The dishonest fantasy of wind and solar

Nuclear is an economically proven source of 'green energy'

Byron Donalds

“Green alternative energy” is often deemed a solution to tackle the so-called “climate crisis.” Today’s discussions about green energy usually focus on energy generated from wind turbines and solar panels — with “green” proponents intentionally omitting nuclear from clean energy conversations. However, this is deliberately disingenuous. Nuclear specifically is an economically proven source of “green energy” that, in 2021, accounted for 19% of U.S. electricity generation — while wind and solar only accounted for 9.6% and 2.8%, respectively. Many “green energy” promoters fixate on an energy grid centered around wind and solar to “reduce fossil fuel consumption” — but such an energy future is a dishonest fantasy.

I believe in a diversified power grid that produces affordable, reliable electricity, but we must recognize the real-life problems associated with a grid that depends on wind and solar — while simultaneously understanding the positive grid benefits that nuclear power can provide. In fact, I strongly believe that nuclear energy should be embraced and included in future “green alternative energy” conversations.

Before we assess the pros and cons of various energy technologies, let’s begin with basic energy terminology to assist with gauging the value of an energy source.

First, “capacity factor” is the power produced divided by the maximum possible power production over a given period of time. In other words, an

energy source with a 100% capacity factor means it operates at maximum power 24/7/365 — the higher capacity factor, the better.

Second, “baseload” vs. “intermittent” is an important energy distinction. Baseload energy sources operate almost continuously at maximum capacity to serve the minimum amount of electricity demand at any given time (e.g. nuclear). Conversely, intermittent energy sources are only available at certain times and quantities dictated by nature instead of human needs (e.g. wind and solar). Thus, baseload energy sources are more reliable than intermittent energy sources.

To illustrate, the U.S. Energy Information Administration revealed that in 2021, wind farms had an average capacity factor of 34.4% and solar farms had an average capacity factor of 24.4%. In contrast, nuclear energy facilities had an average capacity factor of 92.7%. This statistic alone exemplifies the fact that nuclear power is more energy-efficient and consistent than power generated from wind and solar. And my fellow Americans: Greater reliability equals lower energy prices for the average American household.

In addition, the downfalls of a wind and solar-centered grid can be displayed through recent examples. In August 2020, hundreds of thousands of Californians faced rolling blackouts — resulting in insufficient electricity statewide. Also in February 2021, Texas experienced extreme blackouts from a bitter winter storm that curtailed wind and sunlight. But what caused the blackouts? Well, both electric grids were designed to maximize wind and solar, and Californians and Texans suffered the consequences — no air conditioning amid a heat wave in California, and no heat amid a winter storm in Texas.

These real-life examples of intermittent dependency provide woeful reminders that a reliable power grid should encompass baseload energy sources with high-capacity factors — such as nuclear — instead of depending on sources like wind and solar.

Today, the United States theoretically has enough wind and solar capacity to power an electric grid, and sufficient battery technology to store power for when the wind isn't blowing and when the sun isn't shining. Yet, there are many considerations that complicate this wishful energy opportunity and must be explored further in green alternative energy discussions.

Economically speaking, U.S. electricity prices are generally higher in areas that rely on wind and solar power. Wind turbines and solar farms are often built in plains, deserts, hilltops, and coastal areas (e.g. geographical locations with strong wind and access to sunlight), but constructing massive transmission infrastructure to connect the grid is improbable and unrealistic. Also, government incentives unfairly favor wind and solar at a detriment to nuclear — irrespective of the energy source's overall grid value. Not to mention the additional expenses accompanied with building wind turbines and solar panels, transporting the construction materials, installation, equipment, energy storage, synchronization to the grid, etc.

When assessing the value of wind and solar technology, we must also consider the resulting environmental degradation, toxic deterioration over time, and harm to birds and marine life. Other valid concerns of wind and solar are noise, visual pollution, seasonal reliability in anti-tropical areas, and the vast amount of concrete needed to support underground structures of wind turbines and solar farms. Furthermore, in the absence of transmission infrastructure, large resource-intensive battery storage systems are necessary for wind and solar power, but these systems aren't readily available — thereby casting further doubt on the reality of a wind and solar centric grid.

Wind and solar technologies also increase U.S. vulnerability — and dependence — on foreign countries. Wind turbines and solar panels use significant amounts of rare earth elements (REEs) and critical minerals, which the United States does not presently mine in sufficient quantities and thus must source from foreign countries. For example, a single industrial-sized wind turbine requires nearly a ton of four different REEs, about 900 tons of

steel, roughly 45 tons of non-recyclable plastic, and approximately three tons of copper (notwithstanding the immense amount of copper needed for transmission infrastructure). The U.S. is also extremely reliant on several foreign mineral commodities used in solar panels, such as: arsenic, gallium, germanium, indium and tellurium.

From a geopolitical perspective, the International Energy Agency recently proclaimed that "China plays a commanding role in clean energy technology," and that Beijing's manufacturing and trade capacity have "eclipsed" much of the worlds. China currently controls the world's green tech supply chain — with six of the world's ten largest wind turbine manufacturers being Chinese. Additionally, China produces approximately 95% of the world's REE raw materials and is the world's only exporter of rare earth metals in commercial quantities — making China a lynchpin in the solar and wind supply chain. Also, 75% of silicon-based solar cells installed in the U.S. are made by Chinese partners in Asia — while 89% of solar panels installed by Americans in 2020 were imported from foreign countries.

In comparison, nuclear power requires few critical minerals — most of which can be sourced domestically. By prioritizing nuclear power in the energy mix, the United States would have not only a more reliable grid but also a more geopolitically secure energy grid overall.

In sum, I'm not opposed to wind turbines and solar panels, but if we seriously want an affordable, reliable, secure "green energy" grid, we cannot rely on the dishonest fantasy of utilizing spiky intermittent energy sources like wind and solar. Instead, we must embrace nuclear power and include nuclear in future green alternative energy discussions. Ultimately, we must base our future energy-related decisions on logic and objective facts — not politics.

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