

Nuclear Power? No, Thanks.

By John Reynolds, FAIA

The United States should phase out nuclear power as soon as possible. Instead of nukes, we need a whole-hearted commitment to renewable energy sources. Some of my ASES friends disagree with my nuclear skepticism. I acknowledge their point of view.

The threat of global warming has revived interest in nuclear power, because it apparently produces no gases that contribute to global warming. Some advocates even describe nuclear power as “renewable.” Given the obvious environmental and political disadvantages of fossil fuels, should we develop nuclear power?

Thermal pollution is one obvious nuclear disadvantage. N-plants operate at very high temperatures, requiring huge amounts of cooling water. The typical nuclear plant requires about 50 percent more cooling water than the equivalent coal plant. An ultra-modern nuclear plant is about 40 percent efficient, which means that for every kilowatt-hour of power produced it dumps about 6,000 Btu of waste heat into the air and water. Where waste heat is discharged to rivers, ecosystems are threatened. Spain was forced to curtail some reactors in the summer of 2006 when drought diminished river flows and raised water temperatures downstream, threatening fish kills and algae blooms. With global warming promising more of the same, is nuclear reliable? Do we want to add more waste heat to the greenhouse load?

Nuclear power is renewable only if we accept the plutonium option involving breeder reactors. This terrible choice combines the most severe international nuclear-proliferation threats with hundreds of thousands of years of threat from nuclear waste. Plutonium, the terrorist's gold, should not be an answer to our energy shortages.

Uranium extraction results in pollution from mine tailings. Before it can be used as fuel, uranium requires enormous amounts of energy — supplied mostly by fossil fuels — in an enrichment process heavily subsidized by U.S. taxpayers. Other subsidies include very low limits of utility liability in catastrophic accidents, and billions in proposed loan guarantees.

Nuclear waste must be shipped and then guarded for millenia. In the United States,



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nuclear waste sits at each nuclear plant, even those now decommissioned. If we ever build that central waste depository under Nevada's Yucca Mountain, radioactive waste will then be shipped through our cities and farms. Until the

nuclear waste problem is solved, we should stop producing any more of it.

Nuclear power advocates say that, other than coal, only nuclear can respond to the projected rapid growth in demand for electricity. The advent of the electric car as a “carbon neutral” climate solution is one example of a new technology dependent on increased electrical generating capacity. But I wonder why our industries would have an easier time churning out nuclear reactors than photovoltaic panels or wind turbines. Yes, the current shortage of PV panels and wind turbines is worrisome; so is the recent staggering price increase for uranium. And what about the cost of decommissioning those hot reactors?

I hear concerns about pollution from PV panel manufacture involving arsenic and cadmium. But are uranium mining, enrichment and long-term storage more environmentally benign? The ASES “Tackling Climate Change” report shows that, with increased energy efficiency, renewable energy could supply 51 percent of America's grid electricity by 2030. Marine power (tidal and wave energy) was not included.

Unlike PV and wind, nuclear power can operate 24/7. But so can truly renewable sources such as biomass, geothermal and wave energy. For solar at night and wind in calm, we should invest in energy storage research, such as batteries that also benefit hybrid vehicles, rather than the nuclear power programs that now get the huge preponderance of U.S. Department of Energy funding.

What about this small nuclear reactor, about the size of a hot tub? With a capacity of some 27 megawatts, it claims to produce power for five years before reloading. Like PV and community wind, neighborhood nukes allow a utility to make small

investments where load growth is greatest. But more pockets of radioactive materials in more places do not appeal to me, nor does the prospect of their decommissioning and waste storage.

I advocate solar and wind energy because:

- They are good neighbors. Wind turbines pay welcome royalties to farmers and ranchers who work around them. “Tackling Climate Change” showed that up to 10 billion square meters of solar-accessible residential and commercial rooftop space in the United States could, with PV, produce up to 40 percent of total 2004 United States electricity capacity.

- Solar and wind are labor-intensive in manufacture and installation, contributing to local economies. See the recent ASES report, “Renewable Energy and Energy Efficiency: Economic Drivers of the 21st Century.”

- Once installed, solar and wind have zero fuel costs. The money saved flows to local economies instead of to distant utility corporations and mining companies.

- Solar and wind are inherently terror-resistant because they are widely distributed rather than concentrated. Compare one nuclear plant whose rupture would lead to a massive radiation release to 700 wind turbines spread over several thousand acres of still-farmable land.

- Solar energy offers some blackout protection, because it can be integrated into the building it serves. My solar water heater has a photovoltaic-driven pump. If I lose electricity from my utility, the sun can still warm my water.

- Once in operation, solar and wind contribute almost no pollution or other environmental damage (wind turbine bird kills are an unfortunate exception). What a contrast to the extraction, groundwater pollution, shipping, refining, combustion or fission, waste heat, emissions and waste disposal associated with nonrenewable fuels.

But the most important reason to advocate renewable energy development is its contribution to world peace.

Countries have never gone to war over solar resources. Solar, wind, biomass and ocean energy resources are spread across the Earth, not concentrated in a few Middle Eastern countries. Many poor countries — especially those near the equator in Africa, South America and South Asia — have excellent year-round solar resources. If we promoted solar energy for all instead of nuclear energy to our (current) friends, our world would be a better, safer place. ●

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