

IV. Economic Studies

A Disaster for the United States Economy

by Paul Gallagher

Man, unlike the beasts, is able to change his population density by development.

— Lyndon LaRouche

Feb. 5—The human species is, we must realize, also tragically able to *decrease* its population density by great masses of unnecessary deaths, either by war, or by intentionally reversing development, forcing into reverse the advance of mankind’s scientific and technological capability. Examples of intentional depopulation can be seen in the history of the British Empire’s impositions on their colonies, as in 19th-Century India and China; and in what that empire sought to do to its American colonies, helping trigger the War of Independence. It is seen in the plan originated in Britain’s World Wildlife Fund and similar imperial bodies decades ago, and is now shamelessly called the “Green New Deal,” as if FDR could have stood for such a thing.

In Germany or the United States, the continued imposition of a “Green New Deal” means tremendous price increases for electric power, industrial chaos, blackouts... But in Africa, India or any less industrially developed nation, it means population reduction by millions of unnecessary deaths.

What It Means To Shut Down Coal

With shock, the South African government learned late in 2020 that its new coal-power projects are cancelled, and it is under pressure to close down, in this decade, many of the coal-power plants which provide the lion’s share of electric power to the country. The world’s biggest fund management company, Wall Street’s BlackRock, Inc., pressured South Korea’s leading power engineering company, KEPCO, which was building the South African power complexes, to abandon them.

Following this shock, the new CEO of the South Af-



USGS

For the United States, the continued imposition of a “Green New Deal” means tremendous price increases for electric power, industrial chaos, and blackouts. Shown: A U.S. coal-fired power plant.

rican national power utility ESKOM (Electrical Supply Commission), under the same pressure, announced that South Africa would close one-third to one-half of its coal-fired plants by 2030—15-20 gigawatts. This is 30% or more of its total electric power capacity, in a nation which suffers chronic local and regional blackouts! In 2020, ESKOM had discussed requesting proposals for up to 12.5 GW capacity in small modular nuclear reactors; but this idea is not near realization or

financing. Proposing to replace coal power with wind and solar is pathetic.

South Africa is a nation twice the size of the U.S. state of Texas, and with a comparable population density, but only half the electric power generation capacity. Just as overpriced projects of giant wind farms in the windiest parts of West Texas, with 750-mile new transmission lines to bring the power to the Gulf Coast, have been abandoned more than once, so any similar idea for South Africa is an expensive folly and would leave a completely unreliable electric grid even if it could be done.

Worse, electricity use *per capita* in South Africa has been dropping since 2008 and is now (2019) 3,800 kWh per year, less than half of the European level and 1,000 kWh/year less than in 1997 according to the IEA. The country's hospital systems are, in some regions, overwhelmed already by the COVID-19 pandemic and subject to electricity unreliability. If this drop is extended and worsened by attempts to cut down the overwhelmingly dominant electricity source, reduction of the population will be a fact.

Dr. Kelvin Kemm, CEO of Stratek CC and former board chairman of the South African Nuclear Energy Corporation, made clear in his [presentation](#) on September 6, 2020 to a Schiller Institute webinar, that South Africa needs small modular nuclear plants as soon as possible to be built near population and production centers, where distribution lines can be made adequate.

Bloomberg's and Fink's 'Beyond Coal'

The incoming Biden Administration has a policy of prohibiting any new power production with coal. The nominated Secretary of State, Anthony Blinken, denounced coal-power plants during his confirmation testimony, while blaming their construction on China. "We are not going to allow foreign investment in dirty technologies," Blinken told the U.S. Senate, specifically referring to China's building of coal-fired power plants in Belt and Road nations.

BlackRock CEO Larry Fink released a letter to corporate CEOs, timed with the World Economic Forum summit, in which he stated:

More and more people understand that climate risk is investment risk. When finance really understands a problem, we take that future problem and bring it forward. That's what we saw in 2020....

In other words, what the public is told is the risk of *future* effects of climate change, is actually made by

huge funds like BlackRock into the *immediate* risk of denial of investment.

In the United States, half of all coal-power plants have been closed over the past five years by BlackRock's and Sir Michael Bloomberg's "Beyond Coal" drive, in spite of President Donald Trump. While the larger and more modern ones remain on line, for now, rated coal-electric generating capacity has fallen by half. Coal-power electric generation fell by 25% in the United States in 2020 alone. This was not a function of lower economic activity under the pandemic. Wind- and solar-power generation *rose* by 12% in the same time; natural-gas turbine generation by 9%; while nuclear power generation fell by 2.5%.

The Energy Information Agency (EIA) says that total electricity use in the United States in 2020 was approximately 7% less than two years earlier, and will remain at that depressed level in 2021. Since coal was slightly above 20% of electric power generation in 2020, the drop in coal power almost entirely accounted for the drop in power overall. The two will continue together.

Neither solar- and wind-power capacity, nor the cycling gas turbine generation capacity necessary to back it up, are being, or can be put on line in the United States as rapidly as coal-power capacity is being taken off. Nuclear power capacity is slowly shrinking at the same time. According to the U.S. Energy Information Administration (EIA) total electricity consumption dropped in 7 of the 13 years from 2007 to 2019, including 3% in 2019, and then the above-cited 7% drop in 2020. *Per capita* annual electricity generation and use has fallen since 2009 from nearly 14 MWh to 11.5 MWh, a huge 17% drop, which was accelerating in 2019 and 2020. Industrial electricity use *per capita* has dropped by 25% during that decade-plus, from just under 4 MWh to just under 3 MWh/year, according to charts by Gail Tverberg on OurFiniteWorld.com from EIA data.

Productivity Progress Reversed

One way of expressing productivity in industrial processes would be the ability to use less energy, less work, to produce the same product, and therefore to produce more and better output with the same input of energy and work time. Technological progress usually accounts for this increase in productivity. The "Green New Deal" proposes to reverse that across the U.S. economy.

The plan by that name, introduced during 2019-20 by Senators Bernie Sanders and Edward Markey and Representative Alexandria Ocasio-Cortez, and sup-

ported then by many other Democratic officials, proposed to replace both 100 million gasoline-powered motor vehicles with electric vehicles, and half of the coal and oil used in residential and commercial heating with electricity. This would require roughly 360 gigawatts (a gigawatt, GW, is one million kilowatts) of new electric power capacity in the U.S. fleet of power plants. But since at the same time, the Green New Deal also eliminates coal-fired power production in the provision of electric power *for industry*, and replaces it with “renewables,” about 485 GW of new electric power capacity would be needed.

But all electric power capacity is not the same by any means. A wind farm of, say, 1,000 megawatts (a megawatt, MW, is one thousand kilowatts) of rated capacity, takes 7-10 years to build, and its “median performance”—actual electricity generated—is half or less than that of a 1,000 MW coal-fired plant, which takes three years to build. (A solar farm generates one-quarter or less.) To make up for this, closer to 900 GW of new electric power would be required *if in the form of wind power* (much more than that if solar); and it will take three times as long to add it, than if the new power were in the form of modern “clean” coal-fired power plants—which emit carbon dioxide but release very low levels of nitrous oxides, sulfur dioxide, and particulates.

A huge bill of materials would be required to build the 200,000 or so large wind turbines necessary for this, not to mention an impossible/unavailable bill of materials for all the electric vehicles (see “Electric Vehicles, But No Electricity” in this report). But leave these huge obstacles aside for the moment and consider: Since all these different forms of power plants are produced by industrial processes, industry would be using far more energy and expending far more work-time, than the existing energy and work it is replacing in the form of electricity from coal-fired and nuclear power plants.

This would seem to be central to the definition of *lowering* economic productivity.

Anti-Productivity in Detail

Consider the replacing of 100 million gasoline-burning motor vehicles with electric vehicles (out of about 250 million personal motor vehicles and trucks on American roads). If they are driven 50 miles/day, these 100 million electric vehicles will require 1,300 gigawatt-hours (GWh) of electric power per day, or 13% of total current American electricity use.

Keep that figure in mind to consider the second

“leg” of the Green New Deal, “electrification of all buildings.” The claim is constantly repeated, of replacing fossil fuel use in residential and commercial buildings, primarily for heating, with electricity. Approximately 20% of the current 4 million GWh-equivalent of U.S. residential and commercial energy use per year is currently not provided by either electricity or natural gas. (Gas is, of course, a fossil fuel, but it is given an opportunistic pass for decades to come by some Green New Dealers.) Replacing that 20% with 800,000 GWh/year of electric power requires raising U.S. generation and use by another 20%, beyond the 13% for electric vehicles. But because it is intermittent, the median output of a given electric capacity of wind power is half that of the same capacity powered by coal; for solar power, it is one-fourth that of coal power. So, at best, replacing that 20% of residential and commercial energy use with electricity *produced by wind and solar* will actually require 1.6 million GWh/year or more of added power capacity. That means adding 440 GW of new capacity at the median output of wind, which is considerably better than that of solar; and the 100 million electric vehicles discussed above will require 280 GW new capacity at the median output of wind.

So, the total new capacity required for just these so-called “sustainable” goals of the Green New Deal, 720 GW, is equal to two-thirds of the entire United States electric power fleet.

Thirdly, some 9% of the United States’ total energy use consists in industrial use of coal and oil for energy. If even half of this were supposed to be replaced by “renewable” sources—which, in the “green finance” taxonomy, don’t include nuclear electric power—that would require building wind and solar power equivalent to another 125 GW capacity—but actually more, 250 GW *at the median output of wind turbines*. So, the Green New Deal would require *adding*, in total, the equivalent of nearly 90% of the United States current electric power fleet, which has 1,100 GW rated capacity.

If all this were wind turbine power, by a very conservative rounding down of specifications given in the U.S. Department of Energy’s “Ultimate Fast Facts Guide to Nuclear Energy,” it would cover 6.5% of the United States’ land mass, 250,000 square miles of wind farms, the size of Nevada, Arizona and half of Colorado. If solar, it would devour the area of five such states. Also needed: conservatively, 150-200,000 miles of new long-distance high-voltage transmission lines, even assuming that local distribution lines would be able to distribute all the additional power. And we’re

President Trump wanted to give the southwest border a new wall. President Biden wants to give the whole country a new solar floor, and walls of windmills. Occupying only a tiny fraction of that land area, fourth-generation small modular nuclear reactors can be produced in this decade with readily available bills of materials—unlike the huge lithium-cobalt batteries which supposedly will raise solar and wind efficiency.



CC/Tom Brewster



TVA

The Watts Bar Nuclear Power Plant, near Spring City, Tennessee; a Desert Renewable Energy Conservation Plan solar array in California; and a wind turbine farm in California.



CC BY-SA 2/Erik Wilde

not talking about the power losses in transmission along these very long new high-voltage lines.

Almost buried under this Green New Deal scheme would be the only sensible act suggested by it—electrifying rail passenger and freight transportation and raising it to higher speeds. This, by contrast, would require only an addition to U.S. total electric power capacity of about 1%, or 10-12 GW of new power; or 25-30 GW new power to include the additional construction of 10-12 new high-speed rail corridors. But in the Green New Deal, electrification of existing rail lines is *not* proposed.

Electricity Grid Nightmare

These comparisons of different power sources are summarized in a more compact form in **Figure 1**.

That electricity would become twice, perhaps three times as expensive as the current average 10-11

cents/kWh in America, can be assumed from the experience of Germany and Denmark which are well embarked on this road, though not this far. This will cut capital investment and power use in industries of every type. In areas where concentrations of high-technology industry remain, such as the northern Midwest states, the South and Southwest, the attempt to use electricity grids largely supported by intermittent power technologies will cause damaging power interruptions—and the same is true regarding modern med-

FIGURE 1
Power Efficiency by Energy Source

Power Source	Energy Conversion Efficiency	Median Performance (Output)	Power Efficiency
Hydro	80-90%	70% (2006-16 average)	60%
Nuclear	35%	85-90%	30%
Fossil fuels	37%	75%	28%
Wind	Up to 45%	20%	Up to 9%
Solar	20%	20% (2006-16 average)	4-5%

ical centers with complexes of hospitals and clinics.

But much more dangerous will be the condition of the now much larger, supposedly much “smarter” electric grid. If anything like the scheme described above *could* be carried out, it would require a U.S. electrical capacity of some 2,000 GW installed, nearly half of which would be wind and solar farms whose generated output fluctuates *daily* between zero and 40-50% of their rated power capacity. Since no electric grid obeying the laws of electrodynamics, no matter how “smart,” could cope with this constant huge fluctuation, the 1,000 GW of newly added power would consist of a mix of wind and solar farms, and large numbers of new natural gas-powered turbine plants which “back up” these “renewables”—better called “interruptibles.” The other half of the U.S. fleet would also continue to include a very large number of gas turbine plants, with declining numbers of nuclear power plants and hydroelectric dams, and some biomass mini-plants.

A very large share of the natural gas and nuclear plants—while capable of relatively stable and reliable operation for the gas turbines and extremely reliable operation for the nuclear plants—would instead be ramped up and down, shut down and restarted, according to the demands of the intermittent and fluctuating output levels of the “interruptibles.” The performance of the nuclear plants in particular would be degraded by this, and their operating lifetimes shortened closer to the very short lifetimes of the wind turbines and solar farms.

And the more wind and solar were added to the grid, the more unstable it would become, as amply shown by the German “energy transition” since 2011 (see report on Germany in this White Paper). To the prospect of a nationwide blackout due to existing but remote threats—a huge solar coronal ejection directed at the Earth, or an EMP attack using nuclear weapons—we will have added the increasingly grave threat of a nationwide blackout due to our own policy of returning to “throwback” energy technologies with low energy-flux densities.

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CC/Payton Chung

World steel production under Green New Deal measures would decline dramatically. Shown: Two arc furnaces in the interior of a Finkl Steel forging mill in Chicago.

Steel- and Auto-Making Productivity Falls

The other crucial economic sectors in which the Green New Deal would do irreparable damage, are agriculture and livestock raising, and steel production. A 2020 study by a think-tank for the OECD called SYSTEMIQ, which was created under the Paris Accord to look for long-term arcs of change in various sectors under a Green Deal, made the shocking forecast that world steel production would decline by 23% between now and 2100 under what it called “the Paris Effect”!

In the eyes of these neo-Malthusians, the global steel sector already “suffers from overcapacity.” The Malthusian solution is revealed in the graph accompanying the study’s chapter on steel, where global steel production is assumed to decrease from 2,342 metric tons (Mt) per year to 1,786 Mt by the year 2100. Within this total, the segment of “primary production” further shrinks 50%—because primary steel production requires large-scale heating and burning of carbon fuels—while the segment of “recycled” steel by electric-arc and similar processes more than doubles, comprising more than half of all steelmaking by 2100.

Recycled steel is inherently of a lower quality (strength) than high-carbon primary production product, and some special grades of steel cannot be reliably produced by recycling at all.

The sponsors of this [SYSTEMIQ](#) include Lord Nicholas Stern, another protégée of Prince Charles, and Klaus Schwab of the World Economic Forum, and the Green Finance Institute.

So, it is not only difficult to see where all the materi-

als for hundreds of millions of very large lithium batteries for electric vehicles will come from; it is hard to see even where the high-quality rolled steel products to make the vehicles themselves will be coming from. (Not to mention the special steels required for rails for high-speed and magnetic-levitation rail transport.)

The Example of California

California is as far ahead of the rest of the United States in implementing the Green Deal, as Germany is in making a cautionary tale for Europe.

California's governor in 2005 issued an executive order, then made law by its 2006 Global Warming Solutions Act, that it would cut CO₂ emissions to just 20% of the 1990 level by 2050; and, among other things, that it would not only eliminate coal power but refuse to *import* coal-fired power from any other state. It has since done these things. But its attempt to replace coal and nuclear with constantly expanding wind farms, solar farms and natural gas turbine plants has failed.

Electric power generation in California dropped by 2.7% in 2019, while “interruptible” power technologies rose from 55% to 57% of total rated capacity. The state's target is that this will become 100% by 2045. Coal has been eliminated in the state, and nuclear power plants, which once had combined installed capacity of 12 GW, now are at 2.4 GW from a single plant, Diablo Canyon, and will go to zero in 2024.

The state's *per capita* energy consumption is the third-lowest in the nation. Regarding actual generation of electricity as opposed to installed capacity: Coal power has been completely eliminated in the state; residual nuclear energy is just 2.6% of total generation compared to 19% nationwide; wind, solar, biofuel and hydro accounted for 36.6%—double the national average—and natural gas turbine plants for 60%. *This is precisely the Green New Deal profile for electric power, as detailed above.*

The result is also predictable. In-state generation of electricity fell by 5% in 2018 before the above-cited 2.7% in 2019, the result of shutting (inclusive of 2020 actions) about 12 GW of gas turbine capacity. The residential electricity price is 50% above the national average; the commercial electricity price, 70% higher; and the price for industrial electricity, 150% higher.

California suffered regional power blackouts three times in 2019 and 2020 combined. These occurred because the state government attempted to shut down some of the (“polluting”) gas-turbine capacity, which

had replaced coal and nuclear and had become the back-up redundant power for the wind and solar farms. With power demand high in the summer, the state regulator, which already was far above any other state in importing power from other states, tried to import still more at high-demand times of day and was rebuffed. Blackouts ensued, primarily in the southern part of the state.

Remarkably, after the August 2020 “high-level emergency” declared on the grid, with wholesale electricity prices reaching \$1/kWh and the ensuing regional blackouts, California's governor acknowledged that the state's economically suicidal energy policy was responsible. Governor Gavin Newsom said the displacement of fossil fuel by solar and wind was “a moral and ethical imperative” but it had created “gaps in reliability” in the electric grid. Thus, we are morally and ethically required to have unreliable electricity supplies through a “Green New Deal.”

Manufacturing growth has been rendered nearly impossible in a state which once led the nation in high-skilled aerospace manufacturing, for example. California had 2,050,000 manufacturing jobs in 1990 but is down to 1,220,000 at the start of 2021, a 40% drop. During the gain of approximately 600,000 manufacturing jobs nationwide during the Trump Administration's first three years, California's manufacturing employment stagnated; it remains at the level of 2015.

California imports one-third of its total electricity—and will not, by law, import power produced by coal. Were even a significant minority of states to reach that situation, regional power blackouts would become a certainty, producing chaos in industry, medical care, and many other fields.

In a nation in which states with a great deal of nuclear and coal power, such as Pennsylvania, Illinois and Alabama, are the biggest exporters of power; and states like California and New York, with no coal and only residual nuclear power, are the biggest importers; the consequences of imposing California's Green New Deal nationwide are obviously dangerous. The biggest electricity importing states also exhibit lower, and falling *per capita* electricity use; New York's electricity use, for example, as of 2018 became the fourth-lowest *per capita*, above only California, Rhode Island and Virginia. New York has just eliminated 13% of its power capacity by closing the remaining Indian Point nuclear reactors, and despite plentiful hydropower, is getting most of its power from “interruptibles” and from natural gas.