Idaho's electricity by the numbers

Idaho Department of Labor
Research and Communications
August 2026

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Introduction

It is difficult to avoid conversations about artificial intelligence (AI), data centers and electricity prices in 2026. As data centers and semiconductor fabrication facilities continue to be built across the country, including in the Gem State, electricity has taken center stage in national policy discussions.

These developments have raised understandable concerns about the capacity of Idaho's electrical grid and what the future of the state’s energy industry may look like. To keep conversations grounded in the data, it is worth taking a closer look at how this industry currently affects Idahoans and the economy, how much electricity the state consumes and where that electricity comes from.

Definitions

Most people are familiar with kilowatt-hours (kWh) from their monthly utility bill, but few think about what the measurement actually represents.

A kilowatt-hour is a unit of energy equal to 1,000 watts of electricity consumed over the course of one hour. When scaled up by a factor of 1,000, this becomes a megawatt-hour (MWh). Another factor of 1,000 produces a gigawatt-hour (GWh), and 1,000 gigawatt-hours equals one terawatt-hour (TWh).

Conversion rate

- 1 kilowatt (kW) = 1,000 watts
- 1 megawatt (MW) = 1,000 kilowatts
- 1 gigawatt (GW) = 1,000 megawatts
- 1 terawatt (TW) = 1,000 gigawatts

Electricity costs

Energy consumption

In 2025, the average Idaho household consumed 11.2 MWh of electricity, compared with the national average of 10.5 MWh. A single terawatt-hour (TWh) of electricity would be enough to supply approximately 89,365 Idaho households for a year, or 95,238 households using the national average.

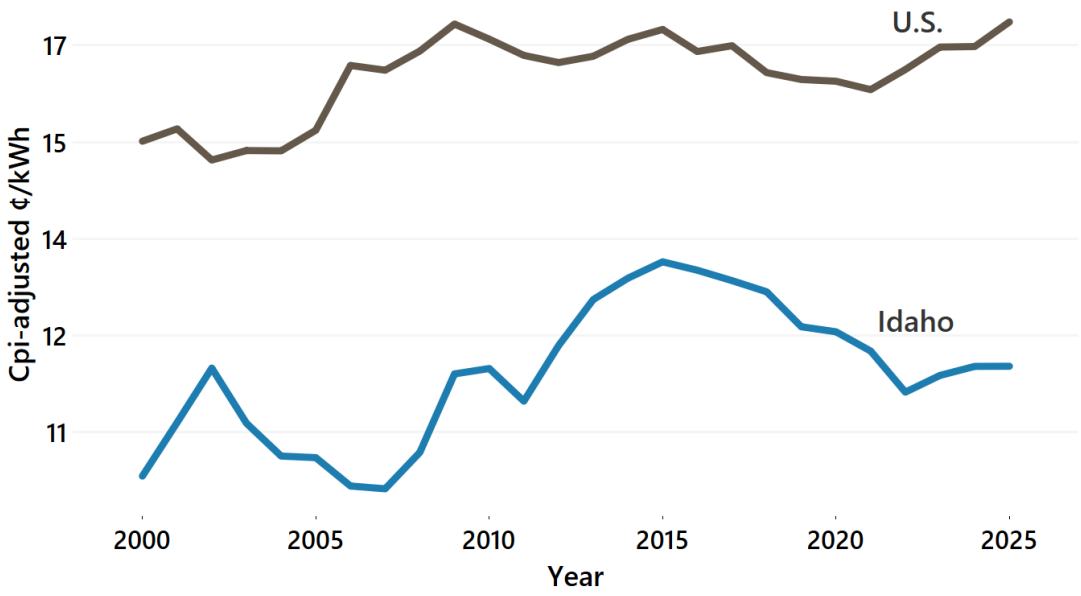
Idaho's above-average electricity consumption is largely driven by the state's climate. Cold winters and hot summers increase demand for both heating and air conditioning, resulting in higher household electricity use than in many regions with milder weather.

Idaho vs. national average

Despite using more energy, Idahoans pay lower prices per kWh than most states. When adjusted for inflation (2024 dollars), Idaho had the nation's second-lowest residential electricity price in 2025 at 11.52 cents per kWh, trailing North Dakota's 11.51 cents by only one-hundredth of a cent.[1] By comparison, the national average was 16.86 cents per kWh — 46% higher than Idaho's rate.

As shown in Figure 1, Idaho's electricity prices generally followed the national trend until around 2021, when they began to diverge. National residential electricity prices climbed from a decade-low of 15.81 cents per kWh in 2021 to 16.86 cents by 2025, an increase of 7%. Idaho, however, moved in the opposite direction — residential electricity prices declined by approximately 2% over the same period, making electricity in the 2020s less expensive than it had been during the previous decade.

Figure 1. Price comparison between the U.S. and Idaho, 2000–2025



Sources: U.S. Energy Information Administration, "Historical State Data"; U.S. Bureau of Economic Analysis "Personal Income by State"; U.S. Bureau of Labor Statistics, "Consumer Price Index."
*CPI stands for Consumer Price Index
**¢/kWh stands for cents per kilowatt-hour

[1] "Historical State Data 1990-2024," U.S. Energy Information Administration, accessed June 2026, https://www.eia.gov/electricity/data/state/.

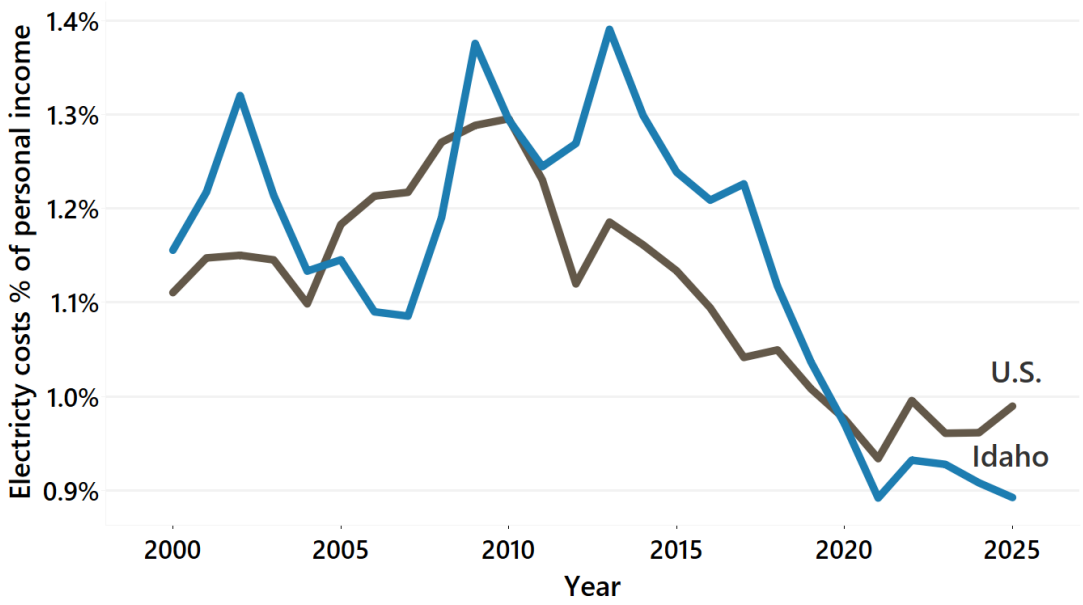
Affordability for households

Although Idaho enjoys a substantial advantage in electricity prices, the overall burden on household budgets tells a more nuanced story. Figure 2 shows that electricity expenditures accounted for 1.16% of Idaho's total personal income in 2000. By 2025, that share had fallen to 0.89% — a 23% decline. Rising incomes and improvements in energy efficiency have both contributed to this long-term reduction.

Even so, Idaho households have historically devoted a larger share of their income to electricity than the national average, particularly throughout the 2010s. Between 2010 and 2019, Idaho's electricity costs, as a share of personal income, averaged roughly 9% higher than the U.S. average.

This relationship reversed beginning in 2020. As residential electricity prices accelerated nationwide, Idaho became comparatively more affordable, improving from roughly 1% below the national average in 2020 to 10% below it by 2025.

Figure 2. Electricity expenditures as a percentage of personal income, 2000–2025



Sources: U.S. Energy Information Administration, "Historical State Data"; U.S. Bureau of Economic Analysis "Personal Income by State."

Despite residential electricity prices being 46% lower than the national average, Idaho households spend only about 10% less on electricity overall. Two primary factors explain this difference.

First, Idaho's per capita personal income in 2025 was 18% below the national average.[2] Second, every household requires a baseline level of electricity for essential daily activities: heating and cooling, appliances, communications and other necessities that cannot easily be reduced. Idaho's colder winters and hotter summers further increase that baseline level of consumption.

Together, these factors mean that electricity consumes a larger share of household income than price comparisons alone would suggest. As a result, Idaho households remain particularly sensitive to changes in electricity prices, underscoring why the state's long-term energy outlook deserves close attention.

[2] "Personal Income by State 2000-2025," U.S. Bureau of Economic Analysis, accessed June 2026, https://www.bea.gov/data/income-saving/personal-income-by-state.

Electricity customers

Residential, commercial and industrial

Households are not the only consumers of electricity. Utilities sell electricity to three broad customer classes: residential, commercial and industrial. The price paid per kWh varies considerably among them.

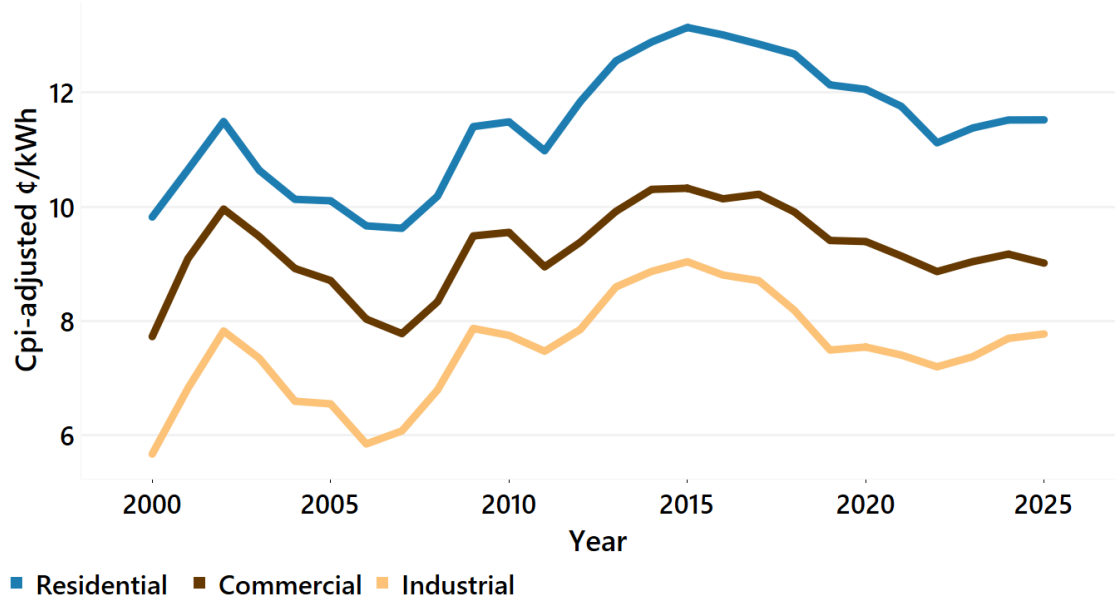
Residential customers are households. Industrial customers include manufacturers, mining operations, agricultural producers and construction firms. Commercial customers encompass nearly everyone else, including businesses, government entities, public institutions and data centers.[3]

In Idaho, residential customers paid the highest electricity rates in 2025 at 11.52 cents per kWh, followed by commercial customers at approximately 9 cents per kWh, while industrial customers paid the lowest rates at roughly 7.8 cents per kWh.

Residential service is more expensive because utilities must build and maintain extensive distribution infrastructure to deliver electricity to hundreds of thousands of individual homes.

Commercial and industrial customers, by contrast, typically receive electricity at a single facility or campus, reducing distribution costs and allowing utilities to offer lower rates. Despite these differences in price, all three customers have followed similar pricing trends since 2000, with no significant divergence.

Figure 3. Price per kilowatt-hour by customer class, 2000–2025



Source: U.S. Energy Information Administration, "Historical State Data"; U.S. Bureau of Labor Statistics, "Consumer Price Index."
*CPI stands for Consumer Price Index
**¢/kWh stands for cents per kilowatt-hour

While electricity price trends have remained relatively consistent across customer classes, electricity consumption has changed considerably over time. As shown in Figure 4, industrial customers have

[3] "Glossary," U.S. Energy Information Administration, accessed July 2026, https://www.eia.gov/tools/glossary/.

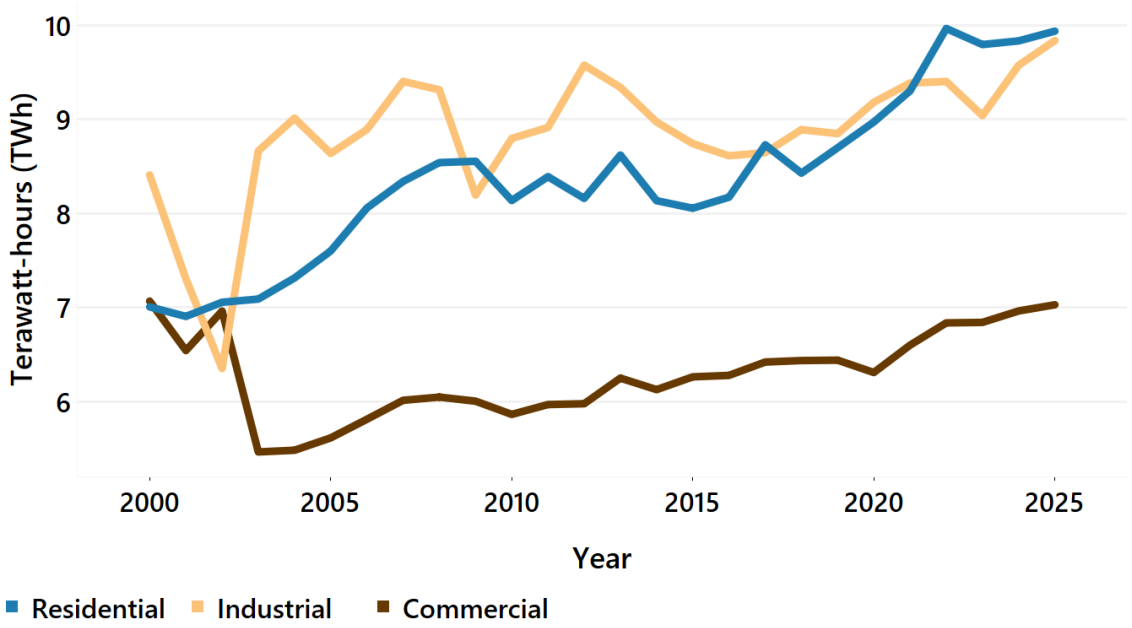
historically been Idaho's largest consumers of electricity. Their demand has also been the most volatile, largely because the industrial sector consists of relatively few customers.

There were just 29,635 industrial customers in 2025, compared with 899,124 residential customers and 126,776 commercial customers.[4] A small number of large industrial facilities can therefore have a significant effect on statewide electricity sales.

That pattern began to change as Idaho experienced rapid population growth. During the past six years, residential customers became the state's largest consumers of electricity, purchasing 9.9 TWh in 2025 compared with 9.8 TWh for industrial customers. Between 2019 and 2025, there was an increase in residential electricity sales of 18%, industrial sales of 11% and commercial sales of 9%.

What's worth taking note of is the commercial sector's relative stability. Despite steady economic growth, commercial electricity sales have yet to surpass their all-time high of 7 TWh which occurred in 2000 before the collapse of the dot-com bubble.

Figure 4. Electricity sales by customer class, 2000-2025



Source: U.S. Energy Information Administration, "Historical State Data."

Electricity generation

Idaho's domestic vs. imported energy

Because Idaho has some of the lowest electricity prices in the nation, many people assume the state is a net exporter of electricity. Figure 5 below demonstrates how Idaho has actually relied heavily on imported electricity for decades, as opposed to its own generated electricity (referred to as domestic).

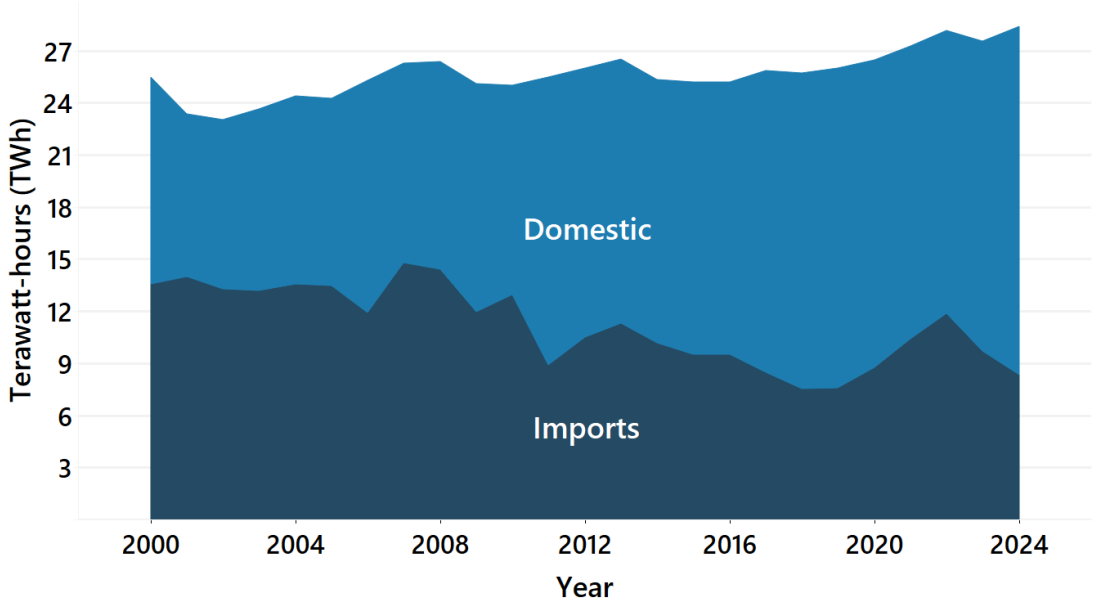
In 2000, Idaho generated only 11.9 TWh of electricity while importing an additional 13.6 TWh from neighboring states, bringing total electricity consumption to 25.5 TWh. It wasn't until 2011 following the

[4] "Historical State Data 1990-2024," U.S. Energy Information Administration, accessed June 2026, https://www.eia.gov/electricity/data/state/.

Great Recession that in-state generation supplied a majority of Idaho's electricity needs, reducing imports to 35% of total consumption.

Idaho’s importation of electricity continued to decline gradually throughout the 2010s. The COVID-19 pandemic caused a sharp but temporary increase in the share of imported electricity, reaching a height of 42% in 2022 and falling back down to 29% by 2024. In 2025, Idaho consumed 28.3 TWh of electricity, with domestic generation reaching a record of 20.7 TWh.[5]

Figure 5. Domestic generation and imported electricity, 2000–2024



Source: U.S. Energy Information Administration, “State Energy Data System.”

Electricity-related employment

Idaho's push for domestic electricity independence has paved a path into high paying jobs across the state. For example, in 2025, electrical power-line installers and repairers started with an entry wage of $82,420 a year and an average annual wage of $113,480 overall — nearly double Idaho's average annual wage across all occupations of $61,170.

Idaho’s electrical engineers were also well compensated in 2025, earning an average of $126,200 annually. Power distributors and dispatchers and power plant operators rounded out the list, averaging $143,960 and $112,490 a year respectively.

Idaho employed 2,270 workers across these roles in 2025, with the largest share — 860 workers — coming from electrical power-line installers and repairers. As the state continues to grow rapidly, it's likely the high salaries and demand for jobs in these fields will persist.[6]

[5] “State Energy Data System,” U.S. Energy Information Administration, accessed June 2026, https://www.eia.gov/electricity/data/state/.
[6] “Occupational Employment and Wage Statistics,” Idaho Department of Labor, accessed August 2026, https://lmi.idaho.gov/data-tools/oews/.

Energy sources

Hydro, natural gas, wind and more

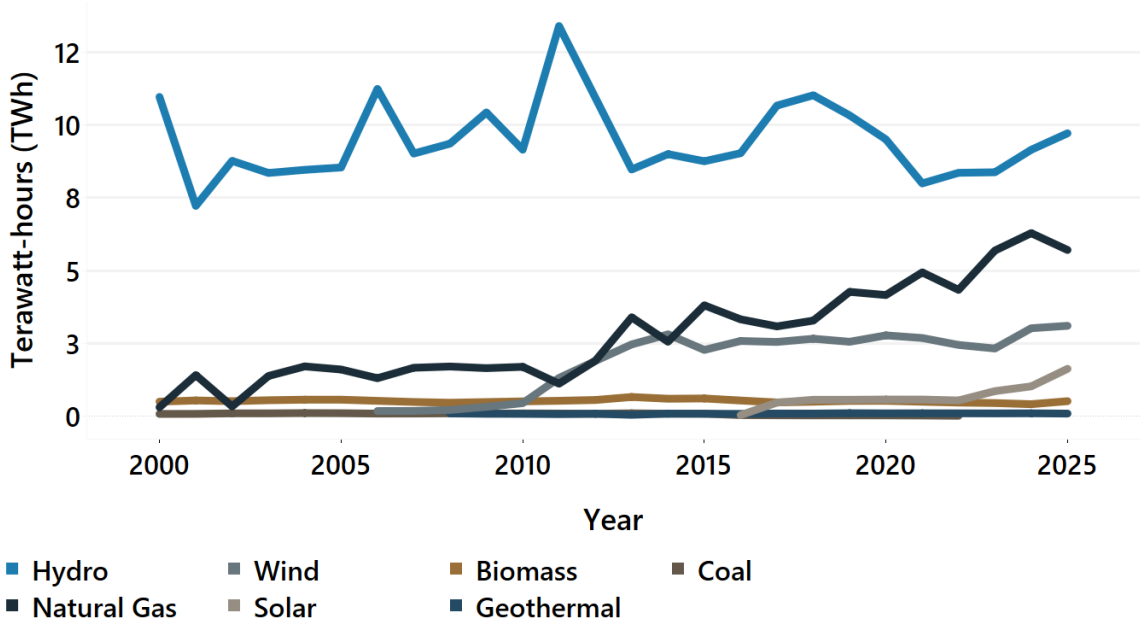
Hydroelectric power remains the foundation of Idaho's electricity generation, as shown in Figure 6. Since 2000, hydroelectric facilities have generated an average of 9.4 TWh of electricity annually, producing 9.7 TWh in 2025. Annual output fluctuates with water availability, and because few major dams have been constructed or significantly expanded in recent decades, hydroelectric generation has remained relatively stable over time.

Natural gas has emerged as Idaho's second-largest source of electricity generation. Output increased from just 0.3 TWh in 2000 to 5.7 TWh in 2025. Meanwhile, coal-fired generation remained minimal, hovering around 0.08 TWh annually before being phased out entirely in 2023.

Wind and solar generation have experienced the fastest growth over the past two decades. Wind generation came online in 2006, producing 0.2 TWh in its first year, and expanded to 3.1 TWh by 2025, making it Idaho's second-largest renewable energy source. Solar generation followed a decade later, beginning with just 0.03 TWh in 2016 before increasing to 1.6 TWh within ten years.

Biomass and geothermal generation have remained comparatively stable, producing approximately 0.5 TWh and 0.08 TWh annually, respectively, with geothermal first contributing to Idaho's electricity supply in 2008.[7]

Figure 6. Electricity generation by source, 2000–2025



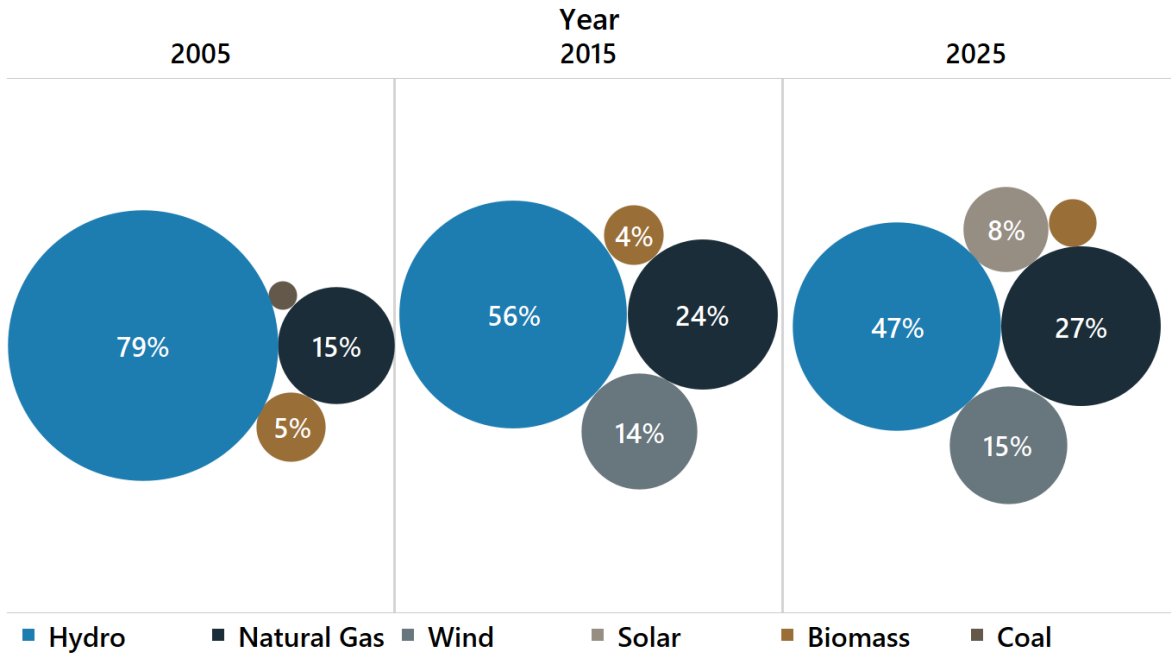
Source: U.S. Energy Information Administration, "State Energy Data System."

The rapid expansion of non-hydroelectric generation has fundamentally reshaped Idaho's electricity portfolio over the past two decades, as illustrated in Figure 7.

[7] "State Energy Data System," U.S. Energy Information Administration, accessed June 2026, https://www.eia.gov/electricity/data/state/.

In 2005, hydroelectric power accounted for nearly 80% of in-state electricity generation. By 2025, that share had fallen by almost half. Natural gas increased its share of total generation from 15% to 27% over the same period. While wind generation grew more than tenfold, its share of Idaho's electricity mix remained relatively stable at roughly 15% as overall electricity generation continued to increase. Solar, by contrast, grew from essentially zero to 8% of total generation by 2025.

Figure 7. Energy portfolio by share of generation, 2005-2025



Source: U.S. Energy Information Administration, "State Energy Data System."

Although renewable resources still accounted for 73% of Idaho's electricity generation in 2025, down from 84% in 2005, the composition of those renewables has become considerably more diverse. Rather than relying predominantly on hydroelectric power, Idaho now benefits from a broader mix of hydroelectric, wind and solar generation.

This diversification strengthens the state's electric grid by reducing its dependence on annual water conditions while providing greater flexibility to meet Idaho's steadily growing demand for electricity.[8]

Energy utilization in Idaho

Not every power plant generates electricity at its maximum capacity all the time. One of the best ways to compare different energy sources is through their utilization rate — the percentage of time a generating facility is producing electricity relative to its maximum potential output.

For example, a natural gas plant may have a rated capacity of 500 MW. If it operates at roughly 60% utilization over the course of a year, its average effective output is closer to 300 MW. For energy sources such as natural gas, utilization is influenced by maintenance schedules, electricity prices and grid demand.

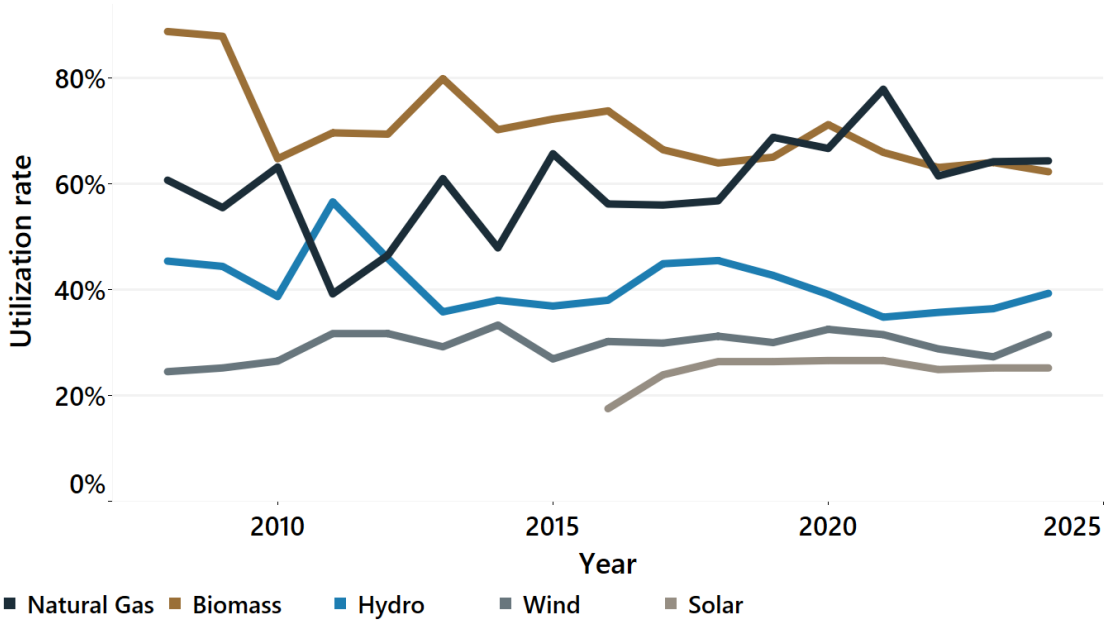
[8] "State Energy Data System," U.S. Energy Information Administration, accessed June 2026, https://www.eia.gov/electricity/data/state/.

Renewable resources, however, are constrained primarily by environmental conditions. Wind turbines generate electricity only when sufficient wind is available, while solar facilities depend on daylight and weather conditions.

Figure 8 compares the utilization rates of Idaho's major electricity sources. In 2025, natural gas and biomass recorded their highest utilization rates at 64% and 62%, respectively. These rates were significantly higher during the COVID-19 pandemic, reaching 78% for natural gas and 71% for biomass. This was a result of people being quarantined and therefore putting more strain on the grid by running their heating and cooling systems more.

Hydroelectric generation has historically exhibited the widest range of utilization, fluctuating between 34% and 56% depending largely on annual water availability, while averaging 41% since 2000. Wind and solar have been considerably more consistent, with solar generally operating between 24-26% utilization and wind between 27-33%.

Figure 8. Idaho's utilization rate by energy source, 2000–2025



Source: U.S. Energy Information Administration, "State Energy Data System."

Utilization rates provide important context when comparing announced energy projects. New generating facilities are typically described in terms of installed capacity (megawatts), but capacity alone does not indicate how much electricity a facility will actually produce over the course of a year.

Because utilization rates vary significantly across technologies, one energy source may require nearly twice the installed capacity of another to generate the same annual amount of electricity.

Understanding utilization rates therefore allows for a more meaningful, apples-to-apples comparison of different energy resources and provides a better measure of their practical contribution to Idaho's electric grid.[9]

[9] "State Energy Data System," U.S. Energy Information Administration, accessed June 2026, https://www.eia.gov/electricity/data/state/.

Conclusion

Idaho's electricity system is more resilient than many people realize. Although demand continues to grow, the state has expanded domestic electricity generation, reduced its reliance on imports and built a more diverse energy portfolio over the past two decades. Those changes have helped Idaho maintain some of the lowest electricity prices in the nation while supporting a growing population and economy. However, as advancements in AI and data centers persist, so will the demand for electricity, and Idaho's grid will require continued investment and innovation to meet future needs.

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August 2026