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THE ILLINOIS CHALLENGE: BALANCING DECARBONIZATION WITH ECONOMIC REALITY

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A LEGACY OF PRAGMATIC SUCCESS

Historically, Illinois has operated from a position of strength in the energy market with a low-carbon foundation that other states are only beginning to strive toward. However, policies that are aimed at abolishing current dispatchable generation to meet climate goals set in 2021 threaten to undermine the state's energy and economic successes.

Illinois' per-person energy consumption is close to the national average (see fig. 1), but greenhouse gas emissions are well below (see fig. 2) thanks to its status as the country's top generator of nuclear power — the state's largest source of electricity. Coal use has gradually shrunk; gas overtook it as the second-largest source of power in 2023 (see fig. 3) while wind generation has doubled in just seven years and is on course to move up to third place. Total spending per person on electricity, gas, and gasoline is among the lowest in the country, at almost 12% below average (see fig. 4). Economic output per person is high, and as a result, total energy spending accounts for just 4.7% of state output, more than 16% below average.

Illinois has also been more successful than most other states at lowering emissions in recent decades, cutting them 2.1% per year between 2005 and 2023, compared to 1.2% for the country as a whole. The state achieved this speedy reduction mostly because gas replaced coal-fired generation while its population stayed flat.

Compared to the size of its economy, Illinois' carbon emissions are now the 18th-lowest in the U.S.; it produced 188 tons for every $1 million of output in 2023 (see fig. 5), down 42% since 2005 after adjusting for inflation, and more than 10% below the national average. Illinois emits much less CO_2 per $1 million of output than other Midwest states, including Minnesota (207 tons), Wisconsin (250 tons), Michigan (255 tons), Ohio (260 tons), Missouri (291 tons), Iowa (337 tons), and Indiana (381 tons). It performs well on this measure thanks to the local dominance of high-value-added, low-energy-use industries such as finance and insurance, as well as significant nuclear output.

Illinois is the country's fifth-largest electricity generator and exports surplus power to neighboring states. In 2024, it was by far the country's largest nuclear producer (99 billion kilowatt-hours), well ahead of second-place Pennsylvania (75 billion kWh). Nuclear accounted for more than half of in-state generation. Fossil fuels accounted for 31% of generation in 2023, down from 51% in 2005. Coal generation has been cut by two-thirds, mostly replaced by equal amounts of wind and gas. As a result, its energy mix has the country's fifth-lowest carbon intensity (see fig. 6). Nonetheless, residual coal generation is among the highest in the country, which explains why Illinois has not made even faster progress reducing emissions.

A PROMISING STRATEGY AT RISK

Illinois has pursued an all-of-the-above power strategy. Between its strong nuclear backbone, the decision earlier this year to lift an old moratorium on the construction of new reactors, and recent emissions reductions driven by the switch from coal to natural gas, the state could be a leader in pragmatic energy policymaking.

But Illinois is in danger of sacrificing its successful track record thanks to an overenthusiastic push for zero emissions, which is now colliding with the realities of reliability, affordability, and public safety.

Take the Climate and Equitable Jobs Act, which the governor signed in 2021. The law mandates 100% clean energy by 2050 and 100% carbon-free electricity by 2045, with coal- and oil-fired generation phased out by 2035 and natural gas by 2045. While the state is making progress toward closing coal and oil generation, the rush to abolish base load power from natural gas generation is raising alarms about capacity shortfalls. As the Illinois government's own study points out, pursuing the abolition of natural gas generation by 2045 would create a capacity gap that would result from removing firm capacity just as electricity demand is surging. Additionally, if Illinois eliminates its in-state natural gas generation by 2045, the state is projected to go from being an electricity exporter to a net importer. This would result in the state becoming heavily reliant on the PJM and MISO regional grid, both of which are projected to have severe capacity shortfalls by 2030, raising the risk of blackouts. Additionally, if Illinois is forced to buy electricity from surrounding states, the carbon emissions are not eliminated, merely moved to other states where fossil fuels are used for generation. Ultimately, the state's 2025 Resource Adequacy Study concludes that "thermal generation is an important source of resource adequacy alongside new battery storage resources, while new renewable energy resources (wind and solar) can continue to drive reductions in carbon emissions from electrical energy consumed in Illinois."

Enacted in January, the Clean and Reliable Grid Affordability Act is an attempt to accelerate the green transition in light of the "One Big Beautiful Bill Act" and the onerous string of executive orders that curtailed federal renewable incentives and froze Inflation Reduction Act funding. The

increased investment in zero-carbon generation, like geothermal, and investments in battery storage and grid modernization are positive steps. However, if baseload generation is undermined by prematurely retiring natural gas plants, increased prices and reduced reliability threaten to undermine political support for all positive climate measures.

While other states are prudently reassessing their 2020 climate mandates in light of new and unprecedented demand and cost, Illinois is doubling down in the face of the reality of today's energy market, risking exacerbating the affordability crisis while driving investments to neighboring states.

FUTURE OF GAS WORKSHOPS VS RESOURCE ADEQUACY REPORT

The Illinois Commerce Commission has begun conducting a series of workshops to explore how much the state should invest in its natural gas infrastructure going forward, given the climate goals set forth in the CEJA. This process is slated to conclude by the end of this year.

Illinois manufacturers, businesses, and labor organizations are seeking to end the Future of Gas Workshops over concerns that a recommendation to aggressively phase out natural gas could lead to greater capacity shortages, lower reliability, and higher electricity prices. They point to a 2025 resource adequacy report by state agencies that found regional transmission organizations serving Illinois are already "projected to face capacity shortfalls over the coming decade" unless more new power sources are developed.

DRIVING JOBS AND INNOVATION TO NEIGHBORING STATES

Illinois's aggressive gas-to-electric drive presents a threat that could inadvertently subsidize the growth of Illinois's neighbors. The state is beginning to sunset natural gas infrastructure at a moment when energy-intensive sectors are already facing reliability and cost challenges.

Wholesale electricity costs in the PJM region, which serves northern Illinois, surged by over 40% in 2025 due to unprecedented demand. If capacity constraints lead to further price spikes or brownouts, the state's carbon efficiency won't matter. Data center developers and manufacturers will be pulled to higher-emission states like Indiana or Ohio, where firm power is prioritized over prescriptive technology bans. Prematurely retiring gas plants will turn Illinois from an energy exporter into an economic casualty.

A PRAGMATIC PATH: RECOMMENDATION FOR A CLEAN FIRM FUTURE

Illinois must move from technology-specific mandates to outcome-focused reliability. To secure its status as an economic powerhouse, the state should adopt the following pillars:

- **Embrace New Nuclear**: Illinois must continue to lead the country in nuclear generation, which provides the clean, firm power necessary to backstop intermittent renewables and support 24/7 industrial loads. Governor Pritzker has gotten this policy right by committing to 2 GW of new nuclear generation. Lifting the moratorium was the essential next step following the initial authorization of Small Modular Reactors (SMRs).
- **Reform Gas Transition Timelines:** High-efficiency natural gas is a necessary partner, not an enemy, of the zero-carbon transition. Policymakers should use the Future of Gas study to align infrastructure retirements with the actual maturity of replacement technologies. No gas assets should be retired before there are fully operational and proven-at-scale replacements that perform at the same reliability and dispatchability as current gas generation.
- **Prioritize Grid Reliability:** Regulators and policymakers must heed the capacity warnings that are facing the state. Ignoring those and pursuing 2050 calendar-based zero emission goals risks grid reliability and economic disaster.

Illinois's legacy as a nuclear and economic leader is at risk unless it balances its climate ambitions with the physical and competitive realities of the regional energy market. Pragmatism, not ideology, must dictate the pace of Illinois energy transition.

APPENDIX: STATE ENERGY CONSUMPTION AND EMISSIONS

Illinois' energy consumption per person is close to average, but emissions are well below, according to data from the U.S. Energy Information Administration. The state is the largest nuclear generator in the country, and nuclear is the top source of electricity, keeping emissions low. Coal-fired generation has been gradually reduced, with gas overtaking coal as the second-largest source of power in 2023. Wind generation has doubled in just seven years and is on course to overtake coal to become the third-largest power source. Total spending per person on electricity, gas, and gasoline is among the lowest in the country, almost 12% below the average. Economic output per person is high, and as a result, total energy spending accounts for just 4.7% of state output, more than 16% below average.

Illinois' total emissions rank (7th) in line with its population (6th) and slightly lower than the size of its economy (5th). The state has been more successful than most others, lowering them in the last two decades. Emissions were cut to 167 million metric tons in 2023 from 244 million in 2005. The decline was much faster (2.1% per year) than in the country as a whole (1.2% per year), mostly because gas has replaced coal-fired generation while population has been flat.

Emissions per person have remained slightly below average, falling at a similar rate to the rest of the country. Per capita emissions were cut to 13 tons in 2023 from 19 tons in 2005. Emissions per person ranked 27th, putting Illinois close to the median. Emissions were less than Australia (14 tons) and Canada (15 tons), but much higher than Germany (7 tons) or Japan (8 tons).

Emissions are relatively low in relation to the size of the economy (34th) because of the state's high value-added and significant nuclear generation. Real output per person was around 4% higher than the national average in 2023. The state emitted 188 tons for every $1 million of output in 2023, down from 329 tons in 2005, after adjusting for inflation. Emissions per $1 million of output were more than 10% below the national average (211 tons). Illinois emits much less CO_2 for the same amount of output than other Midwest states, including Minnesota (207 tons), Wisconsin (250 tons), Michigan (255 tons), Ohio (260 tons), Missouri (291 tons), Iowa (337 tons), and Indiana (381 tons).

The state's energy system is less carbon-intensive than most because of its high nuclear output, but it has made only average progress in reducing carbon intensity further. Fossil fuels accounted for 67% of primary energy consumption in 2023, down from 76% in 2005, and there has also been a shift to lower-emission gas from coal. Illinois emitted 43 tons of CO_2 for every 1 billion British thermal units of energy supplied in 2023, down from 54 tons in 2005. Carbon intensity is the fifth-lowest in the country and well below the national average (51 tons).

Illinois is the country's fifth-largest electricity generator and exports surplus power to neighboring states. In 2024, the state was by far the country's largest nuclear producer (99 billion kilowatt-hours), well ahead of Pennsylvania (75 billion kWh). Nuclear accounted for more than half of in-state generation, the main reason emissions are low. Fossil fuels accounted for

31% of generation in 2023, down from 51% in 2005. Coal generation has been cut by two-thirds, mostly replaced by equal amounts of wind and gas. Nonetheless, residual coal generation is among the highest in the country, which explains why Illinois has not made even faster progress in reducing emissions.

ENERGY CONSUMPTION

Energy consumption per person (276 million British thermal units) was in line with the national average (278 million BTUs) in 2023. Illinois ranked 26th among the states for energy use per person. But consumption per $1 million of output (3.94 billion BTU) was well below the national average (4.13 billion BTU) because the value of the state's output is high. Since 2005, however, the state's low energy-intensity advantage has eroded, with consumption per unit of output declining (1.9% per year) more slowly than in the country as a whole (2.2% per year).

Illinois is highly urbanized. Population density (231 inhabitants per square mile) is two-and-a-half times the national average (94), putting it among the most densely inhabited states (12th). At the time of the last Census in 2020, almost 87% of the population lived in areas classified as urban compared with 80% across the country. As a result, a smaller share of the population lived in single-family homes (57%) than in the country as a whole (62%). The proportion of single-family homes is much lower than in Wisconsin (68%), Minnesota (70%), Ohio and Michigan (71%), Iowa (76%), and Indiana (77%). Many more inhabitants live in multi-family buildings. Nearly one-in-six inhabitants live in buildings with 10 apartments or more. Smaller dwellings use less energy for heating, cooling, lighting, and power.

Illinois' highways recorded 103 billion vehicle-miles traveled in 2023, 8th in the country, roughly in line with the state's population. But the volume of driving per resident (8,137 vehicle-miles) was among the lowest in the country (43rd) and about 16% below the national average (9,640). Commuting time (28 minutes on average) is close to average (27 minutes). But Illinois has a relatively high level of transit use because of its high urbanization. Transit ridership is the fourth-highest in the country after New York, California, and New Jersey. Public transportation accounted for almost double the share of commuting (7.0%) than in the rest of the country (3.7%). As a result, Illinois's oil consumption per person (18 barrels per year) was well below the national average (22 barrels per year).

Energy prices and spending are both well below average. Total energy prices for electricity, gas, and gasoline were about 8% below the national average in 2023. Total spending per person was about 11% below average. Residents spent about $550 per year less on energy than the typical across the country. Spending was even lower in relation to the state's above-average GDP. Spending as a share of the state's economic output was 16% below average. Energy costs absorbed just 4.7% of state GDP compared with 5.7% in the United States as a whole.

In 2024, residential electricity prices (15.9 cents per kilowatt-hour) were 4% lower than across the country as a whole (16.5 cents). Residential use ranked fairly low (39th) (3,427 kilowatt-hours per person) and 20% below the average (4,305 kWh per person), keeping bills down. Summers are cooler than in most other states, limiting air conditioning. Residential consumption per person has declined at an average annual rate of 0.7% since 2005 as a result of efficiency improvements.

Gas consumption by all sectors, including generators, increased to 88 million BTU per person in 2023 from 78 million in 2005. Illinois is the median state for per capita gas use (25th), but consumption is about 12% below the national mean (100 million BTU). Cold winters boost gas consumption for heating, but the state relies less on gas than others for power generation. Gas use per person has increased (0.7% per year) at less than half the national rate (1.5% per year) since 2005. Residential gas prices ($11.57 per thousand cubic feet) were about 25% below the national average ($15.39), keeping bills low in 2023.

RECENT DEVELOPMENTS IN ELECTRICITY PRICES (2019-2025)

Since 2019, Illinois' electricity prices have increased more slowly than in most other states. Retail prices for residential customers increased by 22% between 2019 and 2024. Nearly all the increase was attributable to inflation, with the consumer price index excluding volatile food and energy items up by more than 21%. In real terms, residential prices rose by just 0.5% compared with an increase of more than 4% nationwide. Real power prices have risen more slowly (0.1% per year) than in other large states such as Texas (1.0% per year), Pennsylvania (1.2% per year), Ohio (1.3% per year), New York (2.4% per year), and California (6.6% per year).

Chicago and the surrounding areas in the north of the state are part of the PJM interconnection, where the rapid build-out of data centers has been exerting strong upward pressure on wholesale electricity prices. But the rest of the state lies within the transmission area and wholesale electricity market covered by the Midcontinent Independent System Operator (MISO). So far, the region has been less affected by the growth of data centers. Nonetheless, capacity constraints are expected to emerge as large loads are added faster than new generation. There is a high risk that MISO will have insufficient generation capacity by 2028, according to the North American Electric Reliability Corporation (NERC).

Upward pressure on electricity prices is starting to emerge. Wholesale power costs increased sharply during the summer of 2025 as both PJM and MISO paid much more to procure enough generation capacity. Rising wholesale costs are filtering through to higher residential rates. Residential prices jumped by 11% in 2025 compared with 2024.

Figure 1: State-level energy consumption in 2023

million British thermal units per capita

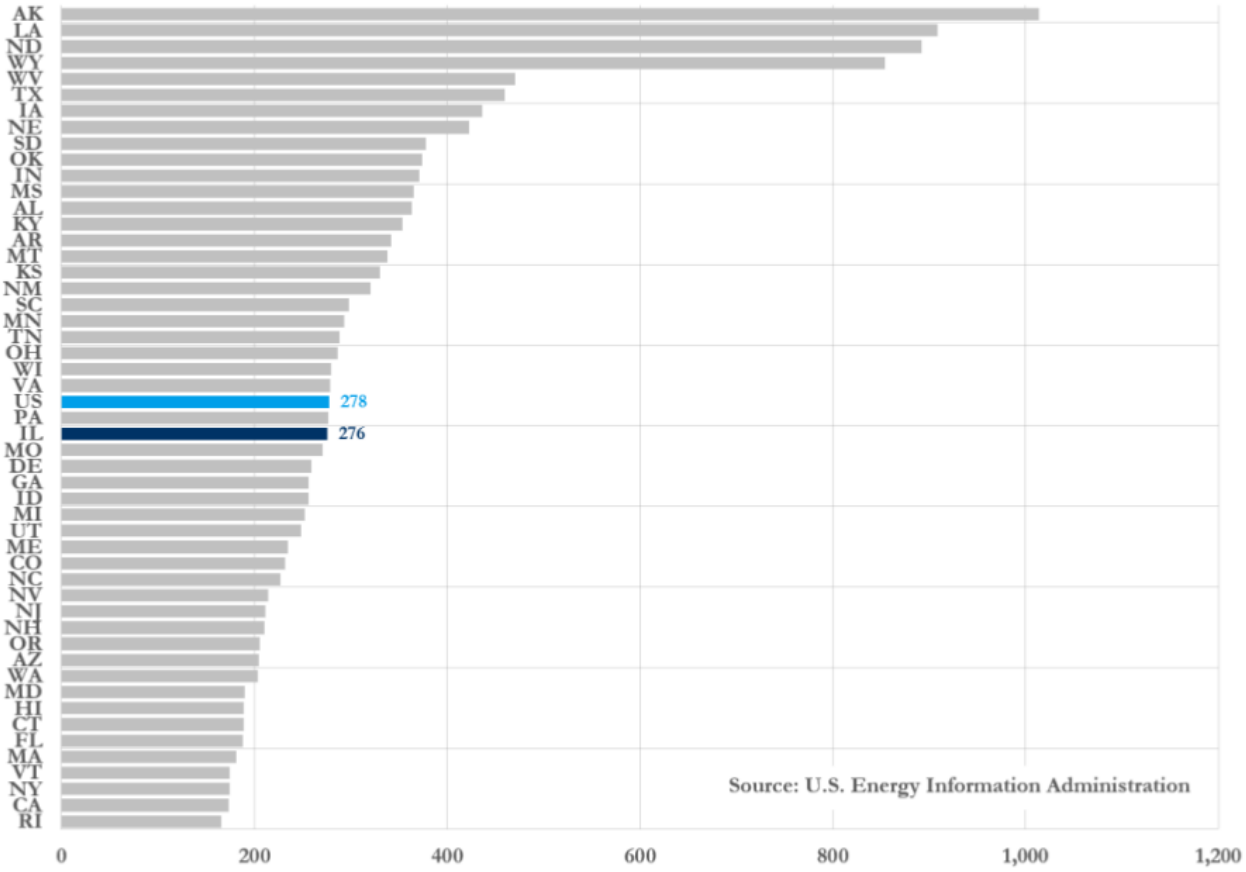


Figure 2: State-level energy-related carbon dioxide emissions in 2023

metric tons per U.S.$(2017) 1 million

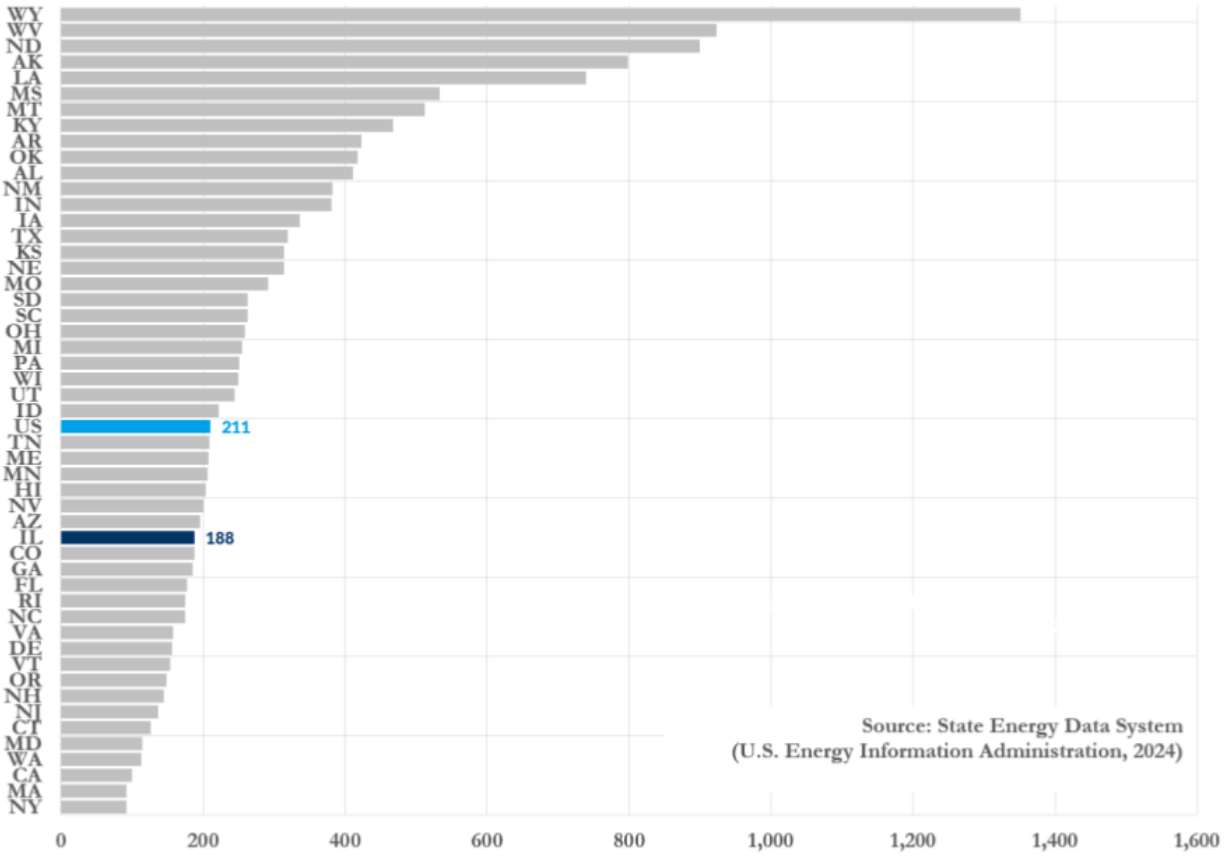
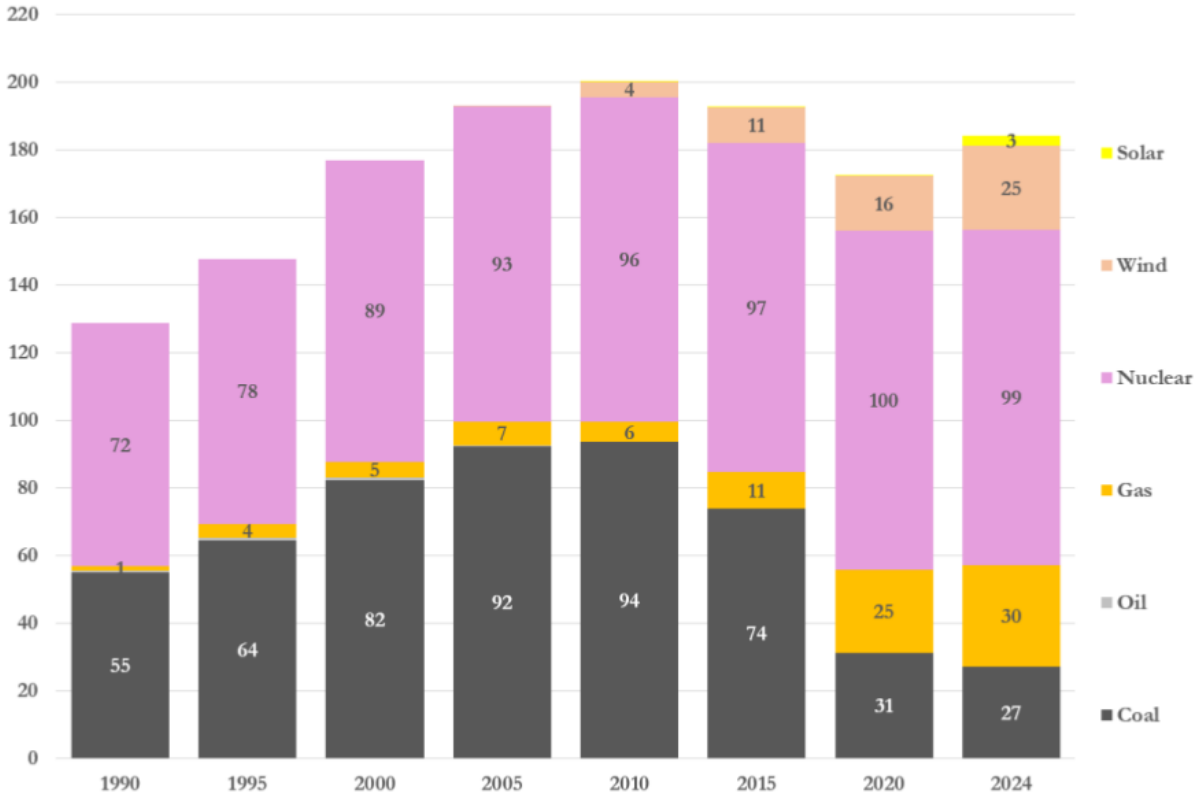


Figure 3: Illinois state electricity generation, 1990-2024

billion kilowatt-hours (TWh), annual



Source: Electric Power Annual (U.S. Energy Information Administration, 2025)

Figure 4: State energy spending per capita in 2023

U.S.$ (2023) annual expenditure on petroleum fuels, gas and electricity

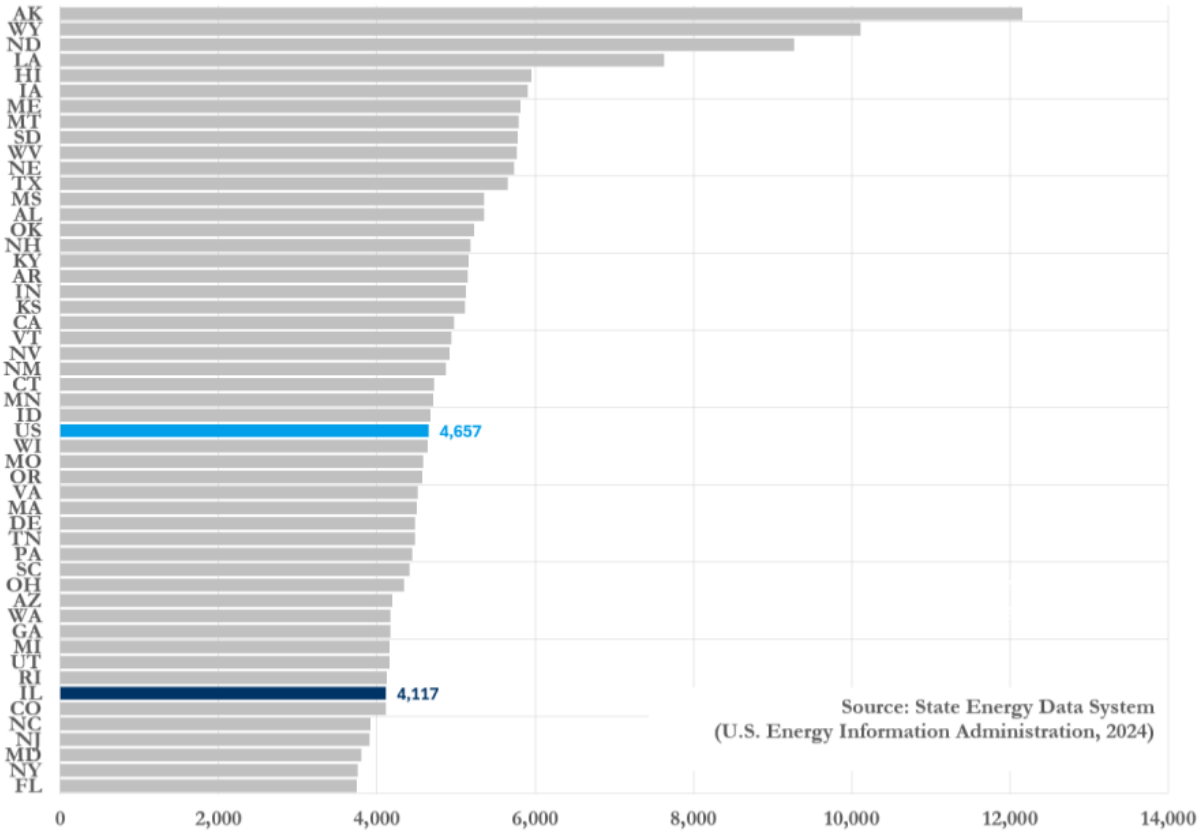
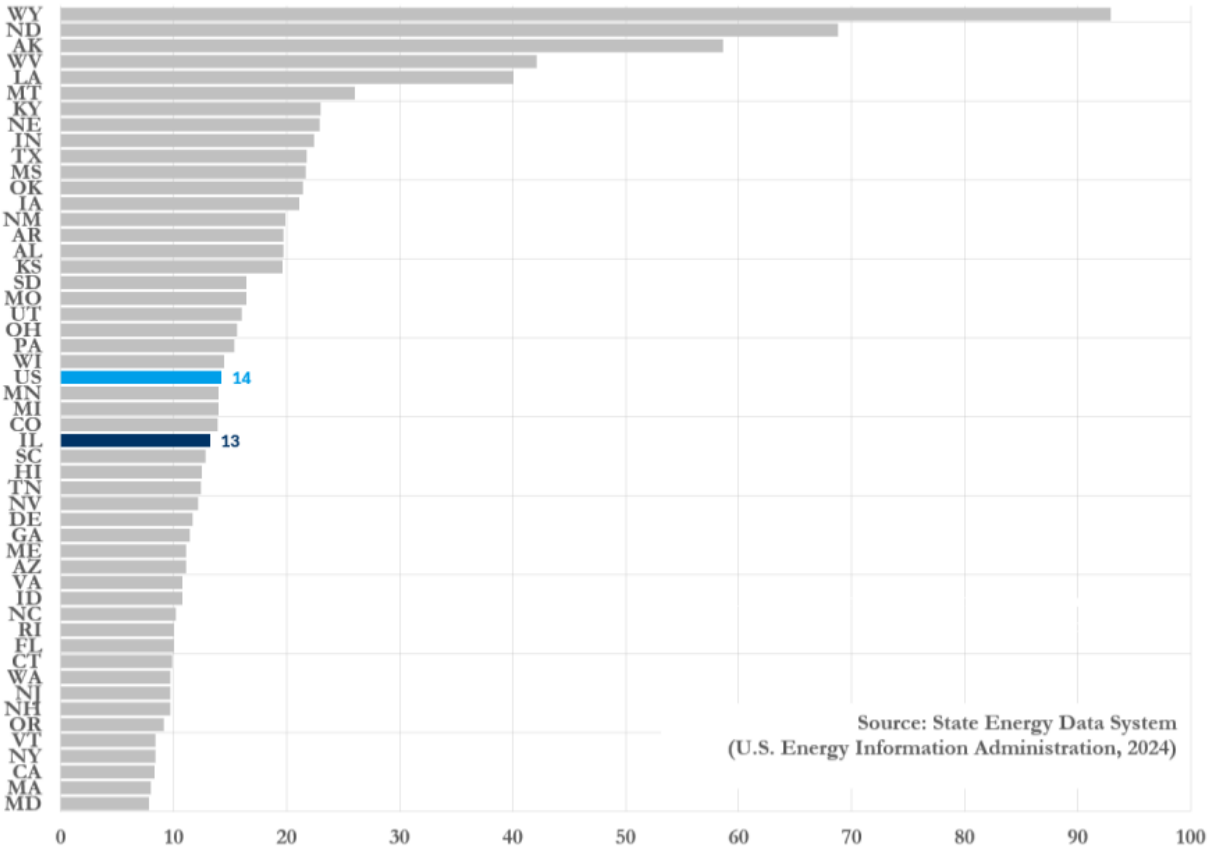


Figure 5: State-level energy-related carbon dioxide emissions in 2023

metric tons per capita



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