

LET'S RUN THE NUMBERS

Nuclear energy vs. wind and solar

by

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Four bottom lines up front:

- It would cost over \$29 Trillion to generate America's baseload electric power with a 50 / 50 mix of wind and solar farms, on parcels of land totaling the size of Indiana. Or:
- It would cost over \$18 Trillion with Concentrated Solar Power (CSP) farms in the southwest deserts, on parcels of land totaling the area of West Virginia. Or:
- We could do it for less than \$3 Trillion with AP-1000 Light Water Reactors, on parcels totaling a few square miles. Or:
- We could do it for \$1 Trillion with liquid-fueled Molten Salt Reactors, on the same amount of land, but with no water cooling, no risk of meltdowns, and the ability to use our stockpiles of nuclear "waste" as a secondary fuel.

Whatever we decide, we need to make up our minds, and fast. Carbon fuels are killing us, and killing the planet as well. And good planets are hard to come by.

If you think you can run the on wind and solar, more power to you.

It's an attractive idea, but before you become married to it, you should cuddle up with a calculator and figure out exactly what the long-term relationship entails.

This exercise has real-world application. The 620 MW (megawatt) Vermont Yankee nuclear reactor was recently shut down. So were the two SONGS reactors in San Onofre, which generated a combined total of 2.15 GWs (gigawatts). The public didn't suddenly go on an energy diet; in the wake of Fukushima, they were just more freaked out than usual about nuclear power. Regardless, these reactors will have to be replaced, either by building more power plants or by importing the electricity from existing facilities.

To make the numbers easier to think with, we'll postulate a 555 MW reactor that has an industry-standard 90% online performance (only shutting down for