

Evaluating the Climate Change Hypothesis

Current climate change theory ignores the fact that despite the constant rise in atmospheric levels of carbon dioxide (which is not in dispute) there has been ZERO global warming in more than twenty years. **There has been no valid scientific reason given for this warming pause.** More and more scientists are believing carbon dioxide is getting a bum rap. Climate Depot issued a report citing more than 1000 scientists dissent over manmade global warming.

See <https://www.climatedepot.com/2011/05/31/special-report-more-than-1000-international-scientists-dissent-over-manmade-global-warming-claims-challenge-un-ipcc-gore/>

See also https://www.epw.senate.gov/public/_cache/files/8/3/83947f5d-d84a-4a84-ad5d-6e2d71db52d9/01AFD79733D77F24A71FEF9DAFCCB056.senateminorityreport2.pdf

Other notable "climate deniers" include MIT's prestigious climate scientist Dr. Richard Lindzen, Nobel Prize winner Dr. Ivar Giaever, Dr. Freeman Dyson, etc., etc.

The rationale for the Green New Deal places the blame for climate change on human activity. Progressives believe carbon emissions from fossil fuel use and agricultural activity (plus methane emissions from livestock) are causing global warming, severe weather changes, increased forest fires, droughts, and rising sea levels. Each of these claims is examined in detail and refuted with scientific data in Gregory Wrightstone's book Inconvenient Facts, and available through the CFACT.org website. I highly recommend reading the whole book. It is science presented for the non-scientist, thoroughly referenced, and presented in a very understandable manner. Items in the brief "book report" below are taken from this book.

Environmentalists blame greenhouse gas emissions (specifically carbon dioxide and methane) for global warming and climate change. They claim the science is settled...but science is never settled. They claim scientific consensus, but consensus is not science.

Why should farmer's care about this issue? Because farmers and poor people will suffer the most economically from changes to reduce carbon emissions from the environment. Changes that will likely create more harm to world economies and to the global climate.

Carbon dioxide is not a pollutant despite activist's efforts to paint it as one. It is a substance necessary for life. It is food for plants and crops.

During photosynthesis plants and trees absorb CO₂, water, and sunlight, and catalyzed by chlorophyll, create sugar for plant food and emit oxygen.

Carbon dioxide is no more a pollutant than water vapor is. And despite the fact that CO₂ levels in the atmosphere have risen from 280 to 415 ppm during the past 150 years, we are

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still experiencing a drought of CO₂, not a tipping point or catastrophic limit. Over the entire geologic history of the earth, carbon dioxide levels have been 20x as high as they are now.

There are many benefits from increased levels of CO₂ in the atmosphere that farmers should be aware of:

- plants grow faster and larger (globally)
- yields of most crops increase; the more CO₂ the better the yield
- CO₂ increases the drought resistance of plants
- decreases the amount of water needed for irrigation
- higher CO₂ levels shorten the growing cycle and lengthen the growing season
- CO₂ benefits the beneficial bacteria in the soil
- higher CO₂ levels increase the level of soil moisture
- at levels of 1000 ppm, photosynthesis increases 50%
- increased plant growth decreases soil erosion
- higher CO₂ levels correlate with fewer droughts and forest fires
- more CO₂ globally will make it easier to feed a growing population
- more CO₂ is greening the whole earth dramatically

Any one of the above bullet points will benefit farmers. In the aggregate they will significantly reduce cost of farming.

Realizing that CO₂ is not the cause of global warming or catastrophic climate change will eliminate the perceived need to stop using fossil fuels and keep energy more affordable for everyone.

In 2016, it was estimated that the global economic cost of implementing the Paris Climate Accord would be \$100 Trillion by the year 2100 to reduce global temperature by 0.3 degrees.

End of book report

About the Green New Deal

The Green New Deal seems to offer the path to a world divorced from fossil fuel use. However, the plan ignores some staggering realities:

Perhaps the largest factors producing the Industrial Revolution of western society were the discoveries and widespread use of electricity and fossil fuels.

More than 80% of all global energy is supplied by fossil fuels.¹

Availability of energy produced through various means is literally what separates the developed from the undeveloped countries and **directly correlates to the standard of living throughout the world**. Nevertheless, of the 7.7 B people in the world, about 2 B do not have access to reliable electricity, about 3 B live on less the \$2.50 per day,² and **80 % of humanity lives on less than \$10 per day**.³ Four out of every 7 people on earth live in China, India, or Africa.⁴

Affordable electricity is essential to lifting people out of poverty. Otherwise, people in poor countries will continue to live in poverty, burning wood and dung for their energy.⁵ Electricity provides light, powers heating and cooling systems, equipment in our factories, computers, hospitals, schools, buildings, etc. Add the use of petroleum and its derivatives, and both the quality and longevity of our lives dramatically improves. Electricity doesn't directly produce products, but enables their production and reduces their cost.

In the past 250 years life expectancy has more than doubled, global population increased 8X, and incomes increased 11X. Concurrently, CO2 emissions increased 2800X from 3 million tons to 8.4 billion tons.⁶ Atmospheric levels increased from about 280 to 415 ppm.

Nothing has revolutionized human life, eliminated poverty, reduced famine, and improved the human condition more than the use of fossil fuel products and availability of electricity since the beginning of the industrial revolution in the 1850s. Availability of clean water, improvements in sanitation, and medical advances have lengthened human life span.

But electricity alone is not sufficient; fossil fuel provides other products (some 6000 of them) that can greatly improve the quality of life in undeveloped countries. A partial list of petroleum derived products is linked here (See also **Appendix 1**):

<https://whgbetc.com/petro-products.pdf>

Emission reduction goals have significantly increased electricity and transportation costs which directly increases the cost of goods and services. The inevitable result: inflation. Renewable energy surcharges just push the inflation rate higher, resulting in more poverty and misery for the economically disadvantaged.

90% of goods on the world cannot be transported or delivered without stable, reliable energy.⁷ Without transportation, there is no commerce. Without commerce, there is no economy, period.

Countries that import more products will feel inflationary cost increases more than those who make and transport goods domestically.

“Renewable energy” is a misnomer. Wind and solar machines and batteries are built from non-renewable materials. They wear out. Old equipment must be decommissioned, generating millions of tons of waste.⁸ In addition, **many of the materials needed to construct and install renewable energy systems cannot be produced without fossil fuels.** Examples are steel, cement, plastics, lubricants, adhesives, and sealers. In addition, **minerals needed to construct solar panels and wind turbines can't be mined without excavating equipment made of steel**

nor transported without tires made of synthetic rubber (derived from petroleum) for cars, trucks, excavating equipment, and airplanes and transported on asphalt roads.

Solar and wind energy is not green. Both forms are destructive to the environment and create huge volumes of waste that is too costly to recycle, so it is landfilled. Huge amounts of carbon dioxide are emitted at every stage of the solar panel and wind turbine mineral extraction, ore processing, component manufacturing and equipment installation.

What About Materials Needed to Make Solar Panels and Wind Turbines?

Neither mining of the ores needed to produce solar panels nor the ore processing facilities currently exist in the US. Our country was much more mineral self-sufficient in the 1990s when it led the world in mining output.⁹ The decision to cease US mining and processing of these needed minerals was made for geopolitical reasons. **Thus the United States would once again be dependent on foreign countries (some of which are enemies) for production and supply of solar panels and wind turbines also require rare earth elements (REE), must be mined wherever they are found. China now owns or controls processing of 90-97% of all REE ores.**¹⁰

The International Energy Agency finds that with a global energy transition like the one Biden envisions, demand for key minerals such as lithium, graphite, nickel, and rare earth metals would explode, rising by 4200%, 2500%, 1900% and 700%, respectively.¹¹ Each of these materials are extracted by mining.

Mining is not an environmentally friendly process. Some of the minerals needed for renewable energy come from places that are hostile or that we do not control – such as China/Mongolia, the Congo, and Bolivia – leading to an unpredictable supply. **Minerals mined in third world countries like Congo (e.g.cobalt) are produced by slave labor in unsafe conditions. China produces solar panels using the labor of political prisoners. This is a humanitarian issue.**

Most of the world's solar panels are built in Asia on coal-heavy electric grids.¹² A study by Northwestern University and Argonne National Laboratory found that **the carbon footprint of a solar panel produced in China is twice that of one from Europe, because China has fewer environmental standards and more coal-fired power plants.**¹³ Therefore, not all solar panels are equal.

Manufacture and repair of renewable energy systems will be reliant on supply of minerals or parts from Red China. The same is not true of fossil fuel systems,

for which the United States had already achieved energy self-sufficiency from unfriendly foreign countries and had become a net energy exporter.

If the US were to attempt to generate all of its energy from renewables, it would require the use of 25-50% of all land in the US, as compared to 0.5% required by existing sources. Adding the battery storage required for the renewable sources at current lithium battery prices adds about \$188 trillion to the cost.¹⁴

What's more, mining and fabrication require the consumption of hydrocarbons. **Building enough wind turbines to supply half the world's electricity would require nearly two billion tons of coal to produce the concrete and steel, along with two billion barrels of oil to make the composite blades.**¹⁵

To completely replace hydrocarbons over the next 20 years, global energy production would need to increase 90X. By contrast, it took 50 years to expand global oil and gas production tenfold. It is not within the realm of reason to assume that any new form of energy production could grow 9X that fast in less than half that time.¹⁶

A wind/solar grid would need to be sized to meet both peak demand and to have enough extra capacity beyond peak needs in order to produce and store additional electricity when sun and wind are available. This means, on average, that a pure wind/solar system would necessarily have to be about threefold the capacity of a hydrocarbon grid: i.e., one needs to build 3 kW of wind/solar equipment for every 1 kW of combustion equipment eliminated. That directly translates into a threefold cost disadvantage, even if the per-kW costs were all the same.¹⁷

Because solar and wind systems do not function continuously, coal, natural and nuclear power generation are (and will continue to be) required to perform backup services for which they are not adequately compensated to cover their fixed costs. Back up services must be fully staffed because computers, electronics, refrigeration, and critical medical equipment must operate on a stable and continuous supply of electricity.

What About Energy Efficiency of Renewables?

Solar and wind energy efficiencies are limited by laws of physics. For silicon photovoltaic (PV) cells, the physics boundary is called the Shockley-Queisser Limit: a maximum of about 33% of incoming photons are converted into electrons. State-of-the-art commercial PV cells achieve just over 26% conversion efficiency—in other words, near the boundary limit.¹⁸ **Scientific improvements in solar panels will therefore not yield the kind of power generation increases required to replace fossil fuels.**

Similarly, wind turbines are limited by the Betz Limit to a theoretical efficiency of about 60%. Modern wind turbines already exceed 45% efficiency.¹⁹ **Therefore, the kind of renewable energy efficiency increases required for solar or wind are not scientifically possible using current technology.** Further, because the sun doesn't always shine and the wind doesn't always blow, these energy sources only produce electricity at 10-30% of their rated capacity. **This creates the need to store the energy produced which greatly adds to the cost of electricity generation.** For the reasons above, the lion's share of technological advances must occur in battery technology.

The Critical Concept of Energy Density

Proponents of the Green New Deal seem to be unaware that **coal, gas, and oil are much more energy-dense sources of power than wind and solar. Coal, gas and oil return 30X more energy than they require while solar and wind return only 1.6X and 3.9X, respectively.**²⁰ It is this fact that will relegate wind and solar energy production to the role of auxiliary power.

Energy density is one of the biggest reasons, outside of cost, that renewable energy cannot eliminate electricity generation by fossil fuels within constraints of current technology. Power-dense cities and factories need energy-dense fuels because they are more easily stored, transported, and they pollute less.²¹

To understand the issues associated with replacement of energy production by fossil fuels with renewable energy system, you must understand the concept of **energy density. About 60 pounds of batteries are needed to store the energy equivalent to that in one pound of hydrocarbons. Meanwhile, 50–100 pounds of various materials are mined, moved, and processed for one pound of battery produced.**²²

The energy stored per pound is the critical metric for vehicles and, especially, aircraft. The maximum potential energy contained in oil molecules is about 1,500% greater, pound for pound, than the maximum in lithium chemistry. That's why the aircraft and rockets are powered by hydrocarbons. And that's why a 20% improvement in oil propulsion (eminently feasible) is more valuable than a 200% improvement in batteries (which is still difficult).²³

It costs less than \$1 a barrel to store oil or natural gas (in oil-energy equivalent terms) for a couple of months. Storing coal is even cheaper. Thus, unsurprisingly, the U.S., on average, has about one to two months' worth of national demand in storage for each kind of hydrocarbon at any given time.²⁴

Switching from fossil fuel energy production to energy from solar or wind sources will require the greatest expansion of mining the world has ever seen and would produce huge quantities of waste.²⁵

Batteries Required to Store Renewable Energy Are a Huge Factor

Intermittent production of electricity from wind and solar necessitates storage of the energy produced in batteries.

The environmental impact of battery production is significant. The production of lithium is either carbon dioxide polluting or wasteful of water — up to 500,000 gallons per ton of the mineral. Cobalt mining produces radioactive contaminants, including uranium. About 80% of the weight of a Tesla battery — 1,200 pounds gross — requires mined materials. In practice, that means mining about 100,000 pounds or 50 tons of raw ore per vehicle. If 10 million U.S.-based electric cars are sold in 2030 (about half of sales), that would translate to 500 million tons of new mining with all the accompanying emissions from mining equipment and the accompanying pollution. To put that in context, current U.S. coal mining is about 700 million tons per year.²⁶

So how many batteries would be needed to store, say, not two months but two days worth of the nation's electricity? The \$5 billion Tesla "Gigafactory" in Nevada is currently the world's biggest battery manufacturing facility. Its total annual production could store three minutes' worth of annual U.S. electricity demand. Thus, **in order to fabricate a quantity of batteries to store two days' worth of U.S. electricity demand would require 1,000 years of Gigafactory production.²⁷**

Meanwhile, with batteries, it costs roughly \$200 to store the energy equivalent to one barrel of oil. Thus, instead of months, **barely two hours of national electricity demand can be stored in the combined total of all the utility-scale batteries on the grid plus all the batteries in the 1 million electric cars that exist today in America.²⁸**

Meanwhile, the two most populous countries on earth, China and India, each with billions of people, are choosing coal for their main source of electricity generation and are continuing to build hundreds of new coal-fired power plants. Apparently continued use of coal-fired power plants is only a problem in the United States, not in China or India.

70% of China's grid is fueled by coal today and will still be at 50% in 2040. This means that, over the life span of the batteries, there would be more carbon dioxide emissions associated with manufacturing them than would be offset by using those batteries to, say, replace internal combustion engines.²⁹

China uses 49% of all the coal mined in the world. China's coal-fired plant capacity is more than 3X the rest of the world's. **China has more than half of total number of coal-fired power plants in the world. *They are the world's biggest polluter.* They emit more greenhouse gases than the remaining developed countries combined.** And they plan to continue building more than 300 coal-fired power plants in other countries including Turkey, Vietnam, Pakistan, Bangladesh, Indonesia, Egypt, and the Philippines. Building these plants is a 40-50 year commitment³⁰, so this will continue into 2060 or 2070. So why is the UN applying all the pressure to the US who is already taking coal-fired power plants out of commission, and not building new? **China has 4X as many coal-fired electricity generating plants as the US and is building hundreds more.**

By sunseting fossil fuel use, the Green New Deal will also be sunseting the renewable energy industry because they would lack critical materials to make solar panels and wind turbines.³¹ All the minerals and metals used to make wind turbines and solar panels rely on global mining and transportation equipment made from products of fossil fuels and powered by fuels from crude oil.

In the most recent global climate summit (COP 26) perhaps the single most important strategy for reducing GHG emissions, nuclear energy, was ignored despite the fact that nuclear power facilities emit no significant greenhouse gases.

Although nuclear waste is more difficult to dispose of (a problem that must be dealt with) its volume is 1/10000th that of solar and 1/500th of wind.³²

Over the life cycle of power plants (mining, construction, transport, operation, decommissioning, and waste disposal, GHG emissions per quantity of nuclear energy are 1/700th of coal, 1/400th of gas, and 1/4th of solar.³³

Wind and solar renewable energy are suitable as backup electricity production, but totally inadequate for replacing large scale, existing electricity generating systems. Therefore, renewable energy cannot save the planet.

We need to stop spending trillions of dollars on emission strategies that punish America, who is reducing its emissions while allowing polluters like China and India to continue to increase theirs. China has more than half the coal-fired power plants in the world, and is continuing to build more. Both China and India are planning coal-fired power plant use into 2060 and 2070.

Because of the low energy density of both wind and solar technologies, installing this type of equipment will never be cost effective as compared to fossil fuel power generating equipment, and would therefore be a very poor use of productive farmland for large installations.

Why do progressives continue to push the Green New Deal?

Follow the money. A change from fossil fuel-generated energy to renewable energy creates revenue for many stakeholders. Solar and wind equipment manufacturers, project developers, engineering firms, mining companies, ore processors, technology developers, utility companies, and especially investors.

Who are the investors? The ultra rich individuals, big banks, huge venture capitalists (like Berkshire Hathaway)³⁵, and mammoth corporations like Amazon, Facebook, Google, and Apple. How does it work? **Through the intricacies of tax equity market.** Specifically, the two types of tax equities available only to renewable energy projects are the Investment Tax Credit (ITC) and the Production Tax Credit (PTC).³⁴ Other energy producers are not eligible for ITC and PTC. Publicly owned utilities are not eligible for ITCs.³⁵ Unlike other types of tax credits, the ITC and PTC cannot be directly used by the recipients...so they “sell” the tax credits to investors that have huge tax obligations they want to avoid paying. ITC investors in solar projects can get a 26% credit on their basis cost for a new solar system³⁶; and they can tack onto that accelerated depreciation of the equipment (31% in the first 3 years) through the Modified Accelerated Cost Recovery System (MARCS) hastening investment payout.³⁷ In Indiana the sales tax on solar equipment systems is waived. In addition, the Economic Recovery Tax Act (ERTA) in 1981 allowed commercial real estate investors to write-down the full value of real estate over a 15 year period.³⁸ For wind investors, the equipment depreciation is accelerated to a 5 year period.³⁹ Also, capital investors in these projects can charge project developers fees or rents and added premiums for use of their capital.⁴⁰ The system is designed to significantly reward investors.

Therefore, the actual cost of solar and wind energy can never be compared to the cost of fossil fuel-generated electricity, because it is not apples to apples.

In 2019, Bank of America and JP Morgan accounted for 50% of the renewable energy tax equity market at \$3 B each.⁴¹ So ITCs and PTCs give billions of taxpayer dollars to the richest of the rich (tax evaders) so they can avoid paying “their fair share”. In 2020 the ITC and PTC generated as much as \$18 B in tax shelters. This is an invisible tax revenue loss.⁴²

US tax shelters have always been a realm for the rich. The US tax equity system means that financial institutions take direct ownership in renewable projects (in lieu of the government) as well as lending to project developers.⁴³

How Are Renewable Energy Systems Doing?

Experience in Europe provides a glimpse into the renewable energy future. From 2004-2014 European consumers saw cost increases of 50%; in the UK 141%, Germany 74%, Ireland 93%, Portugal 69%, and Spain 114%. The more wind and solar capacity, the more customers have to pay for their electricity. Also as wind and solar serves more of the grid, more interventions are required by conventional energy producers to maintain electrical voltage and frequency within normal operating ranges.⁴⁴ The higher energy prices and climate policies are driving industry from the European continent. In the UK, 22 chemical plants have closed.⁴⁵

How could solar and wind energy NOT be more costly than current conventional electricity generating facilities when both conventional sources and renewable sources must exist to ensure a constant flow of power to transmission lines?

Recall from prior section of this report, wind and solar estimates benefit from the Intricate web of tax credit deceit. Through the tax credits granted to only renewable projects and sold to huge banks and investors, the taxpaying public is unaware they are paying the true cost of these forms of energy. **The greenest part of this green energy is the money huge investors make via tax avoidance.**

Conclusions

Science shows that human emissions of carbon dioxide are not driving climate change in any measurable way, nor is a Climate Apocalypse coming. There is no climate crisis that requires the intervention of humans.

There is no valid scientific reason to replace conventional energy generating systems because increasing carbon dioxide emissions are a substance necessary for life on planet earth, and the more of it, the better. CO2 is plant food, not a pollutant. It is not the largest greenhouse gas; water vapor is 90% of all Greenhouse gases. Our sun has a much greater effect on our climate, and climate computer models vastly underestimate the effect of our sun on earth's climate. Carbon dioxide emissions have a lesser effect on global warming than previously thought.

The war on fossil fuel use and farming practices is not driven by a climate emergency. It is driven by the global desire to destroy capitalism, national sovereignty, and individual freedom lead by the United Nations. The goal is a One World Government in total **control** of all global citizens and funded by a global tax on carbon emissions.

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Nuclear energy is the most energy dense, has the highest energy capacity, and the smallest environmental footprint. It is non-polluting, produces the least waste, and has the best safety record. Submarines and aircraft carriers have been using small nuclear reactors for more than 50 years. The increased use of small modular nuclear reactors is supported by science.

Fossil fuel energy is abundant, has an existing infrastructure, and is relatively cheap when existing pipelines and coal mines are not shutdown. Furthermore, the US fossil fuel energy supply is self sufficient.

Fossil fuel use provides the best opportunity for undeveloped nations to improve their standard of living and feed their growing populations. The use of biofuels does not lower carbon emissions. While more industry causes more pollution, rising incomes from that activity have allowed developed countries to reduce it.

Major improvements in air quality from pollution control measures since 1980 show the following: carbon monoxide 83% less, Lead 99% less, NO₂ 61% less, ozone 31% less, and SO₂ 91% less.⁴⁷

In the final scientific analysis, we must ask the critical question: **Are we going to destroy our planet's environment to save ourselves from the perceived dangers of climate cycles that have been occurring throughout earth's geologic history?**

The greenest part of solar and wind energy is the money made from pursuing it as a replacement for fossil fuel, which cannot happen for several reasons:

- Solar technologies have improved and are continuing to improve in efficiency, but are limited by the laws of physics to a maximum efficiency of 33.7%. Current technology is operating at about 26%. **Solar panels lose about 0.5-1% efficiency per year.** This means they will likely be taken out of service before their stated end of life. Solar panels must be regularly cleaned to maintain peak efficiency.
- Fossil fuels are necessary to operate the equipment to mine and process the ores required to make solar panels.
- Sunsetting the fossil fuel energy use also sunsets renewable energy for the above reason.
- Wind power is also limited by the Betz law of physics to a maximum efficiency of 60% capture of kinetic energy in moving air. Current wind technology is achieving 40-45%.
- Because both large scale wind and solar energy is produced intermittently and at low efficiencies, energy produced must be stored in batteries.
- China dominates global battery manufacturing. China also dominates in global production of solar panels at 62%. Europe produces 10% and the US 4%.

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- The annual output of the world's largest battery factory (Tesla) could store about 3 minutes of the US annual requirement for electricity.
- \$200,000 worth of batteries (about 20,000 pounds) are required to store the energy equivalent of 1 barrel of oil.
- **The cost to store energy in batteries is 200X the cost of storing an equivalent amount of natural gas.**
- 50-100 pounds of materials must be mined, moved and processed for every pound of battery produced.
- **Producing one Tesla battery (1200 lbs) requires the mining of 50 tons (100,000 lbs) of ore.**
- **Renewable energy is not green to our environment.** Massive amounts of materials must be mined and processed to produce solar panels, wind turbines, and batteries. Mining of enough materials to replace the electricity from fossil fuels would destroy the environment to change the climate.
- Because energy is produced from renewable sources intermittently, back-up sources must be maintained and staffed to assure a constant flow of electricity. This means that more electric generating capacity must be planned than would be necessary from fossil fuel or nuclear power plants.
- Nuclear power generating plants are safer, non-polluting, and more reliable than
- renewable energy, **yet some operating nuclear power plants are being decommissioned to be replaced with renewable sources.**
- Global energy production is projected to rapidly increase in the future, compounding the size and scope of these problems.
- **At End of Life, solar panels and wind turbines must be recycled or disposed in landfills.** The cost of transport and recycling of solar panels exceeds the cost of manufacturing new ones. Wind turbine blades are not recycled, they are landfilled.
- **In countries where renewable energy has progressed the most, electricity prices have skyrocketed.** That means economically disadvantaged people will have difficulty affording energy needed for improving their lives.
- **While some countries follow drastic policies to wean themselves from fossil fuel electricity, China, the world's largest polluter continues to operate over 5500 coal-fired power generating units (4X more than the US) with hundreds more planned in the future.**
- China has 3X more coal-fired generating plant capacity than the rest of the world. They will be operating them into 2060 and beyond. India has the third highest number of coal-fired power plants, but will soon pass the US to become second.
- **China and India are not participating in the effort to reduce global warming in any meaningful way.**
- The cost of electricity from renewable sources cannot be compared to cost from fossil fuel generation, because of government subsidies that only these sources qualify for and (by design) are too covert and complex to fully understand. Renewable energy cost can not compete without those subsidies because of its poor energy density and intermittency.

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- The major question to be answered is why do we need to wean ourselves from fossil fuels and the 6000 products derived from them? (See Appendix 1).
- **All this to save ourselves from climate change? The climate has changed throughout earth's geologic history, and it will continue to do so. ADAPT.**

Nothing in this report should be construed as against all forms of solar and wind energy, only large solar farm and wind farm installations that will replace far more efficient conventional power generation systems; **particularly those that would occupy productive farmland**. If residents, farmers, schools, and businesses want to install small systems on their property in accordance with local ordinances, that is their right. Refer to **Appendix 2** to better understand the value of farming to Elkhart County.

To more fully understand the science behind climate change, please read "Inconvenient Facts" by Gregory Wrightstone, Silver Crown Productions, LLC, 2017. Available through CFACT.org.

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APPENDIX 1

What Would a World Without Fossil Fuels Look Like?

Many people do not realize how many products we use daily originate from a barrel of crude oil. There is little awareness of the wide variety of materials that have made significant improvements in our American way of life. Each 42 gallon barrel of crude is used in the following :

Each 42 gallon barrel of crude yields about 45 gal of petroleum due to refinery processing gain.

Here is the breakdown: Gasoline, 19.4; distillate 12.5; jet fuel 4.4; residual fuel oil 0.5; hydrocarbons 1.5; other products 6.5 (gallons).

As mentioned previously, the number of crude oil derivative products numbers over 6000, but I have selected a few to help illustrate the Conveniences we would have to learn to live without if fossil fuel use was banned. Here is an abbreviated list that also includes products from coal:

Tires (synthetic rubber) for cars, trucks, airplanes, excavating equipment, farm equipment

Synthetic fabrics (nylon, polyester, acrylic, spandex, neoprene, fleece, lycra, goretex, kevlar, olefins, pleather, suede, microfiber, acetate, dacron, synthetic fur)

Plastics (dentures, toys, cell phones, car parts, straws, plastic bags, etc.)

asphalt	lubricants	dryers	soaps	hot tubs
fiberglass	farm equip	telephones	shampoos	showers
steel	tapes	TV sets	anesthetics	glues
artificial limbs	sheets	computers	shoes	furniture
contact lenses	pillows	cosmetics	coffee makers	toilet seats
linoleum	blankets	hair products	roofing	gloves
refrigerators	towels	airplanes	helmets	trash bags
water pipes	curtains	eyeglasses	balls (various)	brushes
swimming pools	carpeting	washing machines	bath tubs	remote controls
Enamel	cortisone	life jackets	candles	deodorants
Toothpaste	antiseptics	bandages	paints	cameras

APPENDIX 2

What is Special About Elkhart County?

Total Land Area = 463.17 sq mi (296774 acres)

Total farms = 1667 (174929 acres)

Total businesses = 4951

Total residences 80082

59% of Elkhart County land area is farmland (98% are family farms)

Unemployment rate 3.5%

Converting productive farmland to public utility solar or wind farms is undesirable because of the importance of having local supplies of food.

Elkhart County has a unique blend of farming, industry, and residential properties.

If enough farmland is taken out of production, farming infrastructure will collapse... beginning with small farms. When farm infrastructure collapses, grain and animal production would move to other counties or states. Once lost, farm infrastructure is extremely hard to build back.

Elkhart County farms are 27% small, 30% large, 43% medium.

In the last available agriculture census, Elkhart County's state rank was:

3rd in total sales of agriculture products

2nd in livestock, poultry & product sales

2nd in cattle and calf sales

1st in sheep and goat product sales

2nd in sales of cow's milk

4th in poultry and egg sales

Modern agriculture has shown remarkable stewardship. From 1961-2013 yield of agricultural products has tripled while global population went from 3.1 to 7.2 billion.

Since 1950 the malnourished population of our planet has decreased from 30% to 11%. Today's farmers are using less land, water, fertilizer, and pesticides.

The Biden Administration's objective to conserve 30% of our country's land and water over the next 10 years is incompatible with solar and wind land use.

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END NOTES

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