

DAILY NEWS

OPINION

The nuclear option: Yes. It's safe, reliable and efficient energy

BY [ROBERT BRYCE](#)

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The debate over sources of power has raged since the disaster in Japan.

First, there was [Three Mile Island](#), then [Chernobyl](#) and now, [Fukushima](#). The devastating tsunami and earthquake which caused the nuclear accident in [Japan](#) is once again raising serious questions about the safety of nuclear energy, particularly when it is produced by older reactors.

While the need to phase out poorly designed reactors and improve nuclear safety is abundantly obvious, we cannot stop the utilization and development of fission, which now provides 20% of [U.S.](#) electricity and some 14% of global electricity. Newer reactor designs can safely produce huge quantities of reliable, dispatchable electricity that will help tens of millions of people around the globe escape dire energy poverty while also limiting air pollution and carbon dioxide emissions.

The pursuit of nuclear energy will continue because the physics of nuclear are so compelling. An important physics metric, power density - which is a measure of the energy flow that can be harnessed from a given unit of area, volume or mass - shows why this is true.

Using the power density metric, let's look at wind energy, a favored source among environmental groups, many politicians and a panoply of subsidy-seeking companies. And while considering wind energy, let's set aside its fatal flaws, which include its incurable intermittency and variability. No matter where you put wind turbines, they have a power density of about 1 watt per square meter.

Now let's compare wind's power density numbers with those from the two nuclear reactors at Indian Point in [Westchester County](#). Those reactors, with 2,083 megawatts of generation capacity, provide as much as 30% of all the electricity needed by [New York City](#). The power density inside the reactor cores at Indian Point is about 338 megawatts (338 million watts) per square meter. Even if you include the entire footprint of Indian Point - about 250 acres - the power density at the site exceeds 2,000 watts per square meter, meaning that the nuclear plant has 2,000 times the power density of the best wind projects.

Put another way, to equal the electricity generation capacity at Indian Point with wind energy, you'd need to pave about 770 square miles of land with wind turbines, an area slightly smaller than the state of [Rhode Island](#).

And even that comparison is too generous because wind energy cannot be counted on to deliver electricity when demand is highest, meaning you would still need conventional generators (fueled by coal, natural gas or nuclear) to make sure the lights stay on. Further, few people could live on that 770 square miles of land because the noise (including infrasound) generated by the wind turbines is so disruptive. The deleterious health effects of wind turbine noise have been documented by numerous health professionals including, notably, [Dr. Nina Pierpont](#), a physician who practices in Malone, [New York](#).

The nuclear reactors now being designed and built have passive cooling systems that will allow them to operate much more safely in case of a catastrophic event akin to what happened in Japan. In addition, several companies are developing small reactors which could, given their lower cost, allow utilities to invest relatively modest amounts of capital in new nuclear generation capacity. Add in the potential for thorium to replace uranium as a reactor fuel - and in doing so, reduce production of weapons-grade radioactive materials - and it becomes apparent that the Nuclear Age is far from over.

Finally, the world's insatiable hunger for electricity ensures that nuclear reactors will continue to be a go-to source when it comes to large-scale production of dispatchable electrons from low- or no-carbon sources. Last year, the [International Energy Agency](#) projected that global electricity demand will soar by some 80% by 2035.

As a friend of mine told me recently, "Some things are so useful you can't ignore them. And nuclear energy is one of them." He's right.

Bryce is a senior fellow at the [Manhattan Institute](#). His fourth book, "Power Hungry: The Myths of 'Green' Energy and the Real Fuels of the Future," will soon be released in paperback.



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