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IOWA'S RENEWABLE ADVANTAGE:

DRIVING JOBS, GROWTH, AND PROPERTY TAX RELIEF

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ABOUT COMMON SENSE INSTITUTE

Common Sense Institute is a non-partisan research organization dedicated to the protection and promotion of Iowa's economy. CSI is at the forefront of important discussions concerning the future of free enterprise and aims to have an impact on the issues that matter most to Iowans. CSI's mission is to examine the fiscal impacts of policies, initiatives, and proposed laws so that Iowans are educated and informed on issues impacting their lives. CSI employs rigorous research techniques and dynamic modeling to evaluate the potential impact of these measures on the economy and individual opportunity.

TEAMS & FELLOWS STATEMENT

CSI is committed to independent, in-depth research that examines the impacts of policies, initiatives, and proposed laws so that Iowans are educated and informed on issues impacting their lives. CSI's commitment to institutional independence is rooted in the individual independence of our researchers, economists, and fellows. At the core of CSI's mission is a belief in the power of the free enterprise system. Our work explores ideas that protect and promote jobs and the economy, and the CSI team and fellows take part in this pursuit with academic freedom. Our team's work is informed by data-driven research and evidence. The views and opinions of fellows do not reflect the institutional views of CSI. CSI operates independently of any political party and does not take positions.

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INTRODUCTION

Around the start of the new millennia, the United States electricity grid began a major shift away from coal as a power generation source. Natural gas and renewable energy largely replaced it. The share of U.S. electric energy generation from coal fell from half (51%) in 2001 to 17% in 2025. From 2001 to 2025, natural gas rose from 17% to 41%, and renewables rose from 7% to 24%. Wind energy alone rose from nearly 0% to 10%. While every state participated broadly in this national trend, each state's transition looked different, both in the evolution of the blend of energy sources used and the forces driving the transition. Iowa has transitioned to renewables as its primary source of electricity generation while maintaining competitive energy markets and brining quantifiable benefits to the state's economy and taxpayers.

This report assesses Iowa's energy transition and quantifies the economic impact of renewable energy in the state. It first provides background on the buildout of Iowa's renewable electric energy generation from wind, solar, and battery storage. It shows how the share of the state's power generation by source has changed over time and briefly discusses what made that transition possible. It then pivots to its primary question: what impact has renewable energy development had on Iowa's economy? The analysis starts by estimating the total value of past investments in renewable energy in the state and then projecting future investments. It uses those projections to forecast the expected economic impact of renewable energy on Iowa's economy over the next decade.

Iowa has transitioned to renewables as its primary source of electricity generation while maintaining competitive energy markets and brining quantifiable benefits to the state's economy and taxpayers.

After forecasting macroeconomic impacts, the report turns to an analysis of renewable energy's contribution to Iowa's tax base and how renewables impact taxpayers broadly. It concludes with local case studies that examine pairs of comparable Iowa counties—with and without wind developments—to better understand how investments in wind energy can impact local taxpayers and their Main Street economy.

KEY FINDINGS

- In 2025, renewable energy supplied roughly 62% of Iowa's electric grid, with wind alone producing nearly 59% of generation. Renewables accounted for just 18% of generation in 2010.
    - **Residential electricity prices grew 51.3% in the U.S. but only 32.4% in Iowa as the state's renewable energy expanded from 2010 to 2025.**
    - Over the same timeframe, Iowa's residential electricity costs improved from 22nd lowest in the nation in 2010 to 16th lowest in 2025.
- Renewable energy development has generated substantial private-sector investment in Iowa's economy.
    - Wind, solar, and battery projects generated more than $23 billion in combined investment from 2016 to 2025.[1]
    - **CSI projects an additional $29 billion in renewable energy investments over the next decade if current trends continue.**
    - CSI estimates that as of 2024, all wind energy conversion property in Iowa had a combined real value of approximately $25.7 billion across 51 counties.
- Without the projected investments in renewable energy over the next decade, Iowa would conservatively miss out on—
    - **At least 5,500 jobs, with an average of 7,000 each year.**
    - $10.6 billion in economic growth (GDP).
    - $17.4 billion in business sales.
    - $7.6 billion in personal income.
    - $6.9 billion in disposable personal income.

- Without the projected investments in renewable energy over the next decade, Iowa would conservatively miss out on—
  - **Between 3,000 and 4,100 jobs each year directly attributable to renewable energy projects** (construction, technical services, trucking, etc.), with an average loss of 3,600 jobs each year. (See table 2 for a detailed breakdown.)
  - **Between 550 and 700 indirect jobs each year attributable to suppliers to renewable energy projects** (manufacturing, environmental consulting, logistics, etc.), with an average loss of 600 jobs each year. (See table 3.)
  - **Between 1,900 and 3,600 additional induced jobs across the state's economy** resulting from increased spending by those directly and indirectly employed from the projects, with an average loss of 2,800 jobs each year. (See table 4.)

Renewable energy contributes to Iowa's tax base and reduces local tax levies.

- **CSI estimates renewable energy projects were responsible for about $1.5 billion in state and local tax revenue between 2010 and 2025.**
  - Wind and solar facilities generated an estimated $1.22 billion in direct property tax revenue to local governments between 2010 and 2025.
  - Economic modeling suggests renewable energy projects indirectly boosted state tax revenues by $276 million between 2010 and 2025 through increased personal income and economic activity.
- Based on CSI's research, the presence of wind production within a local taxing jurisdiction is associated with lower property tax levies.
  - **On average, properties in school districts with no wind turbines pay 26% higher property taxes than those in districts with large-scale wind production.**
  - CSI's statistical analysis found that school districts with more wind turbines tend to impose lower voted mill levy rates. For districts with—
    - No wind turbines, the average voted levy is 4.67.
    - 1-49 wind turbines, the average voted levy is 4.51.
    - 50-99 wind turbines, the average voted levy is 3.66.
    - 100+ wind turbines, the average voted levy is 3.46.
  - **The owner of an average residential property living within the taxing jurisdiction of a school district with average wind production pays $194 less in property taxes than the same resident living in a district with no wind turbines.**

- CSI's analysis found that counties, cities, and other local governments that saw more growth in wind turbines from 2010 to 2024 saw marginally smaller property tax rate increases and/or larger property tax rate decreases.

Case studies demonstrate wind production reduces property tax levies and stimulates counties' main street economies.

Common Sense Institute analyzed two comparable sets of counties, one with wind development and one without, to illustrate the local economic effects of wind development. The two were Adams County (wind) versus Ringgold County (no wind) and O'Brien County (wind) versus Lyon County (no wind).

- **From 2015 to 2023, median homeowner property taxes rose about 40% (Ringgold) and 86% (Lyon) faster in the non-wind-producing counties than in the comparable wind-producing counties.**
- **Wind development shifted the tax burden away from residential properties.**
  - Residential property accounted for 73% of per-household property tax revenue growth in Ringgold County—3.3 times higher than Adams County's 22% growth.
  - Residential property accounted for 168% of per-household property tax revenue growth in Lyon County—70 times higher than O'Brien County's 2.4% growth.[2]
- In total, Adams County generated 66% more property tax revenue per resident than Ringgold while maintaining similar levy rates—10.93 versus 10.49.
- Wind energy directly generated substantial local revenue to host counties in 2024.
  - Wind properties generated approximately $324 per resident in Adams County, just over 20% of total property tax revenues per resident.
  - **Wind properties contributed approximately $166 per resident in O'Brien County, or about 25% of total property tax revenues per resident.**
- **Main street economic activity grew more in wind-producing counties.**
  - Taxable sales per capita increased 6.3% in Adams County during the Southern Hills Wind Project and 11.4% during the Prescott Wind Farm development while Ringgold declined 1.6% and 1.0% during those same periods.
  - O'Brien County also outperformed Lyon during the Highland Wind Project construction, with taxable sales per capita rising 15.1% compared to Lyon's 10.0% growth.

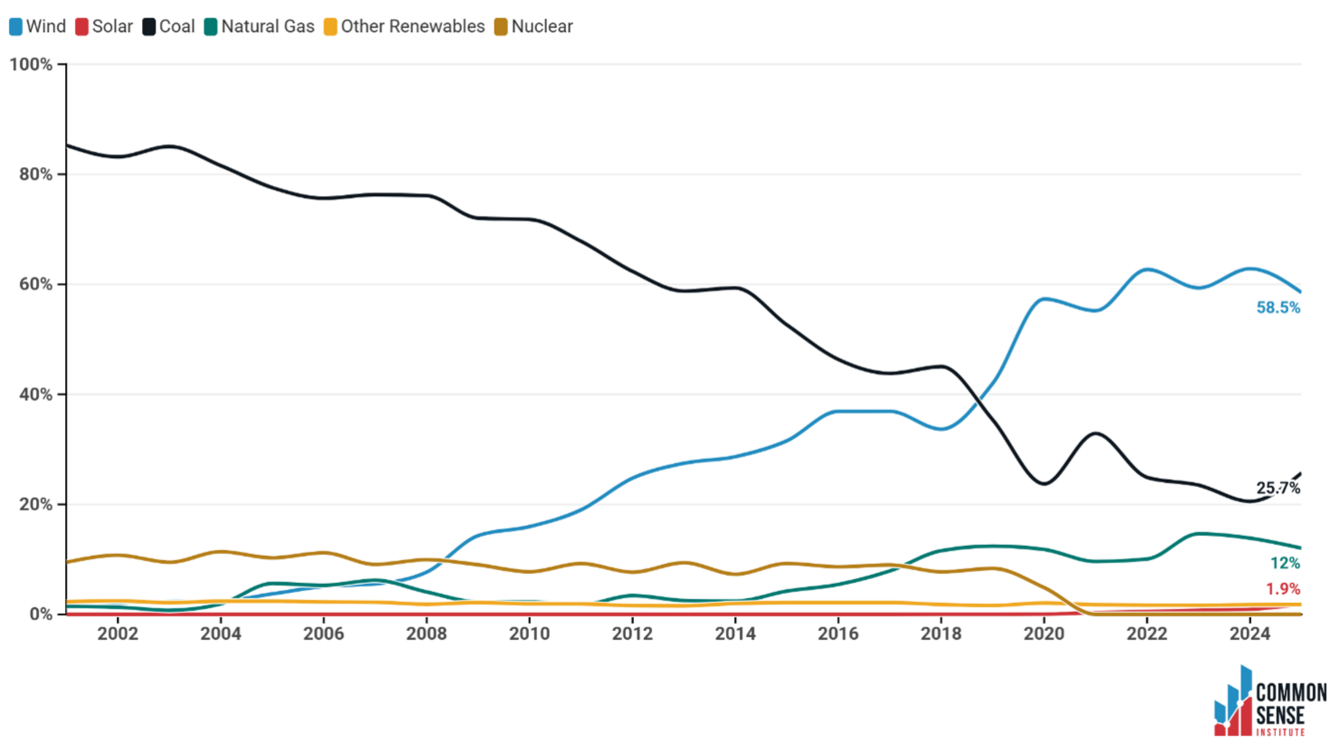
IOWA'S RENEWABLE ENERGY BUILDOUT

The use of renewable energy to meet the Iowa's electricity needs—the focus of this report—began around the turn of the century, but the state's broader transition to renewables began in the 1970s. At that time, almost half of Iowa's energy consumption came from petroleum—far more than any other source. Today, renewable energy and petroleum make up a near equal share. They each account for about 28% of the state's total energy consumption, which includes energy used to heat homes, fuel vehicles, and power buildings. This report, however, focuses on just the electricity generation side of the equation where renewables now play the leading role. The data presented demonstrate how Iowa's "all of the above" energy approach has bolstered the state's overall energy competitiveness relative to the rest of the nation and brought quantifiable upside for the state.[3] Net energy generation, shown in figure 1, provides a clear view of the change over time in energy sources used to produce electricity within a state.

FIGURE 1.

Share of Net Energy Generation by Source, Megawatt Hours, Iowa

Since 2001, the share of net energy generation from coal declined from 85.3% to 25.7% in 2025. Wind production replaced most of that production, growing from 1.2% to 58.5% over this same period. The next largest sources for net energy generation in 2025 were natural gas (12%), solar (1.9%), and other renewables (1.8%).



Source: Energy Information Administration
Note: Petroleum and other did not exceed 1% over this period and are excluded from the graphic.

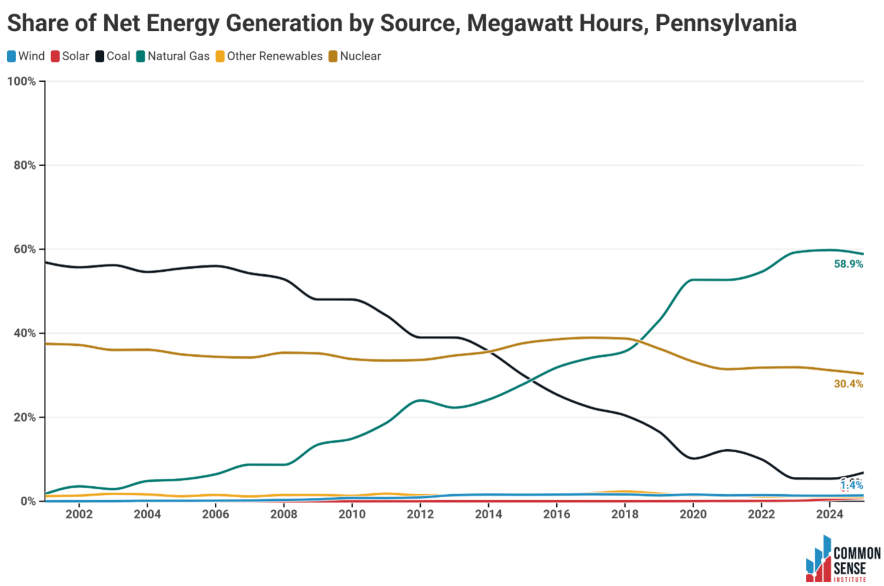
In 2001, coal accounted for 85.3% of Iowa's net electricity generation. Since then, coal generation has declined sharply, falling to 25.7% by 2025. Over the same period, wind generation expanded from 1.2% of total generation to 58.5%. Wind energy has replaced most of the generation previously supplied by coal, becoming the dominant source of electricity produced in Iowa since 2019. Figure 1 visualizes Iowa's trend in net energy generation by source since 2001.

This transition was not accidental. The United States saw coal production peak in 2008 and decline steadily since.[4] Instead of coal, the nation embraced alternatives like natural gas and renewables. Iowa's geography and resources suited it best to the latter. Iowa has a unique alignment of natural resources, geography, and infrastructure that make it ideal for producing renewable energy. In the early to mid-1980s, Iowa began to see a meaningful rise in energy consumption sourced from renewables, as seen in figure A.[5] Large-scale use of renewables to provide electric power to the state, however, did not begin until 1999 with the development of the 193-megawatt (MW) Storm Lake Wind Farm, the largest wind farm in the world at the time.[6]

For 2025, the state is on track to produce over 40 million megawatt hours (MWh) of wind energy, making up around 59% of net electricity generation in the state.[7] Solar is on track to generate around 1.3 million MWh, or nearly 2% of net generation.[8] While several generating stations in Iowa rely on battery storage, especially as part of a hybrid plant with wind or solar, most of their contributions do not show up in the U.S. Energy Information Agency (EIA) data as separate battery-source energy. This evolution has turned Iowa into one of the nation's leaders in renewable energy production, led primarily by wind energy.[9]

Not all states followed Iowa's trajectory of renewable energy growth. Pennsylvania, for example, replaced its coal generation with natural gas at about the same pace that Iowa replaced coal with wind. Figure 2 illustrates the change in the share of net energy generation by source for Pennsylvania as figure 1 does for Iowa. Coal supplied nearly 57% of Pennsylvania's electricity generation in the early 2000s, but that number fell to roughly 7% by 2025. Natural gas generation grew from 2% to 59% over this period due to the Keystone State's access to abundant shale gas resources. Wind generation grew very little.

FIGURE 2.



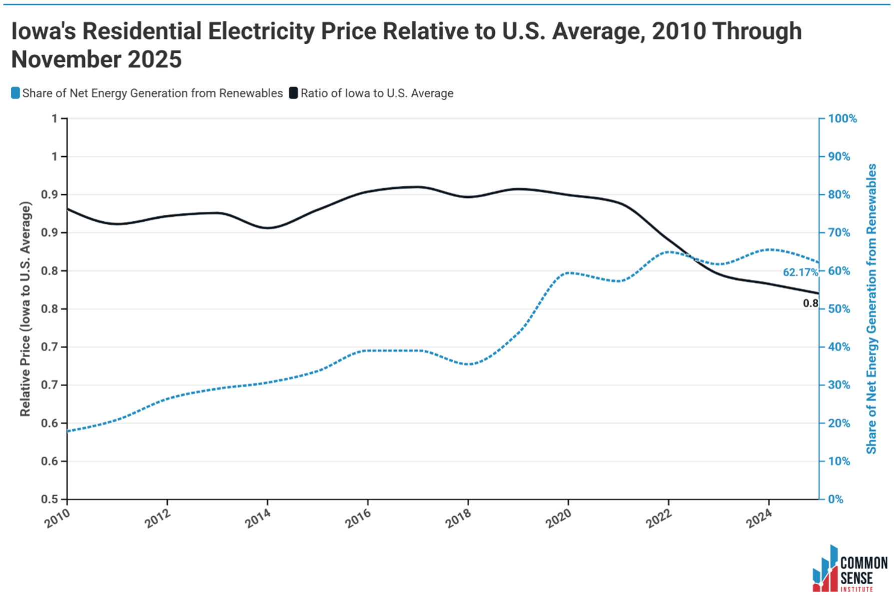
Source: Energy Information Administration
Note: Petroleum and other did not exceed 1% over this period and are excluded from the graphic.

Iowa and Pennsylvania are examples of states that replaced coal with abundant local energy sources. They demonstrate that state-level energy transitions are often shaped by natural resource availability. Iowa replaced imported coal with a natural resource it had in great abundance: wind. Pennsylvania replaced coal, a local resource, with another abundant and cleaner-burning domestic resource: natural gas. However, producing energy in-state may not always be an efficient or cost-effective means to provide energy—even if a state has the domestic resources necessary to do so. Iowa's position as a top exporter of electric energy and its competitive energy prices demonstrate the state's comparative advantage in the market using its domestic renewable energy resources.

In a 2025 analysis, the U.S. Energy Information Administration stated, "Since 2008, Iowa has generated more electricity each year than the state consumed, and the excess power was sent to other states over the regional electric grid. Iowa ranks in the top 10 states in total electricity sales per capita." Iowa's position as one of the nation's top energy exporters suggests the state has developed and maintained highly competitive domestic energy generation using domestically sourced renewable sources. Regional organizations like Midcontinent Independent System Operator (MISO) are designed to export electricity from the lowest-cost power plant available in the region, allowing utilities to reduce costs relative to local production.[10] Iowa's competitive energy prices ultimately drive its comparative advantage in the market.

When comparing the cost of energy in Iowa to all states, Iowa ranks favorably. Figure 3 visualizes the ratio of Iowa's electric prices relative to the national average. Values below one indicate Iowa has a lower cost than the average; values above one indicate Iowa has a higher cost. Iowa's residential electricity prices have remained consistently below the U.S. average throughout the past decade and a half, with the gap widening as renewable generation expanded. In 2025, the average price of residential electricity in Iowa was 13.9 cents per kilowatt hour. By contrast, the U.S. average was 18 cents per kilowatt hour. Among all states, Iowa ranked 22nd lowest for residential electricity costs in 2010. Its rank improved to 15th lowest in 2024 and was 16th lowest for 2025 (annual average through November 2025). Notably, because Iowa exports its relatively cheap energy to neighboring states like Wisconsin and Minnesota, electric rates for Iowans remain somewhat higher than what would be possible if providers sold that energy exclusively within the state. However, the ability to produce energy in Iowa and export some to neighboring states helps make the renewable energy investments work economically.

FIGURE 3.



Source: Energy Information Administration

From 2010 to 2021, Iowa's electricity prices generally moved in line with national trends. Beginning in 2022, however, Iowa's comparative affordability improved sharply as energy costs increased across much of the country. This divergence coincided with a period of significant cost pressure within traditional energy markets. The producer price index for coal mining and related fossil fuels rose as much as 50% between 2021 and 2022, increasing generation costs in states more reliant on those fuels.[11] By increasing its renewable energy usage from 35.5% of electricity generation in 2018 to 64.9% by 2022, Iowa insulated itself from the brunt of these negative price shocks. From 2010 to 2025, Iowa's residential electricity prices grew just 32.4% while the U.S. grew 51.3%. The expanded renewable share helped diversify Iowa's generation mix and reduced exposure to coal and fossil-fuel price volatility, allowing the state to absorb broader commodity price increases more effectively than other states.

By reducing its reliance on coal and shifting toward locally sourced renewable energy, Iowa has improved its affordability while increasing overall nameplate capacity and reliability.[12] The state's success, however, does not necessarily mean a shift toward renewables would yield the same results in every state. Iowa's success resulted from its approach and unique set of circumstances. As explained at the start of this section, Iowa possesses natural conditions favorable to renewable energy, especially wind. Additionally, while governments incented Iowa's renewable energy buildout with tax credits, investments were driven by the private sector rather than by top-down mandates.[13] Unfortunately, not every state has followed Iowa's lead.

Increasing a state's reliance on renewable energy generation can yield very different results if a state imposes the energy transition through aggressive, top-down mandates with undue consideration for economic knock-on effects.[14] For example, extensive research by Common Sense Institute Colorado has largely found adverse economic consequences of Colorado's irresponsibly executed energy transition. The state's forced premature termination of existing fossil fuel energy generation has raised concerns over grid reliability.[15] Indeed, the state has experienced an increasing number of power outages, which some blame—at least in part—on these mandates.[16] Last year, the CEO of Colorado Springs Utilities announced the utility must reevaluate its transition to wind and solar to avoid large cost increases for ratepayers.[17] The compulsory transition to renewable energy driven by fast-approaching CO2 emission reduction targets has led to an unfortunate and preventable trade-off between CO2 reduction and economic vitality. With all the problems Colorado faces in its energy transition so far, it still generates only 43% of its electric energy from renewable sources.

Iowa demonstrates a better way.

Without heavy-handed state mandates, Iowa went from generating just 2.9% of its electric energy from renewable sources in 2001 to 62% today. As Iowa increased its reliance on wind and other renewables, its residential electricity costs improved from 22nd lowest in the nation in 2010 to 16th lowest in 2025. In contrast, Colorado's rank remained unchanged at 29th in 2010 and 2025. In CSI's most recent Free Enterprise Report, Iowa ranked first nationally in the overall competitiveness of its energy market.[18] It has accomplished this feat while generating the largest percentage of its electricity from wind of any state.[19]

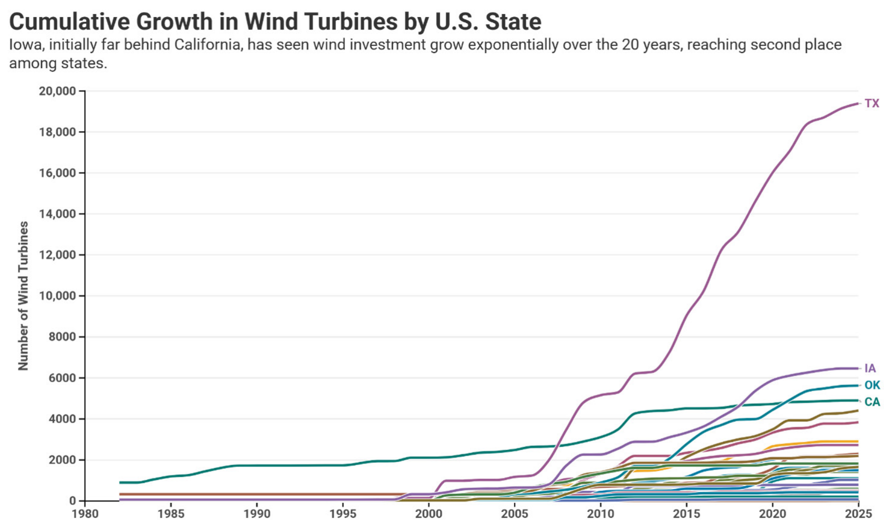
While electricity prices provide insight into the state's overall competitiveness, it does not explain how individual renewable energy sources have contributed to Iowa's evolving energy market. Wind, solar, and battery storage have each contributed to the growth in renewables at varying rates. The following subsections examine these three renewable energy sources, evaluate their historical development, and quantify each one's past and projected future economic contributions within the state.

Wind Investments

Over the past 20 years, investment in Iowa wind energy infrastructure has increased dramatically. With nearly 6,500 operational wind turbines (see figure 4), Iowa has the second most turbines in the nation, behind only Texas. Iowa also ranks second for megawattage generated by wind turbines and third in clean renewable energy generation.[20] The state ranks first for share of electricity generated from wind.[21]

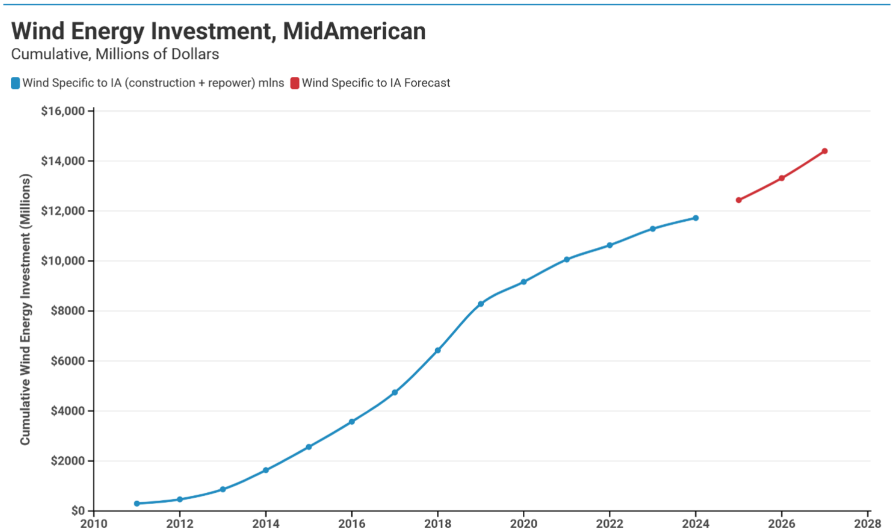
While dozens of companies have invested in wind energy production in Iowa, MidAmerican Energy Company has made the largest investments and is currently the largest producer of wind energy in the state. Their investments illustrate the dramatic rise in investments over the last 15 years. From 2011 through 2025, MidAmerican invested an estimated $11.7 billion in wind energy, including $434 million in 2024 and a projected $716 million in 2025.[22] This number includes investments in construction and repower. MidAmerican financial disclosures anticipate further investments in 2026 and 2027 of $879 million and $1.08 billion, respectively.[23] Although not all this investment will go directly toward manufactured product from Iowa-based businesses, the historical $11.7 billion did, and the forecasted $2.7 billion will, create jobs and economic growth for residents in the state.

FIGURE 4.



Source: Energy Information Administration

FIGURE 5.

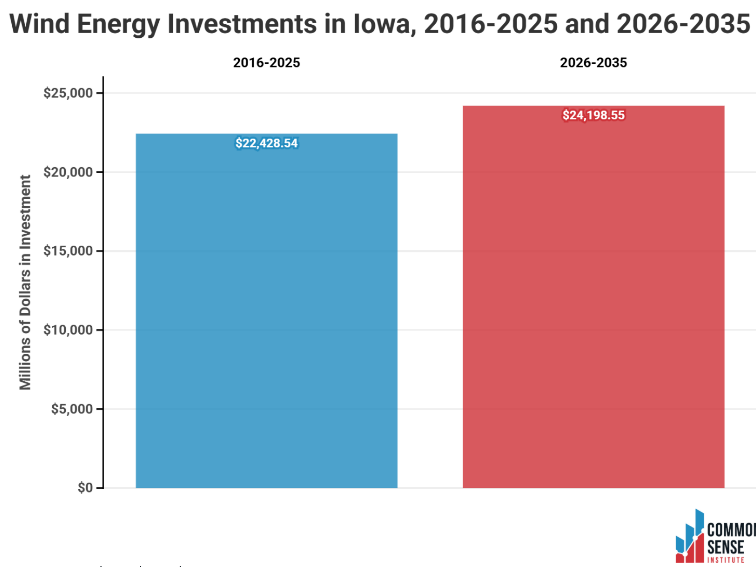


Source: MidAmerican Energy Company Financial Reports

In addition to MidAmerican, other companies have invested billions into Iowa's economy through wind-based investments. To estimate the amount of investment smaller companies have made in wind turbines in the state, CSI compared the share of wind turbine capacity accounted for by MidAmerican and assumed the remaining capacity as a share of the total must have come from non-MidAmerican companies. The total capacity was based on information published by the Energy Information Administration and corroborated with other published information. From this inferred capacity, CSI employed an estimated cost per megawatt from MidAmerican to infer what other companies may have invested. This estimate was then corroborated with other sources.[24] The end result was about $1.6 million per megawatt. Then, projecting forward current trends and stated future investments, figure 6 shows investment from 2016 through 2025 and CSI's projection of investments from 2026 through 2035.

Overall, Common Sense Institute estimates total wind energy investments in the state across all companies from 2016 through 2025 summed to approximately $22.4 billion. When looking forward to the 2026 through 2035 period, CSI estimates future investment in wind energy will increase to more than $24.2 billion. In addition to the direct impact of creating more electric energy generation capacity, as shown in figure 4, these investments will create jobs, tax revenues, and economic growth. This report explores these macroeconomic impacts in the section "Economic Impact of Renewable Investments" and in Appendix C.

FIGURE 6.



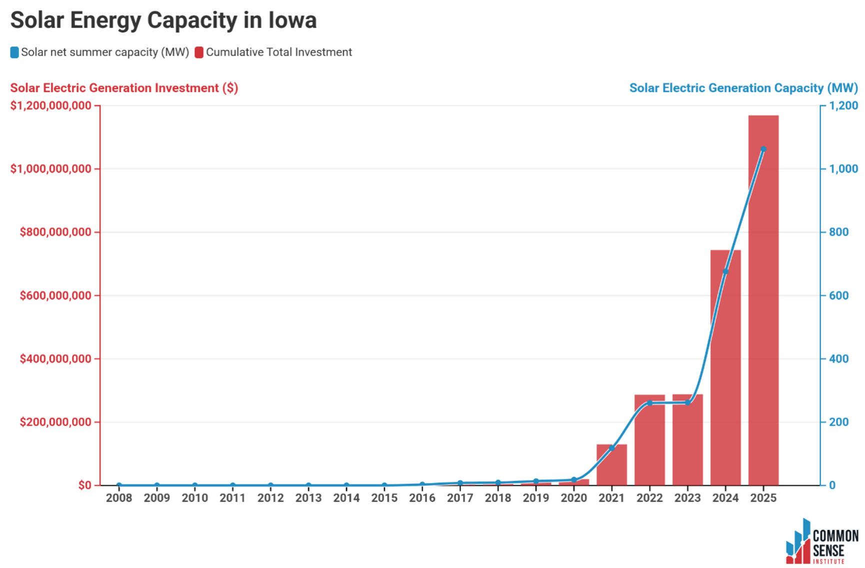
Source: CSI Research and Analysis

Solar Investments

Iowa does not get as many hours of sunshine as states across the south and southwestern regions of the United States where solar power is more prevalent. Nonetheless, several factors make Iowa well-suited for utility-scale solar power generation. First, solar panels perform more efficiently in Iowa's cooler temperatures.[25] Second, Iowa provides abundant space for utility-scale solar alongside agricultural land, brownfields, and industrial zones. While the Midwest does not have the best solar irradiance nationally, it has the most sun in the summer months when supplemental solar power is needed.[26] In Iowa, solar power generation peaks during summer afternoons, and wind peaks overnight and in winter. The two renewable sources complement each other. Together, wind and solar smooth seasonal and daily generation gaps.[27] Thanks to a favorable set of conditions in the state, solar enhances grid reliability and reduces peak-price exposure even without southwest-level sunlight. For good reason, Iowa has seen a remarkable rate of growth in electric power generation from solar over the last decade.

The state saw its first utility-scale solar power plant open in Black Hawk County in 2016. The EIA reports 151 MWh of solar power generation in Iowa that year.[28] In 2017, generation rose to 4,838 MWh, a 3,100% increase in just one year. In 2025, Iowa will generate about 1.25 million MWh of utility-scale solar power according to CSI estimates.[29] The absolute amount of power generated comes nowhere close to the nearly 40 million MWh of power generation sourced from wind, but the rate of growth is far greater. Because wind accounts for about 58.5% of electric energy generation in 2025 and solar just 1.9%, the latter looks like a nearly flat line in figure 1. Figure 7 illustrates the dramatic rate of growth in Iowa's solar energy generation.

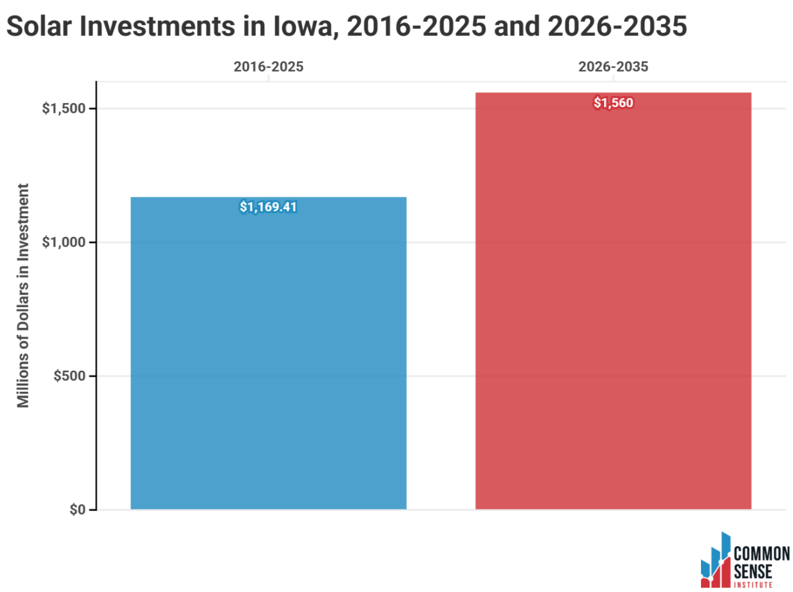
FIGURE 7.



Source: EIA, NREL

Until 2021, solar had little footprint in the state. The state's largest utility, MidAmerican, did not bring its first solar project online until late 2021—a 3 MW array in Waterloo. Since then, expansion of capacity in solar has been large, with overall capacity now approaching 1,100 MW. Using $1.1 million per MW as the estimated cost of bringing solar online, CSI estimates companies have invested approximately $1.2 billion in Iowa solar through 2025.

FIGURE 8.



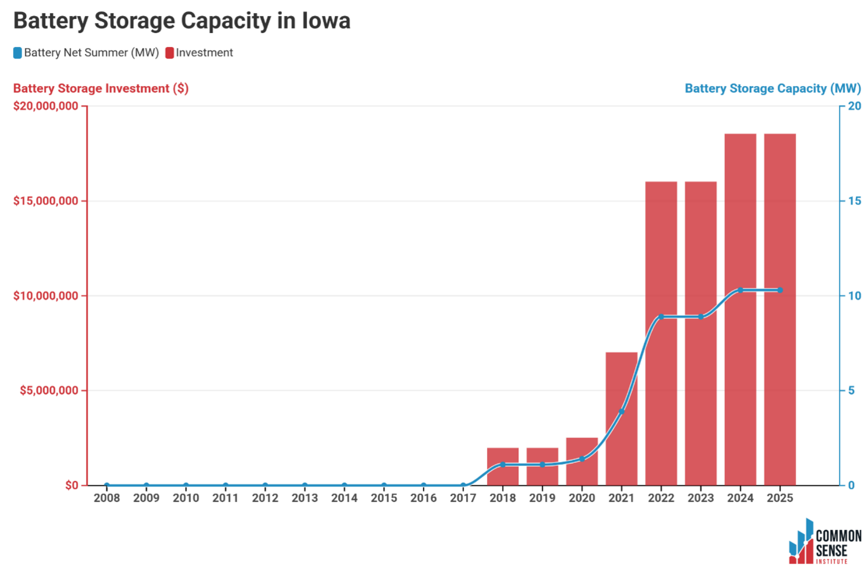
Source: CSI Research and Analysis

On February 17, 2025, MidAmerican announced an additional 800 MW of solar across multiple sites in Iowa.[30] NextEra Energy expects to complete its Duane Arnold Solar IV facility near Center Point, Iowa and make it operational by the end of 2026.[31] It will generate an estimated 220 MW. With these as examples, Iowa is likely to see significant investment in building out solar capacity in the coming years. Based on announced plans for future solar projects, CSI projects that over the next 10 years solar investments in the state will reach at least another 1,500 MW. The dollars associated with this investment will likely reach close to $1.6 billion from 2026 through 2035. Given rising demand for energy and possible investments stemming from the Inflation Reduction Act, this estimate may prove conservative, though policy changes may threaten solar investment incentives.[32] In addition to the direct impact of creating more electric energy generation capacity, as shown in figure 7, these investments will create jobs, tax revenues, and economic growth. This report explores and quantifies those secondary and tertiary impacts in future sections.

Battery Storage Investments

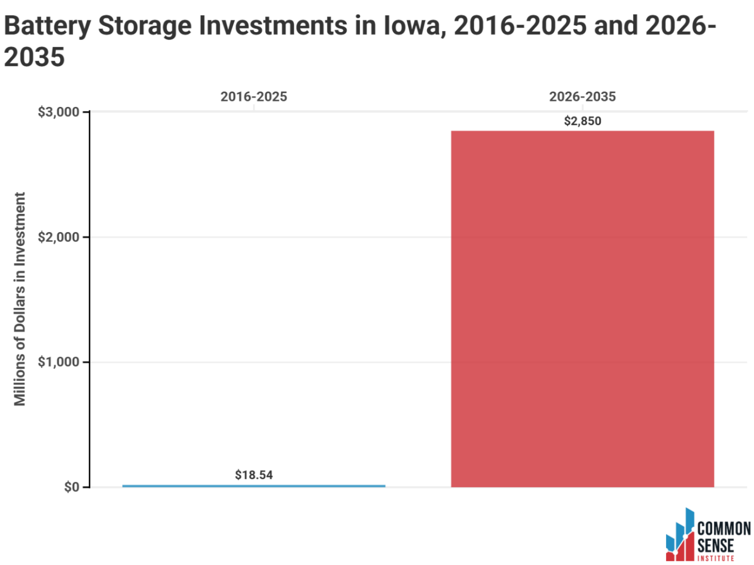
Battery storage is emerging as a complementary energy source to Iowa's growing basket of renewable energy. Unlike wind and solar, which generate electricity, battery storage allows excess electricity to be stored and deployed when demand rises or when generation declines. Because wind and solar are intermittent, the value of battery storage technology increases as wind and solar comprise a larger share of Iowa's electricity generation. Indeed, states with high renewable energy production increasingly rely on utility-scale battery storage.[33] Battery storage curtails risk by capturing low-cost power and reselling it during peak demand, which in turn limits price volatility.[34] Through participation in MISO, Iowa utilities operate within a multi-state wholesale electricity market that dispatches generation from the lowest-cost available sources across the region. MISO balances

FIGURE 9.



Source: EIA, CSI Research

FIGURE 10.



Source: CSI Research and Analysis

electricity across geography by routing power from surplus-generation areas to high-demand areas through transmission infrastructure. Battery storage therefore helps shifts electricity over time and across location, acting as local grid stabilizers.[35] The U.S. Department of Energy identifies grid-scale storage as an effective tool for reducing congestion costs in transmission congested corridors.[36]

These factors, alongside Iowa's rapid growth in wind and solar energy development, have resulted in rapidly expanding battery storage over the past decade. According to data from the EIA, Iowa's battery storage capacity has grown from 1.1 MW in 2018 to nearly 10.3 MW in 2025, as shown in figure 9.[37] While this capacity remains modest relative to Iowa's wind and solar generation footprint, the rapid rate of expansion mirrors early growth patterns observed during the initial build-out of wind and solar infrastructure.

The capital investment required to support this growth has increased alongside storage capacity. Utility-scale battery storage systems installed during the 2020s typically ranged between $1.7 million and $1.9 million per MW of installed capacity, depending on the system configuration and duration.[38] Therefore, assuming $1.8 million as the cost to build out 1 MW of utility scale battery storage capacity, the overall investment by companies in battery storage has been approximately $18.5 million.

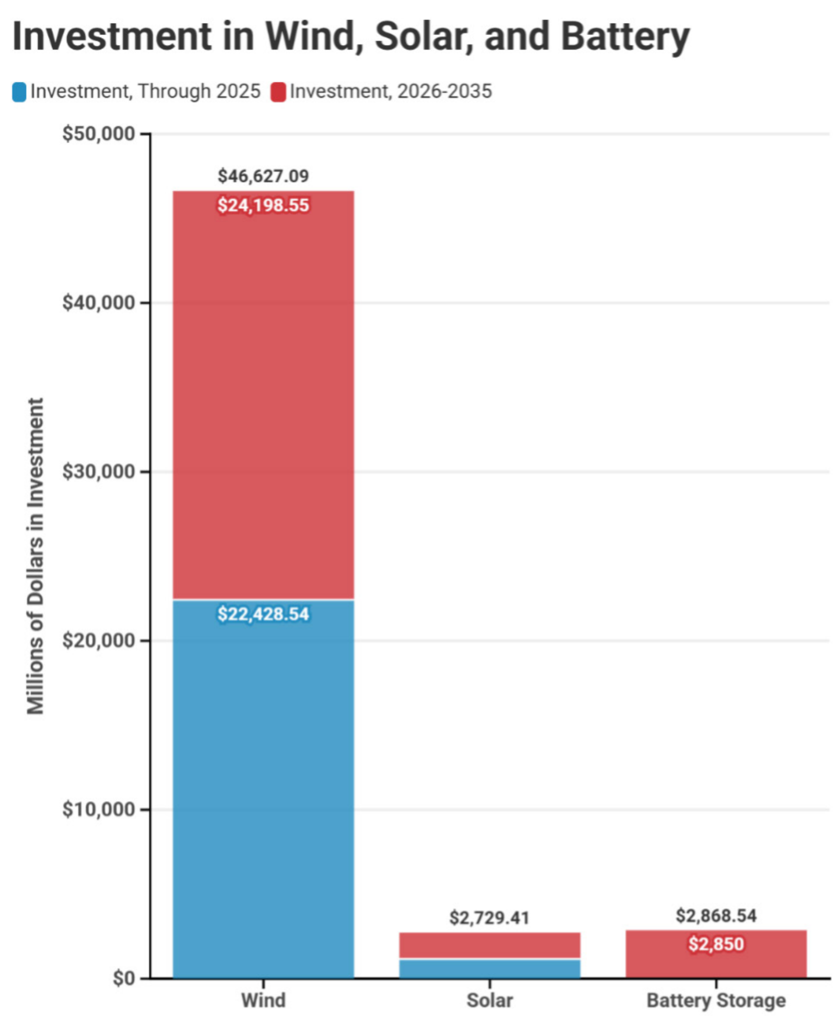
Looking forward, battery storage is expected to experience substantial growth as utilities, grid operators, and private developers seek to manage rising demand for renewable energy generation.[39] Based on announced expansions and expected market trends over the coming 10 years, CSI estimates Iowa will see at least another 1,500 MW of battery storage investment in the state from 2026 through 2035.[40] Based upon cost projections from the National Renewable Energy Laboratory (NREL), CSI estimates future battery storage deployment may average approximately $1.9 million per MW of new battery storage capacity.[41] At these cost levels, an additional 1,500 MW in new battery storage would represent approximately $2.85 billion in new private-sector investment across Iowa's energy infrastructure during the next decade. Because so little investment in battery storage has occurred to date, however, accurately predicting future investment remains challenging. Readers should consider this a conservative estimate subject to change. Visualized clearly in figure 10, these future investments are well above the $18.5 million investment the state has seen so far.

ECONOMIC IMPACT OF RENEWABLE INVESTMENTS

To forecast the economic impact of renewable energy investments in Iowa over the next decade, CSI relies on its direct investment projections for wind, solar, and battery storage provided in prior subsections of this report: "Wind Investments," "Solar Investments," and "Battery Storage Investments." Figure 11 compiles the findings from those sections. It shows CSI's estimate of past investments through 2025 and CSI's projection of future investments, which sum to more than $29 billion in expected direct wind, solar, and battery storage investment from 2026 through 2035.

To forecast the direct and indirect economic impact of these projected investments, CSI modeled a hypothetical scenario where the investments fail to materialize. In the model simulation, Iowa invests $0 instead of the projected $29 billion. The simulation results show the difference between the expected investments and the counterfactual. That difference represents the expected impact of the investments. The forecast employs the REMI PI+ model.[42] The results of the model are shown in Table 1. For readers interested in the full modeling methodology, see Appendix C.

FIGURE 11.



Source: CSI Research and Analysis

TABLE 1.

Economic Impact if Wind, Solar, and Battery Storage Investments Failed to Materialize

Total employment is the annual impact. GDP, Output, Personal Income, and Disposable Personal Income are **cumulative**.

Year	Total Employment	Gross Domestic Product (thousands)	Output (thousands)	Personal Income (thousands)	Disposable Personal Income (thousands)
2026	-7,781	-$940,459	-$940,459	-$940,459	-$940,459
2027	-8,123	-$2,030,921	-$2,823,641	-$1,601,855	-$1,524,081
2028	-8,120	-$3,167,385	-$4,785,402	-$2,325,297	-$2,164,934
2029	-7,847	-$4,309,117	-$6,753,588	-$3,080,283	-$2,836,010
2030	-7,450	-$5,432,737	-$8,686,140	-$3,849,190	-$3,521,243
2031	-7,004	-$6,524,994	-$10,559,830	-$4,618,065	-$4,207,777
2032	-6,556	-$7,580,801	-$12,366,567	-$5,379,707	-$4,888,988
2033	-6,142	-$8,601,436	-$14,109,556	-$6,131,957	-$5,562,692
2034	-5,787	-$9,591,607	-$15,797,432	-$6,875,239	-$6,229,021
2035	-5,485	-$10,557,475	-$17,441,858	-$7,611,785	-$6,889,880

Source: REMI

Without the projected investments in renewable energy over the next decade, Iowa would conservatively miss out on—

- At least 5,500 jobs (annual average).
- $10.6 billion in economic growth (GDP).
- $17.4 billion in business sales.
- $7.6 billion in personal income.
- $6.9 billion in disposable personal income.

Table 2 details the model results for the projected job creation over the next decade broken down by occupation:

TABLE 2.

Detailed Job Categories of Coming Investment in Wind, Solar, and Battery Storage

Overall, the jobs with the highest impact are construction trades, business operations, material moving workers, motor vehicle operators, retail sales workers, and other installation/maintenance/repair workers.

Occupation	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Average, 2026-2035
All Occupations	7,781	8,123	8,120	7,847	7,450	7,004	6,556	6,142	5,787	5,485	7,029
Construction trades workers	1,147	1,250	1,257	1,205	1,122	1,028	935	850	778	720	1,029
Business operations specialists	456	465	458	441	418	395	371	350	331	315	400
Material moving workers	432	434	427	411	392	371	350	331	314	300	376
Motor vehicle operators	388	390	381	367	349	331	314	297	282	269	337
Computer occupations	372	370	363	352	340	327	315	302	290	280	331
Retail sales workers	259	270	278	275	264	250	235	221	209	198	246
Other installation, maintenance, and repair occupations	265	284	287	277	261	243	224	207	192	181	242
Other management occupations	189	203	207	201	191	180	168	157	147	139	178
Information and record clerks	207	209	205	196	184	172	161	151	142	135	176
Other office and administrative support workers	199	206	204	195	182	168	155	144	134	126	171
Supervisors of construction and extraction workers	176	192	193	184	172	157	143	130	119	110	158
Financial specialists	175	175	169	161	151	142	132	124	117	112	146
Food and beverage serving workers	129	141	150	154	153	151	147	142	138	133	144
Secretaries and administrative assistants	169	173	169	161	150	138	127	118	111	104	142
Financial clerks	161	162	158	149	139	128	118	110	103	97	133
Operations specialties managers	124	125	123	118	113	107	101	96	91	87	109
Preschool, elementary, middle, secondary, and special education teachers	72	103	118	124	123	120	115	109	103	98	108
Health diagnosing and treating practitioners	115	120	121	118	114	109	103	98	94	91	108
Engineers	123	123	119	114	108	102	96	91	86	82	105
Other jobs	2,624	2,728	2,731	2,646	2,523	2,384	2,245	2,115	2,003	1,908	2,391

Source: REMI

COMMON SENSE INSTITUTE

Table 3 details the model results for the projected job creation over the next decade broken down by industry.

TABLE 3.

Detailed Job Sectors of Coming Investment in Wind, Solar, and Battery Storage

Overall, the jobs with the highest impact are in the construction, professional/scientific/technical services, retail trade, administrative/support services, truck transportation, wholesale trade, food services, and real estate sectors.

Industry	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Annual Average, 2026-2035
All Industries	7,781	8,123	8,120	7,847	7,450	7,004	6,556	6,142	5,787	5,485	7,029
Construction	2,322	2,528	2,538	2,426	2,253	2,058	1,866	1,693	1,547	1,429	2,066
Professional, scientific, and technical services	1,796	1,754	1,699	1,637	1,575	1,514	1,455	1,396	1,344	1,294	1,546
Retail trade	471	499	521	518	501	476	447	419	396	375	462
Administrative and support services	395	389	378	361	344	326	309	294	280	269	335
Truck transportation	349	339	325	311	296	282	268	256	244	234	290
Wholesale trade	351	341	326	308	289	271	254	239	225	213	282
Food services and drinking places	229	253	273	282	285	283	277	270	263	255	267
Real estate	188	201	211	209	202	191	180	170	161	154	186
Warehousing and storage	205	201	196	190	183	177	170	164	158	153	180
Ambulatory health care services	163	148	138	126	115	105	97	91	87	84	115
Social assistance	92	95	97	95	92	88	85	81	79	77	88
Repair and maintenance	87	90	91	89	87	83	80	76	73	70	82
Rental and leasing services; Lessors of nonfinancial intangible assets	98	95	91	87	83	79	75	72	69	66	82
Personal and laundry services	92	88	86	83	80	76	72	69	67	65	78
Religious, grantmaking, civic, professional, and similar organizations	80	78	75	71	66	61	57	54	51	49	64
Hospitals	43	47	49	49	49	48	47	45	44	44	47
Wood product manufacturing	47	49	48	44	39	34	29	25	22	19	35
Nursing and residential care facilities	37	38	37	36	34	32	30	29	28	27	33
Accommodation	34	33	33	31	30	28	27	26	25	24	29
Couriers and messengers	35	34	32	30	28	26	24	23	21	20	27
Other sectors	668	825	894	909	904	879	846	808	771	737	824

Source: REMI

The simulation forecasts that construction, professional/scientific/technical services, retail trade, administrative/support services, truck transportation, wholesale trade, food services, and real estate sectors will see the largest job growth because of projected renewable energy investment in Iowa over the next decade. Table 4 breaks down expected job creation resulting from renewable energy investment by direct, indirect, and induced job creation.

TABLE 4.

Direct, Indirect, and Induced Jobs Impact of Coming Investment in Wind, Solar, and Battery Storage

Overall, the average annual jobs impact is highest for the direct impact at 3,582 (annual average), followed by the induced impact of 2,823 and the indirect impact of 624.

Category	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Annual Average, 2026-2035
Total Employment	7,781	8,123	8,120	7,847	7,450	7,004	6,556	6,142	5,787	5,485	7,029
Direct Employment	4,115	3,994	3,865	3,741	3,623	3,511	3,401	3,291	3,188	3,087	3,582
Indirect Employment	701	681	668	654	637	619	599	579	562	544	624
Induced Employment	2,966	3,448	3,587	3,452	3,190	2,874	2,556	2,272	2,037	1,853	2,823

Source: REMI

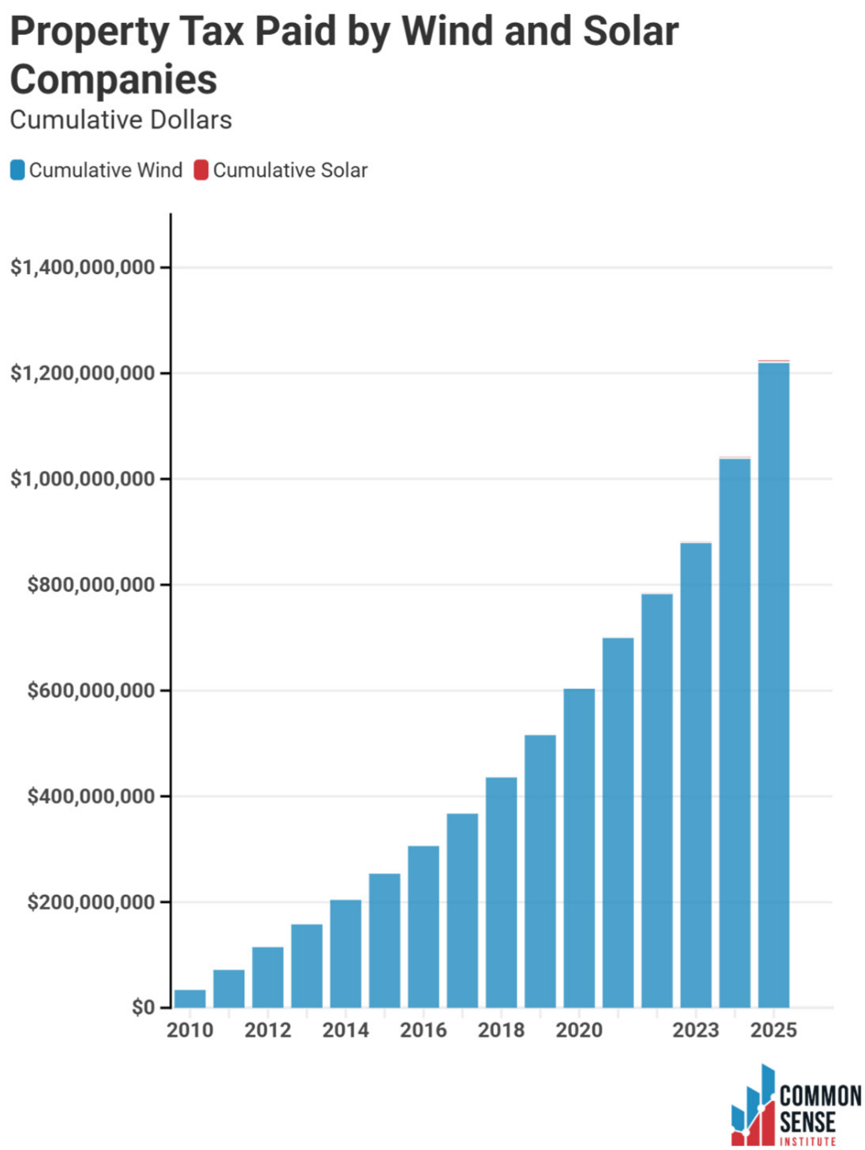
Overall, the largest impact comes from jobs like construction, technical services, and trucking directly attributable to renewable energy projects. Direct jobs will average about 7,000 each year. Indirect job creation includes new jobs like manufacturing, environmental consulting, logistics, etc., which are associated with suppliers to renewable energy projects. These make up the fewest new jobs—about 600 each year on average. Induced jobs result from increased spending by those directly and indirectly employed from the projects. The simulation projects about 2,800 induced jobs each year on average.

TAX REVENUES FROM RENEWABLES

Renewable energy projects generate direct tax revenue for Iowa's local governments. The precise statutory mechanisms for taxation can be varied and complex, but they largely fall under property taxes.[43]

In addition to the direct tax paid to local governments, wind, solar, and battery storage facilities can initiate economic activity like employing individuals and purchasing non-exempt equipment, which leads to additional tax revenue.[44] Common Sense Institute reviewed available information and estimated the direct tax paid by wind and solar companies from 2010 through 2025, shown in figure 12. While Iowa has utility-scale battery storage, it has not yet showed up in the revenue data. Overall, from assessment year 2010 through 2025, wind and solar companies have paid approximately $1.22 billion in property tax to counties, cities, schools, and other local taxing entities.

FIGURE 12.



Source: CSI estimates using MidAmerican Energy Company financial reports, Alliant Energy financial reports, EIA production data, and Iowa Department of Revenue data.

In addition to the direct tax revenue, the development of wind, solar, and battery storage can indirectly increase income tax, sales tax, and other taxes paid by employers, employees, and consumers. To model the impact, CSI employed REMI Tax PI+, a dynamic economic multiplier system.[45] The inputs into the REMI model are the investment amounts companies had made in renewable energy over the prior 10 years. The result on personal income from this simulation was used as the basis for tax revenue by using the share of estimated revenue collection per total personal income and multiplying this amount by the modeled personal income stemming from the renewable energy investments. This method estimates the indirect state tax revenue attributable to renewable development at approximately $276 million from 2010 through 2025.

Wind energy production correlates to lower school district levies

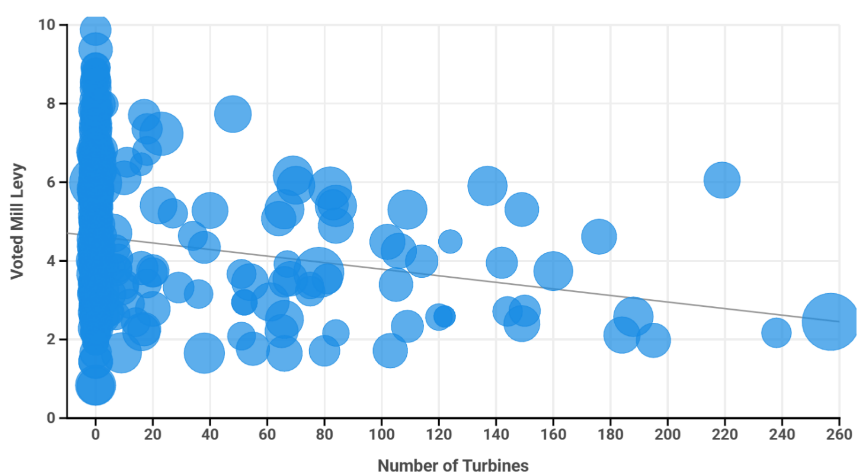
Direct and indirect tax revenues from renewable energy contribute to the total revenue Iowa's local governments collect to fund services. Providing services like sanitation, public recreational facilities, public education, emergency services, social services, and infrastructure maintenance has the same cost regardless of whether a local jurisdiction has access to tax revenue from renewable energy projects. Thus, when a taxing authority gains new revenue from renewables, it either enjoys more total revenue, shifts some of the burden away from other taxpayers while maintaining the same total revenue, or a combination of these two outcomes.

To test which of these outcomes has materialized in Iowa, CSI analyzed the relationship between the number of wind turbines within each Iowa school district's taxing jurisdiction and its voted mill levy. Figure 13 plots the voted mill levy rate against the number of wind turbines in each school district. A map of all wind turbines by school district can be found in Appendix A.

The data show that in Iowa more wind turbines generally translate to a lower school district voted millage rate for all property classes. This outcome is shown by the downward sloping line, indicating that an additional wind turbine is associated with a lower overall millage rate. But how much of a difference does the presence of wind turbines make? To estimate the effect of the growth in wind turbines on school district millage rates, CSI employed a simple multiple regression where the voted district millage rate is a function of the number of wind turbines, students, the non-voted levy local tax rate, and the tax year. The statistical results are presented in Appendix B.

FIGURE 13.

Relationship Between Mill Levy and Number of Wind Turbines by Iowa School District, 2026



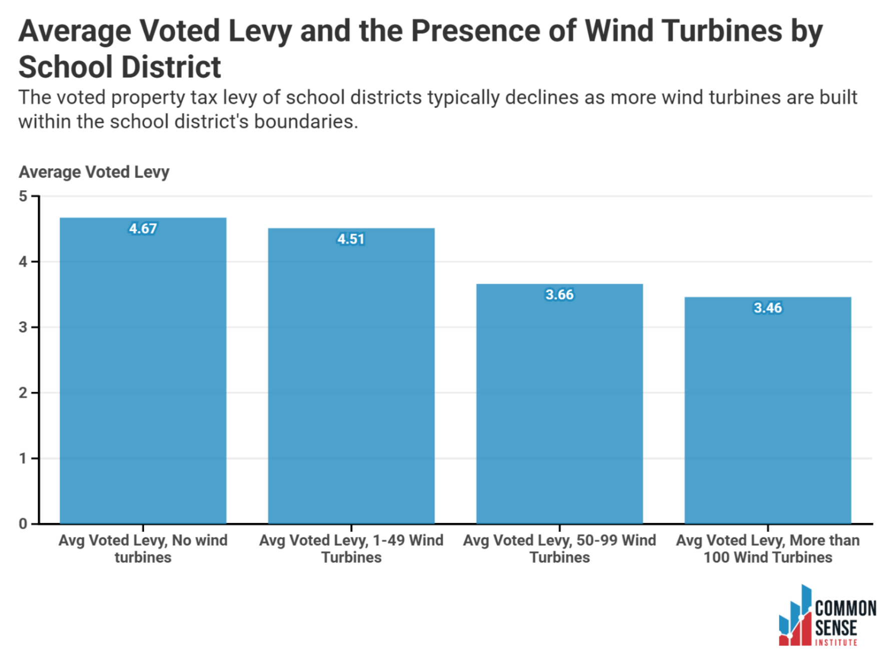
Source: EIA, Iowa Department of Management

The model result is approximately -0.006 for the number of wind turbines. For every additional wind turbine in a school district, the property tax burden goes down by -0.006 multiplied by the rolled-back assessed value. These results reflect real savings for homeowners in districts with wind energy production. Imagine a resident living within the taxing authority of a school district with 54 wind turbines—the average count for school districts with wind turbines.[46] Assume that resident owns an average residential property valued at $244,000.[47] Based on the model, that resident would have a property tax bill that is $194 lower than a resident living within the jurisdiction of a district with no wind turbines.

Based on CSI's regression model results shown in Appendix B, figure 14 illustrates the difference in voted school district mill levies depending on the number of wind turbines present in the district. The levy falls as the number of wind turbines increases. For districts with 1-49 wind turbines, the average voted levy is 4.51 mills. It falls to 3.66 for districts with 50-99 wind turbines and to 3.46 for districts with 100 or more wind turbines. Districts with no wind turbines have the highest average school district mill levies at 4.67.[48]

These results do not mean school districts never use some of the revenue from wind turbines to increase total revenue and overall spending capacity. As discussed later in this report, taxing entities, including schools, also use the presence of wind turbines for spending priorities. Some of the potential total revenue from wind turbines may be used to prevent potential property tax increases while another share is allocated to increase spending for schools and other public services.

FIGURE 14.

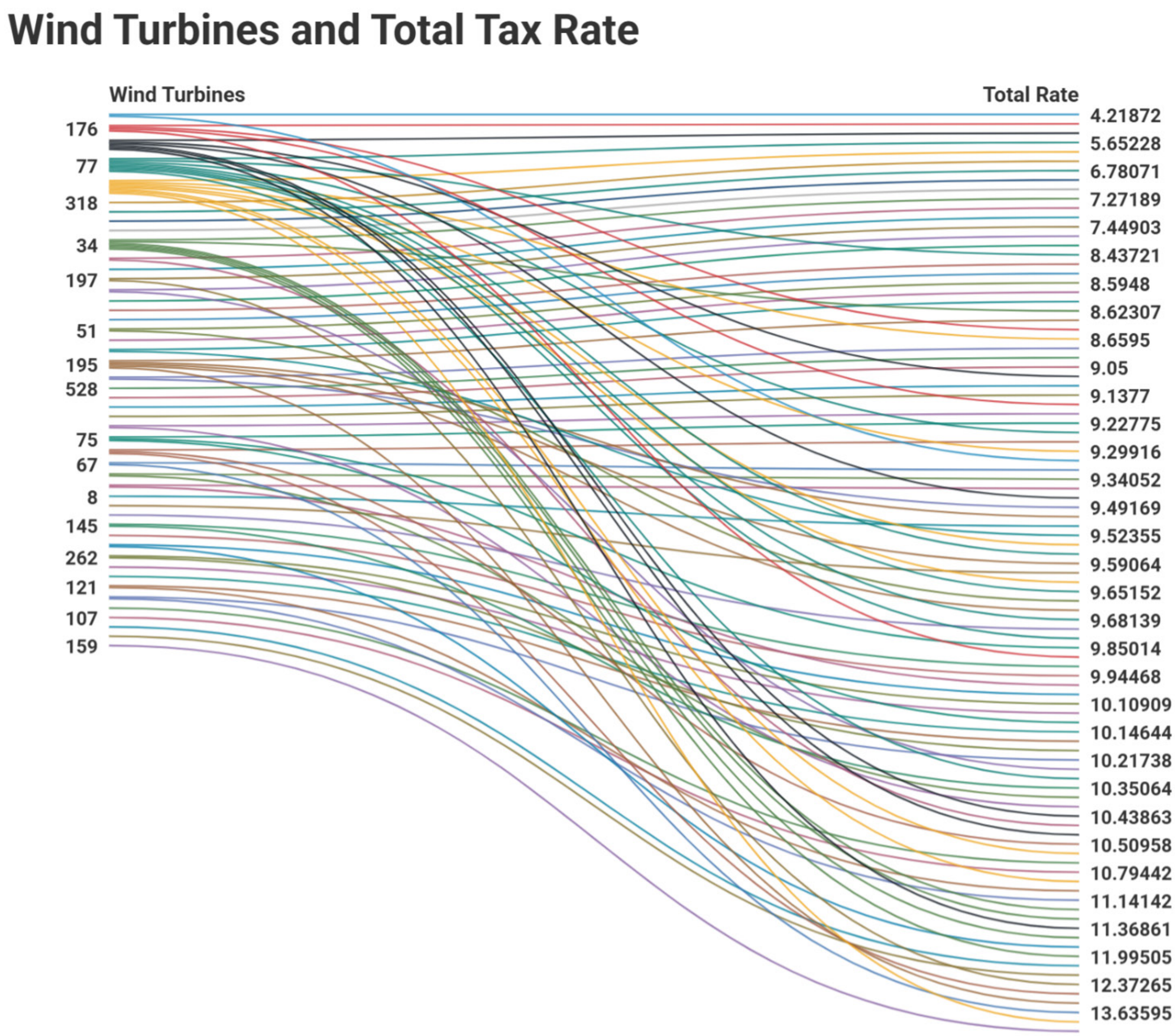


Source: CSI Analysis of DOM, DOR, and USGS information

Wind energy production correlates to a lower overall property tax burden

School districts represent about 40% of the overall property tax paid by a homeowner in Iowa.[49] Thus, the reduction in school district levies from the presence of wind turbines has a substantial impact on Iowa property owners' overall property tax burden. Though not immediately obvious, the presence of wind turbines has an even more pronounced impact on Iowans' overall property tax burden than on school district levies alone. The Sankey chart shown in figure 15 illustrates the relationship between the total millage rate at the county level and the number of wind turbines in each county. Each line represents a county.

FIGURE 15.

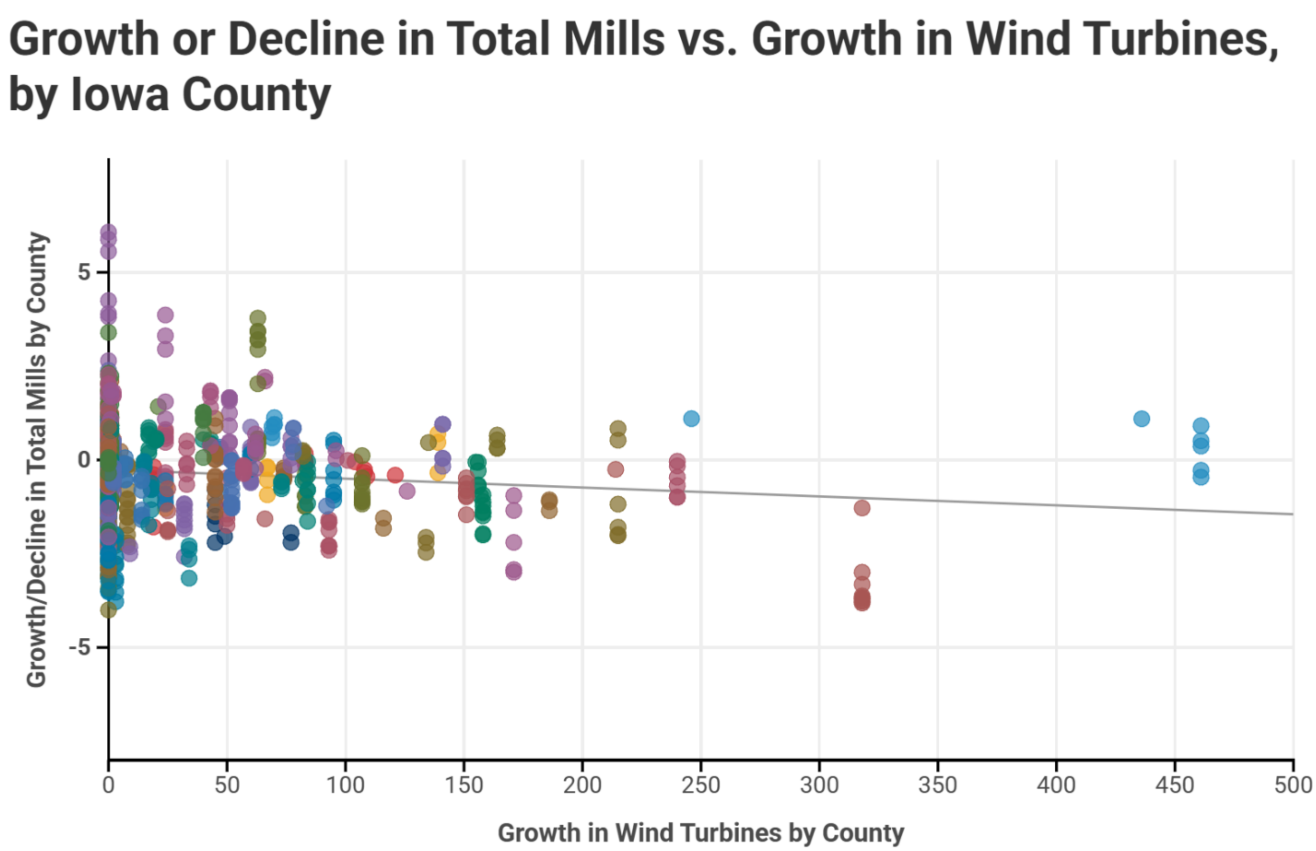


Source: CSI Analysis of DOM, DOR, and USGS information

At first glance, figure 15 appears to show little or no relationship between the number of wind turbines in a county and the average mill levy. If the relationship were simply one-to-one, sorting the figure by total tax rate would also mean sorting by the number of wind turbines. All lines would run straight across the figure. But figure 15 more closely resembles spaghetti than a harp. Some counties reflect the expected outcome: more wind turbines mean a lower average mill levy. In other counties, however, that relationship does not come through. As explained in the previous subsection of this report, new revenue from renewable energy generation can reduce the tax burden for other classes of property or it can increase overall revenue. Figure 15 provides evidence that Iowa counties exercise both of these outcomes.

To better understand the general trend—despite the differences between individual counties—CSI compared the change in property tax rates across counties from assessment year 2010 through 2024 and connected these changes with the change in the number of wind turbines. Figure 16 illustrates that relationship, where each circle represents a county. Overall, counties, cities, and other local governments with a growth in wind turbines over the period saw marginally smaller property tax rate increases and/or larger property tax rate decreases.

FIGURE 16.



Source: Iowa Department of Management, EIA

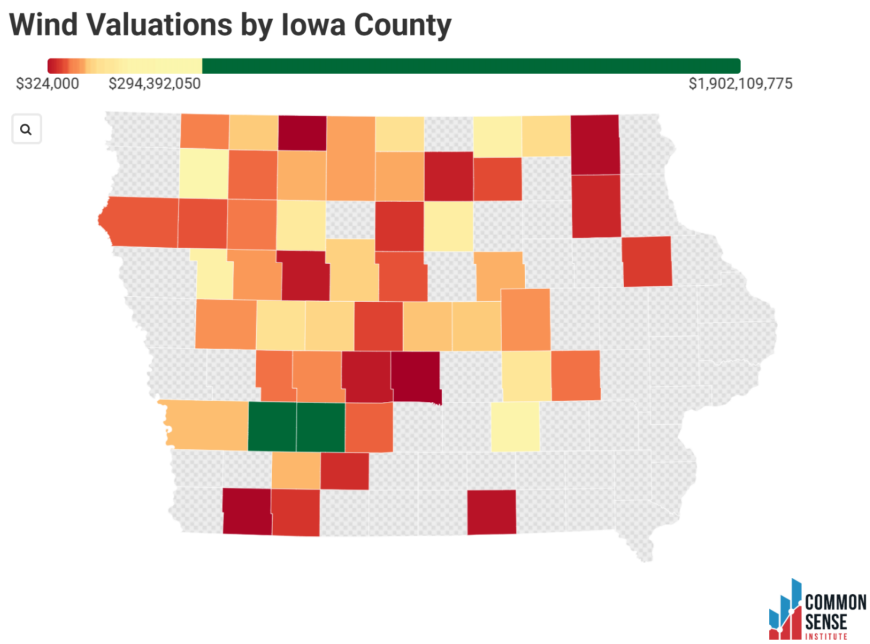
The conclusion that counties with a larger growth in wind turbines generally saw marginally lower growth or marginally faster declines in their property tax rates stems from the gray, downward sloping regression line. The gray line essentially indicates that when a wind turbine came online, some counties saw marginally smaller property tax rates as a result. The result is not incredibly strong, indicating that although the presence of wind turbines may have equated to lower overall property tax rates in some counties, other counties may have simply spent the money generated by the wind turbines. The section of this report entitled "County Case Studies" takes a closer look at the effect of wind production on local tax burdens in Adams and O'Brien counties by comparing each to similar counties without wind energy conversion property.

Wind Energy at the County Level: 2023 and 2024 Tax Values

At the time of writing, the Iowa Department of Revenue has county-level wind energy conversion property valuation data available for tax years 2023 and 2024. As of the end of 2024, wind turbines had an assessed special value of $6.6 billion, up from $4.2 billion in 2023.[50] Because wind turbines are taxed at a special rate, this assessed special value is only a portion of the actual market value of Iowa's wind production properties. Using the share of net acquisition cost as a guide for the overall value of wind production property, the total value for 2024 sums to $25.7 billion, up from $18.9 billion in 2023. By way of comparison, total assessed property value in the state was approximately $335 billion in 2023 and approximately $350 billion in 2024, meaning wind properties represent more than 2% of all assessed property in the state at their special assessment values.[51]

Figure 17 shows the 2024 wind valuations by county as used for property tax purposes. Overall, wind farms contribute to property tax bases of just over half of Iowa counties—51 in tax year 2024. Cass County had by far the largest wind turbine tax base at almost $2 billion in 2024. The next section of this report takes a deeper dive into the impact of wind energy production on individual counties by comparing similar counties with and without wind energy generation.

FIGURE 17.



Source: Iowa Department of Revenue

COUNTY CASE STUDIES ON RENEWABLE DEVELOPMENT

Statewide data show wind, solar, and battery storage development has materially expanded Iowa's property tax base while generally moderating the tax burden for other property classes. See figures 12 and 14. Statewide trends, however, can mask substantial variation in how these revenues translate into local outcomes. Statewide totals demonstrate the scale of renewable-driven tax revenue growth, but understanding how those revenues influence levies, tax burden distribution, and local government budgets requires examining outcomes at the county level. To better understand how renewable-driven tax base expansion affects local revenues and property tax burdens in practice, CSI evaluated a set of county-level case studies designed to isolate these dynamics under comparable economic conditions.

The counties selected for comparison were chosen intentionally to provide credible counterfactual pairings—counties that are similar in population size, rural economic structure, and agricultural reliance, but that differ meaningfully in renewable energy development. By pairing counties with broadly similar demographic and economic fundamentals, differences in property tax growth, levy trends, and tax base composition can be more confidently linked to the presence or absence of renewable energy infrastructure rather than to structural economic differences.

Comparing these counties side-by-side allows CSI to isolate and evaluate the effect of wind-driven taxable valuation on long-term revenue growth and property tax burden distribution. Most wind-related taxable valuation appears in the industrial property class, though a smaller share can fall within the utility property class. Both contribute to total taxable valuation and expand the overall tax base. However, this analysis focused on the industrial property class because it represents the overwhelming majority of wind-related valuation. Taxable values across property classes are measured after the state applies its assessment rate but before credits, deductions, and exemptions. The lack of credits, deductions, and exemptions in the data will not alter long-term trend comparisons nor affect the analysis in a substantive way.

Adams County and Ringgold County represent a comparison between two small, rural counties with similar population sizes and agricultural economic foundations. Adams County has approximately 3,606 residents; Ringgold County has 4,608 residents. These figures place both counties in the same rural classification and limit fiscal differences driven by raw population scale.[52] Overall economic output is also comparable, with Adams County's GDP near $289 million and Ringgold County's near $211 million.[53] Both counties rely heavily on agriculture, though Adams maintains a somewhat larger and more diversified agricultural base.[54] The key distinction between the two counties is the presence of wind development in Adams County versus an absence from Ringgold County.

O'Brien County and Lyon County provide a second comparison among larger, but still rural, agricultural economies in northwest Iowa. Lyon County has approximately 12,378 residents, compared to 14,260 residents in O'Brien County, placing both within a comparable rural population tier.[55] Economic output is similarly aligned, with O'Brien County generating approximately $1.2 billion in GDP and Lyon County approximately $1.3 billion.[56] Both economies are heavily agricultural, though Lyon County maintains a larger and more livestock-intensive agricultural sector.[57] Notably, Lyon County also hosts Grand Falls Casino and Golf Resort, which generates approximately $1.4 million in property tax revenue, including roughly $267,000 directly to the county.[58] Despite these similarities, the two counties differ significantly in wind energy development, providing a useful comparison for evaluating renewable-driven property valuation growth, or lack thereof, in a larger-population rural setting.

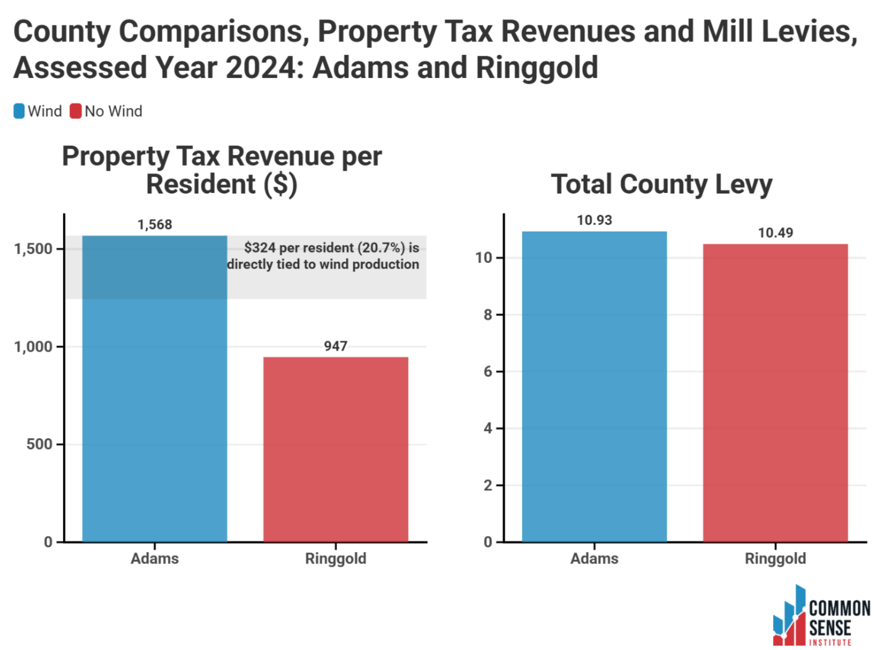
Together, these county pairings provide grounded, real-world examples of whether renewable energy development can shape local fiscal outcomes. This comparison helps the statewide trends discussed in the previous section of the report to be examined under localized, directly comparable conditions.

Adams County vs. Ringgold County

The transition from the broader statewide discussion to localized case studies naturally leads to examining how renewable energy development—particularly wind infrastructure—translates into tangible fiscal impacts for residents at the individual county level. While statewide aggregates highlight overall revenue growth and levy reductions from renewables, these benefits can vary significantly at the local level depending on the concentration of development. Property tax revenues per resident provide a particularly insightful metric for isolating these effects. It captures the effective revenue-generating capacity available to support local services without relying solely on population growth. This per-capita amount can determine the added value, or lack thereof, of wind projects relative to population size.

Figure 18 compares property tax revenue per resident and total county levy rates for Adams and Ringgold in assessment year 2024. Adams County generated approximately $1,568 per resident in property tax revenue, compared to $947 per resident in Ringgold County—a gap of roughly 66%. Despite this substantial difference in revenue capacity, the two counties maintain nearly identical total levy rates: 10.93 in Adams versus 10.49 in Ringgold. Notably, about $324 per Adams County

FIGURE 18.

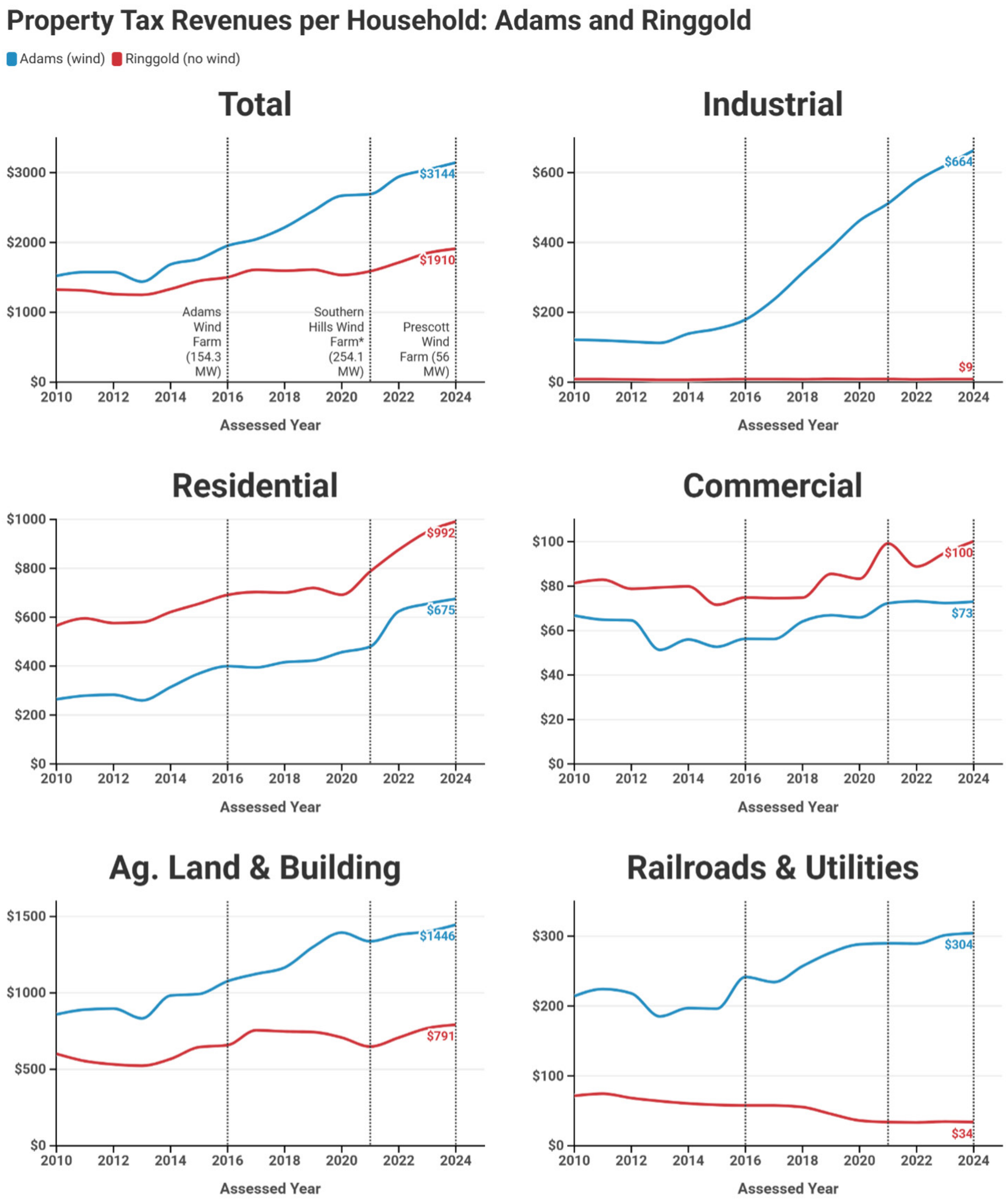


Source: Iowa Department of Management, CSI Research and Analysis

resident—just over 20% of total per-capita property tax revenue—is directly attributable to wind energy production. A significant portion of the revenue gap stems directly from a materially larger tax base, in part due to major wind investments.

This divergence between these two counties becomes clearer when examining how property tax revenue per household has evolved over time across major property classes. Examining property classes per household normalizes revenue by the number of occupied housing units rather than residents. This examination provides sharper insight when considering residential properties. Figure 19 shows that prior to the mid-2010s, Adams and Ringgold tracked relatively closely in total property tax revenue per household. Ringgold consistently exceeded Adams in residential revenues, while Adams modestly outperformed in agricultural land and utilities. Nonetheless, while Adams remained a step ahead of Ringgold, the two grew at proportional rates. That pattern changed sharply following the development of utility-scale wind projects in Adams County beginning in 2015-2016. Industrial property tax revenue per household in Adams increased rapidly and persistently, while Ringgold's industrial property remained flat. By 2024, Adams generated $664 per household from industrial property taxes, compared to $9 in Ringgold. This single category accounts for most of the divergence in total per-household revenues.

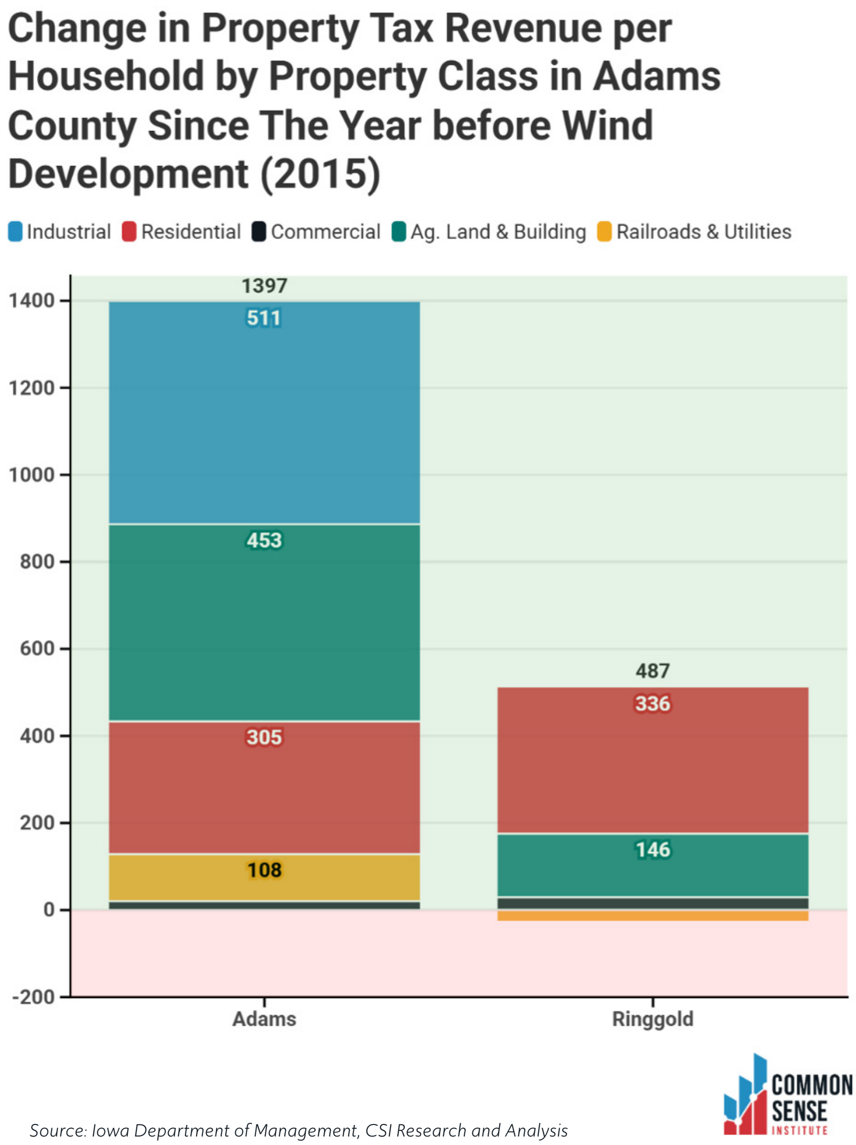
FIGURE 19.



Source: Iowa Department of Management, CSI Research and Analysis
Note: Southern Hills Wind Farm is spread across three counties and is partially located in Adams County.

While Adams County saw substantial revenue growth from industrial property, Ringgold continued to outpace Adams in residential property taxes per household. In 2024, Ringgold collected $992 in property taxes per household versus $675 for Adams. This outcome means Adams County was able to expand its tax base without overburdening its residential properties. Commercial revenues also remained higher in Ringgold, while agricultural land and buildings increasingly favored Adams. Outside research suggests that wind development could result in higher overall agricultural land valuations, which may be evident in figure 19.[59]

FIGURE 20.



Source: Iowa Department of Management, CSI Research and Analysis

Figure 20 isolates the source of property tax revenue growth the year Adams County finished the installation of wind farms. Adams Wind Project officially became operational in December 2015, meaning its taxable valuation did not significantly occur until at least 2016.[60] Adams County's increase—about $1,397 per household—is overwhelmingly fueled by industrial and agricultural property valuation growth. Residential properties tracked almost equally.

While Adams County expanded its tax base through wind investments, Ringgold's growth was driven primarily by rising residential property values and increased homeowner tax collections. In Ringgold, residential properties contributed 72.9% to the total, nominal change in property tax revenues per household. Adams, on the other hand, still achieved similar nominal residential revenue growth, but that growth only contributed 22.1% to the total nominal change. Rather, the county expanded its tax base by adding substantial new revenue from industrial wind property and agricultural valuation gains.

The property class trends shown in figures 18 through 20 help explain where valuation growth is occurring, but they do not isolate the tax burden faced by homeowners. The residential property class includes rental units, seasonal properties, and multi-family housing, which means changes within that category do not necessarily reflect the experience of owner-occupied households. Examining median homeowner property tax payments provides a more direct measure of how property tax changes affect individual homeowners and allows for a clearer comparison of homeowner tax burden across counties.

HOMEOWNER IMPACT

This subsection shifts the focus from the entire property class composition to outcomes for homeowners. It uses homeowner tax payment data to evaluate whether broader valuation growth from wind production has translated into measurable differences in homeowner tax burdens. Data for the analysis in this subsection is derived from the U.S. Census Bureau and Tax Foundation, a non-partisan, nonprofit tax policy research organization.[61] The data are not directly tied to the valuations in figures 18-20. Instead, this section focuses on a subsection of the residential property class—homeowner occupied, single family residences. This construct helps isolate the impacts that introducing taxable wind valuations could have on the median homeowner in wind- and non-wind-producing counties.

To determine the rate of growth from before wind development to current day, the following analysis uses the American Community Survey (ACS) five-year estimate for 2015 as the baseline. Wind operations began at the tail end of 2015, but the developments were not fully taxable until at least 2016. Therefore, this baseline marks the pre-wind period. In 2015, Adams and Ringgold counties started with similar median homeowner property tax burdens: $1,048 in Adams County and $1,209 in Ringgold County—a gap of just 15.4%.[62] By 2023, that gap had expanded. Adams County's median homeowner property tax rose to $1,479, an increase of about 41.1% from the 2011-2015 period.[63] Ringgold County's median tax climbed to $1,909, an increase of about 57.9% over the same starting point.[64] That year, the percentage gap between the counties grew to 29.1%, nearly double that of the 2011-2015 period.

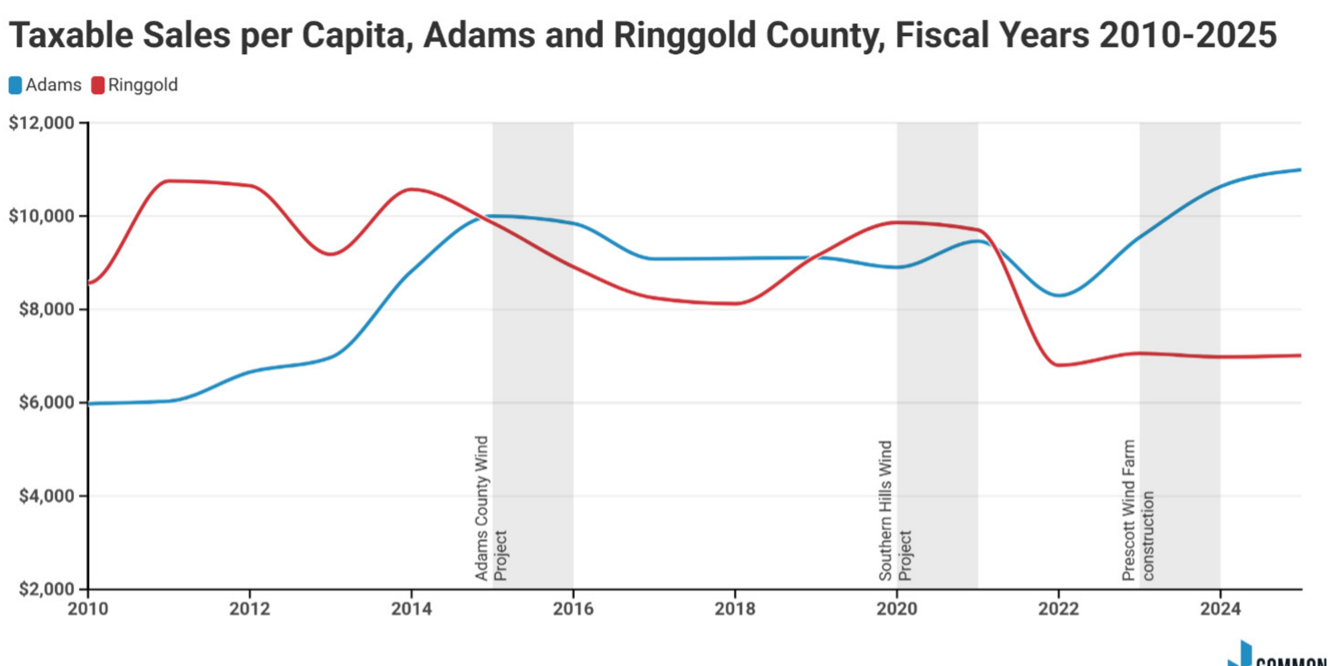
Again, the ACS metric focuses specifically on owner-occupied housing, while the residential property data in figure 19 includes rental units and other non-owner-occupied properties. By isolating the owner-occupied homes, the ACS data captures the direct tax burden experienced by homeowners. The data indicates homeowner tax bills rose faster in Ringgold than Adams. This outcome may suggest that the wind-driven tax base growth in Adams County corresponded with comparatively slower increases in homeowner tax burdens than those observed in its non-wind counterpart.

MAIN STREET IMPACT

The evolution of property tax burdens and revenue distributions, as shown in prior figures, captures the direct fiscal mechanics of wind development in Adams County versus Ringgold—highlighting how industrial valuation growth can broaden the tax base and moderate residential increases. However, these metrics alone do not fully reveal whether such investments translate into broader economic vitality that touches everyday life for residents, such as enhanced local commerce, job opportunities, or community spending power. To assess these "Main Street impacts"—the tangible effects on local economies that residents might feel through bustling businesses, increased retail options, or sustained services—a useful indicator is taxable sales per capita, which measures the volume of taxable retail and service transactions relative to population size.

This per-capita metric is particularly insightful in rural counties like Adams and Ringgold where populations are small and stable because it serves as a proxy for local economic health and consumer activity. Higher taxable sales may signal increased regional economic activity associated with renewable energy development. Temporary population inflows from project construction may heighten demand for local goods and services. This activity could increase spending at retail stores, lodging establishments, restaurants, and other service-based businesses as workers participate in the local economy. Over time, continued operations, maintenance activity, and landowner lease income can increase personal income levels for residents, which may also recirculate into the community through local businesses. In contrast, stagnation or decline might reflect limited new economic activity or reflect broader outmigration demographic pressures. By tracking taxable sales per capita over time alongside wind project development, this metric can evaluate whether renewable energy activity corresponds with meaningful, sustained boosts to "Main Street" beyond tax revenues. Figure 21 tracks these trends, with shaded vertical bars denoting key wind farm developments in Adams County.

FIGURE 21



Source: Iowa Department of Management, CSI Research and Analysis

Adams County begins the period at $5,977 taxable sales per resident, notably lower than Ringgold's $8,566. Adams County began to see meaningful growth in 2013, surpassing Ringgold in 2015—right before construction began for the Adams County Wind Project. In 2015, Adams County had $10,001 in taxable sales per resident and Ringgold had $9,857. Taxable sales data during production of Adams County's three wind projects show increased economic activity:

- **Adams County Wind Project.** During the initial Adams County Wind Project, taxable sales per resident fell in both counties, but it fell far less in Adams County. It fell 1.6% in Adams County between 2015 and 2016 while Ringgold County saw a decline of 9.5% over the same period.

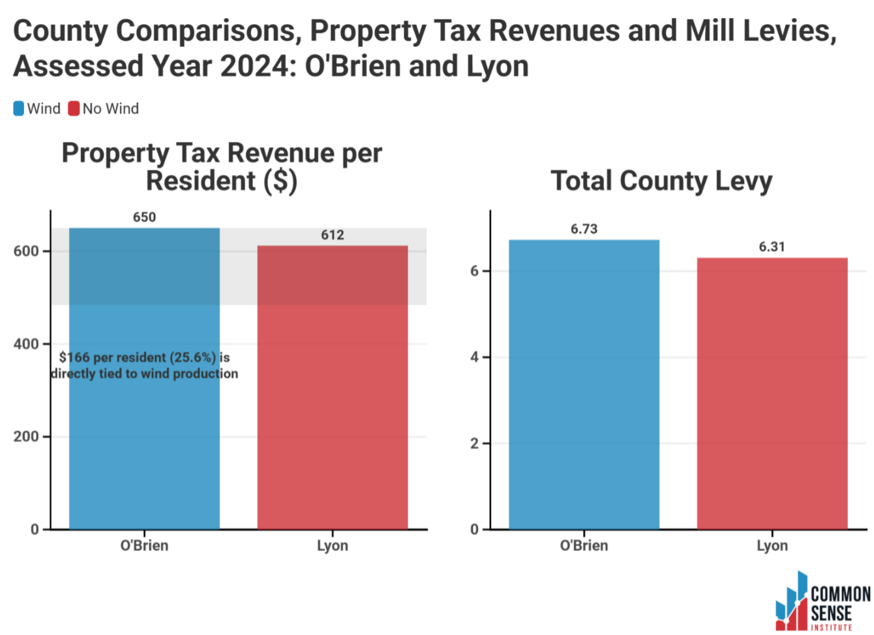
- **Southern Hills Wind Project.** During construction of the Southern Hill Wind Project in 2020, Adams County saw its taxable sales per capita grow by 6.3% while Ringgold County declined by 1.6%.
- **Prescott Wind Farm.** During the development of the Prescott Wind Farm from 2023 to 2024, Adams County saw a sharp growth in taxable sales per capita of 11.4% whereas Ringgold County declined by 1%.

While the timing of Adams County's taxable sales per capita gains aligns closely with renewable energy development timelines, these trends should not be interpreted as conclusively caused by wind production alone. Broader factors, such as regional agricultural conditions, national economic cycles, pandemic recovery patterns, or other local investments may have contributed to the observed fluctuations in both counties. That said, the consistent pattern of Adams County either outperforming Ringgold or experiencing milder declines while wind projects were in development suggests wind infrastructure played a meaningful role in sustaining and bolstering Main Street economic activity in Adams County.

O'Brien County vs. Lyon County

This section compares the second set of counties for CSI's case studies: O'Brien and Lyon. O'Brien hosts large-scale wind infrastructure while its neighbor Lyon does not. Given their similar economic and demographic makeups, these counties also offer evidence for how wind valuations influence revenue, taxes, and broader economic outcomes over time. Figure 22 compares property tax revenue per resident and total county levy rates for O'Brien and Lyon counties in assessment year 2024. Despite their similar population size and economic scale, O'Brien County generated meaningfully higher property tax revenue on a per-resident basis, at roughly $650 per resident compared to about $612 in Lyon County, even while maintaining a comparable overall levy rate. Notably, approximately $166 per O'Brien County resident—about one-quarter of total per-capita property tax revenue—is directly attributable to wind energy production. In aggregate, wind-related property taxes in assessment year 2024 totaled $2.32 million, exceeding the total property taxes generated by Lyon County's Grand Falls Casino in 2020.

FIGURE 22.

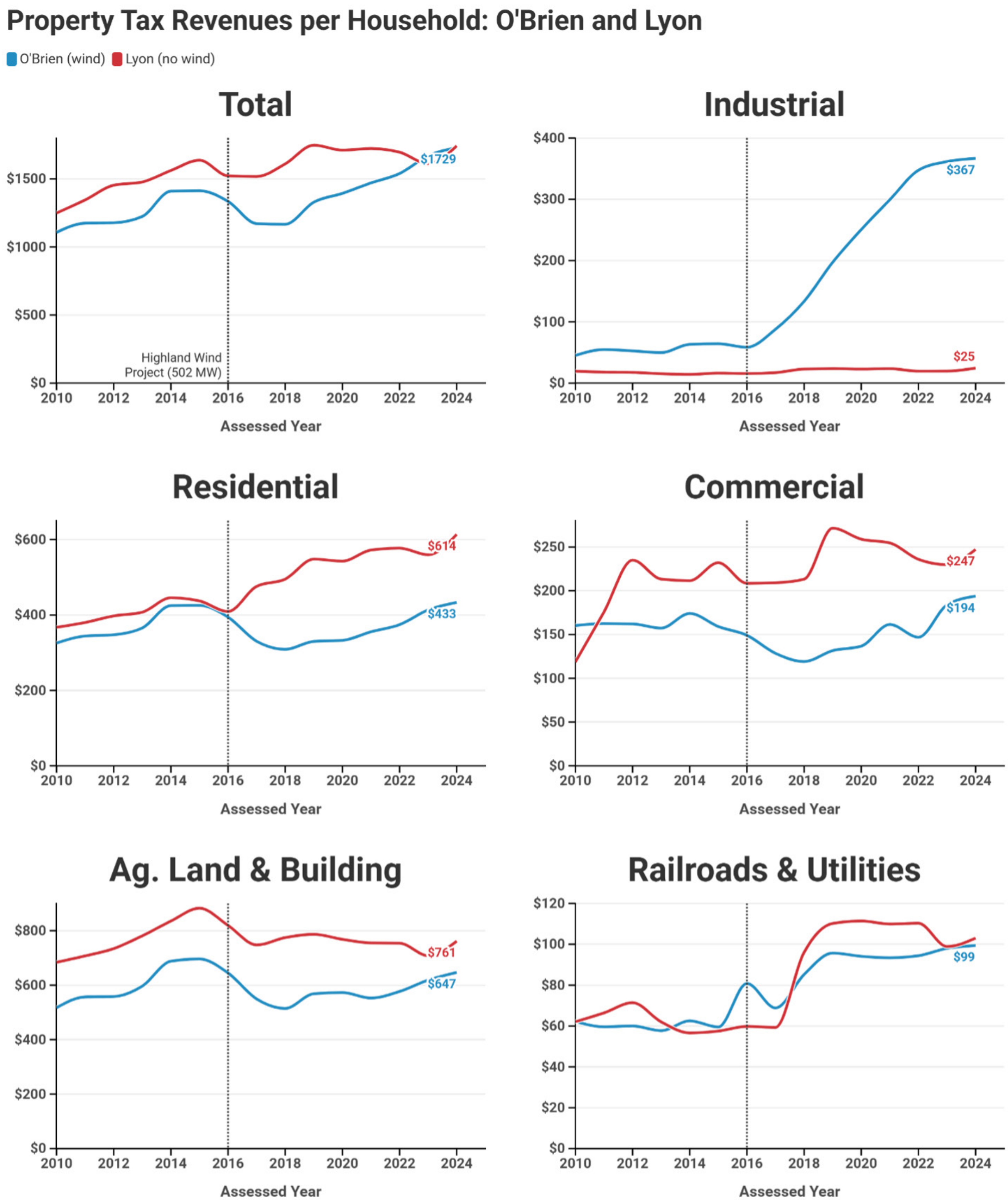


Source: Iowa Department of Management, CSI Research and Analysis

The experiences in these counties show wind energy can materially expand the local tax base without requiring higher levy rates, particularly in rural counties with otherwise similar demographic and economic fundamentals. Figure 23 builds on that point by illustrating how the mix of property tax revenues per household has shifted over time in O'Brien and Lyon counties. Before the mid-2010s, Lyon consistently generated more property tax revenue per household across most major classes, including residential, commercial, and agricultural land and buildings, while the two counties tracked closely in railroads and utilities. O'Brien lagged in these categories, producing a clear gap in total per-household revenues at the start of the period.

That gap narrowed rapidly following the development of large-scale wind projects in O'Brien County around 2015-2016. Although Lyon continued to exceed O'Brien in residential, commercial, and agricultural property taxes per household, O'Brien experienced a pronounced and sustained increase in industrial property tax revenues—a category in which Lyon remained largely flat. This divergence in industrial valuation offset Lyon's advantages in other property classes and reshaped the overall revenue profile. By 2024, the combination of slower growth in Lyon's traditional tax bases and O'Brien's industrial expansion brought total property tax revenues per household to near parity, despite the counties relying on fundamentally different sources of taxable value.

FIGURE 23.



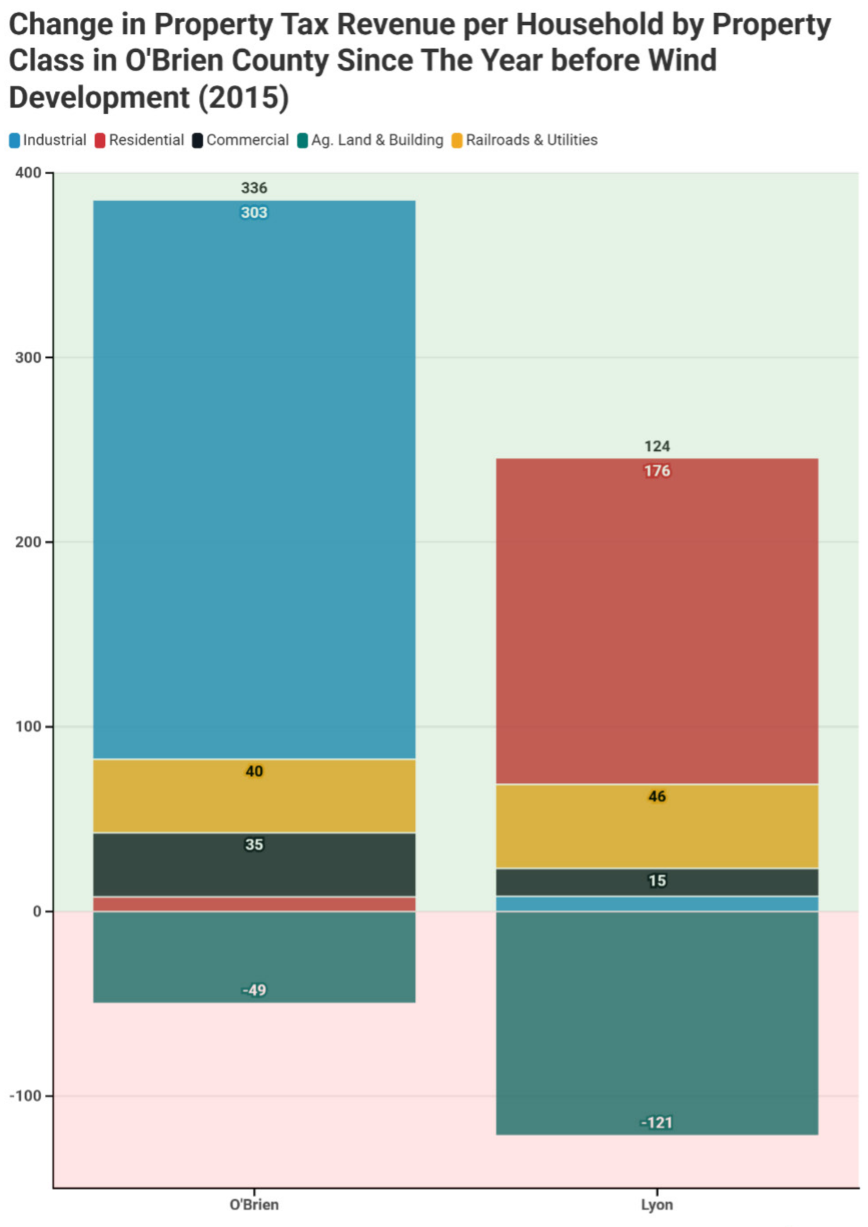
Source: Iowa Department of Management, CSI Research and Analysis

O'Brien's Highland Wind Project officially began commercial operations in early December 2015, meaning its taxable valuation did not significantly occur until at least 2016.[65] Figure 24 therefore explores the change in property tax revenue by property class from 2015 to 2024. Rather than incremental growth spread across multiple property classes, O'Brien's increase is overwhelmingly concentrated in industrial property, which accounted for 95.8% the per-household gain over the period. Commercial, railroads, and utilities contribute modestly, residential properties remained flat, and agricultural land and buildings declined. None of the other property classes approached the scale of the industrial increase tied to wind development.

Lyon's experience over the same window was fundamentally different. Its per-household growth was driven primarily by residential and, to a lesser extent, commercial and utility classes, with negligible change in industrial valuations. The county also saw a decline in agricultural land valuation that was more than twice the size of O'Brien. The result was that O'Brien's total per-household revenue growth since 2015 was more than double Lyon's, not because of broad-based appreciation across the entire tax base, but because the single industrial category expanded dramatically.

While O'Brien County expanded its tax base through wind investments, Lyon's growth was driven primarily by rising residential property values and increased homeowner tax collections. In Lyon, residential properties contributed 168% to the total, nominal change in property tax revenues per household. This growth exceeds 100%

FIGURE 24.



Source: Iowa Department of Management, CSI Research and Analysis

because of the significant negative growth for agricultural land. O'Brien, on the other hand, achieved near zero nominal residential revenue growth, only contributing 2.4% to the total nominal change. Instead, O'Brien County expanded its tax base by adding substantial new revenue from industrial wind property and agricultural valuation gains.

The divergence in property tax revenue growth occurred directly across a shared county border. O'Brien and Lyon are neighboring counties with similar geography, labor markets, and regional access. Moving from one county to the other does not meaningfully change proximity to jobs, population centers, or underlying economic conditions. The key difference was the presence of large-scale wind development in O'Brien County, which provided significant locally generated value. In O'Brien where wind infrastructure exists, residential properties saw little to no increase in their property taxes per household. Lyon, on the other hand, overwhelmingly relied on increasing residential property revenues to maintain a growing tax base. However, while property class trends help explain where valuation growth is occurring, they do not directly measure the tax burden faced by homeowners. As CSI did for Adams and Ringgold counties, the following subsection will examine a subset of residential properties to measure homeowner tax burden levels before and after wind installations.

HOMEOWNER IMPACT

To determine the rate of growth from before wind development to current day, the following analysis again uses the ACS five-year estimate for 2015 as the baseline. Wind operations began at the tail end of 2015, but the developments were not fully taxable until at least 2016. Therefore, this baseline marks the pre-wind period. In 2015, both counties had similar median residential property tax burdens: $1,228 in O'Brien County and $1,305 in Lyon County—a modest gap of 6%. By 2023, that divergence was no longer subtle. O'Brien's median residential property tax rose to $1,572, an increase of about 28% from 2011-2015.[67] Lyon County's median climbed to $1,983, an increase of about 52% over the same starting point.[68]

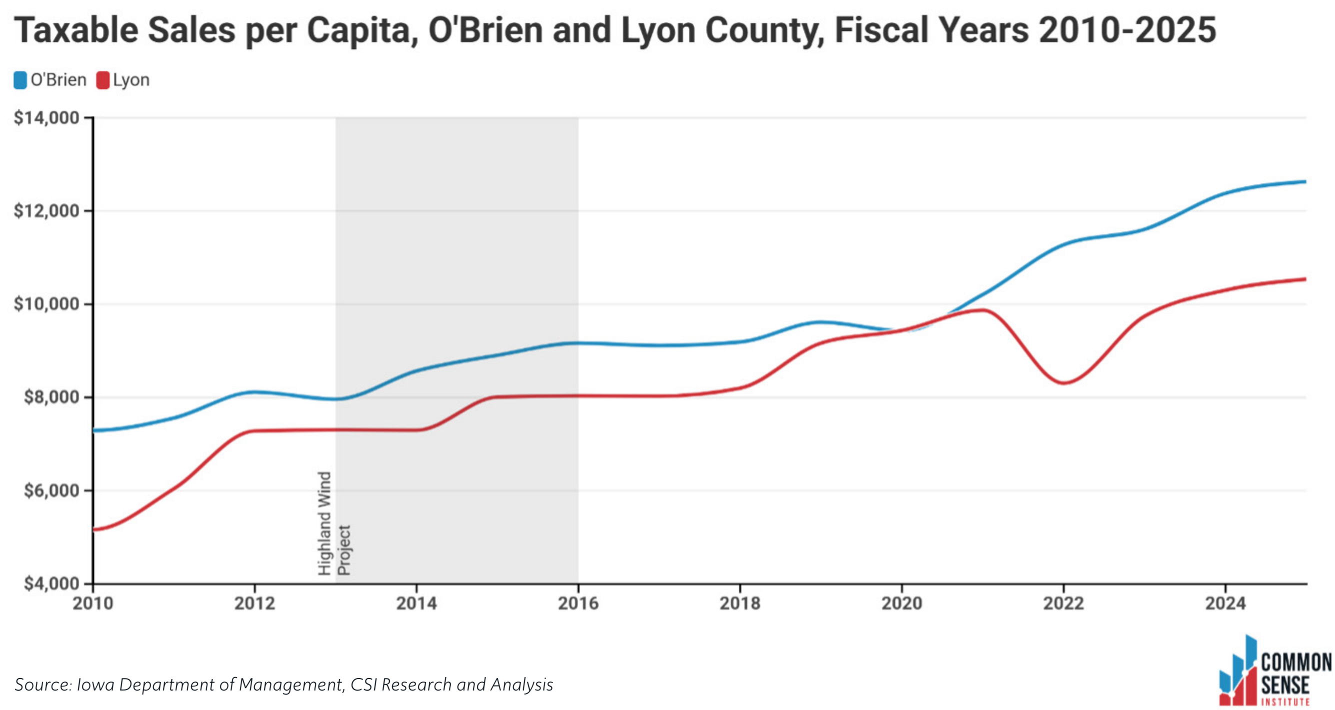
As a reminder, the ACS metric focuses specifically on owner-occupied housing, while the residential property data in figure 23 includes rental units and other non-owner-occupied properties. By isolating the owner-occupied homes, the ACS data captures the direct tax burden experienced by homeowners. The data indicates homeowner tax bills rose faster in Lyon than O'Brien. This outcome may suggest that the wind-driven tax base growth in O'Brien County also corresponded with comparatively slower increases in homeowner tax burdens than those observed in Lyon County, the non-wind comparison county.

MAIN STREET IMPACT

As explained previously, taxable sales per capita serves as another meaningful metric in determining the "Main Street" impacts for a wind-producing county. Figure 25 tracks this metric for O'Brien and Lyon, with shaded vertical bars denoting key wind farm developments in O'Brien County. O'Brien County begins the period at $7,291 taxable sales per resident, notably higher than Lyon's $5,165. Despite this gap, the two saw meaningful growth over the entire period before and after the development of the Highland Wind Project in 2013. Between the beginning of construction in 2013 and the start of operations in 2016, O'Brien County's taxable sales per capita grew 15.1% while Lyon County grew 10%—a gap of 5.1%. Afterwards, the two grew hand in hand, with Lyon quickly catching up to O'Brien's taxable sales per capita levels by 2020-2021—though the two quickly diverged again to their largest nominal gap in the years thereafter.

While there is evidence that suggests the development of wind infrastructure momentarily boosts the local economy relative to a county with no wind developments, many external factors could also be at play within both counties. Nonetheless, O'Brien County clearly outperformed Lyon County in taxable sales per capita consistently over the last 15 years and during construction of the Highland Wind Project.

FIGURE 25.



Source: Iowa Department of Management, CSI Research and Analysis

BOTTOM LINE

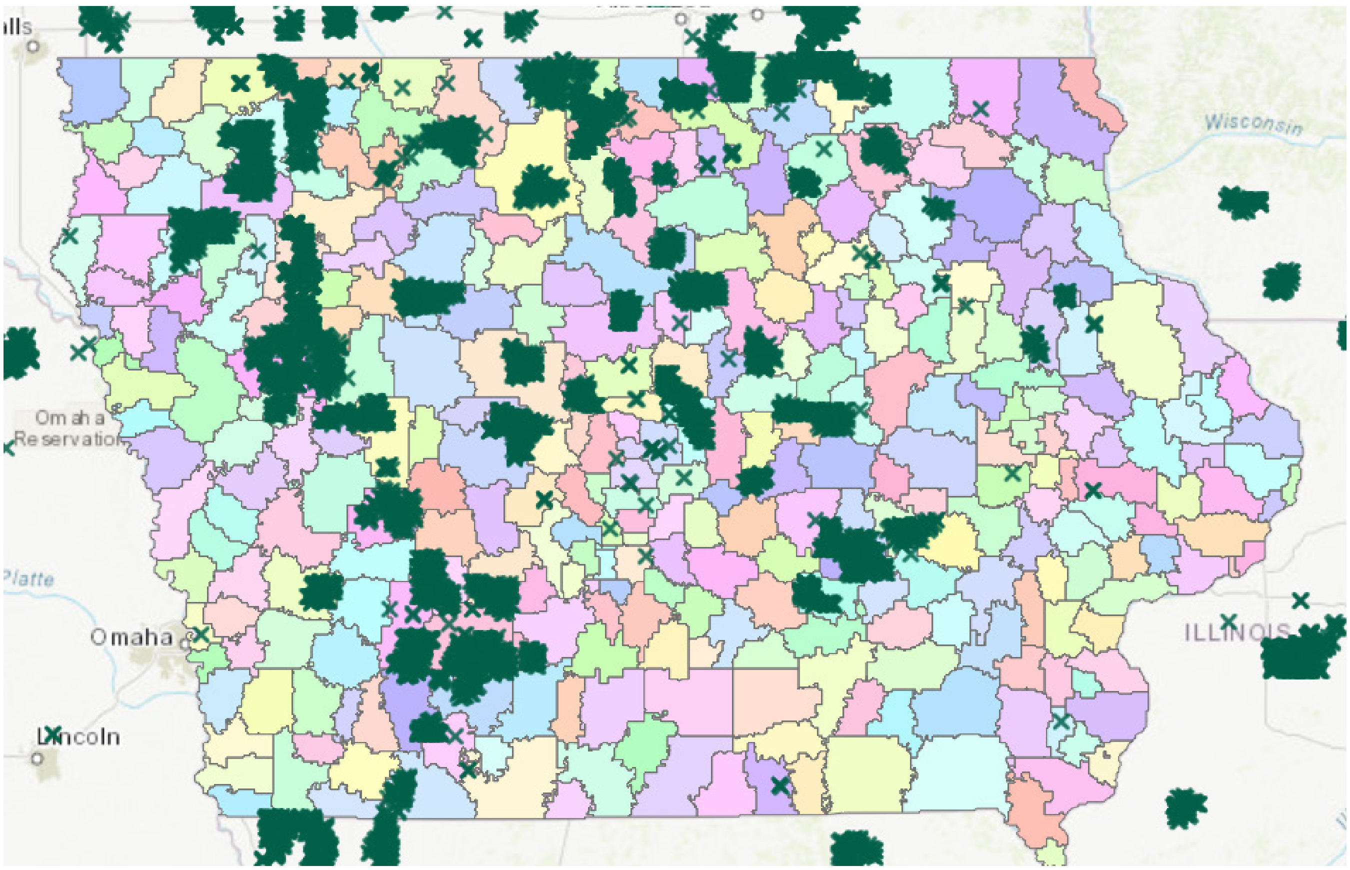
Iowa has proven itself a leader in renewable energy and an example of a successful energy transition. At the turn of the 21st century, Iowa depended almost exclusively on coal imported from other states for its electricity generation. Today, nearly two-thirds of its power comes from renewable energy produced at home.

That transformation has brought tangible benefits to Iowa's economy, its local and state governments, its taxpayers, and its Main Streets. Billions of dollars of investments have flooded into the state with billions more projected to come. Projects in development have created jobs and increased earnings, while projects in service supply ongoing electric energy to Iowans and tax revenue to their local governments. This analysis shows taxes paid by renewable energy properties reduce the tax burden on other property classes, increase the overall tax base for the taxing jurisdiction, or both.

As it has increased its buildout of renewable energy, Iowa has accomplished all of these positive outcomes while maintaining competitive energy prices and standing out as one of the all-around most competitive energy markets in the nation.

APPENDIX A: LOCATION OF WIND TURBINES IN IOWA

FIGURE 26.



APPENDIX B: ORDINARY LEAST SQUARES (OLS) REGRESSION RESULTS

Coefficient Estimates

TABLE 5.

voted_levy_rate	Coefficient	Std. err.	t	P>|t|	[95% conf. interval]	
num_turbines	-.0056494	.0009512	-5.94	0.000	-.0075148	-.003784
resident_student	.0000418	.0000148	2.82	0.005	.0000127	.0000708
non_voted_levy_rate	.1586289	.0306436	5.18	0.000	.0985311	.2187267
year						
2022	.002386	.1370982	0.02	0.986	-.2664887	.2712606
2023	.319984	.1375944	2.33	0.020	.0501362	.5898318
2024	.4369737	.1382159	3.16	0.002	.165907	.7080404
2025	.3839233	.1380547	2.78	0.005	.1131728	.6546738
2026	.4728052	.1380962	3.42	0.001	.2019733	.7436371
_cons	2.646751	.2997833	8.83	0.000	2.058821	3.234681

Model Fit Statistics

FIGURE 6.

Observations	1956
R-squared	0.0625
Adj. R-squared	0.0587
Root MSE	1.7530

APPENDIX C: MODELING METHODOLOGY

Companies investing in Iowa's energy infrastructure may purchase material from out-of-state to use in the production of components that go into the final wind, solar, or battery storage investment. It's also true that some of the material will be imported from out-of-state and imported from another country.

Model Assumptions for Wind Turbines

On wind turbines, several major wind components have been or are being made in the state, such as:

- Siemens Gamesa wind turbine blade factory in Fort Madison.
- TPI Composites reopened its Newton blade plant in mid-2025.
- Arcosa Wind Towers has an operating tower facility in Newton.
- Nordex has a turbine assembly facility in West Branch, including the production of nacelles (enclosure on a wind turbine that houses the energy-generating components, including the shaft, generator, gearing—all of which are connected to the rotor and blades).

These production facilities in Iowa are, of course, not an exhaustive list of everything produced in Iowa nor does it mean that everything is produced in Iowa. For instance, bearings, gearboxes, power electronics, and some castings/forgings may be sourced from companies in other states/countries. Reuters notes that onshore wind manufacturing still comprises a good amount of non-domestic content, with the classification of the wind turbine as qualifying as domestic content hinging on nacelles, towers, and blades.[69]

Overall, the bottom line for Iowa economic accounting is that the construction and interconnection will be invested in Iowa, a nontrivial share of physical manufacturing may be done out of state.

Model Assumptions for Solar

Iowa also has some solar manufacturing, although companies manufacturing the solar panels used in big solar farms may not be in Iowa. Companies operating in the solar industry with an Iowa presence include, among others:

- PowerFilm Solar in Ames, which manufactures flexible/thin-film solar products. These are not the standard framed modules used in utility-scale solar farms.[70]

For utility-scale solar projects in the state, it is generally thought that the mainstream modules/inverters are procured from national/global supply chains and are likely manufactured in other states or abroad and then shipped to Iowa for installation.

Overall, when it comes to solar, most of the investment for utility-scale solar is site preparation, racking, electrical, interconnection, and labor—all of which generate jobs and economic growth in the state.

Model Assumptions for Battery Storage

The situation for battery storage is similar to solar. An example of a company based in Iowa that competes in the battery manufacturing sector is Stryten Energy, which is in the process of discussing broader manufacturing expansion in the U.S.[71]

It is thought that utility grade battery storage systems are typically built from containerized systems where the battery cells/modules and power electronics may be manufactured and assembled out of state or out of the country and shipped to Iowa as racks and containers and then installed on site.[72]

Explanation of Modeling Methodology

Given that a portion of the investment will be sourced out of state, the modeling was categorized into four phases.

- First, the development and permitting phase, which encompasses legal, engineering, and land/leases.
- Second, the construction and installation phase, which includes site preparation, civil, electrical, foundations, labor, trucking, and rentals.
- Third, the equipment and major components phase, which include purchases of the turbines, modules, inverters, battery energy storage systems, transformers, and switchgears.
- Fourth, the ongoing operations and maintenance of the investment.

Within these four phases, the REMI inputs were categorized into sector and year. The analysis divided the expected $29 billion in utility-scale wind, solar, and battery storage investment in Iowa equally across 2026 through 2035. Total investment is also allocated within common project finance and engineering, procurement, and construction accounting. Phase shares of total capital expenditure (CAPEX) are based on benchmark cost structures reported by the National Renewable Energy Laboratory (NREL) Annual Technology Baseline[73], NREL Annual Wind Technologies Market Report[74], NREL U.S. Solar Photovoltaic System Cost Benchmark reports[75], and Lazard's Levelized Cost of Energy (LCOE) and Levelized Cost of Storage analyses[76,77]. Specifically, blended baseline shares across wind, solar, and storage assume approximately 3.7% of CAPEX for development and permitting, 27% for construction and installation, 69.3% for equipment procurement, and recurring annual O&M equal to approximately 2.2% of CAPEX. These blended shares reflect the capital-intensive nature of renewable generation and storage technologies, where major components (turbines, PV modules, inverters, battery containers, transformers, and power conversion systems) represent the dominant share of project cost.

To avoid overstating in-state economic impacts, the model applies Iowa-specific local content (Iowa retention) factors to each phase, reflecting the fact that many major renewable energy equipment is manufactured outside Iowa and imported into the state. Local content assumptions are based on a combination of NREL supply-chain studies, U.S. Department of Energy (DOE) wind and solar manufacturing and supply-chain assessments[78], U.S. Bureau of Economic Analysis regional purchase coefficient concepts, and REMI modeling practice for states without significant utility-scale turbine, module, or battery cell manufacturing. Under the baseline case, Iowa retention is assumed to be 65% for development and permitting (reflecting heavy use of in-state engineering, environmental, legal, surveying, and land-leasing services), 67% for construction and installation (reflecting Iowa-based civil, electrical, specialty trade, trucking, and equipment rental activity), 11% for equipment procurement (reflecting primarily in-state wholesale margins, transportation, warehousing, and limited local services, with the vast majority of producer value imported), and 75% for operations and maintenance (reflecting local technicians, vegetation management, site administration, monitoring support, and ongoing service activity). These retention factors are consistent with findings in NREL and DOE analyses showing that turbine nacelles, blades, towers, PV modules, inverters, and battery systems are predominantly sourced from out-of-state or international manufacturers, while construction labor and ongoing service activities largely employ Iowans.

Within each phase, Iowa-retained spending is allocated across specific REMI-compatible industries to reflect realistic spending patterns. Development and permitting spending is allocated primarily to architectural and engineering services, environmental and technical consulting, legal services, surveying and geotechnical testing, real estate and leasing-related services, and administrative and project management support. Construction and installation spending is allocated to nonresidential construction, electrical and specialty trade contractors, local trucking and logistics, heavy equipment rental and leasing, wholesale trade margins on locally sourced materials, and miscellaneous local site services. Equipment procurement spending captured in Iowa is allocated to wholesale trade, truck transportation, warehousing and storage, professional and technical services related to inspection and commissioning, and limited construction and specialty trade support not already captured in construction. Operations and maintenance spending is allocated to repair and maintenance services, administrative and support services (including vegetation management and site security), professional and technical services for monitoring and compliance, trucking for service trips and parts runs, wholesale trade margins for replacement parts, utilities and telecommunications, and other local services.

All REMI shocks are entered only for the Iowa-retained portion of spending by phase and category. Imported equipment producer values are treated as economic leakage and are not modeled as Iowa manufacturing activity, ensuring that indirect and induced impacts reflect only in-state supply-chain and household income effects. This approach is consistent with best practices in regional economic impact modeling and is intended to produce conservative estimates of Iowa-specific economic activity supported by renewable energy and storage investment.

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