

Rolling Back Global Warming brings Energy Independence

We created the Global Warming crisis in large part because we lost the courage to complete President Eisenhower's 1953 "Atoms for Peace" transition from coal electricity to nuclear electricity after the Three Mile Island accident in 1979. Industrial societies must have *abundant cheap energy* to survive so the motive to go nuclear then was to produce "Electricity Too Cheap to Meter." Nuclear electricity was abandoned after Three Mile Island. The world now has 141,000 operating fossil-fuel electricity generating units - mostly coal. Our power plants have brought us, in large part, Global Warming.

Three Mile Island's unfounded, but paralyzing, nuclear fears remain to this day, causing us to ignore the fact that whatever the problems of nuclear, they are nothing compared to Climate Change. **Paralyzing fear is no longer an option.**

Effective CO₂ mitigation solutions call for ample quantities of CO₂-free nuclear energy:

Coal Replacement - If the world's [141,000](#) fossil-fuel electricity generating units were eliminated by converting them from coal-burning boilers to TRISO high temperature nuclear boilers, 70% of Global Warming's advance would be stopped. **Available now.**

Oil Substitution - If gasoline, diesel, and jet fuel were made from *carbon-neutral* nuclear-hydrogenated algae (to fully energize it as if it were crude oil) instead of using fossil oil, almost another 70% of Global Warming's advance would be stopped, *and there would be no "Peak Oil" crisis or oil wars.* **Commercial quantities of carbon-neutral hydrogen are still not available.**

Natural Gas Replacement - If natural gas electricity generation and gas residential heating were replaced by electricity by doubling our fleet of conventional nuclear electricity reactors, another 35% of Global Warming's advance would be stopped. **Available now.**

Water Desalination - Most of the world's large population centers are on salt water shores. Any nuclear reactor is a great source of the heat needed to remove the salt from water. **Available now.** The Russians have been running one for years.

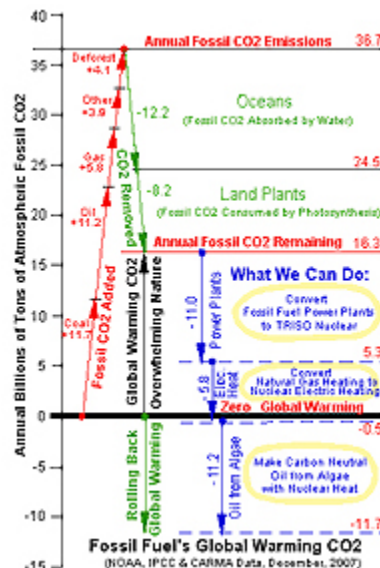
Population Roll Back - Robert Hargraves cites CIA data that shows population growth trends to replacement as per capita personal energy availability trends toward 2,000 kilowatt-hours per year (230 watts/hour) and GDP trends toward \$7,500 per year. **We're doing it already in some countries.**

ROLLING BACK GLOBAL WARMING: All three - coal, oil, and natural gas - add up to 175% of what it takes to stop Global Warming's advance. This means not only can Global Warming be stopped; the pool of excess CO₂ that has accumulated in the atmosphere over the years could be reduced by natural CO₂ sequestration at an annual rate of 75% of its current growth.

At this rate, our damaged atmosphere would be restored to normal in about 60 years.

ENERGY INDEPENDENCE: Both uranium and thorium are practical nuclear fuels. **URANIUM:** Since it is possible to obtain all the uranium we would ever need from [sea water](#), the above three measures would also bring total energy independence. Rather than wasting spent nuclear fuel by burial, we can [recycle](#) it ten or more times down to nothingness. **THORIUM:** Using our 200,000+ years of thorium in fast reactors would produce almost zero amounts of waste.

All three of these substitutions can be worked on simultaneously and are relatively frugal compared to the cost of renewables. The cost of converting our existing coal power plants to TRISO nuclear should be cheaper than the cost of converting them to "Clean Coal's" Carbon Capture and Storage (CCS) system. CCS also creates about a 25% parasitic electricity loss because of the need to power the carbon capture machinery.



To raise public awareness of these facts the author has established an ongoing basic web site book called: <http://www.coal2nuclear.com>

The web site *suggests* ways each of the three major sources of Global Warming carbon dioxide can be replaced in years, rather than decades, using existing technologies and the same multi-national production scale-up methods ([Project Merlin](#)) that served us so well during World War II.

--- Jim Holm