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Nuclear Power is the Most Reliable Energy Source and It's Not Even Close

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Nuclear energy is America's work horse.

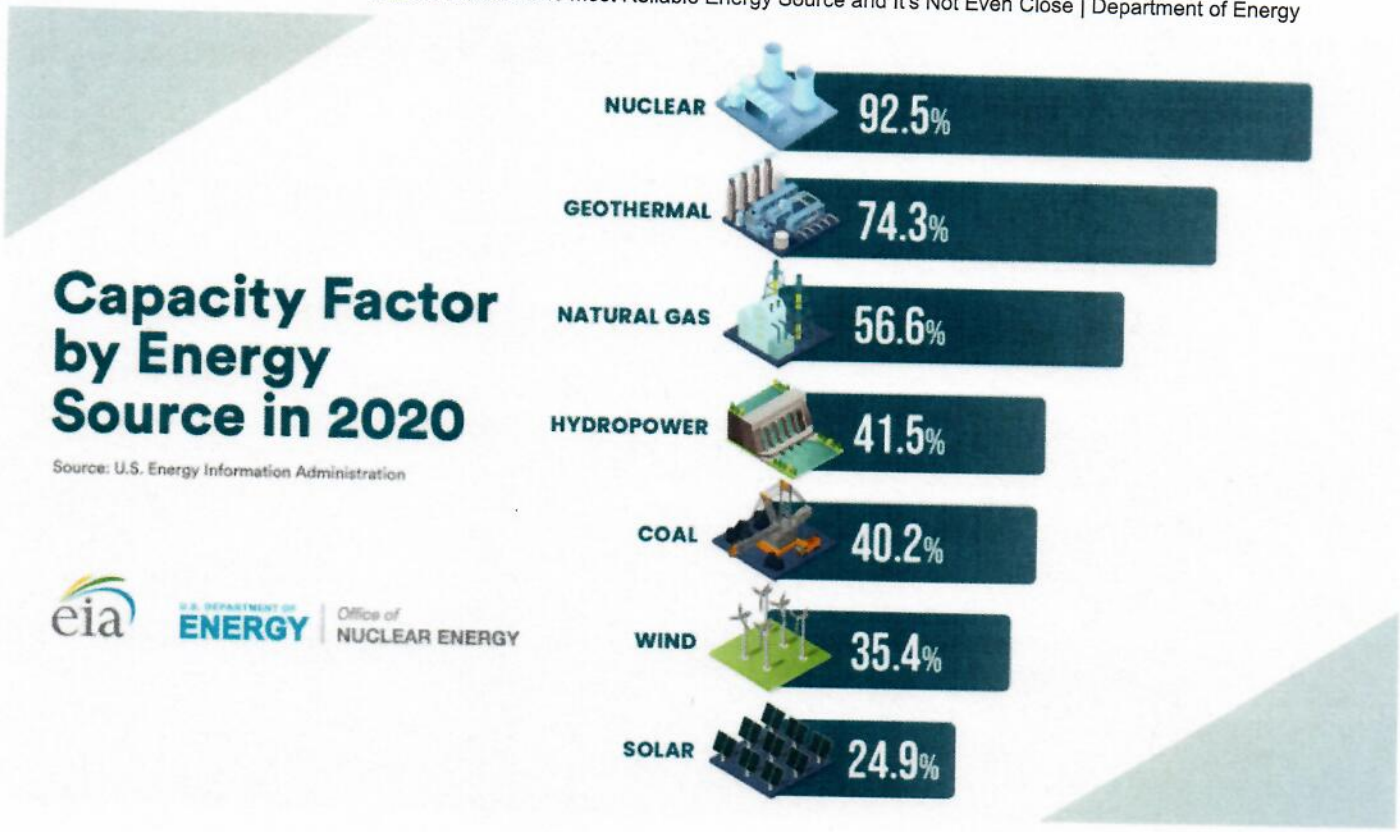
It's been rolling up its sleeves for six decades now to provide constant, reliable, carbon-free power to millions of Americans.

Just how reliable has nuclear energy been?

It has roughly **supplied a fifth of America's power** each year since 1990.

To better understand what makes nuclear so reliable, take a look at the graph below.

Nuclear Has The Highest Capacity Factor



As you can see, nuclear energy has by far the **highest capacity factor** of any other energy source. This basically means nuclear power plants are producing maximum power more than 92% of the time during the year.

That's about **nearly 2 times more** as natural gas and coal units, and almost 3 times or more reliable than wind and solar plants.

Why Are Nuclear Power Plants More Reliable?

Nuclear power plants are typically used more often because they require less maintenance and are designed to operate for longer stretches before refueling (typically every 1.5 or 2 years).

Natural gas and coal capacity factors are generally lower due to routine maintenance and/or refueling at these facilities.

Renewable plants are considered intermittent or variable sources and are mostly limited by a lack of fuel (i.e. wind, sun, or water). As a result, these plants need a backup power source such as large-scale storage (not currently available at grid-scale)—or **they can be paired** with a reliable baseload power like nuclear energy.

Why Does This Matter?

A typical **nuclear reactor produces 1 gigawatt (GW) of electricity**. That doesn't mean you can simply replace it with a 1 gigawatt coal or renewable plant.

Based on the capacity factors above, you would need almost two coal or three to four renewable plants (each of 1 GW size) to generate the same amount of electricity onto the grid.

> **Suggested Read: What is Generation Capacity?**

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