

— WHITE PAPER —

RENEWABLE ENERGY'S BALANCING ACT: DAWN OF A NEW ERA OR WELCOME A TROJAN HORSE?

Renewable Energy or Human Development: Choose One (not both)

By David Boleneus, June 2016

PREFACE¹

Though the Millennium Bulk Terminal project delivers a port, a loud uninformed minority voices false alarm that it contributes to global warming or climate change, and that the port might add emissions of carbon dioxide said by few as dangerous to humans. None of this alarm is true. All evidence indicates that such fictional concerns are propaganda to promote an anti-fossil fuel agenda by extreme environmental groups. The answer to these make-believe dangers is to push renewable forms of energy to eliminate concerns invented by these groups about carbon dioxide.

This paper shows why objections to the port on the basis of global warming, climate change or concerns about carbon dioxide.

Carbon dioxide (or its chemical formula CO₂), consisting of one carbon and two oxygen atoms, is essential to life of all forms, of plants and animals. CO₂ was borne of primordial earth. Earth needs more of it. Should it fall below a baseline, only slightly below today's level, all plant and animal life would cease to exist, and die. This includes you. Promoting an end of carbon dioxide therefore advocates death.

This report, entitled "*Renewable Energy's Balancing Act: Dawn of a New Era or Welcome a Trojan Horse?*" identifies the tragedy symbolized by the anti-fossil fuel agenda. The report explains why promoting renewable energy as a sole form of energy for the United States and other developed countries to quell climate change is an immense and tragic mistake borne from impure purpose and baseless promotion of untruth. It explains why ushering in renewable energy as a sole energy form is tantamount to welcoming the Trojan Horse to control our energy supply.

The tale of the Trojan Horse is appropriate to happenings today. Likened to the mythical trick used by the Greeks to enter and capture the City of Troy, fear of carbon dioxide, climate change, global warming answered by converting to renewable energy represents the subterfuge to subdue and stop the forces of human development and technology in the United States. This myth symbolizes how demonizing carbon dioxide and promoting renewable energy represents the Trojan Horse of today, an end of life for many of the population in the United States.

¹ Information provided in this paper is well supported by substantive and authoritative citations provided and so may be taken as truthful. If readers are privy to fundamental data counter to those found here, the author would consider it.

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--White Paper--

RENEWABLE ENERGY'S BALANCING ACT: DAWN OF A NEW ERA OR WELCOME A TROJAN HORSE?

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Summary

The purpose in this thesis is to reveal the unsoundness of the renewable industry including the reasoning for its promotion and to compare this to the proven benefits provided by our current energy structure. Reported are the problems and disadvantages of renewable energy, with emphasis on wind power generation that due to its varied representation offers nothing renewable. The entire renewable industry is reactionary and follows a political ideology mostly unsupported by sound business economics.

The primary purpose in demonstrating its unsoundness is a direct result of lack of reasoning for pursuing such a program, lack of proof that it will produce results, is necessary, is safe, is economical or is not economically damaging to the state's financial wellness and to its citizens, and so forth. A state has a duty to protect its citizens and act in their best interest and this is not the case. Though Washington's progress into renewables is not as extreme as Europe's, however their results "scream" that such a path is their vanguard of death to state and national economics that posits hardship on and risks health of its citizens.

A starting point is to report on the amount of energy consumed in this world to compare with renewable forms of energy. The total amount of energy consumed worldwide is enormous as one can imagine.

In 2014 the world consumed 12.9 billion oil-equivalent tonnes of energy (on an oil-equivalent basis, see appendix) of all forms, as shown in the chart below (Figure 1), consisting of renewable, hydroelectric, nuclear, coal, oil and natural gas. The amount of energy consumed from fossil fuel sources, coal, oil and natural gas represents the largest share of the total. This report shows that the amount of renewable energy provided is small and projections show that its expansions or build-out seems to waning as the years pass. Oregon produces just 11% of its electricity from wind, geothermal, or solar while the remaining renewable is from hydropower. Washington's percentage is 6.5% with all from wind turbines.

Already in the U.S. additions of renewable energy other than hydropower cannot keep pace with the increase in population. In 23 U.S. states carbon based fuels continue to displace renewables. The reason for this is unclear. The *Problem with Wind* electric generation are numerous and are demonstrated more plainly as the U.S. gains more experience, but they are inescapably due to its excessive cost and lack of reliability. Overcoming these problems would also nullify objections.

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The most visible problem with wind generation is the need for full-time backup of wind power facilities from a choice of oil, natural gas, coal or nuclear, with a result that customers must “double-pay” for electricity when one source would be adequate. The greatest impact of wind power cost is that realized upon low wage consumers who must choose between electricity and other needs as retail electricity has more than doubled in cost from 3.7 cents to 8.5 cents per kilowatt-hour (kwhr) since 2000. If increases in costs continue, U.S. consumers likely will face huge cost increases with no benefit, or similar to the situation in Spain’s recently realized renewable energy nightmare or excessive cost leading to the ordered construction shutdowns in the UK’s and Denmark’s systems as the renewable unreliability becomes plain³.

The performance of wind turbines is also seriously questioned in the Northwest, as shown by review of a recent operating period of 992 days of public records examined (2013-2015) of the Bonneville Power Administration, the agency charged with balancing the region’s power needs against supply. Here renewable energy provided by 44 wind farms in Washington and Oregon with a capacity of 4,782 megawatts delivered only 10.5% of its capacity available for 56% of the time (555 days) and during 57 days in 2014 produced no power at all, including a 24-day period of continuous no-power days in winter in 2014.

The most intractable problem is the space requirement of wind turbines that require 75 acres per turbine including transmission facilities. By comparison, a single nuclear power plant (or coal plant) that produces 26 terawatt-hours on full-time basis occupies 430 acres. To produce the same power from wind turbines requires an area of 250, 000 acres (390 square miles) but wind turbines still cannot provide electricity full-time. Complicating the problem for wind energy, the Department of Energy’s hints at reaching a limit or saturation of “ideal” wind energy sites which raises doubt in its ability to provide additional wind resource with expectation of maintaining efficiency, output, and cost at current levels. Maintaining these factors is impossible as experience shows as closer packing of turbines reduces efficiency to a value less than the already low efficiency values of 26% in Washington and 24% in Oregon.

Compounding the problem is a lack of profitable economics as the wind industry is supported by 100% loan guarantees for construction, tax rebates, a 3.2 cent per kilowatt-hour tax credit and a 12 cent per kwhr selling price guarantee. This industry has proven it cannot self-support. A few of the many serious objections and problems are listed, many of which impact severely on the communities near or within the installations. Most important is the trail of corruption in the Falmouth MA controversy between the turbine-maker Vestas, acoustic consultants and the Massachusetts legislature, bird deaths, wind power’s intermittency, infringement on human rights, industrializing of landscapes, noise pollution leading to mental distress, and especially the Duke of Edinburgh’s comment that “Wind Farms are Useless, a Disgrace”.

Renewable energy build-outs are driven by the public’s fear and alarm concerning fossil fuel and their release of carbon dioxide (CO₂). The public believes that all CO₂ is the result of burning of fossil fuels but this is patently false, is unproven and is an exaggeration. Only 1% or 2% of the total amount of CO₂ comes from burning fossil fuels so it is impossible that fossil fuel CO₂ is the cause. See CO₂ Additions by Source (Appendix). The benefits from carbon dioxide and fossil fuels are well known but withheld from public view. Carbon dioxide is a natural plant fertilizer, it promotes plant photosynthesis and it assists plants to use less water resources. More CO₂ accelerates plant photosynthesis, vigor, weight, plant height and growth responses while decreasing transpiration of water in plants. The

³ Denmark Cancels All Coastal Wind Farms, Delays New Built Until 2025 by Jyllands-Posten, 7 June 2016

increase in carbon dioxide since the 1960s is solely responsible for a \$3.2 trillion economic benefit to food production and another \$9.8 trillion benefit is projected to 2035. Economists show how carbon dioxide produced from fossil fuels is profoundly earth-friendly that its costs are nil compared to its benefit, that its anthropogenic input is a tiny 1% to 2% of total natural CO₂ emissions, that its impact on weather is 5,000 times less than the most dangerous greenhouse substance, water vapor. The benefits of electricity generated from fossil fuels have raised the human development of countries by 390-fold to 510-fold over its cost, have increased GDPs 74-fold since 1900, have increased life expectancy two-fold, created an 8-fold increase in populations, and increased incomes 11-fold while advancements have ushered new technology and scientific breakthroughs that permits a high quality of life, with all of this inescapably related to fossil fuels.

Renewable energy is a bad idea that gets worse. It is a silent killer of America's and State's economies. The devastation of European economies becomes clearer by the day. A Renewable Energy Standard (RES) is an idea that serves no reasonable purpose or one for thoughtful governments to undertake and blindly force on citizens. RES is based on four lies: To get off oil; to use clean energy without CO₂, because it is a greenhouse gas, that causes climate change. Renewable energy cannot exist without continued government support yet it is inappropriate to ask the cost and socioeconomic impact. Fifteen renewable companies are bankrupt at a cost of \$7.01 in loan guarantees and loan guarantees exceeded \$26 billion. Seventy-three solar companies declared bankruptcy from 2009 to 2013. Five wind companies in Europe were bankrupt at a cost of \$350 million. Still Washington State continues its blind path into renewables on a program with unknown benefits, whose health effects are unknown, with technology that is unknown, on a program whose merits are unknown, for reasons and purposes that are unknown, and with economics that are unknown. It's Washington's RES + 7U's.

Definition – *Renewable Energy* – Renewable energy is a term coined by lobbyists, solely for promotional purposes. There is no true definition. Well aware of this lobbyists have worked diligently to give the impression that “renewable energy” is a scientific concept. It's not, and it does not qualify as a scientific term. Real science is based on empirical evidence and proof, concepts few outside sciences understand. Real science and empirical data are an anathema to lobbyists who are closely aligned with politicians. *Consider this: Is wind energy renewable? How is that so?* Read appendix about how to build a wind turbine before you answer this question. Though a scientist myself, I will continue to use the term renewable energy for convenience of my audience.

World Energy Consumption

Annual consumption of energy in 2014 from all sources in the world is an enormous 12,989 million oil equivalent (MMOE) tonnes, an increase of 6.3% from 2010. This total is equivalent to 94,700 million barrels of oil. The six principal energy sources include oil, natural gas, coal, hydroelectric, nuclear and renewables. Of this amount, world coal consumption amounted to 3,881 MMOE tonnes in 2014, a 2.7 percent increase from 2011, of which 453 MMOE tonnes (about 680 million tonnes of hard coal on an equivalent basis) was the United States' 2014 share of consumption. Worldwide contributions from renewable energy sources in 2014 from geothermal, solar, ethanol, wood debris, and wind amounted to 383 MMOE tonnes or 2.9% of the total. In Figure 1, the bar symbol represents consumption values for 2014 and the dashed and solid line symbols depict total consumption values for 2011 and 2012. This shows the U.S. consumption increased in 2014 after decreasing slightly from 2011 to 2012. Consumption increased also for China and Africa-Middle East.⁴

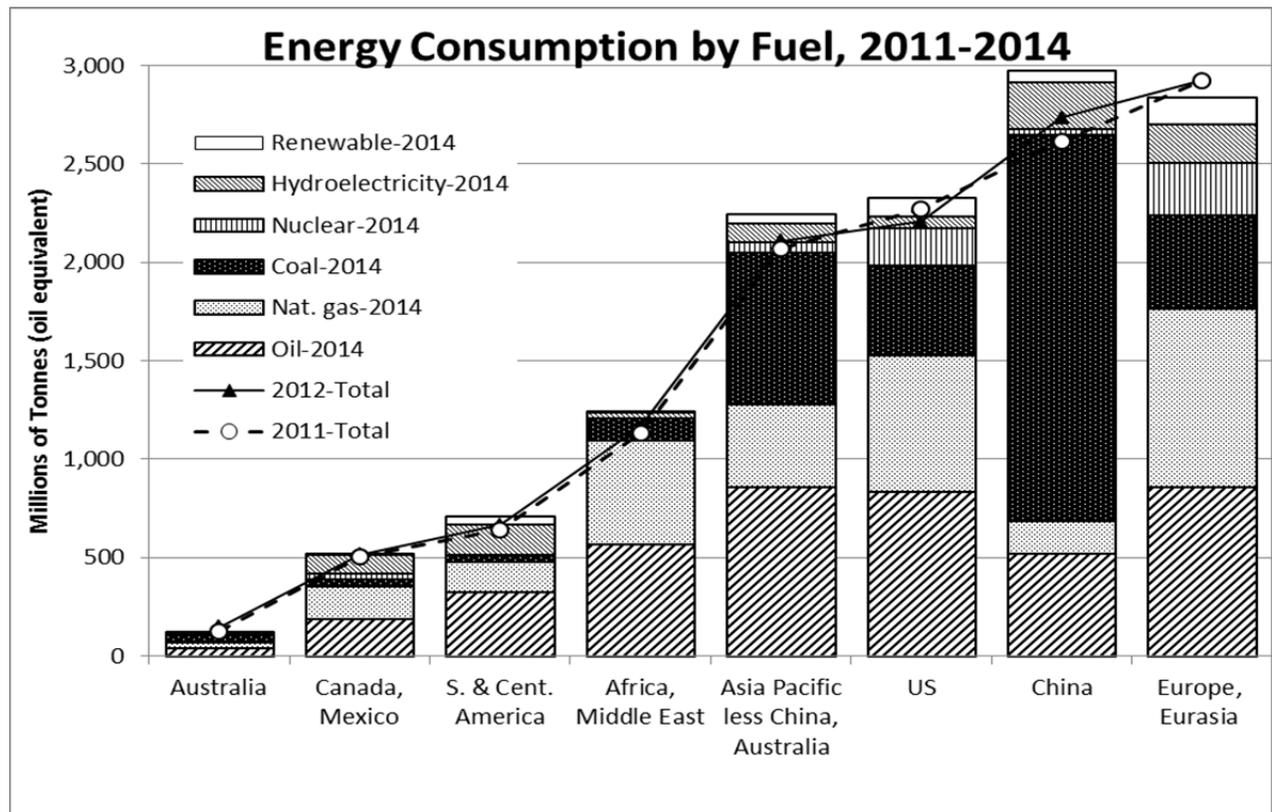


Figure 1. Energy consumption by fuel type.

Consumption for all forms of energy increased from 2012 to 2014 by 513.4 MMOE tonnes. Increases were large in percentage terms for renewable forms of energy which increased 145.9 MMOE tonnes, a 61.5% increase. Hydroelectric consumption also increased 42.8 MMOE tonnes, a 5.2% increase since 2012. Coal consumption increased 151.8 MMOE tonnes, a 4.1% increase over the same period an amount equivalent to an increase of 303.6 million tonnes of hard coal or 1,683 loaded very large bulk

⁴ BP Statistical Review of World Energy, 2012, 2013, 2015

cargo ships. Oil consumption increased least since 2012 at 80.7 MMOE tonnes, or 2 %, an amount equivalent to 589 million oil barrels and equivalent to 2,182 loaded very large bulk oil tanker ships.

Renewable Energy

The amount provided and consumed from renewable forms of energy is tiny as noted in Figure 1. It has recently become apparent that renewable construction projects are on the wane and that the wind energy facility additions may soon end. Why is this so? Ask yourself and others this question. See Figure 2 to show this trend. Expansion of wind energy has slowed from more than 40% annual build-out to less than 5% in 2015 and this expansion is expected to diminish substantially in 2016.⁵ Will economic unreliability of renewables soon be recognized? The popularity of renewables is also waning and its diminution is also due to the fact that Renewable Portfolio Standards (RFS) pledged in many states have been met and so expansions become less a priority. Could the answer be that renewable is not readily available, is not easily transported, is too expensive, is risky to investors, is unaffordable by most consumers, and is too widely dispersed. Is this because wind energy transmissions are much diminished due to distance to consumers? Most important this power could not be provided profitably without mandated consumer taxation and generous government support. Why is it that expansion of renewable forms has almost ended over the last two years? The expansion of solar and photovoltaic is now so low as to be non-expanding. The mega-Ivanpah solar facility in Nevada in June 2016 caught on fire. It has also been ridiculed numerous occasions for the bird deaths it causes as birds flying through its concentrated sun rays are vaporized⁶.

Over the past two decades a number of US States pledged goals to convert a percentage of their total energy need from existing forms to renewable energy. These pledges were set into law but only 29 states are participating by mandating energy portfolios within their borders. These are called Renewable Energy Standards (RES) or Renewable Portfolio Standards (RFS)⁷. Mandated RES or RFS are a “back-end way to put a price on carbon” says Robert Bryce⁸. In seven states mandates have caused rates to increase by 54.2% and the rate shock upon consumers recently announced in California may imperil the environment. Bryce says mandates are more irresponsible than useful. Washington’s pledge is to convert 15% of its energy to renewable forms by 2020 and Oregon’s is to convert to 25% of its energy from large utilities to renewables by 2025. Both states have met this goal but a very large percentage of renewable pledges come from hydropower so their goal was met by hydropower even before their standards were set. Oregon provides 11% of its energy from wind and 2% from biomass, solar and geothermal combined. Washington gets 6.5% of its energy from wind and 1.8% from biomass and none from solar or geothermal. So the obvious question might be asked: Are their RES pledges only partly fulfilled and might they do more?

The Renewable Energy Policy Begins

Europe’s current policy and strategy for the support of so-called renewable energy dates to 1997. On November 26th of that year, the European Commission presented the White Paper “for a Community Strategy and Action Plan” titled “Energy for the future: renewable sources of energy.”⁹ In presenting this European aid scheme barely five days before the Kyoto conference (*Third Conference of the Parties to the United Nations Framework Convention on Climate Change*), where the signing of a CO2

⁵ Wind energy generation, US Energy Information Administration, EIA-923 Report

⁶ <http://wattsupwiththat.com/2016/03/21/failing-ivanpah-solar-power-plant-gets-temporary-repreive-but-is-producing-prohibitively-expensive-electricity/>

⁷ <http://www.dsireusa.org/resources/detailed-summary-maps/>

⁸ Bryce, R., 2012, The high cost of renewable electricity mandates: Manhattan Institute Center for Energy Policy and Environment

⁹ http://ec.europa.eu/energy/library/599fi_en.pdf

rationing accord had already been foreseen, the European Union wanted to get ahead of events and opt for a transformation of its energy model in order to reach the then-stated goal of reducing its greenhouse gas emissions by 2010 to 15% below 1990 levels.^{10 11} The familiar argument had already been popularized by president Barack Obama: *“Development of renewable energy sources can actively contribute to job creation, predominantly among the small and medium sized enterprises which are so central to the Community economic fabric, and indeed themselves form the majority in the various renewable energy sectors. Deployment of renewables can be a key feature in regional development with the aim of achieving greater social and economic cohesion within the Community.”*¹²

Thus, in 1997 the creation of jobs in the “renewables” industry emerged as one of the main justifications and focal points of the plan. The authors of the report estimated that between 500,000-900,000 new jobs would be created. What the White Paper does not clarify is the relationship between the new job opportunities that *“would derive from investments in the various forms of renewable energy sources”* and *those that would not be created or that would be destroyed* in other parts of the economy precisely because the funding diverted to renewable energy. In this plan there is no promise, intent or reference that fossil fuel use or the carbon dioxide emissions would decrease but promoting these unnamed purposes top the list of reasons to promote renewable energy.

Renewable Portfolio Standards are the Silent Killer of America's and State Economies

Renewables experiences in the U.S. appear to be a bad idea that gets worse.

The RPS is a legislated mandate requiring a certain percentage of a state's electricity “portfolio” to come from renewable energy (typically referring to wind and solar) by set dates - most states are 10 percent by 2010, 15 percent by 2015 and 20 percent by 2020. In his State of the Union Address, President Obama announced that he'd like to see 80 percent clean energy by 2035. Bernie wants 100%. Renewable energy is known to be more expensive for the consumer than electricity generated from traditional sources - even with subsidies exceeding subsidies to other energy forms by \$49 per megawatt hour. In support of regulations aimed at increasing the use of renewables, a proponent stated, *“The reason for Renewable Portfolio Standards (RPS) is because renewables are more expensive. No one would choose them if it wasn't required.”* Only one state New Hampshire has seen this as a “con” upon them and is the first state to withdraw from the RPS.

Despite the high cost and intermittent availability, renewable energy is touted as the savior and environmental groups lobby legislators to push for mandates - or higher mandates (as in California and Colorado) when they've already voted in the RPS. But, from what is renewable energy “saving” us? Do legislators, governments, voters, or anyone really know? It is inappropriate to ask the cost and socioeconomic impact of pursuing RPS?

- These companies received U.S. \$7.01 billion in loan guarantees are now bankrupt (Solar Trust of Amer., Bright Source, SunPower, Solyndra, Abound Solar, A123 Solar, ECotality, Ener1, Amonix Solar, Azure Dynamics, Energy Conversion, Evergreen Solar, Satcon Tech., Beacon Solar and Fisker Automotive).
- These are the number of solar companies that declared bankruptcy in: 2009-2012 (10), in 2011 (5), in 2012 (37), in 2013 (21)

¹⁰ COM (97) 196 final, 14 May 1997, “The Energy Dimension of Climate Change” y COM (97) 481 final, 1 October 1997, “Climate Change - The EU Approach to Kyoto”.

¹¹ G.C. Alvarex and other, 2009, Study of the effects on employment of public aid to renewable energy sources, RJCUC, Spain

¹² http://ec.europa.eu/energy/library/599fi_en.pdf

- These are the wind companies bankrupt with debt > \$350 million (Renewable Energy, Fuhrlander (Germany), EnergoPro (Bulgaria), Winwind (Finland), Windreich (German))
- The U.S. Department of Energy section 1703-1705 loan guarantees exceeded \$26 billion from 2009 to 2013.
- There were 2,298 permanent jobs created at a cost of \$11.45 million per job.
- Washington State's Renewable Energy Standards (RES) started at 3% of total power in 2012 and was to increase 1.5% per year. By 2020 or when 15% renewable is reached (not including hydro) Washington's RES will destroy thousands of jobs. Average families will pay \$2,400 more per year in utility bills. *Renewable energy represents Washington's 7 U's*. Washington is blindly embarking an unknown, unmarked path, on a program with unknown benefits, whose health effects are unknown, with technology that is unknown, on a program whose merits are unknown, for reasons and purposes that are unknown, and with economics that are unknown. It's blindly promoting hope.
- The need for renewable energy is based on four lies¹³:
 - (1) The first is that we "must" get off of oil", yet almost no amount of electricity comes from oil. Certainly we need to end our oil supply dependence from those who hate America, stop using lives of American military to protect overseas oil supplies, but we have plenty of oil. There is only a shortage of "access" to oil. The access shortage is due to a severe over-indulgence in protecting federal lands from humans, where humans vacation.
 - (2) The second lie is that we must use "clean" energy, or energy that does not produce carbon dioxide, CO₂. This premise is based on the unproven belief that CO₂ causes global warming, that some believe is human-caused, and stopping CO₂ emissions will save the planet. However, CO₂ is good for humans. It is a fertilizer, a requirement for plant growth, our nation's agriculture, and food for a growing population and export to keep America's farms operating.
 - (3) Once more CO₂, at 390 to 400 parts per million, or 0.00039 to 0.00040 of our atmosphere of which fossil fuel part of CO₂ is 0.00002, is an amount so exceedingly tiny as to have no effect whatsoever upon weather, let alone to be a dangerous greenhouse gas or a cause of the physically-impossible "greenhouse effect" in the atmosphere, the third lie. The major contributor to warming and cooling and weather is water vapor, ocean circulation, and heat exchange to and from oceans due solar heating. The warming is due to the sun.
 - (4) The fourth lie is "global warming" (aka climate change, severe weather, climate disruption and other monikers), a state of a natural changing climate that has happened for earth's 3.5 to 4.5 billion year history, and occurs in predictable cycles of 11, 30, and 178 years, is somehow and suddenly dangerous. Earth is now witness to a decadal cooling of 4.1°F as this winter was the 39th coolest since weather record-keeping began. In fact the winter in northern Europe is the coldest since 1941 and winter's snowfall in New England is third snowiest ever. Washington's rural weather stations show a cooling that started in 1930-1940s and continues today. Today's temperature, even when considering any warming expected is 5°F cooler than during the Minoan Warm Period of 1200-1400 BC, a time of the Hebrew Exodus from Egypt, is 3°F cooler than during the Roman Warm Period of 300 BC to 0 AD and is 1.5°F cooler than during the Medieval Warm Period of 800-1050 AD when Vikings settled Greenland.

Ending all of Washington State's emissions of CO₂ would be replaced in 35 days from the rest of the world, in 53 days by China, would yield a temperature savings of 0.0018°F, a sea level rise savings of 0.008 inches by 2050, yet cost Washington household income losses of \$8,200 each and job losses to

¹³ This article used excerpts from an Editorial written by Marita Noon, *Energy Tribune*

the state by 82,000 by 2030, increase gasoline prices at least \$1.17 per gallon and reduce state GDP by \$14.7 billion annually.¹⁴

The Problems with Wind Energy

After 2016 the build-out or expansion of wind electric generation is expected to slow, then decline (Figure 2) and fall to zero with expansion ceasing by 2019-2020. Is this diminution due to one or more of the causes just enumerated? In comparing data, Figure 2 shows that mandated taxation of consumers is still inadequate to assure more than a weak to uncertain future of wind energy, the most common form of renewable energy.

A problem not yet obvious is that renewables are unable to maintain pace with US population growth but are falling behind.¹⁵ Additions in wind power have increased by 191 million MW-hours since 2000 but demand for power has increased about 10 percent faster by 210 million MW-hrs. based on average usage and household. The electricity demand exceeds the averages for household and usage in 22 states. States of Louisiana, Tennessee, Alabama, Mississippi Kentucky, Virginia, Texas top this list where demand is higher-than-average. It is very apparent that renewables are not displacing carbon-based fuels as advertised. This may be due to heightened use of air conditioning.

The decline of wind power generation may be due to a lot of reasons but the most obvious is its lack of reliability and its high cost. Consumers in the U.S. want full-time energy and renewables' history shows they cannot meet this demand. The factors of high cost and unreliability of wind are manifest in five ways, a requirement of a costly source of **backup power**, its **unkept promise** as a power source, its **high cost** that brings **energy uncertainty** to low wage consumers, a requirement for continued government load guarantees and subsidy support to encourage construction, and its insurmountable **requirement to occupy vast amounts of land areas**.

The **first problem** is that wind energy cannot be relied upon as a sole source of power. It is unreliable on its own merits because it is a part time event. It must have full time backup from other sources of power for periods when it provides no power. This requires that a second form of power must also be built so, in essence the duplicate power forms also doubles the cost of the power and this need seems entirely unnecessary and artificial. The question then is: Will these new backup additions come from coal, oil, natural gas, or nuclear plants? In the Northwest, hydro fills the backup niche, but this is an anomaly unique to the region.

A good example of **unkept promise** of wind energy as a power source is revealed clearly in Washington and Oregon by data provided by the Bonneville Power Administration (BPA). BPA is charged with authority for balancing of all energy forms in Washington and Oregon. Included here are the 4,782 megawatts of wind energy capacity from 44 wind farms that BPA orders either on, off, or standby to balance with coal, nuclear, and hydropower. Data from BPA's website shows the reliability problem quite plainly and is a very serious issue.¹⁶ For a 33 month period (992 days) examined in 2013-2015, the BPA records shows that, though capacity is 4782 MW the actual energy provided is quite tiny as records show. For 56% of the time the 44 wind farms produced less than 10.5% of the capacity, for 23% of the time they produced less than 2% of capacity, for 7% of the time (70 days) they produced less than 0.2% of capacity. In fact during 57 days in 2014 they produced no power, and in a single, uninterrupted 25 day winter period of Jan. 5-Jan 29, 2014, they consistently produced no power

¹⁴ http://scienceandpublicpolicy.org/state_climate_profiles.html http://scienceandpublicpolicy.org/originals/state_by_state.html

¹⁵ BP Statistical Review of World Energy, 2015, 2016

¹⁶ <http://transmission.bpa.gov/business/operations/Wind/default.aspx>

whatsoever. Is this the power source that consumers were promised? Did providers know of this problem beforehand?

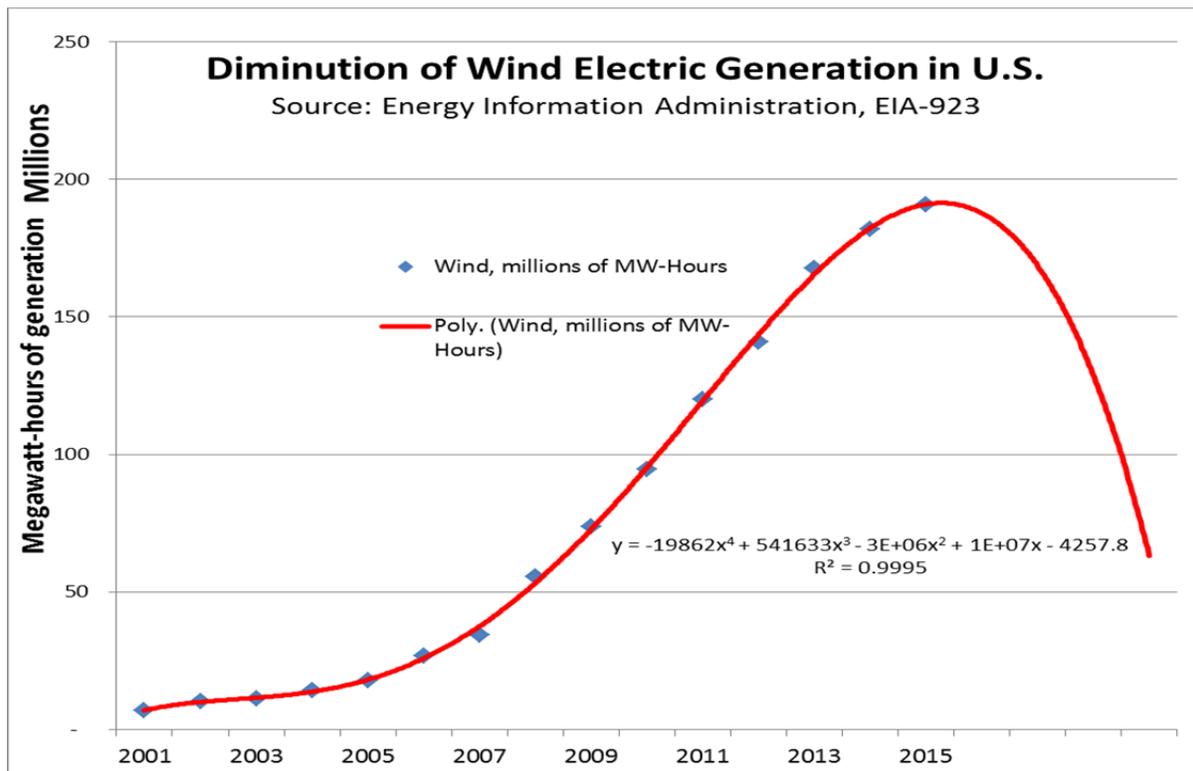


Figure 2. Electric power wind facilities added in U.S. is declining

High cost is the **third problem** with renewable energy. In the year 2000 before renewable energy got its start, the cost of electric power from 20 utility providers in Washington averaged 3.7 cents per kwhr. The cost increased just one half cent in the previous 20 year period. Today it is 8.5 cents per kwhr. Oregon's history is about the same. High cost has been a disaster to economies in other countries, as Germany, Spain and England where their solar and wind energy policies created policy risks of "deindustrialization".¹⁷ The high cost of the EU's Emissions Trading Scheme that caused residential electricity rates to increase 63% on average while rates rose 32% in the U.S. also ushers in energy uncertainty for most low-wage consumers a **fourth problem** faced by many unable to pay very high utility costs. Energy costs increased more in Germany, by 78%, by 111% in Spain and up 133% in the U.K. Germany has scrapped its *Energiewende*, at a cost of 1 trillion Euros and the German government expects payouts of Euro 31 billion per year to continue, a result of its central planning folly. At the same time the German CO2 emissions are rising due to energy use¹⁸. The job gains in renewable energy sectors have caused job losses in other sectors.

Renewable energy in Spain was promoted as creating green more jobs. Though Pres. Obama has touted Spain's broad government support to aid renewable resources a Rey Juan Carlos University study in Spain shows 2.2 jobs were lost in the economy for every green job created and each green job cost \$1.1 million and for each green megawatt installed 5.28 jobs were lost elsewhere. Spain's

¹⁷ <http://www.manhattan-institute.org/html/issues-2016-what-happens-economy-when-forced-use-renewable-energy-8844.html>

¹⁸ <https://wattsupwiththat.com/2016/05/03/fail-co2-emissions-increasing-in-eu-despite-1-trillion-in-green-subsidies/>

unemployment has increased by 21%.¹⁹ To satisfy its renewables debt, now at \$32 billion, Spain must commit 10% of its value-added and corporate income tax revenues and increase utility rates 31%. This experience if translated to the U.S. would cause a loss of 6.6 to 11 million jobs.

Hundreds of wind power facilities are built because the US government guarantees loans of the money for construction provides subsidies when energy is produced, of about 3.2 cents per kwhr and guarantees a minimum selling price of the power of 12 cents per kwhr. Some states also mandate a certain percentage of power must be produced from renewable forms as per their RFS or RES. None of these reasons consider whether the ventures are profitable on their own merits so the financial support is also artificial. In effect those who promised wind as a power panacea delivered nothing new yet what was delivered costs us plenty, are mostly unreliable and this cost continues.

The **fifth problem** is the space requirements for wind facilities. Human residences cannot also occupy the same area as wind turbines. Well known is that each new wind turbine added occupies a prime “windy” location, so that the number of prime locations diminishes as the build-out continues. The Department of Energy reveals that the optimum wind sites are limited in number. So, does the slow-down hint at an approach to a “saturation level” of the optimum sites mentioned by the DOE? It will take results for several more years to answer these questions.

DOE's National Renewable Energy Laboratory (NREL) published land areas available for each state's wind energy potential at 110-m hub height with 35% capacity factor.²⁰ Using NREL's highly optimistic 35% capacity factor, wind farms already built in Washington occupy 18% of its potential land area and Oregon's wind farm occupy 19% of its potential land area

John Droz explains the space requirement of wind facilities advances it ever-closer to a near-intractable obstacle.²¹ The very wide spaces needed for wind are due to its very low power density as explained by Vaclav Smil.²² Smil, one of the world's leading energy experts uses this analogy to explain power density. Packing a minimum volume of food for a mountain hike you skip the carrot and opt to take a granola bar which packs ten times greater density. If you fly across the Atlantic you avoid hydrogen as a fuel and use kerosene instead whose density is 3300 times higher. **Figure 3** illustrates this space requirement, using the power density dimension, whereas an onshore wind farm that occupies 250,000 acres (390 square miles) or a solar farm that occupies 130,000 acres offers the same power density—produces the same amount of energy [although part-time]—as a nuclear or coal plant that occupies 430 acres. The space requirements reflect the power density differences between the fuels. The power density of natural gas and coal are 2,000 to 4,000 times higher than wind or biomass. In other words, the space requirement if opting for solar or wind power balloons to 2,000 to 4,000 times the area needed for a nuclear or coal plant's area. The fossil-fueled civilization of developed countries of the U.S., Asia and Europe are built on making electricity from power sources packed with energy that is more than three orders of magnitude larger (or more dense) than wind, biomass or solar.

A Stanford Engineering professor²³ says we could provide 50% of world electricity by building 7.6 million 2.5 MWe wind turbines. Bernie Sanders thinks that all power (not just half) should be provided by renewables so raise that to 15.2 million 2-1/2 MWe wind turbines. The space requirement of each

¹⁹ G.C. Alvarex and other, 2009, Study of the effects on employment of public aid to renewable energy sources, RJCU, Spain

²⁰ http://apps2.eere.energy.gov/wind/windexchange/wind_resource_maps.asp?stateab=wa

²¹ <http://wiseenergy.org/>

²² <http://sunweber.blogspot.com/2014/11/prove-this-wrong.html>

²³ <http://www.masterresource.org/2010/05/smil-density-comparisons-v/>

²³ <http://www.scientificamerican.com/article/a-path-to-sustainable-energy-by-2030/>

wind turbine at the Vantage wind farm in Kittitas County, Washington is more than 67 acres and after adding facilities to transmit the power this value sums to 75 acres. Packing turbines more closely reduces their efficiency more from the current low efficiency values of 26% for Washington and 24% for Oregon.

Let's look at the land requirements:

15.2 million turbines *times* 75 acres per turbine *divided by* 640 acres per sq mile
equals 1,781,000 sq miles.

The area—1,781,000 square miles--That's the size of all of the 40 smaller U.S. states or all of the 10 largest US states [Alaska, Texas, California, Montana, New Mexico, Arizona, Nevada, Colorado, Wyoming, and Oregon]. So what's left?

Add to that impediment--People cannot live within 1.5 miles of a wind turbine farm due to health hazards as explained in the next section due to constant noise that makes them mentally ill. In effect installation of wind turbines on land preempts its occupation by human beings. Some municipalities have now passed into law set-back code for building permits limiting building of residences no closer than 1.5 to 2 miles from the nearest wind turbine. Then put aside for the moment that wind turbines only work far-less-than-half the time when the wind blows at the right speed. Also put aside the big transmission losses from moving the electricity from where the wind blows to where the electricity is used.

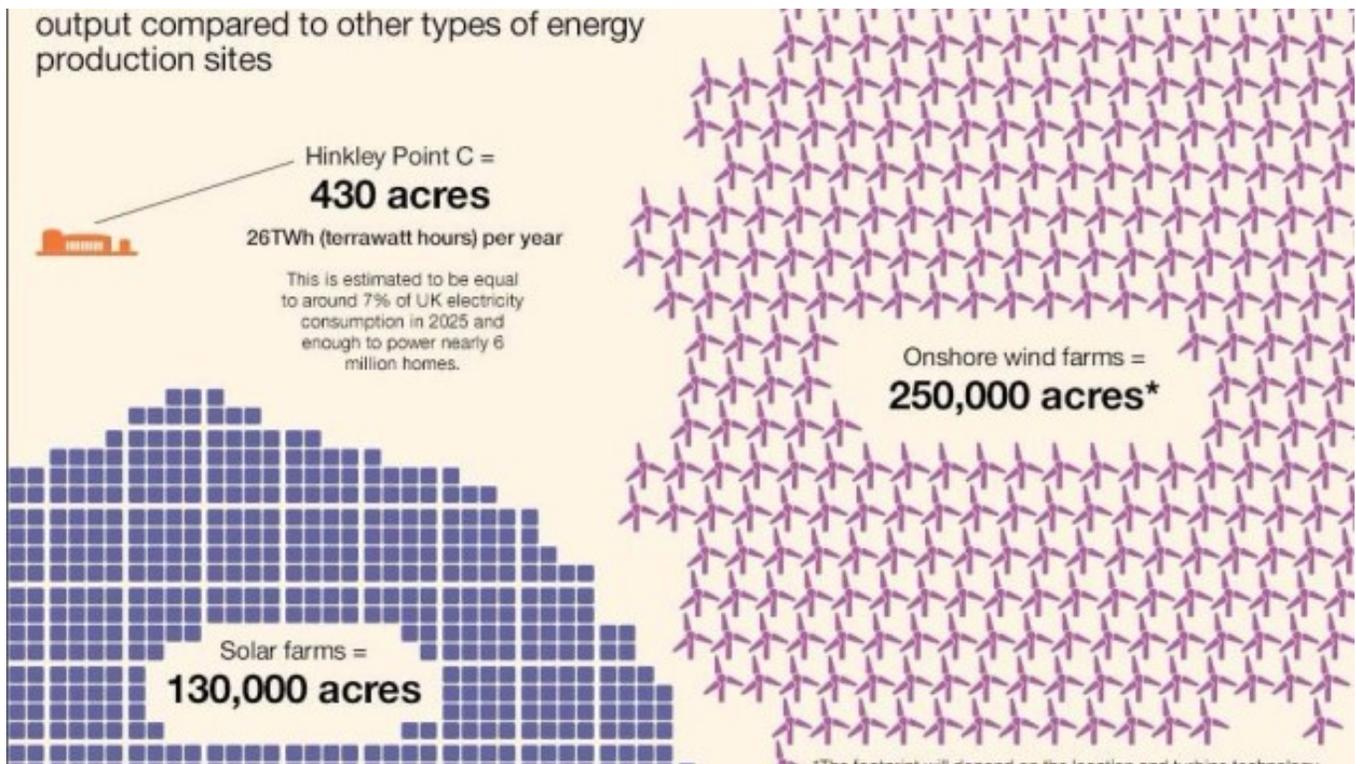


Figure 3. Illustration of Nuclear-Solar-Wind Footprints

The Hinckley Point thermal plant occupies 430 acres and produces 26 terawatt-hours of electricity per year, or 7% of UK's electricity consumption. The same amount of electricity would require a solar farm covering 130,000 acres or a wind farm covering 250,000 acres

Green Renewables Mega-Flop

European consumers are generally opposed to green energy. These experiences are well voiced at the European Platform Against Windfarms. They have learned this energy is costly, defaces once-serene communities, and poses health risks. Hundreds of windmills are operating at a loss and now face demolition.²⁴ In Ontario, Canada, a University of Waterloo wind energy study lists socially mediated health concerns, distribution of financial benefits, lack of meaningful engagement and failure to treat landscape concerns seriously as core stumbling blocks to community acceptance of wind energy developments²⁵.

Following are headlines listing Wind Power concerns by European, US and Canadian communities.

- The Danish Minister of climate and energy Lars Lilleholt is talking about about saving 5 billion green tax Danish kroner by dropping wind farms already agreed upon.²⁶ On June 7, 2016 the Danish government announced that as a « proposal to resolve its renewable energy tax that it will cancel all coastal wind turbines agreed in 2012 because the tax is markedly more expensive than planned ».²⁷
- Wind turbines for climate? A mistake for our planet! - Paris, December 1st 2015.²⁸
- Engie's President pointed out the high price of wind power: "These are intermittent energies that will require great storage capacities, which will rely on natural gas. We will have to pay three times. First because we have to build two systems (wind and gas), second because we have to subsidize wind turbines, and third because the gas turbines will only work 70% of the time and the cost of MWh will increase as much. Aside from its high price, the wind gas system will generate greenhouse gases 70% of the time. It is therefore a polluting combination."²⁹
- Wind turbines kill birds by the hundreds of thousands.^{30 31}
- Massachusetts Epicenter of US Wind Turbine Corruption - The Massachusetts Technology Collaborative, MTC, today known as the Massachusetts Clean Energy Center, MassCEC, bought two massive commercial Vestas V-82 commercial wind turbines to place in residential communities. The trail of corruption starts in 2004 with the Massachusetts state legislature and former Governor Deval Patrick also known as "Sally Reynolds" to wind turbine contractors.³²
- "Energy prices are creating an industrial massacre in Europe" Roger Helmer's speech in the European Parliament--We have a policy which is exporting jobs, exporting investment, exporting manufacturing, and increasing CO2 emissions at the same time.³³
- Fraud in Falmouth MA – Town Relied on Acoustic Consultants' Faked Vestas Wind Turbine Noise Report.³⁴
- Polish Parliament adopts mandatory setback for industrial wind turbines (10 times turbine height)³⁵
- Indoctrination of our Children in Schools by wind developers Must Stop---Subsidy Sam set to knock wind out of Tommy's sails. 'Subsidy Sam' is a children's story written by Lyndsey Ward to counter the shameless pro-wind propaganda allowed in schools.³⁶

²⁴ <http://www.epaw.org/echoes.php?lang=en&article=n476>

²⁵ Tanya Christidis, Univ. of Waterloo School of Planning: Nature Energy

²⁶ <http://www.epaw.org/echoes.php?lang=en&article=n495>

²⁷ Denmark Cancels All Coastal Wind Farms, Delays New Build, by Jyllands-Posten, 7 June 2016

²⁸ <http://www.epaw.org/echoes.php?lang=en&article=n423>

²⁹ <http://www.museedemontmartre.fr/montmartre-21>

³⁰ <http://lepeuple.be/les-eoliennes-tuent-les-oiseaux-par-centaines-de-milliers/52521>

³¹ Environnement & Sciences 1 septembre 2015 <http://www.epaw.org/echoes.php?lang=en&article=n397>

³² <http://www.epaw.org/echoes.php?lang=en&article=n412>

³³ <http://en.friends-against-wind.org/realities/energy-prices-are-creating-an-industrial-massacre-in-europe>

³⁴ <http://stopthesethings.com/2016/01/04/fraud-in-falmouth-ma-town-relied-on-acoustic-consultants-faked-vestas-wind-turbine-noise-report/>

³⁵ <http://en.friends-against-wind.org/news/polish-parliament-adopts-10h-setback>

³⁶ <https://wattsupwiththat.com/2016/04/22/friday-funny-subsidy-sam-in-the-news>

- Human Rights or Wind Energy Projects -- Review of the possible breaches by wind energy projects of human rights of people living nearby. It identifies and considers a number of potential breaches of varying impact and of differing ease or difficulty of establishing.³⁷
- “Now it's official: wind turbines aren't safe. Wind turbines... what they're doing to people's health, and now it's official” Good video footage of Waterloo and strong statements by the presenters plus some footage of acoustics expert Steven Cooper.³⁸
- Subsidy Sam the Turbine. This short story has been written to counter the shameless wind propaganda that is allowed into our schools to influence young minds with no effort to show the other side. We have repeatedly challenged the wisdom and morality of allowing multinational companies into the classroom to put their side of a story that is designed to cultivate acceptance of their industry into future generations. You will remember Tommy the Turbine - a tale told to children in Ireland about the wonders of wind power: www.tommytheturbine.net and tommytheturbine.com³⁹
- Management of Sound Emissions from Wind Turbines -- Mis-handling issues of dangerous sound emissions from wind turbines by Authorities.⁴⁰
- Petition!!! On the Subject of Infrasound -- Debate on the as yet unforeseeable health damages by infrasound in Germany.⁴¹
- Winded in Germany: Berlin's renewable energy fiasco is about to get even worse.⁴²
- Important: Support for Research on wind turbines. Dr David Lawrence, Internal Physician from Connecticut, USA: “*This is seeking crowd-funding support about trying to scientifically establish a cause and effect relationship of IWTs and adverse human effects.*” I practice Primary Care in Internal Medicine in a small town in Northwestern Connecticut. On October 17, 2015, two Industrial Wind Turbines (IWTs) began operation as close as 1600 feet from my house. My wife became so severely affected by the turbines that we moved into our basement the next morning to shield us from Infrasound and whatever else caused the physical effects, possibly including "dirty electricity." Most people cannot feel the effects of IWTs. If they do, they do not often realize that something is going on or they do not know it is from the turbines. But for those who are highly sensitive-like my wife-the symptoms start almost immediately. Head pressure, posterior head pain, dizziness, loss of balance with falls, palpitations, the thumping of the blade in her chest. Sleep disturbance is prominent and has a significant adverse health impact. The clinching factor is that everything goes away when the turbines are not operational or the person leaves the area.⁴³
- German State Of Bavaria “Puts Brakes On” Wind Energy, Industrialization Of Rural Landscape.⁴⁴
- Québec--Fini les factures gonflées à l'éolienne -- Quebec will ensure that the cost of future electricity supply of wind fields, minicentrales and biomass power plants will not be passed on to consumers.⁴⁵
- Ireland's Battle Against Wind Farm Rollout Escalates - Vestas Workers Receive Death Threats.⁴⁶
- French historical monuments destroyed by wind turbine industry -- Hundreds of classified sites, thousands of small historic villages, 51 natural parks are about to be destroyed by 20,000 giant wind turbines. French Senators are trying to stop the destruction of French Héritage!!!!⁴⁷

³⁷ <http://www.epaw.org/echoes.php?lang=en&article=n485>

³⁸ <http://en.friends-against-wind.org/health/what-wind-turbines-are-doing-to-people-s-health>

³⁹ <http://en.friends-against-wind.org/realities/subsidy-sam-the-turbine>

⁴⁰ <http://www.epaw.org/echoes.php?lang=en&article=n484>

⁴¹ <http://www.epaw.org/echoes.php?lang=en&article=n482>

⁴² http://www.wsj.com/articles/winded-in-germany-1460589766?mod=wsj_review_&_outlook

<http://www.epaw.org/echoes.php?lang=en&article=n479>

⁴³ <http://en.friends-against-wind.org/health/support-for-research-on-wind-turbines>

⁴⁴ <http://www.epaw.org/echoes.php?lang=en&article=n477>

⁴⁵ <http://www.epaw.org/echoes.php?lang=en&article=n472>

⁴⁶ <http://stopthesethings.com/2016/04/02/irelands-battle-against-wind-farm-rollout-escalates-vestas-workers-receive-death-threats/>

⁴⁷ <http://www.epaw.org/echoes.php?lang=en&article=n466>

- Falmouth Wind Turbines 110 Decibels-February 2016-05 – Sick and Tired Protest -- The European Platform Against Wind joins the people around the world in voicing the protests and solidarity with your objectives. ⁴⁸
- The Misfortune Of Living By A Wind Farm - The truth about having to live near Grouselodge wind farm, Co. Limerick, the illness they cause, the noise, the discomfort, the lies from developers, wind farm owners/operators - Health professional speak out against wind infrasound...<https://youtu.be/nyK3pG0l270> ⁴⁹
- Disintegrating Wind Turbines & Mass 'Planned' Blackouts in Germany: What's Not to Like About Wind Power? -- The wind industry, its parasites and spruikers, around the globe, hail Germany as *THE* wind power 'Super Model'. Trouble is, in Germany – as elsewhere – the 'gloss' has well-and-truly worn off – and the 'Model' is looking more than just a little worse for wear. Some 800,000 *German homes* have been disconnected from the grid – victims of what is euphemistically called “fuel poverty”. In response, Germans picked up their axes and headed into their forests in order to improve their sense of energy security – although foresters apparently take the view that this self-help measure is nothing more than blatant timber theft. ⁵⁰
- *Wind Farms Useless*, says Duke - The Duke of Edinburgh has made a fierce attack on wind farms, describing them as “absolutely useless”. In a withering assault on the onshore wind turbine industry, the Duke said the farms were “a disgrace”. He also criticised the industry’s reliance on subsidies from electricity customers, claimed wind farms would “never work” and accused people who support them of believing in a “fairy tale”. The Duke's views are politically charged, as they put him at odds with the Government’s policy. ⁵¹

These articles compile wide experiences with wind energy voiced from many perspectives :

- Twenty Bad Things About Wind Energy, and Three Reasons Why--by John Droz, October 24, 2012 ⁵²
- *A Problem With Wind Power* – by Eric Rosenbloom. ⁵³
- *Human Rights and Wind Energy Projects*, March 2016, by Peter Mitchell for *Friends Against Wind*. Reviews residents’ human rights breaches by wind energy projects. ⁵⁴
- *Speaking Truth About Wind Power* – Submission to Legislative Committee of Ontario on Bill 150, by Michael Trebilcock, April 2009, an economist and friend of the environment and a resident of the Grey Highlands, the Niagara Escarpment of Southwest Ontario argues against Ontario’s Green Energy Act, if for many reasons, this act is anything but “green”. ⁵⁵
- *Wind Energy: Facts and Fiction – A half-truth is the whole idea*, by J.A. Halkema, electrical engineer and energy authority, Nederland – He maintains that wind energy advocates with hidden political and monetary agendas intentionally withhold vital information from the public. In the light of steadily growing concerns, the author insists the public should not be told that a partial solution has already been found and is working well. That claim is blatantly untrue. ⁵⁶
- *Power Density Primer: Understanding the spatial dimension ---Why the transition to renewable electricity won't work*, a 5 part series, by Vaclav Smil, May 2010. ⁵⁷

⁴⁸ <http://www.epaw.org/echoes.php?lang=en&article=n465>

⁴⁹ <http://stopthesethings.com/2016/01/11/irish-wind-farm-neighbours-detail-unnecessary-daily-acoustic-misery/>

⁵⁰ <http://stopthesethings.com/2016/01/09/disintegrating-wind-turbines-mass-planned-blackouts-in-germany-whats-not-to-like-about-wind-power/>

⁵¹ <http://www.telegraph.co.uk/news/uknews/prince-philip/8901985/Wind-farms-are-useless-says-Duke.html>

⁵² <http://www.masterresource.org/2012/10/20-bad-things-wind-3-reasons-why/>

⁵³ <http://www.aweo.org/ProblemWithWind.pdf>

⁵⁴ <http://en.friends-against-wind.org/justice/human-rights-and-wind-energy-projects>

⁵⁵ Science and Public Policy, SPPI Reprint Series, April 7, 2009, *Speaking Truth About Wind Power*

⁵⁶ <http://www.hkcawps.org.hk/news.php?l=en&i=6>

⁵⁷ <http://www.masterresource.org/2010/05/smil-density-comparisons-v/>

Carbon Dioxide and Fossil Fuels *Benefit* Food Production, Economic Expansion, Human Development, Lower Use of Water Resources

Authors have outlined the advantages of maintaining a secure electrical power system, the social benefits of carbon based fuels and the disadvantages of relying on renewable energy due to its cost and uncertain benefit. Others have outlined the disadvantages of jumping on the renewable wagon as a measure to replace fossil-based fuels.

Writing on the high cost of renewable electricity mandates, or Renewable Portfolio Standards (RPS), the Manhattan Institute says they are too expensive, counterproductive and unbalanced across the U.S.^{58 59} Nor have states fully calculated renewable costs in the hurry to sign on, a method likened to a back-door way to place a price on carbon as well as to increase the cost of electricity via a de facto carbon reduction tax. The objective of the renewable mandates as a method to avoid so-called dangerous pollution from carbon dioxide from fossil fuels is unproven. These taxes strain struggling economies by regressive taxes that in some states have added 54.2% to electricity rates since 2001 with largest increases in Oregon, California and Ontario.

Stopping emissions of carbon dioxide are very costly while the benefits of carbon dioxide are free. Germany is good example to show that it cannot sustain an economy on renewable energy alone. In Germany, the cost of its “Energiewende” has increased utility costs 31 billion Euros while its carbon dioxide emissions from fossil fuels have actually increased⁶⁰. In 9 August 2012 Chancellor Angela Merkel announced that Germany would build up to 19 coal-fired electric generating plants that pose a carbon dioxide emissions threat as it phases out its nuclear fleet.⁶¹ In 2006 investors had proposed 38 new coal plants but that number has been scaled back. Germany’s Energiewende—the country’s transition away from nuclear to renewables, now welcomes coal back. It is a coal conundrum. Renewable energy seems able to fill the gap left by phase-out of nuclear but the buildout of renewable energy seems unable to diminish the need for lignite and hard coal to generate electricity.⁶²

Australia has ended its renewable energy subsidies. In July 2014 Prime Minister Tony Abbott succeeded in ending Australia’s carbon based tax, the source of these subsidies as it ended its carbon tax law passed just two years earlier in 2012.

Economists Dr. Roger Bezdek and co-others^{63 64} write that *carbon dioxide is profoundly earth-friendly*, that the social benefits of carbon range 380 to 510 times their cost, and that fossil fuel use has resulted in two-fold growth in global life expectancy, an 8-fold growth in population, an eleven-fold increase in incomes due to fossil fuels. Fossil fuels have facilitated successive industrial revolutions and created a modern world with an advanced technological society that permits a high quality of life. Bezdek shows that countries with highest use of fossil fuels and per capita electricity use correspond to highest *human development indexes* in developed countries (Figure 4). The increase of world GDP from \$1,000 billion in 1900 to \$74,700 billion in 2010 is inescapably correlated with increased use of fossil fuels. After the invention of the printing press, the second most significant achievement in the world’s 6,000-year history is electrification.

⁵⁸ R. Bryce, 2012, The high cost of renewable-electricity mandates: Manhattan Institute

⁵⁹ What Happens to an Economy When Forced to Use Renewable Energy? Robert Boyce, 2016 <http://www.manhattan-institute.org/html/issues-2016-what-happens-economy-when-forced-use-renewable-energy-8844.html>

⁶⁰ <https://wattsupwiththat.com/2016/05/03/fail-co2-emissions-increasing-in-eu-despite-1-trillion-in-green-subsidies/>

⁶¹ <http://www.bbc.com/news/business-19168574>

⁶² https://eu.boell.org/sites/default/files/german_coal_conundrum.pdf

⁶³ Bezdek, R, 2014, The social costs of carbon? NO. The social benefits of carbon: Management Information Services www.misi-net.com

⁶⁴ <http://marshall.org/climate-change-tags/social-cost-of-carbon/>

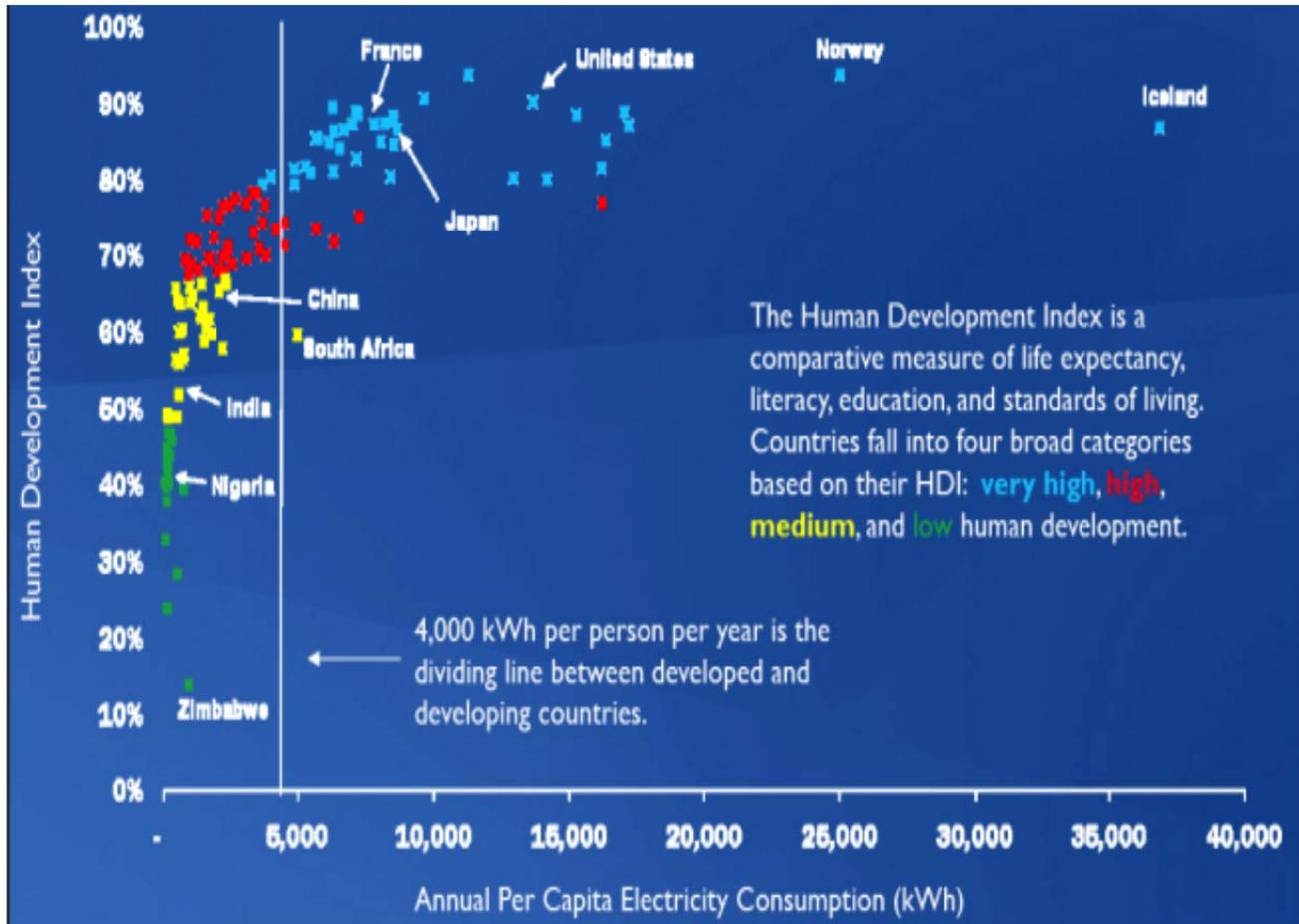


Figure 4. Human development index compared with per capita electricity consumption

(Source: Bezdek, GCMi Briefing, 2014; United Nations Development Program, 2012)

The increase in carbon dioxide in the atmosphere also benefits to crop production and food supply⁶⁵ and reduces water use in irrigation. The benefits of carbon dioxide to plant photosynthesis and more efficient water usage⁶⁶ have been long recognized by plant scientists and biologists. Craig Idso demonstrated that the CO₂-induced benefit for global food production from 1961 to 2010 was \$3.2 trillion after subtracting improvements in new cultivars and improvements in technology. The author projects similar benefits through 2035 to add another \$9.8 trillion.

⁶⁵ Idso, C., 2013: Positive externalities of carbon dioxide: <http://www.CO2science.org/education/reports/co2benefits/co2benefits.php>

⁶⁶ <http://www.co2science.org/subject/w/wateruseag.php>

APPENDIX

How to Build a Wind Turbine.

To construct ⁶⁷ ⁶⁸ one 2.5 megawatt wind turbine with a tower height of 328 feet and weighing 71 tons made of steel--that comes from iron ore mined in Brazil and then shipped 12,000 miles to Philippines at a cost of \$8000 per day on a 1,200 foot long Brazilian flagged ship that consumes 57 tonnes per day of bunker fuel oil, then offloaded because Chinese ports cannot accommodate a ship with a draft so large and reloaded onto a smaller ocean freighter to continue 1300 miles to China where smelted in blast furnaces sometimes using coke made from coal mined from coal mines for fuel shipped by ocean freighter from Eastern Australia that crosses the Great Barrier Reef and carries 180,000 tons of coal--with three blades each 314 feet long weighing 36 tons--made of fiberglass from ethylene a by-product of oil produced from the ground where hydro-fracturing is employed and then refined--mounted on a nacelle weighing 56 tons made of steel--that comes from iron mines in Arctic Norway--that contains 250 gallons of oil--refined and produced from the ground in the United States--in its transmission--and with tons and tons of copper in its winding--that comes from copper mines in Chile that is shipped to Korea--and a rare-earth metal magnet--containing 500 pounds of a very rare metal, dysprosium, that comes from Chinese mines where mines are unregulated by US environmental standard that costs \$500 per pound all of which are transported from Korea or Denmark by ocean freighter that costs \$8000 per day and made by Vestas, a Danish company, now one of several parties accused of fraud in a Falmouth MA wind turbine controversy with Gov. Deval Patrick--and with all of this is set in a foundation of 45 tons of steel reinforcement bar--mined from iron ore in western Australia and shipped to China were its manufactured in blast furnaces with coke that comes from coal mined in eastern Australia and then shipped by ocean freighter at a cost of \$8000 per day and consuming 57 tons of bunker fuel oil per day to the United States--and 1200 tons of concrete made of locally supplied aggregate and water with cement--made and shipped from China to the United States aboard an ocean freighter that costs.....

One 2.5 megawatt turbines produces energy in Washington at an efficiency of 26%, or in real terms it produces only 0.65 megawatts and occupies 75 acres of land where there is a cost either to purchase or to lease the land and which must be at a distance of at least 1.5 miles from residences occupied by people due to the health hazard caused by the low frequency noise produced by the wind turbine and it is well known that operating turbines cause the death of eagles, bats and other small birds in great number though the U.S. government has provided waivers to wind energy companies so they may continue to kill eagles without risk of legal action.

To construct the wind turbine, the US government provides a guarantee of 100% of the loan for construction. To promote the sale of power, when produced, the U.S. Government gives the operator 3.2 cents per kilo-watt-hour for energy produced and has set into law that the minimum selling price will be 12 cents per kilowatt-hour, about double the current rate of electricity in Washington or Oregon. The States of Washington and Oregon have mandated by law that public utilities will buy this energy from the operator as a part of the State Renewable Portfolio Standard so that at least 15% of the utility company's portfolios consist of "renewable" forms of energy. Despite this there is no requirement that any of this saves carbon dioxide, whatsoever. The wind turbine only produces wind when the wind is blowing and if blowing too hard it must be shut down as high wind will damage it. It has a 20 year life and must undergo periodic maintenance each 2 to 5 years.

⁶⁷ <http://static1.squarespace.com/static/503a5bade4b0b543ed240317/t/5730fab7356fb056e17d8b13/1462828034844/>

⁶⁸ <http://www.theenergycollective.com/robertwilson190/344771/can-you-make-wind-turbine-without-fossil-fuels>

Wikipedia says that Renewable Energy is energy which comes from natural resources which are naturally replenished. Well, fossil fuels like oil, gas, and coal fit that definition too. Oil and natural gas are currently forming in deep water deposits offshore from river deltas of the world such as the Ganges, Brahmaputra, Amazon, Niger, Mississippi Rivers because the rate of sediment accumulation is so great and burial and thermogenesis are so rapid. Low grade coal, as peat, is currently forming in swamps of the world in central South America and other low lying river basins of the world.

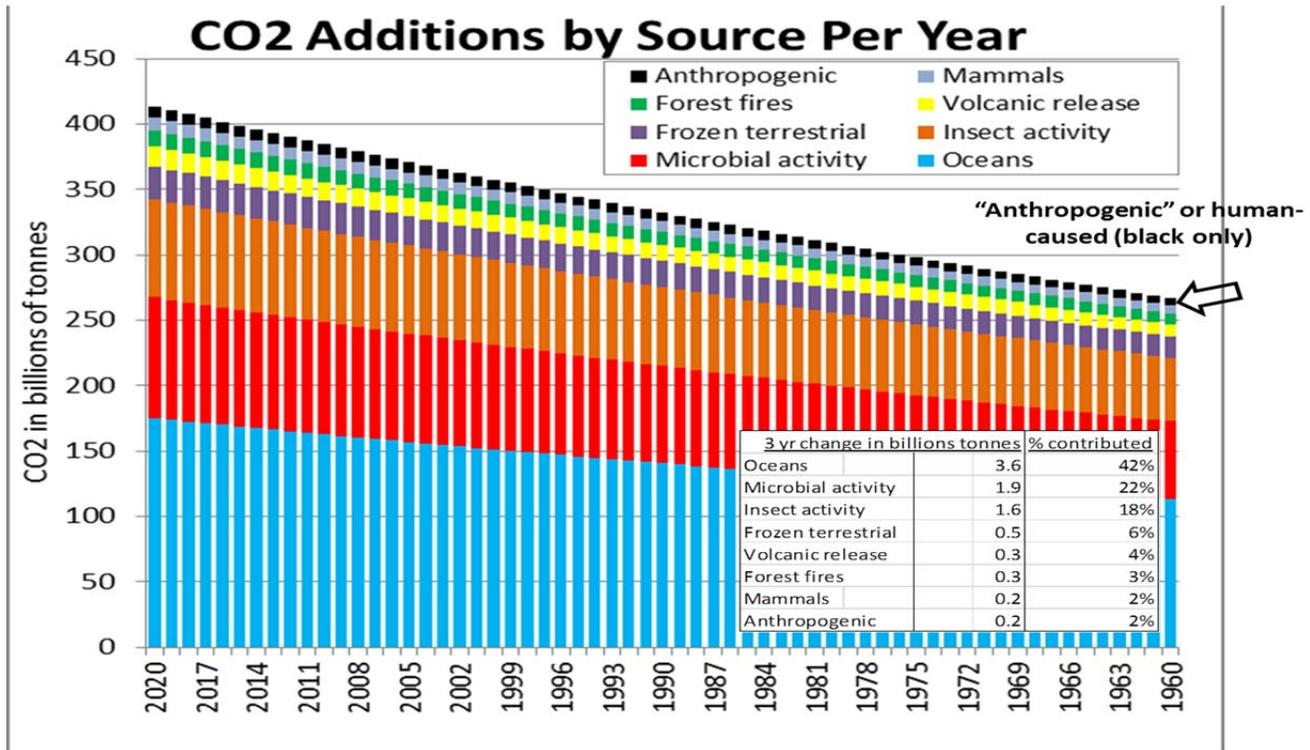
CO2 (carbon dioxide) Additions by Source Shows Human-caused Sources are Tiny

The chart shows carbon dioxide (CO2) additions by source for 1960 to 2020. It shows that humans contribute only a tiny share compared to all other natural sources. The major sources of carbon dioxide are the oceans (mainly bacteria and microorganisms) and microbial and insect life. These sources account for 82% of all carbon dioxide released into the atmosphere. Human or fossil fuel sources (anthropogenic) sum to about 2% of the total (black symbol). The amount of CO2 in the atmosphere today from all sources is about 400 parts per million (or 0.04%). Therefore, the amount contributed by human is 2% of 400 parts per million or 8 parts per million, or as a percentage humans contribute 0.0008%.

It is interesting to compare the amount of water vapor in the atmosphere to human-sourced carbon dioxide. Both are considered greenhouse substances for their moderating effect on weather. The amount of water vapor is about 4% of the atmosphere or 40,000 parts per million (ppm). We can compare the relative impact of water vapor to carbon dioxide in terms of their greenhouse ability although many scientists believe no such effect exists, especially an effect by CO2. Assuming that water vapor and CO2 are greenhouse substances, then we can compare the relative impact of each by their dividing one by the other:

$$40,000 \text{ ppm divided by } 8 \text{ ppm.} = 5,000$$

From this we see that the effect of water vapor as a greenhouse substance is 5,000 times stronger than the effect of CO2.



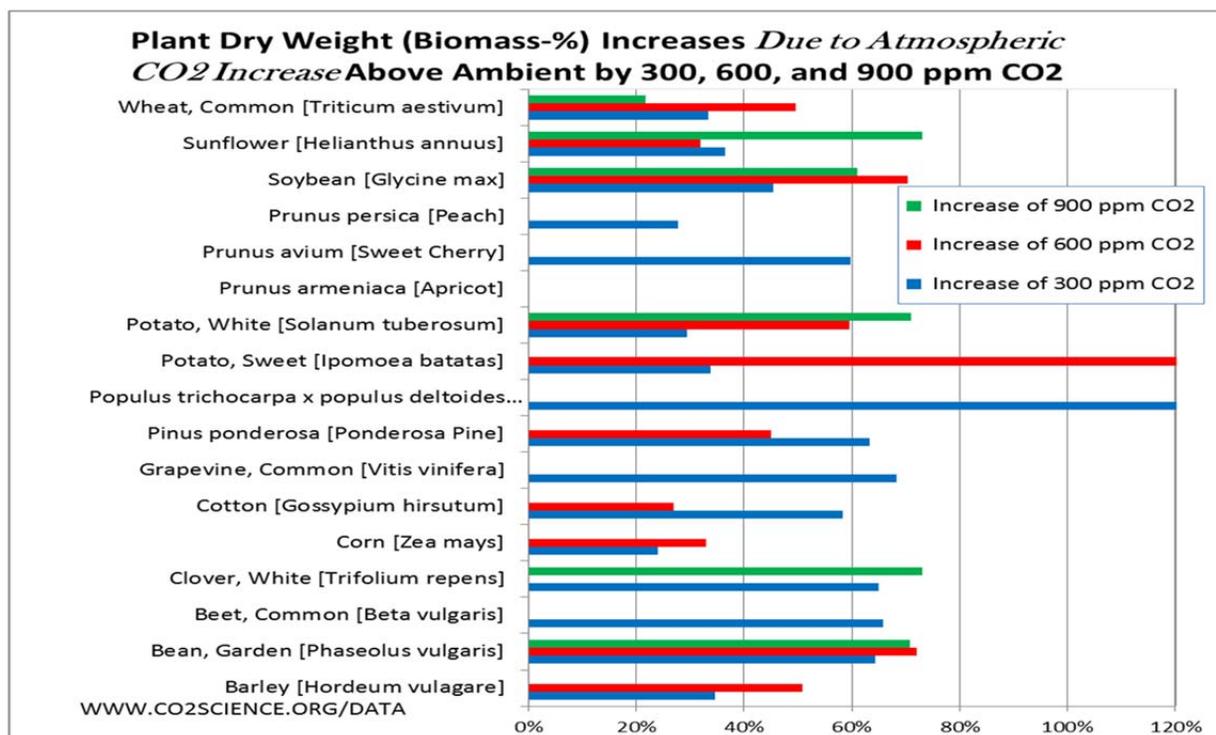
Sources: R.Voison, 2014; IPCC, NOAA, NASA, 2005, 2006

Plant Weight and Photosynthetic Response to CO2 Increase

The chart below shows the benefits to plants by carbon dioxide. It shows why CO2 contributes directly to living plants.

The chart shows the increase in plant weight due to increases in the concentration of CO2 in the atmosphere for increases in amounts of 300 ppm, 600 ppm and 900 ppm above the value today (data courtesy CO2 Science. org). Data provided is for common field crops grown in Washington State. For example, using wheat, wheat increases in weight by 30-32% if the level of CO2 were increased by 300 ppm (blue bar symbol) over levels today (ambient), while soybean increases in weight by 42-44% if there is an increase of 300 ppm (blue bar) CO2 from its level today. The chart also shows the weight response for increases in CO2 of 600 ppm and 900 ppm over ambient.

2. Plant Weight Response to CO2 Increase (average 49.6% response for 300 ppm increase)



Oil equivalent tonne conversion

1 tonne oil - equivalent equals:

- 7.3 barrels or 1,165 litres oil
- 40 million BTU or 400 therms
- 1.5 tonnes hard coal or 3 tonnes lignite
- 1,110 cu m or 39,200 cu ft natural gas
- 12 megawatt-hours electricity
- 12 cords, or 43.5 cu m wood fuel