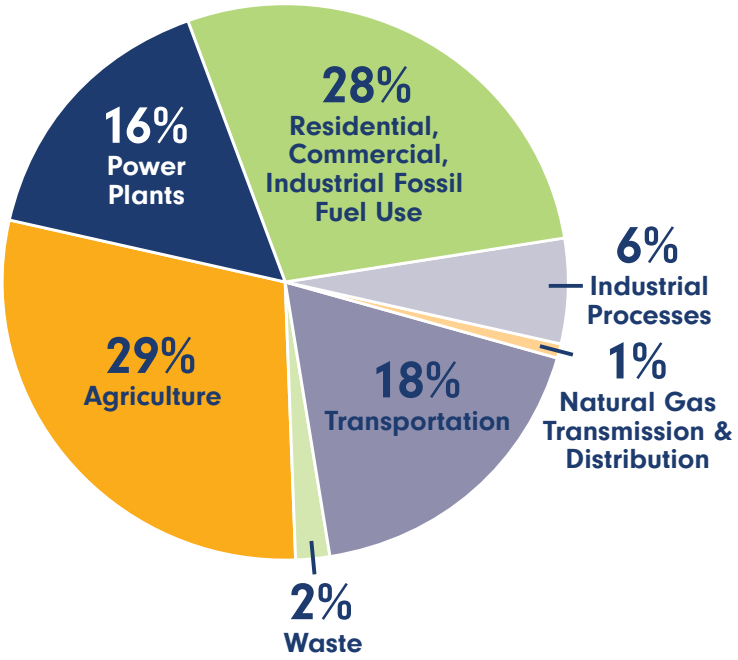
Iowa's Contribution to Climate Change

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 2023.

The 2023 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_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFC), hydrofluorocarbons (HFC), and sulfur hexafluoride (SF_6).

The majority of GHG emissions in Iowa in 2023 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.[12]

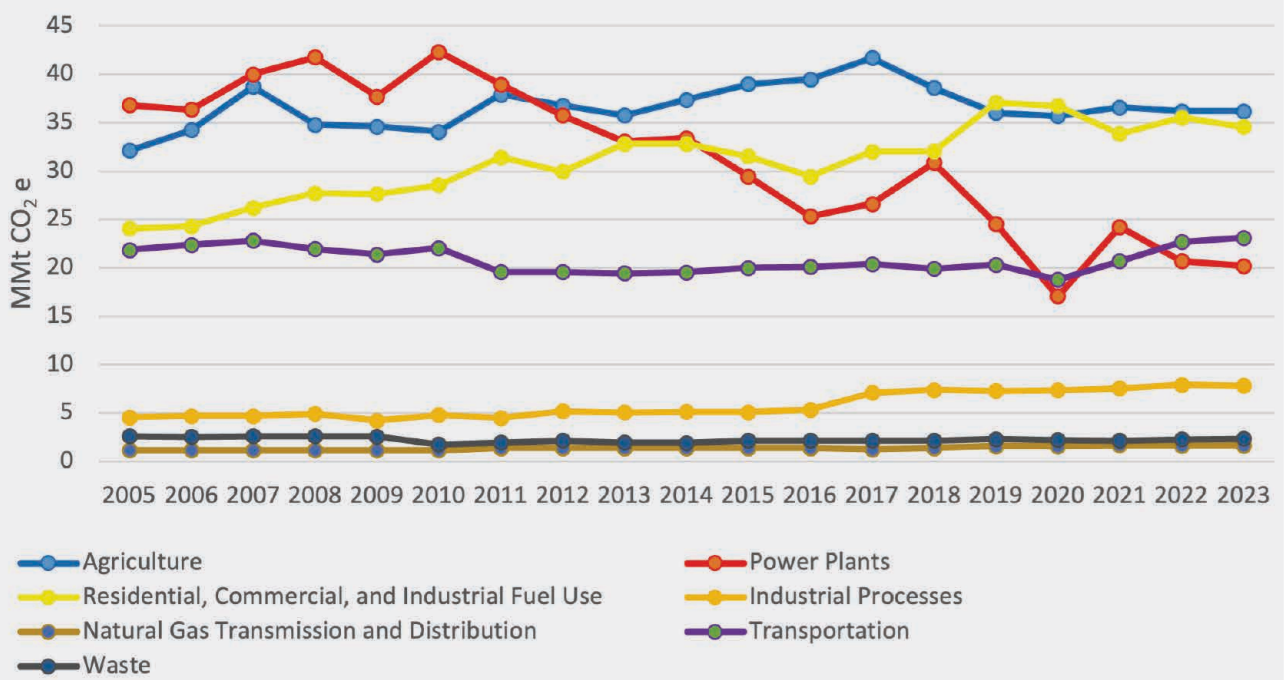
CHART 1 **2023 Iowa GHG Emissions by Sector**



In 2023, total gross Iowa greenhouse gas emissions were 125.95 million metric tons of carbon dioxide equivalent (MMtCO2e).[13] The trend in Iowa from 2005 through 2023 for each of the sectors is shown in Chart 2 on the following page.[14]

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.

CHART 2 **Iowa GHG Emissions 2005-2023**



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.

Both MidAmerican[15] and Alliant[16] 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 have not adopted a plan to achieve companywide net zero GHG emissions, and they have also decided to operate their coal plants well beyond the need to have ***a carbon-free electricity sector by 2035*** identified in the IPCC report.[17]

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.[18] 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.

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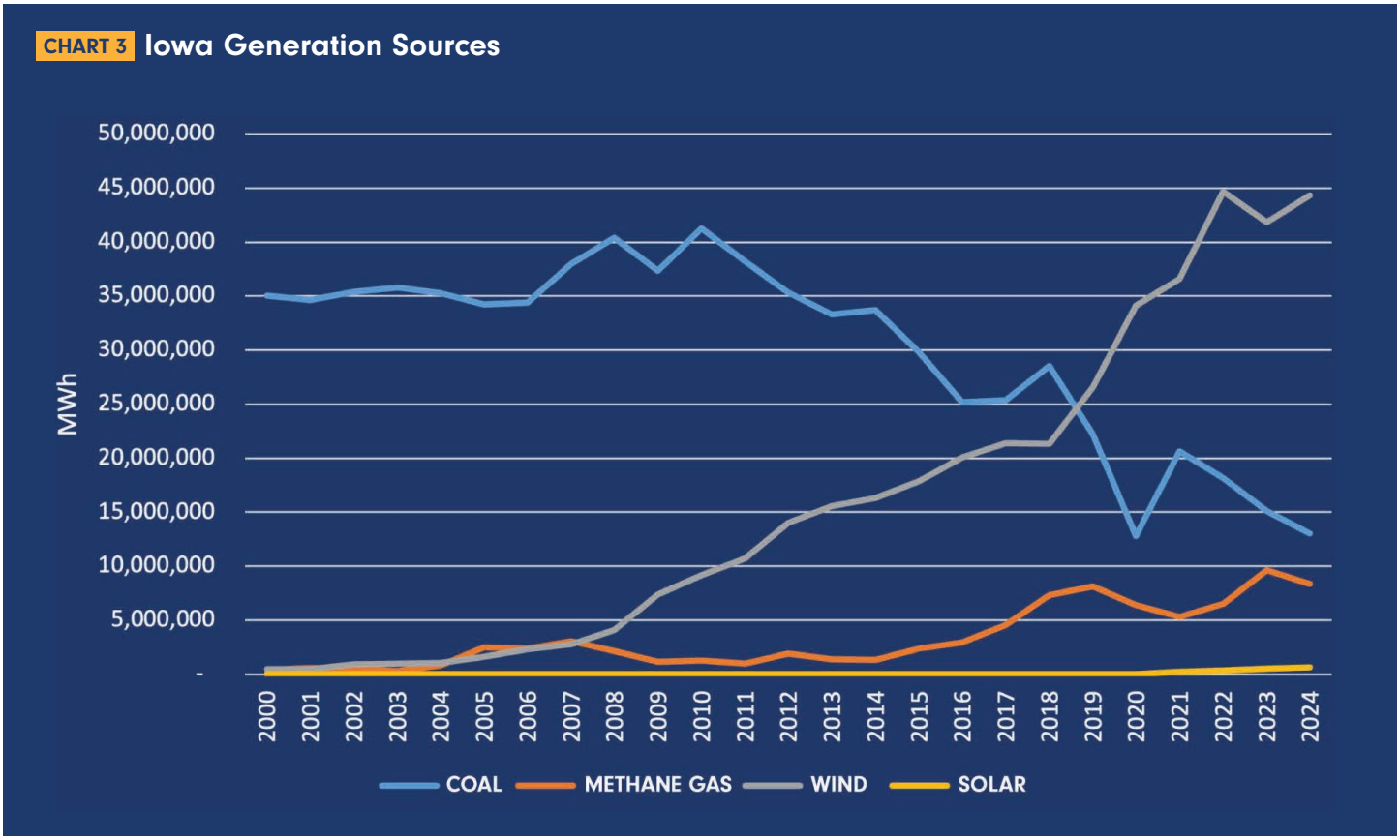
Iowa Generation Since 2000

Iowa's progress in developing renewable energy over the past 20 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.

CHART 3 Iowa Generation Sources



Source: Net Generation by State by Type of Producer by Energy Source (EIA-906, EIA-920, and EIA-9

The 2016 to 2024 timeframe is especially noteworthy because renewable generation from wind and solar not only exceeded coal generation for the first time, but rose to 67% of Iowa's generation in 2024 — the most of any state in the U.S. **Fossil fuel generation in Iowa decreased from 41% in 2021 to 32% in 2024 while wind generation was 66% in 2024 and solar generation was 1% in 2024.** The trend is clear in Iowa and across the county — 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 2024 Iowa resource mixes for Iowa's two largest utilities, Alliant Energy and MidAmerican Energy, are shown in Charts 4 and 5 on the following page.[19] Wind represented 64% of the MidAmerican Energy generation and 37% of the Alliant Energy generation.

> The trend is clear in Iowa and across the county — **wind and solar power is affordable and reliable**.

CHART 4 **2024 MidAmerican Resource Mix**

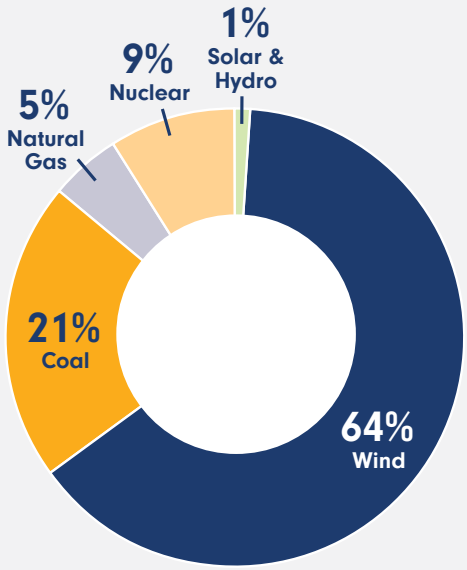


CHART 5 **2024 Alliant Resource Mix**

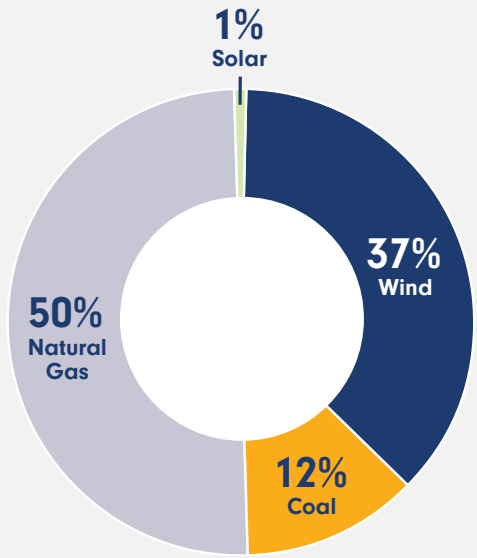
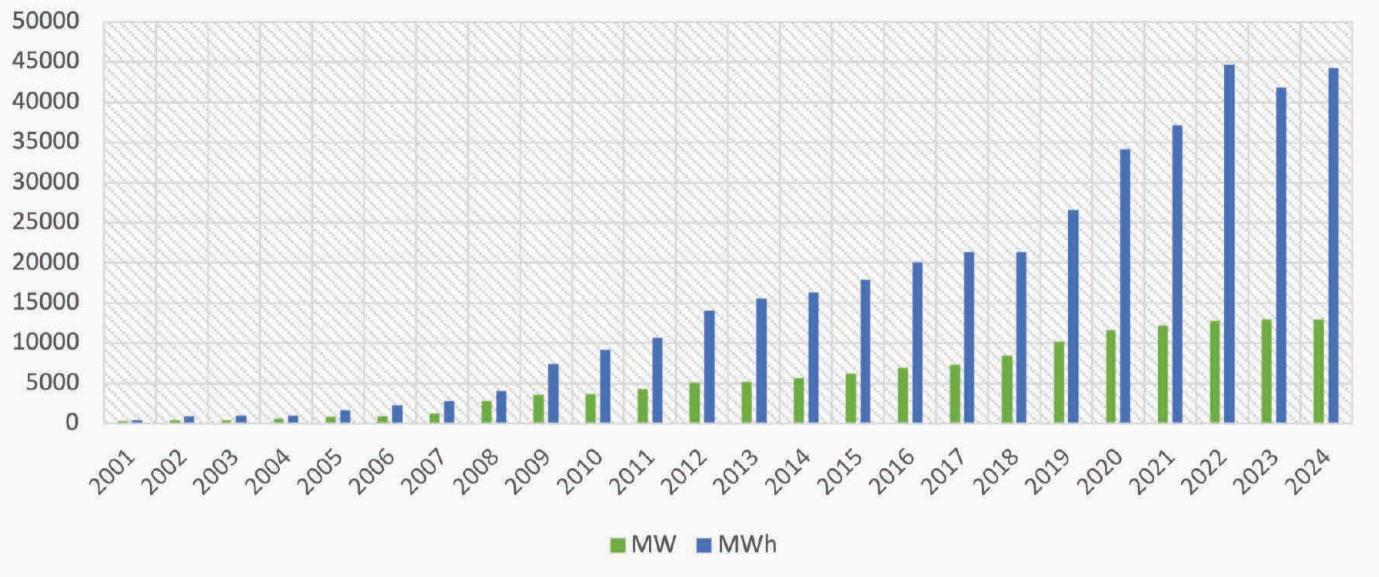


Chart 6 shows the total wind capacity (MW) in Iowa since 2001, and the generation (MWh) from those wind turbines, including the notable 2016 to 2024 timeframe.[20] [21]

From 2016 to 2024, wind capacity increased by over 88% (an additional 6,062 MW) in Iowa, and wind generation increased by over 121%.

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



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[22] The plant ownership interests are shown in Table 1.

TABLE 1 Utility-Owned Coal-Fired Power Plants

NAME	CAPACITY MW	COUNTIES	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, Iowa (1.1%) • City of Harlan, Iowa (0.8%) • City of Tipton, Iowa (0.5%) • City of Eldridge, Iowa (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%)

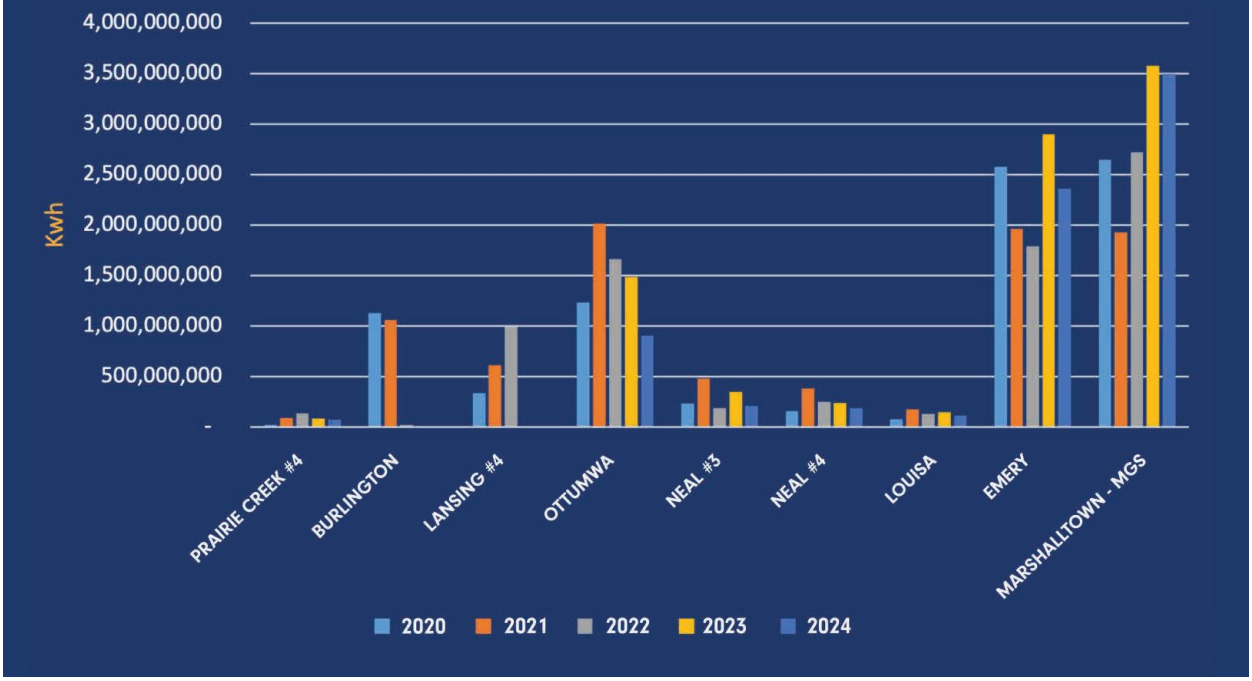
TABLE 2

UTILITY	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

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. The Electric 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).

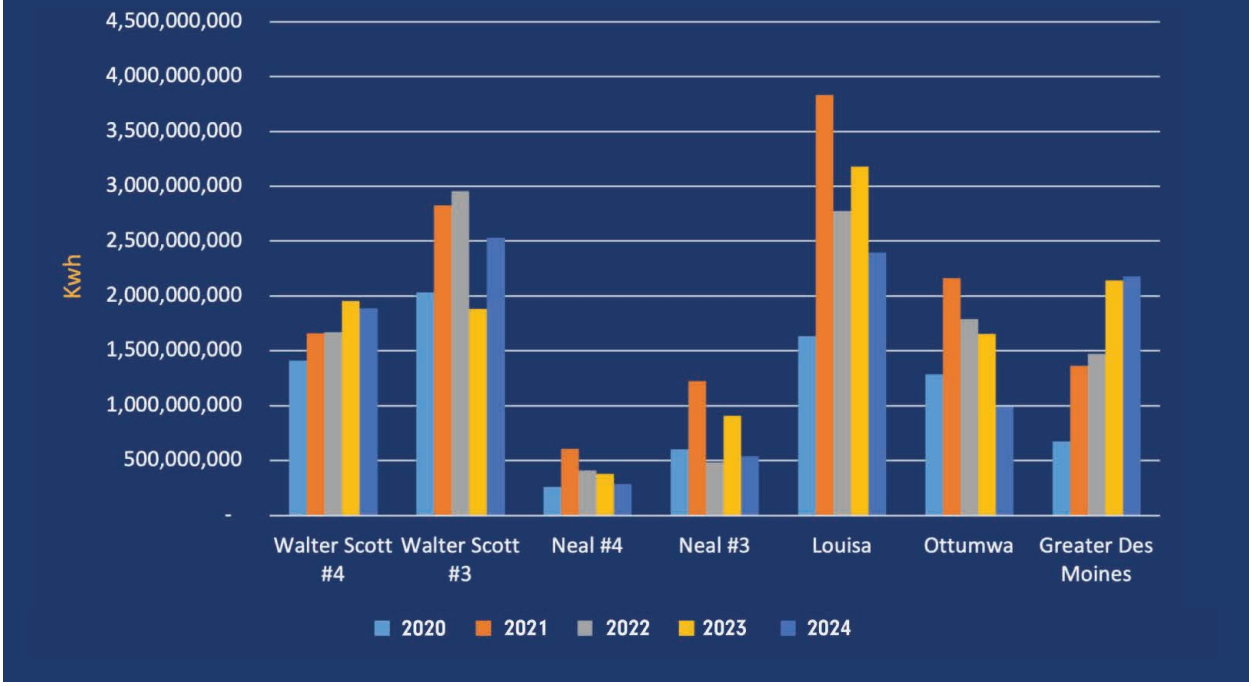
As wind and solar continue to meet more of the energy demand, the coal plants are operating less. From 2020 to 2024, Alliant reduced its electricity production from coal by 54%, while it has only reduced its fossil electricity production by 13%. Over the same time period, MidAmerican increased its electricity production from coal by 20%, and increased its fossil electricity production by 38%. In 2024, fossil generation represented 26% 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; it is easy to see both the variability in deployment of fossil resources but also the clear increased use of natural gas plants since 2020 at the Alliant (Emery and Marshalltown MGS) generating stations, and the MidAmerican (Greater Des Moines) generating station.[23]

CHART 7 **Alliant 2020 - 2024 Fossil Generation**



Note: Prairie Creek #4 uses natural gas and coal, and produces both steam and electricity.

CHART 8 **MidAmerican 2020 - 2024 Fossil Generation**

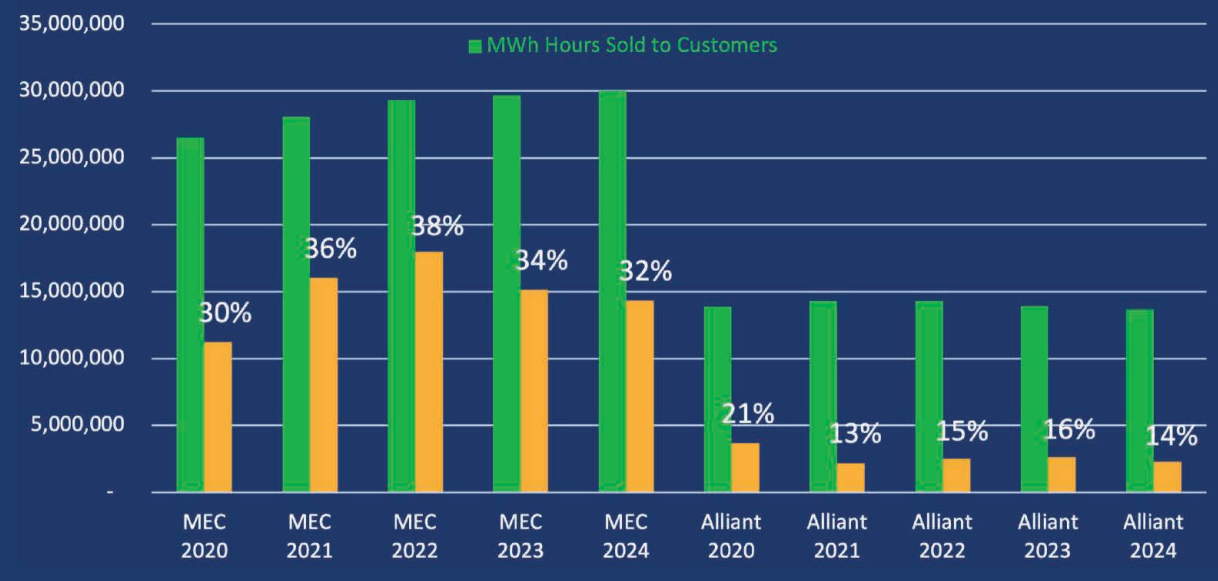


Iowa Retail Load

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*,[24] 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 2020 through 2024, Chart 9 shows what portion of their generation is serving Iowa customers, and what portion is serving the financial interests of MidAmerican and Alliant.[25] From 2020 to 2024, MidAmerican sales to utilities increased by 28% while customer sales increased by 13%. Over the same time frame, Alliant sales to utilities decreased by 28% while customer sales decreased by 2%.

CHART 9 **MidAmerican & Alliant Electricity (MWh) Sold**



For 2024, MidAmerican sold 30 million MWh to its customers and Alliant sold 13.7 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 32% of MidAmerican's 2024 generation being sold to utilities and 14% of the Alliant 2024 generation being sold to utilities. MidAmerican sold 14.3 million MWh to utilities in 2024 for $197 million, while Alliant sold almost 2.3 million MWh to utilities for $24 million. In total, MidAmerican and Alliant generated the following in 2024, categorized by the type of generation:

TABLE 3 **MidAmerican 2024 Generation**

	MIDAMERICAN 2024 MWH
COAL	8,637,308
FOSSIL GAS	2,224,545
NUCLEAR	3,873,290
SOLAR	281,042
HYDO & OTHER	17,562
WIND	26,391,402
TOTAL	41,425,149

TABLE 4 **Alliant 2024 Generation**

	ALLIANT 2024 MWH
COAL	1,470,249
FOSSIL GAS	5,936,824
SOLAR	119,330
WIND	4,347,309
TOTAL	11,873,712

As noted above, the electricity sold to Iowa customers (retail load) was only a portion of the 2024 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.

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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 2024, the coal generation from the coal plants operated by MidAmerican and Alliant was 10,107,556 MWh, resulting in harmful emissions released into the air we breathe.

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

TABLE 5 **Alliant & MidAmerican 2024 Emissions from Coal Generation** [26]

2024	SULFUR DIOXIDE (TONS)	NITROGEN OXIDES (TONS)	MERCURY (LBS)	CARBON DIOXIDE (TONS)
ALLIANT	593	550	16	2,328,134
MIDAMERICAN	7,385	8,736	43	11,803,917
TOTAL	7,978	9,286	72	14,132,051

Table 5 shows the Alliant, MidAmerican, and total emissions from the coal plants in 2024.

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.

A. 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.[27] 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. Between 1999 and 2020,[28] the coal plants in Iowa have contributed to the premature deaths of 340 Iowans and 5,460 premature deaths in surrounding states.[29]

A coal leachate pond at the George Neal Station in Woodbury County, next to the Missouri River.

Coal plant emissions significantly impact our health and are the largest source of air emissions in Iowa.[30] 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 81% of the sulfur dioxide, 50% of the nitrogen oxide, 51% of the carbon monoxide, 48% of the lead, and 29% of the particulate matter pollution in Iowa in 2023.[31]

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)[32] 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
TOTAL IOWA HEALTH EFFECTS	$110,000,000	$150,000,000

When the economic impacts of coal burned by MidAmerican, Alliant, rural electric cooperatives and municipal utilities are quantified, Iowans are being burdened with health care costs ranging from $110,000,000 to $150,000,000 per year.

B. COAL GENERATION AND CROP YIELDS

As covered in more depth in *Iowa Electric Generation, Condition of the State, October 2020*,[33] 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.[34] 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 SO2, NOx, 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. (Multiple studies have shown the correlation between cleaner air and increased crop yields.)[35]

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 4,466 MW of coal is quantified in Table 7.

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

TABLE 7 **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 2024 AVG OF $4.35/BU [36]
MINIMUM LOSS	10	1	66	66 MILLION	$287,100,000
AVERAGE LOSS	50	5	66	330 MILLION	$1,435,500,000

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.[37]

C. SOCIAL COST OF GREENHOUSE GASES

The social cost of greenhouse gases[38] 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.[39]

TABLE 8 Social Cost of Greenhouse Gases

DOLLARS PER METRIC TON EMITTED IN 2024	CO2	N2O
Minimum (2.5% discount rate)	128	39,000
Maximum (1.5% discount rate)	356	92,200

In 2024, MidAmerican and Alliant coal generation in Iowa emitted **12.82 million metric tons**[40] of carbon dioxide, **8.4 thousand metric tons**[41] of nitrous oxides into the atmosphere representing economic harm ranging from **$1.9 billion to $5.3 billion dollars**.

The True Cost of Coal Generation

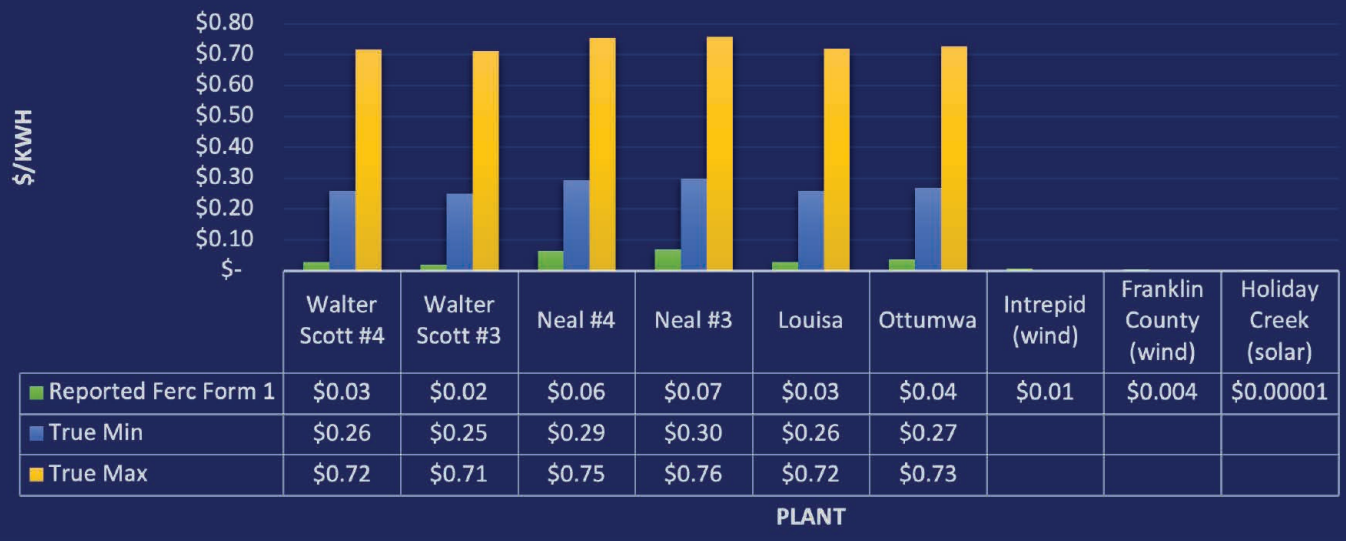
As discussed previously, the decision to continue burning coal by MidAmerican, Alliant, Iowa municipal utilities, and the Iowa electric cooperatives negatively impacts the financial well-being of every Iowan and does not account for the impacts on Iowans' health and wealth — the externalities of burning coal. These impacts are real and quantifiable. The financial impact to Iowans' health, crop loss, and climate impact is summed in Table 9.

TABLE 9 Cost of Externalities from Operating 4,486 MW of Coal

	MINIMUM	MAXIMUM
Iowan's Health Costs	$110,000,000	$150,000,000
Corn Loss Costs	$287,100,000	$1,435,500,000
Social Cost of CO2 & N2O	$1,969,535,574	$5,340,726,709
TOTAL	$2,366,635,574	$6,926,226,709
$/KWh*	$0.24	$0.70

**The total costs of the externalities divided by the 10,107,556,060 KWh of coal generation.*

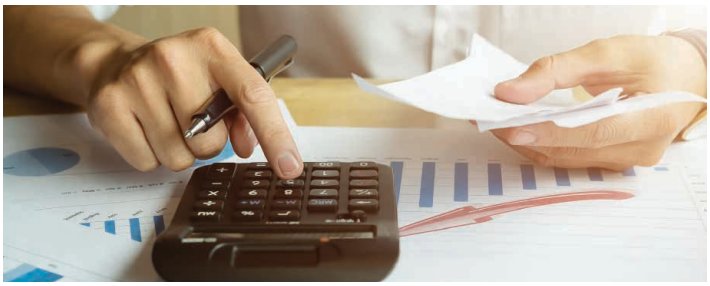
CHART 10 2024 Iowa True Cost of Production



The true costs of production at the MidAmerican and Alliant operated coal plants are shown in Chart 10 above, and contrasted with the cost of production from the wind and solar farms.

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.[42] **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.

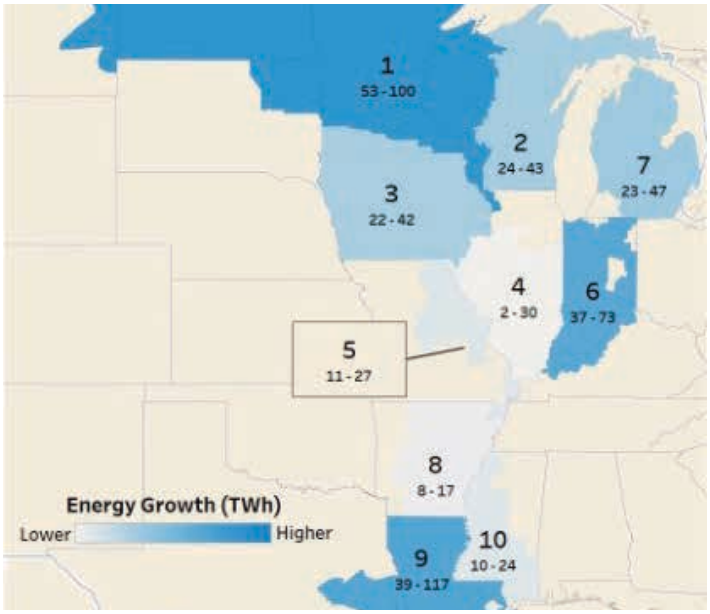


MidAmerican and Alliant coal plants in Iowa are not cost-competitive when compared with renewable generation. This results in increased costs for Iowa customers.

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 is the projected growth in load. The total electric consumption in Iowa in 2024 was 69.874 TWh (terawatt hours).[43] Based on modeling projections from MISO (Midcontinent Independent System Operator) and shown in Figure 1, Iowa (represented as Load Resource Zone 3) is projected to experience load growth of 22 to 42 TWh between 2024 and 2044.[44]

FIGURE 1 **2024 -2044 Expected Load Growth by MISO Local Resource Zones (LRZs) Low-High Ranges**



This represents a projected growth in load of 30% to 60% 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."[45]

Iowa currently has 100 data centers, and is already seeing data center growth as evidenced by the recent announcements for the development of data centers for Google and QTS in Cedar Rapids.[46] [47] **This growth is projected to meet the expected demand for artificial intelligence (AI), with power consumption by data centers 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."[48]

A. CHANGING THE RULES

For decades the electric utilities had a simple strategy for maintaining reliability: always having more supply available than may be required. MISO, as the regional grid operator, required MidAmerican Energy and Alliant Energy to have sufficient generating capacity to meet their annual peak demand. It also requires an additional reserve margin to handle increased load growth and unexpected system issues. In Iowa, the annual peak demand occurred in the summer and the utilities needed to demonstrate they had sufficient accredited capacity to meet the peak demand plus a typical reserve margin of 15%

TABLE 10 Distribution of Wind Capacity by LRZ

METRIC	MISO	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONES 5 & 6	ZONE 7	ZONE 8	ZONE 9	ZONE 10
PLANNING YEAR 2023-2024 – SUMMER										
Registered Max (MW)	28,572	8,233	906	12,659	1,977	1,488	3,310	0	0	0
Total SAC (MW)	5,384	1,745	171	2,350	339	243	525	0	0	0
AVG CREDIT %	17.4%	18.7%	15.5%	17.8%	16.5%	13.8%	15.0%	0.0%	0.0%	0.0%
Wind CPNode Count	264	97	12	96	15	9	34	0	0	0
PLANNING YEAR 2023-2024 – FALL										
Registered Max (MW)	27,207	8,233	906	12,125	1,370	1,488	3,085	0	0	0
Total SAC (MW)	6,570	2,111	154	2,970	274	346	717	0	0	0
AVG CREDIT %	23.1%	24.1%	18.3%	23.4%	18.9%	21.2%	23.0%	0.0%	0.0%	0.0%
Wind CPNode Count	255	97	12	92	11	9	34	0	0	0
PLANNING YEAR 2023-2024 – WINTER										
Registered Max (MW)	28,027	8,233	906	12,459	1,857	1,488	3,085	0	0	0
Total SAC (MW)	11,731	4,087	271	5,347	571	449	1,006	0	0	0
AVG CREDIT %	40.2%	45.3%	29.2%	40.7%	29.2%	29.6%	35.4%	0.0%	0.0%	0.0%
Wind CPNode Count	261	97	12	95	14	9	34	0	0	0
PLANNING YEAR 2023-2024 – SPRING										
Registered Max (MW)	28,572	8,233	906	12,659	1,977	1,488	3,310	0	0	0
Total SAC (MW)	6,993	2,086	191	3,166	509	342	699	0	0	0
AVG CREDIT %	23.3%	23.6%	21.1%	24.0%	24.9%	21.8%	20.9%	0.0%	0.0%	0.0%
Wind CPNode Count	264	97	12	96	15	9	35	0	0	0

Today, however, with the generation mix shifting towards wind and solar, MISO decided to change the rules. Because of the variability and differences of renewable generation in each season of the year, MISO shifted to a system of having a peak demand for each season plus a reserve margin.

The shift towards more wind and solar generation also led MISO to use probability-based modeling to evaluate the possibility that wind and solar do not generate electricity at times of peak demand. 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 2023-2024 shows the probability model based accredited capacity values of wind in Table 10.[49] This probabilistic approach, as shown in Table 10, means that for the summer of planning year 2023-2024 Iowa (Zone 3) had 12,659 MW of wind available to meet the summer demand, but only 2360 MW counted towards meeting the summer accredited capacity. By way of analogy, this is the equivalent of yesterday believing your car would get you to your destination, but today a probability model determined the odds of your car making it to your destination are significantly lower. As a result, in order to increase the odds of making it to the destination, you need to purchase additional cars.

Using this probabilistic modeling approach, 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.

B. MIDAMERICAN ENERGY FUTURE PLANS

In 2024, MidAmerican conducted a Resource Evaluation Study (RES) to model the future resource needs, and determine the resources that best meet the projected increase in demand.[50] MidAmerican's RES was based on several key assumptions, including an expectation that Iowa/South Dakota total retail load 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).[51]

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. 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 11:[52]

TABLE 11 MidAmerican's Action Plan Additions Between Now and 2030

SUMMER SEASON ACCREDITATION	MODEL BUILDS		FEASIBLE TIMELINE	
	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 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 initiated a proceeding to seek Commission approval for two simple cycle combustion turbines (total capacity 520 MW) to be located near Orient, Iowa in Adair County.[54]

C. INTERSTATE POWER AND LIGHT (ALLIANT ENERGY) FUTURE PLANS

In 2024, Interstate Power and Light (IPL) conducted a Resource Evaluation Study (RES) to model future resource needs identifying a projected 20-year portfolio (Projected Portfolio) and preferred five-year action plan (Action Plan) to meet MISO requirements

and serve customer load between now and 2030. 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. IPL'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 IPL's projected capacity needs beyond IPL's current resource mix. In addition, the increased customer investments in IPL's communities are also increasing IPL's projected energy and capacity needs. The RES modeling results for the near term between 2025 and 2030 showed a need to add wind, 4-Battery Energy Storage Systems (BESS), natural gas peaking turbines, and natural gas combined cycle turbines. IPL developed an action plan based on the modeled results as shown in Table 12.[57]

TABLE 12 IPL'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	

IPL has initiated proceedings at the Iowa Utilities Commission to seek approval for a 150 MW BESS in Lansing, a 75 MW BESS in Kossuth County, and a 75 MW BESS in Franklin County.[58] In addition, IPL initiated a proceeding at the Iowa Utilities Commission for a natural gas facility in Marshall County and 1,000 MW of wind.[59]

D. 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 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.

The future plans for new generation at the Iowa utilities include more wind, solar, and storage. **Although the utilities will only have a limited time to potentially take advantage of the IRA tax credits, renewable resources are still the most cost effective for customers even without subsidies,** as shown in the most recent Lazards Levelized Cost of Energy in Figure 2, on the following page.

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.

FIGURE 2 Levelized Cost of Energy Comparison (Version 18.0)

Selected renewable energy generation technologies remain cost-competitive with conventional generation technologies under certain circumstances.

Even without tax credits, wind and solar are the lowest cost generation technologies. Not only is conventional generation like coal and natural gas, higher cost, but imposes additional and unaccounted for costs on Iowa customers.

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[60] 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.

These significant changes occur at the same time that Iowa is projected to experience load growth of 30% to 60% over the next 20 years.[61] Even without tax incentives, Iowa utilities need to aggressively add solar, storage and wind to meet increased demand while providing for a low-cost 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, while increasing farm income and productivity. As shown by the Resource Evaluation Studies conducted by both MidAmerican and Interstate Power and Light, 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 aggressively adding more solar, storage and wind. Only then can Iowa move forward on the path we're blazing toward 100% renewable energy.

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.

ENDNOTES

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