

## The Hidden Price of Intelligence

Nobody talks about the electricity bill. Artificial intelligence is often treated as if it exists somewhere out of sight weightless, effortless, and instant. Yet every AI response and generated image relies on massive data centers that consume enough power to run entire cities. While rivers are being redirected, some communities are discovering their electricity rates have risen without knowing the real reason. The cost of running AI data centers remains one of the most important and least discussed issues today.

The physical reality is striking. A large data center usually uses between 20 and 200 megawatts of power. Just 20 megawatts can supply about 15,000 average American homes. The biggest data campuses being planned now are set to use 1,000 megawatts or more, which is close to the output of a nuclear power plant, all for computing. The money involved is huge. Microsoft plans to spend \$80 billion on data centers in 2025. Google has pledged \$75 billion, and Amazon \$105 billion. These are not just estimates land has already been bought, and construction has started.

Where these centers are built is not random. They tend to cluster where power is cheap, the climate is cool, and fiber infrastructure is good. The effects are local and very real. Ireland, for example, has become Europe's digital gateway for American tech companies. Data centers in Dublin now use about 21% of the country's electricity, which has worried grid operators and led regulators to pause new connections. Ireland, with five million people, is hosting infrastructure meant to serve billions. Singapore stopped allowing new data centers after realizing that its dense, tropical environment and lack of natural rivers made cooling a major problem. The desire to be an AI hub clashes with the environment's physical limits. The UAE and Saudi Arabia are also investing heavily in AI infrastructure as part of their economic plans. But these are some of the hottest places on earth. Cooling a data center in Abu Dhabi in August, when temperatures exceed 45 degrees Celsius, requires so much refrigeration energy that it can match the energy used for computing itself.

Running AI at scale is expensive in ways that add up quietly. A large data center can use between one and five million gallons of water each day just for cooling. Google's 2023

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environmental report showed a 20% increase in water use from the previous year, mostly because of AI workloads. In areas prone to drought, this means data centers compete directly with farms, city water supplies, and natural ecosystems. The cost of a single AI query is between \$0.01 and \$0.10. That seems small, but with hundreds of millions of queries each day, it adds up to billions each year. OpenAI reportedly spent over \$700 million on computing in 2023 alone.

Who actually pays for all this? The companies building these centers expect to make enough money to justify the investment. That might be true, or it could be a case of companies spending out of fear of falling behind, even if the revenue does not match the costs in the short term. From the outside, it is hard to know. What is clearer is who else pays. People living in areas with many data centers often see their electricity bills go up because of the extra strain on the grid and the need for new power lines. Communities that host these centers may lose tax revenue because of deals made to attract the companies. In places where water is scarce, local workers end up competing with data centers for a resource that is limited and not free.

Here is a number to consider: The International Energy Agency estimated that data centers worldwide used 200 to 250 terawatt-hours of electricity in 2024, about as much as Germany uses in a year. If AI keeps growing at the current pace, that could rise to 400 to 800 terawatt-hours by 2030 equal to one or two Germany's yearly electricity use, just for computation. The people signing contracts don't have to answer whether spending this money, water, land, and affecting communities is worth it. Instead, these costs are quietly passed to ratepayers, local water sources, and power grids. The cost is real and paid by people who never agreed to it.