BEFORE THE UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

In Re:	)	
	)	EPA Docket No.
Endangerment and Cause or Contribute	)	
Findings for Greenhouse Gases Under	)	EPA-HQ-OAR-2009-01
Section 202(a) of the Clean Air Act	)	
	)	

PETITION TO REOPEN AND RECONSIDER
"ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(a) OF THE CLEAN AIR ACT"

Filed by

The FAIR Energy Foundation

Dave Wallace
President
FAIR Energy Foundation
805 15th St. NW, Suite 100
Washington, DC 20005
Phone: 410-984-2194
dave.wallace@fairenergyfoundation.org

INTRODUCTION

Pursuant to Section 307(d) of the Clean Air Act, 42 U.S.C. Section 7607(d), the FAIR Energy Foundation submits this Petition to Reopen and Reconsider the "Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act" published by the Environmental Protection Agency ("EPA") on December 15, 2009 (74 CFR 66496, Dec. 15, 2009)(original EPA Docket No. EPA-HQ-OAR-2009-171)("Endangerment Finding").[1] That Finding held that carbon dioxide (CO2) emissions from the use of fossil fuels endanger the public health and welfare.

EPA explicitly based that Endangerment Finding on three specific "lines of evidence." 74 C.F.R. at 66518. New scientific research and updated data since adoption of the Endangerment Finding have invalidated all three of those lines of evidence, as discussed in detail below. That research includes the findings of thousands of peer-reviewed articles published by hundreds of recognized, independent, climate scientists working at world-class academic and research institutions across the globe.[2]

The Petition also draws on the work of William Happer, Cyrus Fogg Brackett Professor of Physics, Emeritus, Princeton University.[3] Happer currently serves on the National Security Council as Senior Director of the Office for Emerging Technologies. Happer has also served as a long time member of JASON, an informal organization of scientists providing independent advice to the U.S. government regarding science, technology, and national security.

This Petition also draws on the peer reviewed *Research Report* of Dr. James P. Wallace III, NASA's esteemed Dr. John R. Christy, and Joseph S. D'Aleo, first published in September, 2016[4] ("Wallace 2016"), which includes a thorough, comprehensive analysis of all data sets concerning global atmospheric temperatures since the 2009 Endangerment Finding. A supplemental report

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[1] Environmental Protection Agency, "Final Rule, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act," *Federal Register* 74, p. 66,496, December 15, 2009.

[2] Craig D. Idso, Robert M. Carter, and S. Fred Singer, *Climate Change Reconsidered II: Physical Science* (Chicago, IL: The Heartland Institute, 2013); Craig D. Idso, Sherwood B. Idso, Robert M. Carter, and S. Fred Singer, *Climate Change Reconsidered II: Biological Impacts* (Chicago, IL: The Heartland Institute, 2014); Craig D. Idso, Robert M. Carter, and S. Fred Singer, *Why Scientists Disagree About Global Warming*, Second Edition (Arlington Heights, IL: The Heartland Institute, 2015); Craig D. Idso, David Legates, Roger Bezdek, and S. Fred Singer, *Climate Change Reconsidered II: Fossil Fuels* (Arlington Heights, IL: The Heartland Institute, 2018).

[3] See, e.g., William Happer Interview, Focused Civil Dialogue on Global Warming, TheBestSchools.org (2019) https://thebestschools.org/special/karoly-happer-dialogue-global-warming/william-happer-interview/.

[4] Dr. James P. Wallace III, Dr. John R. Christy, and Dr. Joseph S. D'Aleo, On the Existence of a 'Tropical Hot Spot' & the Validity of EPA's CO2 Endangerment Finding, Abridged Research Report," September 2016

produced in 2017[5] ("Wallace 2017") further analyzed those global temperature records.

This Petition conclusively invalidates the Endangerment Finding on the grounds discussed below. EPA consequently should withdraw the Endangerment Finding, thus nullifying as well any and all EPA regulations based on that Finding, or replace it with a new Non-Endangerment Finding, no later than 60 days from the filing of this petition.

The FAIR Energy Foundation is not alone in petitioning for reconsideration of the Endangerment Finding. For example, the Competitive Enterprise Institute, in its Petition, noted:

> A rulemaking proceeding is appropriate when new developments demonstrate that an existing rule or finding rests on erroneous factual premises, and a rulemaking petition is a proper vehicle for asking an agency "to reexamine" the "continuing vitality" of a rule.[6]

Standing for this Petition is based on the First Amendment to the United States Constitution, which guarantees to all American citizens the right to petition their government for redress of grievances. Standing is also based on injury to the individual members of FAIR Energy Foundation, who are electricity ratepayers who would face massive increases in their electricity rates under policies stemming from the Endangerment Petition.

I. THE CLEAN AIR ACT REQUIRES EPA TO REOPEN AND RECONSIDER THE 2009 ENDANGERMENT FINDING FOR THE SUBMISSION OF NEW EVIDENCE ARISING AFTER THE 2009 ENDANGERMENT FINDING WAS ISSUED.

Section 307(d)(7)(B) of the Clean Air Act, 42 U.S.C. Section 7607(d)(7)(B), requires the EPA to reopen and reconsider any rule for the submission of information which arose after the formal period for public comment on the Rule has expired, where the information is of "central relevance to the outcome of the

[5] Dr. James P. Wallace III, Dr. John R. Christy, and Dr. Joseph S. D'Aleo, On the Existence of a 'Tropical Hot Spot' & the Validity of EPA's CO2 Endangerment Finding, Abridged Research Report, Second Edition," April 2017.
[6] Sam Kazman and Hans Bader, "Petition of the Competitive Enterprise Institute and the Science and Environmental Policy Project for Rulemaking on the Subject of Greenhouse Gases and Their Impact on Public Health and Welfare in Connection With EPA's 2009 Endangerment Finding, 74 FR 66,496 (Dec. 15, 2009)." Competitive Enterprise Institute, February 23, 2017.

rule." The 2009 Endangerment Finding is a rule subject to that Clean Air Act requirement.

Section 307(d)(7)(B) of the Clean Air Act provides,

> "If the person raising an objection can demonstrate to the Administrator that it was impracticable to raise such an objection within such time or if the grounds for such objection arose after the period for public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule, the Administrator shall convene a proceeding for reconsideration of the rule and provide the same procedural rights as would have been afforded had the information been available at the time the rule was proposed.

42 U.S.C. Section 7607(d)(7)(B). This Section arose directly out of the legislative history of the Clean Air Act with the Senate expressly recognizing the need to update regulations in light of new information:

> "The committee recognizes that it would not be in the public interest to measure for all time the adequacy of a promulgation of any standard or regulation by the information available at the time of such promulgation. In the area of protection of public health and environmental quality, it is clear that new information will be developed and that such information may dictate a revision or modification of any promulgated standard or regulation established under the act. The judicial review section, therefore, provides that any person may challenge any promulgated implementation plan after the date of promulgation whenever it is alleged that significant new information has become available.

S.Rep.No.91-1196, 91st Cong., 2d Sess., 41-42 (1970).

This Petition to Reopen and Reconsider the Endangerment Finding qualifies under Section 307 of the Clean Air Act. The Endangerment Finding was issued on December 15, 2009. But this Petition is based on information arising after that date, published in volumes of peer reviewed research since that time.[7] These

[7] William Happer Interview, Focused Civil Dialogue on Global Warming, TheBestSchools.org (2019) https://thebestschools.org/special/karoly-happer-dialogue-global-warming/william-happer-interview/.

Craig D. Idso, Robert M. Carter, and S. Fred Singer, *Climate Change Reconsidered II: Physical Science* (Chicago, IL: The Heartland Institute, 2013); Craig D. Idso, Sherwood B. Idso, Robert M. Carter, and S. Fred Singer, *Climate Change Reconsidered II: Biological Impacts* (Chicago, IL: The Heartland Institute, 2014); Craig D. Idso, Robert M.

publications report scientific research and data that did not exist prior to 2009, as discussed below, including global temperature data, which contradict and discredit the three lines of evidence on which the Endangerment Finding was explicitly based.

The D.C. Circuit Court in *Olijato Chapter of the Navajo Tribe v. Train*, 515 F. 2d 654 (D.C. Cir. 1975) explained the three-step process that complainants and the EPA should follow in regard to petitions for reconsideration under the Clean Air Act, writing:

> "(1) The person seeking revision of a standard of performance, or any other standard reviewable under Section 307, should petition EPA to revise the standard in question. The petition should be submitted together with supporting materials, or references to supporting materials.
>
> (2) EPA should respond to the petition and, if it denies the petition, set forth its reasons.
>
> (3) If the petition is denied, the petitioner may seek review of the denial in this court pursuant to Section 307."

Id. at 666.

This Petition follows exactly that first step, starting to build the record for the D.C. Circuit on any necessary appeal. The D.C. Circuit in *Oljato Tribe* in fact remanded the Petition to the EPA for the required consideration on the merits.

Moreover, the D.C. Circuit in *Oljato Tribe* held that "the public's right to petition the Administrator for revision of a standard of performance and the Administrator's duty to respond exist completely independently of Section 307 and this court's appellate jurisdiction." 515 F.2d at 667. The D.C. Circuit further elaborated in *PPG Indus. Inc. v. Costle*, 659 F.2d 1239, 1250 (D.C. Cir. 1981) that amendment or withdrawal of a Clean Air Act regulation could be obtained under

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Carter, and S. Fred Singer, *Why Scientists Disagree About Global Warming*, Second Edition (Arlington Heights, IL: The Heartland Institute, 2015); Craig D. Idso, David Legates, Roger Bezdek, and S. Fred Singer, *Climate Change Reconsidered II: Fossil Fuels* (Arlington Heights, IL: The Heartland Institute, 2018); Dr. James P. Wallace III, Dr. John R. Christy, and Dr. Joseph S. D'Aleo, On the Existence of a 'Tropical Hot Spot' & the Validity of EPA's CO2 Endangerment Finding, Abridged Research Report," September 2016; Dr. James P. Wallace III, Dr. John R. Christy, and Dr. Joseph S. D'Aleo, On the Existence of a 'Tropical Hot Spot' & the Validity of EPA's CO2 Endangerment Finding, Abridged Research Report, Second Edition," April 2017, among so many others.

APA Section 553(e) as well as under Clean Air Act Section 307(d)(7)(B), even past the 60 day period for review, ruling:

> "Alternatively, a petition may be filed directly with EPA to interpret or amend the standard, to withdraw the Guidelines, or to specify midnight to midnight reporting procedures. *See* 42 U.S.C. [Section] 7607(d)(7)(B); 5 U.S.C. [Section] 553(e). Either route would provide a reviewing court with a contemporaneous record of the agency's consideration of this issue, rather than the 'post hoc rationalizations of counsel.' *See Oljato Chapter of the Navajo Tribe et al. v. Train*, 515 F.2d 654, 665-68 (D.C. Circuit 1975)."

PPG Indus. Inc. v. Costle, 659 F.2d at 1250. The D.C. Circuit proclaimed the same procedure under the Clean Air Act or the Administrative Procedures Act for petitions to reopen and reconsider EPA rules based on new information arising after the rules were issued in *Group Against Smog & Pollution, Inc. v. EPA*, 665 F.2d 1284, 1290 (D.C. Cir. 1981); *Natural Resources Defense Council, Inc. v. Thomas*, 845 F.2d 1088 (D.C. Cir. 1988), and *Ciba-Geigy Corp. v. EPA* 14 F.3d 1208, 1210 (D.C. Cir. 1995)(agreeing with the reasoning of those cases). EPA itself granted a three month stay of an emissions standard four years after it was issued based on new evidence offered through a Petition to Reconsider. *See* 63 Fed. Reg. 24,479 (May 5, 1998).

In summation, EPA has a duty to reopen and reconsider the Endangerment Finding based on this Petition under Section 307 of the Clean Air Act and under Section 553(e) of the APA, to consider new evidence that has arisen since the 2009 Endangerment Finding was adopted. Indeed, given the substantial evidence raised by this Petition, a summary denial would be an abuse of discretion. *Id.* at 666, n. 19. EPA cannot deny that it has the authority to reopen and reconsider the Endangerment Finding. *See Prill v. NLRB*, 755 F2d 941, 947-48 (D.C. Cir. 1985) and subsequent related cases.

Moreover, the new evidence raised by this Petition is clearly of central relevance to the Endangerment Finding. As discussed in detail below, this new evidence thoroughly and conclusively invalidates the basis for the Endangerment Finding, as the Endangerment Finding itself states and defines that basis. *Coalition for Responsible Regulation v. EPA*, 684 F.2d 102, 125, 126 (D.C. Cir. 2012)(defining test of central relevance), *reversed on other grounds sub. nom. Utility Air Regulatory Group v. EPA*, 134 S.Ct. 2427 (2014). Based on well-established precedent, the D.C. Circuit stands ready to enforce the EPA's duty to reopen and reconsider the Endangerment Finding if necessary.

II. EPA's 2009 ENDANGERMENT FINDING WAS EXPLICITLY BASED ON CONSIDERATION OF THREE SPECIFIC LINES OF EVIDENCE, ALL OF WHICH HAVE BEEN INVALIDATED BY NEW SCIENTIFIC RESEARCH AND UPDATED DATA SINCE 2009.

EPA's 2009 Endangerment Finding itself expressly identified three specific "lines of evidence" on which it relied. 74 C.F.R. page 66,518. "The first line of evidence arises from our basic physical understanding of the effects of changing concentrations of greenhouse gases, natural factors, and other human impacts on the climate system." *Id.* In other words, EPA relied on human scientific understanding of the effects of increasing atmospheric concentrations of greenhouse gases, such as carbon dioxide (CO2), and how they would affect global temperatures.

Because of higher specific humidity in the tropics, global warming theory specifies that a "fingerprint" of anthropogenic (human-caused) global warming should appear in the form of a "tropical hot spot" in the troposphere over the tropical latitudes of the Earth. That is why all the climate models used by the U.N.'s Intergovernmental Panel on Climate Change (IPCC), and so by the EPA itself, predict precisely such an accumulating "hot spot" in the atmosphere over the tropics.

"The second line of evidence arises from indirect, historical estimates of past climate changes that suggest that the changes in global surface temperature over the last several decades are unusual." *Id.* In other words, EPA contends global surface temperatures have been rising in unprecedented, increasingly ominous fashion over the past 50 years.

"The third line of evidence arises from the use of computer-based climate models to simulate the likely patterns of response of the climate system to different forcing mechanisms (both natural and anthropogenic)." *Id.* Based on the projections of these models, the Endangerment Finding concludes, "It is extremely unlikely (<5 percent) that the global pattern of warming over the past half century can be explained without external forcing, and very unlikely that it is due to known natural causes alone." *Id.*

A. A Tropical "Hot Spot" Does Not Appear In Any Temperature Record, Flatly Contradicting and Disproving Any Significant Human Role in Causing Global Warming.

Global warming theory, as embodied in all of the dozens of climate models collected by the U.N.'s IPCC, specifies that a "fingerprint" of anthropogenic (human-caused) global warming should appear in the form of a "tropical hot spot" in the troposphere (upper atmosphere) over the tropical latitudes of the Earth. The increased moisture and higher specific humidity of the tropics amplifies the warming effect of greenhouse gases in the tropics. That amplification causes an accumulation of the greenhouse gas warming in the tropical troposphere, with temperatures increasing at higher altitudes, an effect that has been labeled the "tropical hot spot." This "tropical hot spot" is so fundamental to the theory of anthropogenic global warming that it has been labelled the "human fingerprint" by which anthropogenic global warming can be identified.

But there is one problem with this theory: the so-called human fingerprint of the "tropical hot spot" does not appear in *any* of the 13 most important temperature records of any source, from satellites orbiting the globe and measuring atmospheric temperatures 24/7, to thermometers raised aloft by weather balloons, to ground based weather stations (where the tropical hot spot supposedly accumulating in the upper atmosphere would not be expected to be found).[8]

This is intellectually disabling for the theory of anthropogenic global warming. The Technical Support Document for the Endangerment Finding referenced and relied on the tropical hotspot for its finding of Endangerment, saying if the hotspot were missing it would be "an important inconsistency."[9]

The federal government also referenced and relied upon the Tropical Hot Spot, and said if the Hot Spot were missing it would be "a potentially serious inconsistency."[10]

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[8] See, e.g., Craig D. Idso et al., *Climate Change Reconsidered II, Biological Impacts,* Nongovernmental International Panel on Climate Change (NIPCC) (Arlington Heights, Ill: The Heartland Institute, 2014); Craig D. Idso et al., *Why Scientists Disagree About Global Warming: The NIPCC Report on Scientific Consensus* (Arlington Heights, Ill: The Heartland Institute, 2016);Wallace 2016.

[9] Technical Support Document, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, (74 FR 66496, Dec. 15, 2009)(original EPA Docket No. EPA-HQ-OAR-2009-171), p. 50.

[10] U.S. Climate Change Science Program, Synthesis and Assessment Product 1.1, Temperature Trends in the Lower Atmosphere – Understanding and Reconciling Differences, Chapter 1, Section 1.1, The Thermal Structure of the Atmosphere, p. 11, https://www.gfdl.noaa.gov/bibliography/related_files/vr0603.pdf

The IPCC's Fourth Assessment Report (AR4) states that the Tropical Hot Spot is "an integral feature of the physical understanding of the climate's greenhouse warming mechanism."[11] EPA's Endangerment Finding explicitly and repeatedly relied upon the U.S. CCSP reports and the IPCC AR4.

Wallace 2016 thoroughly examined the 13 available temperature data sets, applying econometric and regression analysis more sophisticated and complete than the analysis conducted by the IPCC, carried out by brilliant minds well established in the scientific community. The report concludes "These analysis results would appear to leave very, very little doubt but that EPA's claim of a Tropical Hot Spot (THS), caused by rising atmospheric CO2 levels, simply does not exist in the real world."[12] Wallace 2017 reached the same conclusion. The first line of evidence is consequently invalidated.

B. Wallace 2016 and 2017, and the Most Authoritative and Reliable Global Temperature Records, Collected by U.S. Satellites Orbiting Earth 24/7, Show Increasing CO2 Is Not Causing Global Temperatures To Rise.

Wallace 2016 examined all available temperature data sets, whether from U.S. satellites orbiting the Earth 24/7 and measuring global atmospheric temperatures, weather balloons, land-based temperature stations, buoys floating across the seven seas measuring marine temperatures, radiosondes, etc. World class scientists carrying out the study applied the most thorough and sophisticated econometric and regression analysis to that temperature data ever done by mankind, exceeding even the IPCC.

Their conclusion was, "[T]his analysis failed to find that the steadily rising atmospheric CO2 concentrations have had a statistically significant impact on any of the 13 critically important temperature time series data analyzed." Wallace (2016) at 4. That means increased CO2 concentrations had no statistically significant correlation with temperature trends or changes. In other words, the regression analyses showed that more CO2 was not causing the planet to become warmer.

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[11] IPCC AR4 WG1, Section 9.2.2, The Physical Science Basis, Chapter 9, Figure 9.1 (http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch9s9-2-2.html) ("Greenhouse gas forcing is expected to produce warming in the troposphere,….").

[12] Dr. James P. Wallace, *supra*, note 7.

Wallace 2016, therefore, showed conclusively, "These results clearly demonstrate – 13 times in fact – that once the ENSO [El Nino/La Nina] impacts on temperature data are accounted for, there is no 'record-setting' warming to be concerned about. In fact, there is no ENSO-adjusted warming at all." Wallace 2016 at 4. This means natural causes were the determinants of temperature trends and changes.

Similarly, Wallace 2017 concluded, "This analysis failed to find that the steadily rising atmospheric CO2 concentrations had a statistically significant impact on any of the 14 temperature data sets that were analyzed."[13]

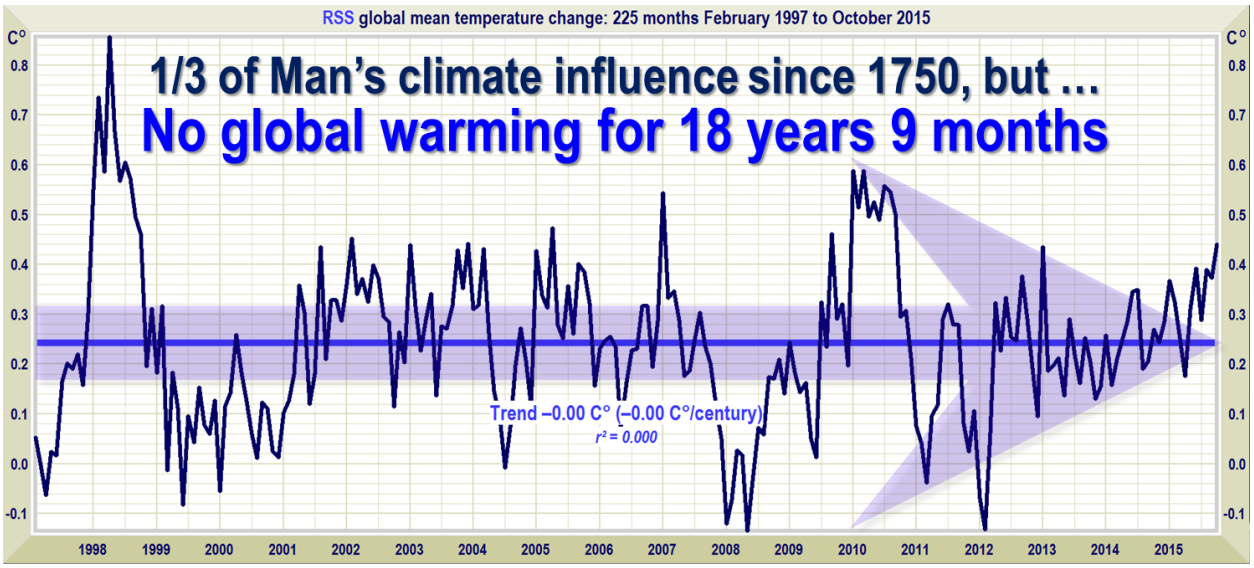
So while the EPA cited the unprecedented, increasingly ominous rise in global temperatures over the last 50 years as the second line of evidence for finding that rising CO2 concentrations endanger the public health and welfare, Wallace 2016 and Wallace 2017, published subsequent to the 2009 Endangerment Finding, found increasing atmospheric concentrations of CO2 played no role in causing any temperature increases. These reports conclusively showed that natural causes, not CO2 concentrations, played the dominant role in global temperature trends over the last 50 years.

U.S. government satellites orbiting the Earth and measuring global atmospheric temperatures 24/7 also document that global warming is over and temperatures are no longer rising. They document further that increased CO2 concentrations have not been causing warming.

The satellite data showed no warming at all for nearly 20 years, or 225 months, from February, 1997 to October, 2015. Yet, the CO2 emissions during that time equaled ***one third of all the emissions since the industrial revolution, from 1750 to today.***

Figure 1
RSS Global Mean Temperature Change
225 Months, February 1997 to October 2015

[13] Wallace 2017 added a 14th temperature data set.



The least-squares trend on the RSS satellite dataset shows no global warming for 18 years 9 months, February 1997 to October 2015, the longest period of the global warming pause–even though one-third of all anthropogenic forcings occurred during that period. *Source*: Christopher Monckton, "Tamper, Tamper! How They Failed to Hide the Gulf Between Predicted and Observed Warming," *Watts Up With That* (website), January 3, 2018.

Indeed, a new study published in the Journal of Atmospheric and Solar-Terrestrial Physics in January, 2019, reporting on satellite measured atmospheric temperatures, further reinforced these findings.[14] The authors write,

"The enhancement of the atmospheric greenhouse effect due to the increase in the atmospheric greenhouse gases is often considered as responsible for global warming (known as greenhouse hypothesis of global warming). In this context, the temperature field of global troposphere and lower stratosphere over the period 12/1978–07/2018 is explored using the recent Version 6 of the UAH MSU/AMSU global satellite temperature dataset. Our analysis did not show a consistent warming with gradual increase from low to high latitudes in both hemispheres, as it should be from the global warming theory."[15]

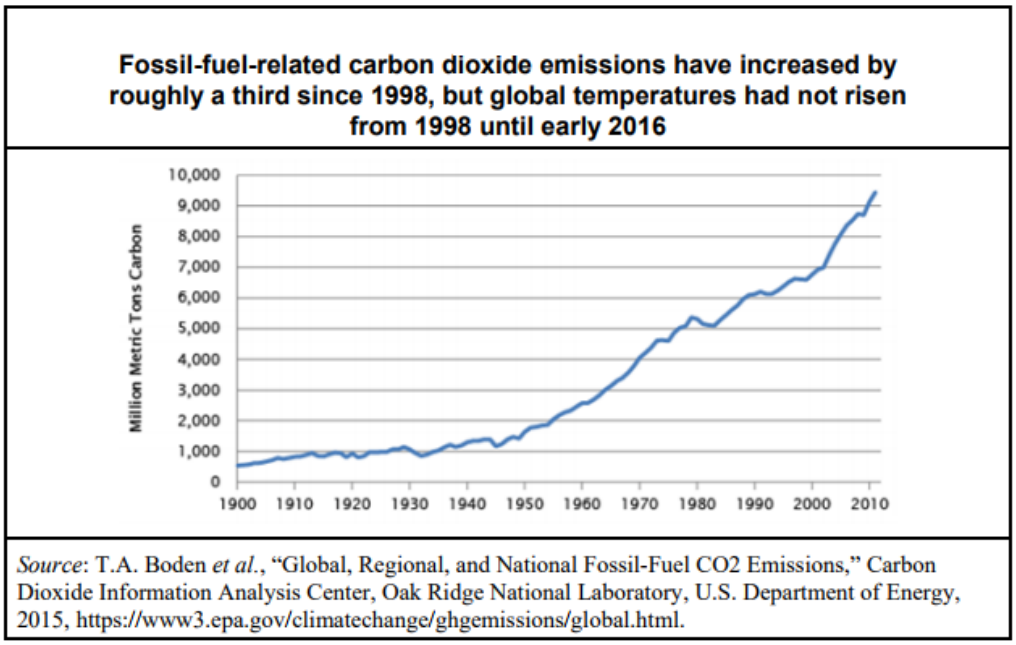
No wonder the Wallace Reports found no statistically significant correlation between increasing CO2 and temperature trends and changes over the last 50 years, and their regression analyses found no statistically significant effect of increased CO2 in causing increased warming. These sources and their data consequently invalidate EPA's second line of evidence for the 2009 Endangerment Finding.

[14] C.A. Varotsos and M.N. Efstathiou, Has Global Warming Already Arrived?, Journal of Atmospheric and Solar-Terrestrial Physics, Volume 182, January, 2019, at 31-38.
[15] *Id.,* at 31.

C. Even the Official Global Surface Temperature Record, Which Has Been Tampered with to Promote Global Warming Hysteria, Has Not Followed the Pattern of Increased Atmospheric Concentrations of C02. Rather, That Temperature Record Has Followed the Pattern of Natural Causes, Primarily Ocean Cycles and Solar Activity.

The pattern of increased atmospheric concentrations has curved up and up since the turn of the 20th Century, as shown in Figure 2 below:

Figure 2
Fossil Fuel Carbon Dioxide Emissions Since 1900



Source: T.A. Boden *et al.*, "Global, Regional, and National Fossil-Fuel CO2 Emissions," Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, 2015, https://www3.epa.gov/climatechange/ghgemissions/global.html.

Even the official surface temperature record, which global warming hysterics have tampered with in recent decades to accentuate a warming pattern, does not track increased CO2 emissions over the 20th Century. Instead, temperatures have tracked long established patterns of natural cycles, as discussed below.

Ocean Cycles

The increase in global temperatures starting in the late nineteenth century reflects the natural end of the Little Ice Age, a period of global temperatures persisting 2-3 degrees F cooler than previously, which lasted from about 1350 AD to about 1850 AD. Global temperature trends since then have followed *not* rising, then soaring

Carbon Dioxide emission trends, but the natural ocean temperature cycles of the Pacific Decadal Oscillation (PDO) and the Atlantic Multidecadal Oscillation (AMO). Every 20 to 30 years, the much colder water near the bottom of the oceans cycles up to the top, where it has a slight cooling effect on global temperatures until the sun warms that water. That warmed water then contributes to slightly warmer global temperatures, until the next churning cycle.[16]

Those natural ocean temperature cycles, and the continued recovery from the Little Ice Age, are primarily why global temperatures rose from 1915 until 1945, when CO2 emissions were much lower than in recent years. The change to a cold ocean temperature cycle, primarily the PDO, is the main reason global temperatures declined from 1945 until the late 1970s, despite soaring CO2 emissions during that time from the postwar industrialization spreading across the globe.[17]

The 20 to 30 year ocean temperature cycles turned back to warm from the late 1970s until the late 1990s, which is the primary reason that global temperatures warmed during this period. But that warming ended 20 years ago. Global temperatures have stopped increasing since the late 1990s, if not actually cooled, even though global CO2 emissions have soared over this period.[18]

As *The Economist* magazine reported in March, 2013,

> "Over the past 15 years air temperatures at the Earth's surface have been flat while greenhouse gas emissions have continued to soar. The world added roughly 100 billion tonnes of carbon to the atmosphere between 2000 and 2010. That is about a quarter of all the CO2 put there by humanity since 1750."[19]

Yet, still no warming during that time. Global warming ended in concert with the natural 20 to 30 year ocean temperature cycles, in spite of soaring CO2 emissions.

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[16] William Happer Interview, Focused Civil Dialogue on Global Warming, TheBestSchools.org (2019) https://thebestschools.org/special/karoly-happer-dialogue-global-warming/william-happer-interview/; Craig D. Idso et al., *Climate Change Reconsidered II, Physical Impacts*, Nongovernmental International Panel on Climate Change (NIPCC) (Arlington Heights, Ill: The Heartland Institute, 2013); Craig D. Idso et al., *Why Scientists Disagree About Global Warming: The NIPCC Report on Scientific Consensus* (Arlington Heights, Ill: The Heartland Institute, 2016).

[17] *Id.*

[18] *Id.*

[19] A Sensitive Matter, *The Economist*, March 30, 2013.

These observed temperature trends demonstrate, in further confirmation of the Wallace Reports, that the supposed Carbon Dioxide greenhouse effect is weak and marginal compared to natural causes of global temperature changes, as should have been expected all along.

All of these sources and data further invalidate the second line of evidence cited for the 2009 Endangerment Finding.

Solar Sunspot Patterns[20]

At first the current stall out of global warming was due to the ocean cycles turning back to cold. But something much more ominous has developed over the past 20 years of no global warming.

Sunspot activity runs in 11-year short term cycles, with longer cyclical trends of 90 and even 200 years. The number of sunspots declined substantially in recent cycles after flattening out over the previous 20 years. But in the most recent cycle sunspot activity collapsed. NASA's *Science News* report for Jan. 8, 2013 stated,

> "Ongoing Solar Cycle 24 [the current short term 11-year cycle] is the weakest in more than 50 years. Moreover, there is controversial evidence of a long-term weakening trend in the magnetic field strength of sunspots. Matt Penn and William Livingston of the National Solar Observatory predict that by the time Solar Cycle 25 arrives, magnetic fields on the sun will be so weak that few if any sunspots will be formed. Independent lines of research involving helioseismology and surface polar fields tend to support their conclusion."

"Solar Variability and Terrestrial Climate," *NASA Science* (website), January 8, 2013. This is ominous because such changes in sunspot activity heralded the beginning of the Little Ice Age in 1350 AD. This new NASA concern has been echoed worldwide. The *Voice of Russia* reported on April 22, 2013,

> "Global warming which has been the subject of so many discussions in recent years, may give way to global cooling. According to scientists from the Pulkovo Observatory in St.Petersburg, solar activity is waning, so the average yearly temperature will begin to decline as well. Scientists from

[20] Much of this discussion was excerpted from Peter Ferrara, "To the Horror of Global Warming Alarmists, Global Cooling Is Here," *Forbes* (website), May 26, 2013.

> Britain and the US chime in saying that forecasts for global cooling are far from groundless."

Anthony Watts, "Russian Scientists Say Period of Global Cooling Ahead Due to Changes in the Sun," *Watts Up With That?* (website). April 29, 2013. That report quoted Yuri Nagovitsyn of the Pulkovo Observatory saying, "Evidently, solar activity is on the decrease. The 11-year cycle doesn't bring about considerable climate change – only 1-2%. The impact of the 200-year cycle is greater – up to 50%. In this respect, we could be in for a cooling period that lasts 200-250 years." *Id.* In other words, another Little Ice Age.

> The *German Herald* reported on March 31, 2013,
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> "German meteorologists say that the start of 2013 is now the coldest in 208 years - and now German media has quoted Russian scientist Dr Habibullo Abdussamatov from the St. Petersburg Pulkovo Astronomical Observatory [saying this] is proof as he said earlier that we are heading for a "Mini Ice Age." Talking to German media the scientist who first made his prediction in 2005 said that after studying sunspots and their relationship with climate change on Earth, we are now on an 'unavoidable advance towards a deep temperature drop.'"

Geoff Brown, "Mini Ice Age Has Started – Prof Warns, *The Australian Climate Skeptics Blog* (website), April 1, 2013. Belief in a looming global warming catastrophe has sharply declined in formerly staunch Europe following increasingly severe winters, which recently have continued into spring. Christopher Booker explained in *The Sunday Telegraph* on April 27, 2013,

> "Here in Britain, where we had our fifth freezing winter in a row, the Central England Temperature record – according to an expert analysis on the US science blog Watts Up With That – shows that in this century, average winter temperatures have dropped by 1.45C, more than twice as much as their rise between 1850 and 1999, and twice as much as the entire net rise in global temperatures recorded in the 20th century."

Christopher Booker, "The Mercury Is Falling, But Our MPs Are Full of Hot Air," The Telegraph (website), April 27, 2013. A news report from India stated, "March in Russia saw the harshest frosts in 50 years, with temperatures dropping to –25° Celsius in central parts of the country and –45° in the north. It was the coldest spring month in Moscow in half a century…Weathermen say spring is a full month

behind schedule in Russia." Vladimir Radyuhin, "Down to Minus 45," *The Hindu* (website), April 22, 2013. The news report summarized in 2013,

> "Russia is famous for its biting frosts but this year, abnormally icy weather also hit much of Europe, the United States, China and India. Record snowfalls brought Kiev, capital of Ukraine, to a standstill for several days in late March, closed roads across many parts of Britain, buried thousands of sheep beneath six-metre deep snowdrifts in Northern Ireland, and left more than 1,000,000 homes without electricity in Poland. British authorities said March was the second coldest in its records dating back to 1910. China experienced the severest winter weather in 30 years and New Delhi in January recorded the lowest temperature in 44 years."

Id. Booker adds, "[In early 2014] it was reported that 3,318 places in the USA had recorded their lowest temperatures for this time of year since records began. Similar record cold was experienced by places in every province of Canada. So cold has the Russian winter been that Moscow had its deepest snowfall in 134 years of observations." Booker, The Telegraph, *supra*.

Britain's Met Office, an international cheerleading headquarters for global warming hysteria, conceded in December, 2013 that there would be no further warming at least through 2017, which would make 20 years with no global warming. That reflected grudging recognition of newly developing trends. Of course, that prediction has now been borne out in reality.

All of this is echoed in *Why Scientists Disagree About Global Warming*, which states, "Forward projections of solar cyclicity imply the next few decades may be marked by global cooling rather than warming, despite continuing CO2 emissions." Craig D. Idso, *et al.*, *Why Scientists Disagree About Global Warming*, *supra* note 2, p. 4.

Is global climate coming full circle in regard to the Little Ice Age? Indeed, on much longer term cycles going back thousands of years, the Earth is overdue for a return of a real, full Ice Age.

D. "Global temperature" projections of unverified "climate models," which involve hypothetical forecasts of, *not real world evidence of,* global warming, have increasingly diverged from the most reliable temperature records computed from the data collected by U.S. satellites. Satellite data indicate global warming stopped 20 years ago, falsifying the models.

EPA's scientific foundation for potentially catastrophic, anthropogenic, global warming is based on the temperature projections of dozens of global climate models voluntarily developed and contributed to the IPCC by scientists across the globe. These climate models are not solid science. They are merely speculative scenarios about climate, *none of which have been validated by the historical temperature record.* The scientific method involves testing a falsifiable hypothesis with experiments and evidence. Climate model projections do not involve any such falsifiable hypothesis, so they are not an exercise of the scientific method.

Even the modelers themselves recognize and admit their models are not designed to produce *predictions* of future temperatures, but just "what if" *projections* of the results of unproven assumptions, to provide some indications, not scientific proof, of future scenarios that could occur if the assumptions turn out to be correct. The *Summary for Policymakers Climate Change Reconsidered II: Physical Science* states, "The science literature is replete with admissions by leading climate modelers that forcings and feedback are not sufficiently well understood, that data are insufficient or too unreliable, and that computer power is insufficient to resolve important climate processes." Craig D. Idso, et al., *Climate Change Reconsidered II: Physical Science, Summary for Policymakers* (Chicago, IL: Heartland Institute for the Nongovernmental International Panel on Climate Change, 2013), p 6.

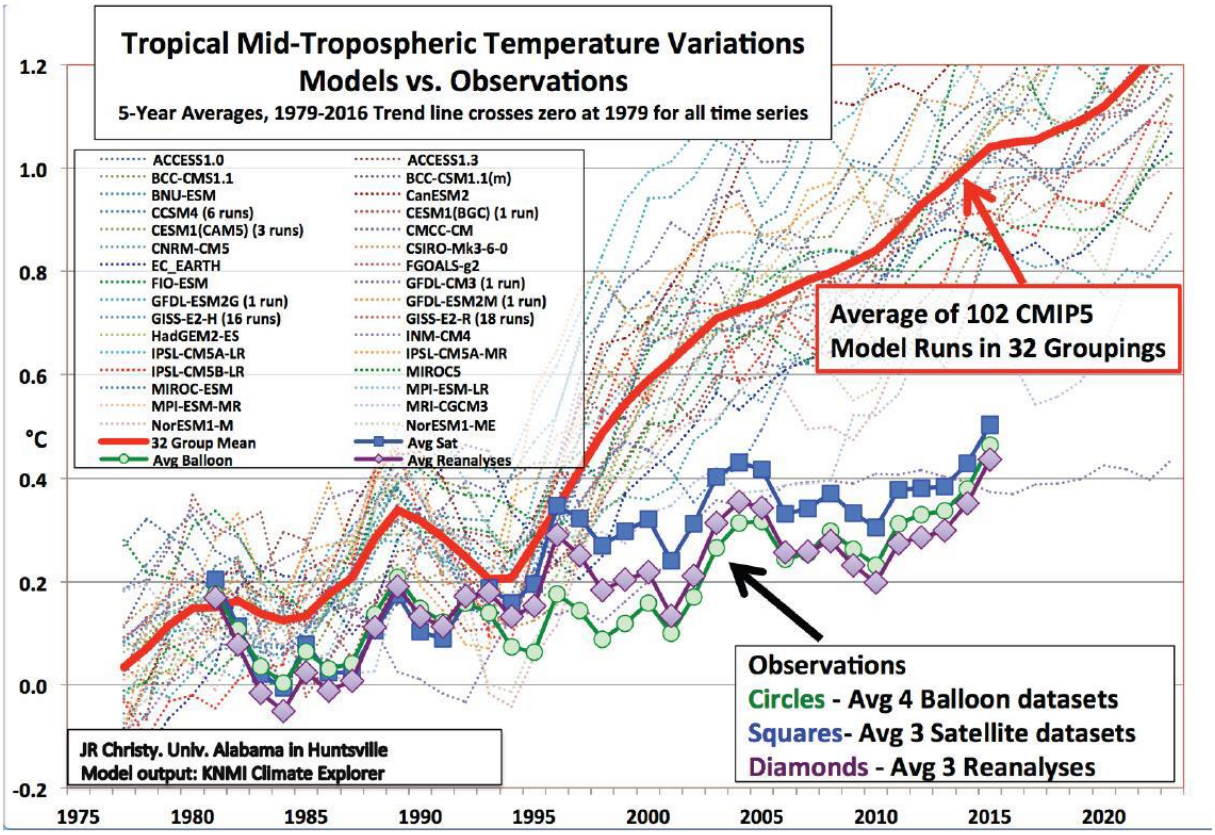
Moreover, none of the models adequately accounts for the Pacific and Atlantic Ocean temperature cycles. None takes into account solar activity cycles indicated by variations in the number and size of sunspots, variations in solar magnetic fields, or cosmic rays flux, all of which are known to significantly affect climate. These cycles have produced major climate changes in the past, such as the Little Ice Age (AD 1350 to about 1850), Medieval Warm Period (about AD 950 to 1250)—during which 'global temperatures' were higher than today—and the early twentieth century warm period from 1915 to 1945.

These design flaws explain why the projections of *all* climate models have now diverged so far from the actual temperatures experienced over the past two

decades. As shown in Figure 1 above, there has been no global warming for nearly 20 years, *which none of the models projected*, which further falsifies the models.

The projections of the models, and their increasing divergence from real world temperature observations, are shown in Figure 3 below. The graph was created by NASA scientist Dr. John Christy, Ph.D., who, with his colleagues at the University of Alabama in Huntsville, monitors atmospheric temperatures as computed from the data collected by U.S. satellites.

Figure 3
IPCC Climate Models Consistently Overstate Warming Climate



Climate models have consistently overestimated the amount of future global warming and are not a reliable basis for public policy. Source: John Christy, Testimony before the U.S. House Committee on Science, Space & Technology, March 29, 2017, p. 5.

The actual atmospheric temperatures recorded by U.S. weather satellites and weather balloons are shown by lines at the bottom of the graph, connecting the squares or the circles. The average of the climate models is the solid red line going through the spaghetti of lines representing the projections of each model. The

average projection is well above the observed real-world temperatures, with the divergence growing over time.

This growing divergence of the models from reality definitively invalidates and falsifies the third line of evidence for the Endangerment Finding, as does

- the inability of the models to account for the global temperature cycles and changes of the past century;

- the inability of the models to account for the Little Ice Age and the Medieval Warm Period over the past 1000 plus years;

- the projection by all models of a Tropical Hot Spot that doesn't exist in the real world;

- the analysis of all temperature records in Wallace 2016 and Wallace 2017.

What is most shocking is how weak the models are as any sort of evidence at all for the idea of catastrophic anthropogenic global warming.

E. Conclusion: While Increased CO2 Concentrations Have Some Effect In Increasing Global Temperatures, Nature and Natural Causes Are The Dominant Factors Causing Global Temperatures Patterns, Which Is Why There Is No Prospect of Catastrophic, Human Caused Global Warming.

Although rising concentrations of atmospheric carbon dioxide will have some effect on future global temperatures, the IPCC and hence EPA, have greatly overestimated this influence.

The inability of the IPCC climate models to accurately predict observed temperatures (discussed in Section D above), coupled with the "global warming hiatus" – a lack of any statistically significant global warming from 1998 to the El Nino of 2015/2016 – a period during which approximately one-third of all human caused carbon dioxide emissions were released into the atmosphere – indicate the

climate models used to justify onerous regulations on carbon dioxide emissions do not match reality, and, therefore, constitute no basis for public policy.[21]

Additionally, approximately 0.4 degrees C of warming occurred before 1950. This means only 0.5 degrees of warming has occurred since humans began to emit CO2 into the atmosphere in any appreciable quantity. This provides further evidence supporting the conclusion that the models are predicting too much warming, and the likely impact of increasing CO2 in the atmosphere is overstated.

III. Carbon Dioxide Emissions from Continued Use of Fossil Fuels Pose No Threat of Catastrophic Global Warming.

A. Carbon dioxide (CO2) cannot be considered "pollution." It is essential to plant photosynthesis, and a highly beneficial substance produced by the natural environment. *Massachusetts* v. *EPA* was wrong to decide it is air pollution and so authorize EPA to create global warming regulation under the Clean Air Act.

Congress never enacted any authority designed to regulate CO2 or other "greenhouse gas" emissions. Under our Constitution and system of government, Congress has the power to legislate, expressing the will of the people. The decision must be left to Congress whether and how to address the issue of global warming/climate change. Congress must decide how real the threat is and what costs the people can be forced to bear to address it.

Despite Congress's clear authority in this matter, in *Massachusetts* v. *Environmental Protection Agency*, 549 US 497 (2007), the U.S. Supreme Court ruled in favor of plaintiffs who argued human Carbon Dioxide (CO2) emissions met the technical definition of a "pollutant" under the Clean Air Act. While the Supreme Court did not rule that EPA *must* regulate and restrict CO2 emissions, the Court effectively ruled that Congress gave EPA authority under the Clean Air Act to decide whether and how to regulate CO2 emissions under the standards of the Clean Air Act, which authorizes regulation to protect human health and welfare.

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[21] John C. Fyfe, et al., "Making Sense of the Early 2000s Warming Slowdown," *Nature Climate Change*, February 24, 2016; G. Marland, T.A. Boden and R. J. Andres, "*Global, Regional, and National Fossil Fuel Emissions*," Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy.

As late as December 18, 2008, after the election of Barack Obama but before he assumed office, EPA itself held the position that the science did *not* support a finding that carbon dioxide emissions posed a threat to public health or welfare. David A. Fahrenthold and Steven Mufson, "EPA Eases Emissions Regulations for New Power Plants," *Washington Post*, December 19, 2008. It was only after EPA issued its Endangerment Finding on December 15, 2009, almost a year after Obama assumed office, that EPA assumed authority to regulate carbon dioxide emissions as a threat to human health and welfare, consistently with President Obama's policy preferences.

President Trump's efforts to end Obama's war on coal, and American energy more generally, may come to naught unless he instructs EPA to rescind its 2009 "Endangerment Finding" against CO2, which was the legal foundation for the Clean Power Plan and many other rules and regulations designed to cripple the energy sector, coal most of all. If that foundation is not removed, future administrations could bring back from the dead all of the Obama-era, zombie regulations, related to CO2 emissions. Isaac Orr and Fred Palmer, "How to Prevent the Premature Retirement of Coal-Fired Power Plants," *Policy Study* No. 148, The Heartland Institute, February 2018.

EPA's Endangerment Finding reads:

> The Administrator finds that six greenhouse gases taken in combination endanger both the public health and the public welfare of current and future generations. The Administrator also finds that the combined emissions of these greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas air pollution that endangers public health and welfare under CAA section 202(a). These Findings are based on careful consideration of the full weight of scientific evidence and a thorough review of numerous public comments received on the Proposed Findings published April 24, 2009 (emphasis added).

Environmental Protection Agency, "Final Rule, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act," *Federal Register* 74, p. 66,496, December 15, 2009.

Because EPA decided greenhouse gases from human civilization's use of fossil fuels, primarily due to CO2 emissions, endanger human health and welfare, the agency has legal authority under the Clean Air Act (CAA) to regulate those gases, based on the Supreme Court's ruling in *Massachusetts* v. *Environmental*

Protection Agency. But if the Endangerment Finding is not valid and is withdrawn, and CO2 does not endanger human health and welfare, EPA's authority to regulate fossil fuel use and CO2 emissions in the name of global warming/climate change is not valid and would be nullified.

Carbon dioxide is a naturally occurring gas that makes up only .04 percent, or 400 parts per *million*, of the atmosphere. Only about 3 percent of that tiny amount is generated by human activities, with the rest coming from natural sources and cycles. In 2003, EPA determined that "Congress has not granted EPA authority under the Clean Air Act to regulate CO2 and other greenhouse gases for climate change purposes" and "setting GHG emission standards for motor vehicles is not appropriate at this time." Environmental Protection Agency, "EPA Denies Petition to Regulate Greenhouse Gas Emissions from Motor Vehicles," news release, August 28, 2003.

That was wise because Carbon Dioxide is a naturally produced, naturally occurring substance, actually essential to the survival of all life on the planet. Without Carbon Dioxide in the atmosphere, plants would die. Without plants at the bottom of the food pyramid, there would not be any food for animals, including humans. These are the reasons why it is nonsensical to call Carbon Dioxide "pollution," and why *Massachusetts v. EPA* was wrongly decided.

But President Obama saw in the Endangerment Finding a way to "weaponize" EPA against the coal industry, and other fossil fuel energy. Immediately after taking office in 2009, he put EPA to work supporting rather than opposing the plaintiffs in *Massachusetts v. EPA*, which came to an erroneous conclusion in labelling the natural substance Carbon Dioxide as pollution. His administration overruled decades of science and bipartisan policy and ignored or tried to refute the comments and testimony of hundreds of experts and even its own staff. See Tim Benson, "Comments, Petitions, and Testimony Opposing the Endangerment Finding," January 17, 2017, The Heartland Institute; Alan Carlin, "Proposed NCEE Comments on Draft Technical Support Document for Endangerment Analysis for Greenhouse Gas Emissions Under the Clean Air Act," Office of Policy, Economics and Innovation, Environmental Protection Agency, March 9, 2009. On December 15, 2009, less than a year after Obama was sworn into office, EPA declared carbon dioxide was indeed a threat in need of regulation. Environmental Protection Agency, "Final Rule, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act," *Federal Register* 74, p. 66,496, December 15, 2009.

The Endangerment Finding was used by the Obama administration to justify dozens of regulations aimed at destroying the coal industry. It also has become a factor in infrastructure and natural resource permitting decisions affecting oil and natural gas. Federal courts have ruled regulatory agencies such as the Federal Energy Regulatory Commission (FERC) and Bureau of Land Management (BLM) did not properly evaluate whether permitting pipelines or approving the extension of coal mining leases would contribute to greenhouse gas emissions. Robert Walton, "DC Circuit Rejects FERC Approval of Southeast Pipeline Project Over Climate Concerns," *Utility Dive* (website), August 23, 2017; Barbara Grzincic, "U.S. Failed to Consider Climate in Mine Lease Extensions - 10th Circuit," Reuters, September 15, 2017. Such rulings have a chilling effect on infrastructure projects and permits for natural resource development as environmental groups use the Endangerment Finding to delay or stop these projects.

The Trump administration will have little long-term success in promoting "clean and safe development of our Nation's vast energy resources", while at the same time avoiding regulatory burdens that "unnecessarily encumber energy production, constrain economic growth, and prevent job creation," President Donald Trump, "Presidential Executive Order on Promoting Energy Independence and Economic Growth," March 28, 2017, unless it can rescind the Endangerment Finding. The good news is that there are ample legal and scientific grounds for such a rescission.

B. The Greening of Planet Earth: Increased atmospheric concentrations of C02 actually promote plant growth, fostering the process of photosynthesis, which makes CO2 essential to the survival of all life on the planet (some "pollution").

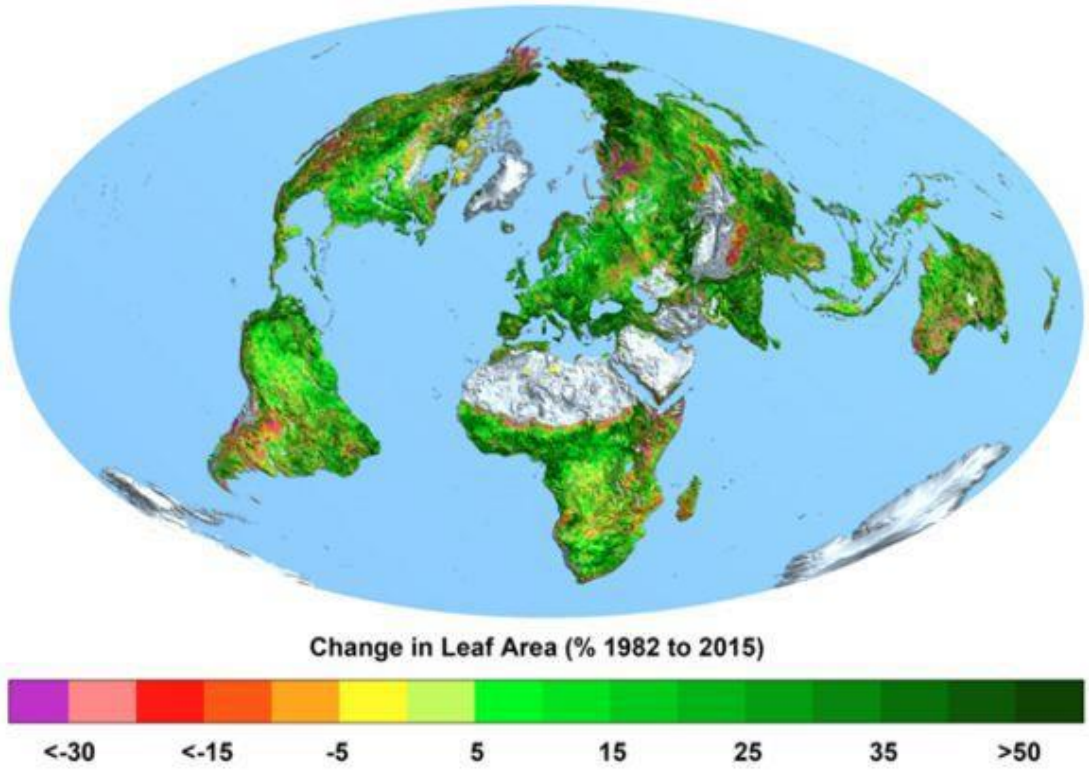
All across the planet, the historical increase in the atmosphere's CO2 concentration has stimulated vegetative and agricultural productivity. This observed stimulation, or greening of the Earth, has occurred in spite of many real and imagined assaults on Earth's vegetation, including fires, disease, pest outbreaks, deforestation, and climatic change.

Results obtained under 3,586 separate sets of experimental conditions conducted on 549 plant species reveal nearly all plants experience increases in dry weight or biomass in response to atmospheric CO2 enrichment. Additional results obtained under 2,094 separate experimental conditions conducted on 472 plant species reveal nearly all plants experience increases in their rates of photosynthesis in

response to atmospheric CO2 enrichment.[22] These observations have been found not only in experiments, but also in the observed environment of forest, grassland, and cropland.

According to a 2016 article in the scientific journal *Nature Climate Change*, by an international team of 32 authors from 24 institutions in eight countries, the ongoing rise in the global atmospheric concentration of CO2 is causing a great greening of the Earth. (See Figure 19). Zaichun Zhu, *et al*., "Greening of the Earth and its Drivers," *Nature Climate Change*, April 25, 2016.

Figure 4
The Greening of the Earth



Significant greening has occurred on 25 to 50 percent of the Earth's vegetated land. In contrast, just 4 percent of vegetated land has suffered from plant loss. Seventy percent of this greening was due to increasing concentrations of carbon dioxide in the atmosphere. Graphic from Roger Harrabin, "Rise in CO2 has 'Greened Planet Earth," BBC News, April 25, 2016.

[22] Craig D. Idso et al., "Summary for Policymakers, Climate Change Reconsidered II, Biological Impacts," Nongovernmental International Panel on Climate Change, 2014.

The study involved using satellite data from NASA's Moderate Resolution Imaging Spectrometer and the National Oceanic and Atmospheric Administration's Advanced Very High Resolution Radiometer instruments to help determine the leaf area index, or amount of leaf cover, over the planet's vegetated regions. The greening represents an increase in leaves on plants and trees equivalent in area to two times the continental United States. Roger Harrabin, "Rise in CO2 has 'Greened Planet Earth," BBC News, April 25, 2016.

Results showed that carbon dioxide fertilization explains 70 percent of the greening effect, said co-author Ranga Myneni, a professor in the Department of Earth and Environment at Boston University. "The second most important driver is nitrogen, at 9 percent. So we see what an outsized role CO_2 plays in this process." *Id.* Increased CO2 also helps plants retain moisture and increases their ability to survive and thrive in drought-like conditions.

Atmospheric CO2 enrichment enhances plant growth, development, and ultimate yield (in the case of agricultural crops) by increasing the concentrations of plant hormones that stimulate cell division, cell elongation, and protein synthesis. *Id.* This means that, far from endangering human health and welfare under Clean Air Act section 202(a), more atmospheric CO2 actually improves human health and welfare.

What could be more ironic than increased atmospheric concentration of Carbon Dioxide causing an actual greening of the planet? This is further confirmation that such Carbon Dioxide presents no threat of catastrophic results from global warming. Rather, it means that such increased Carbon Dioxide has actually been environmentally beneficial, and that the so-called "social cost" of carbon is actually less than zero, amounting to a net benefit, even increasing GDP through increased agricultural production. This is why Happer argues that CO2 does not endanger mankind, but benefits mankind. William Happer Interview, Focused Civil Dialogue on Global Warming, TheBestSchools.org (2019) https://thebestschools.org/special/karoly-happer-dialogue-global-warming/william-happer-interview/.

C. There is a natural limit to any C02 caused global warming, as the effect of C02 in causing warming declines logarithmically asymptotically to zero, as C02 concentration increases.

Climate models consistently fail to accurately predict global temperature because they assume carbon dioxide will have a larger warming effect on the planet than

has been observed. This is called "climate sensitivity": how much the planet will warm in response to increasing concentrations of carbon dioxide in the atmosphere. Tim Wogan, "Earth's Climate May Not Warm as Quickly as Expected, Suggest New Cloud Studies," *Science,* May 25, 2016.

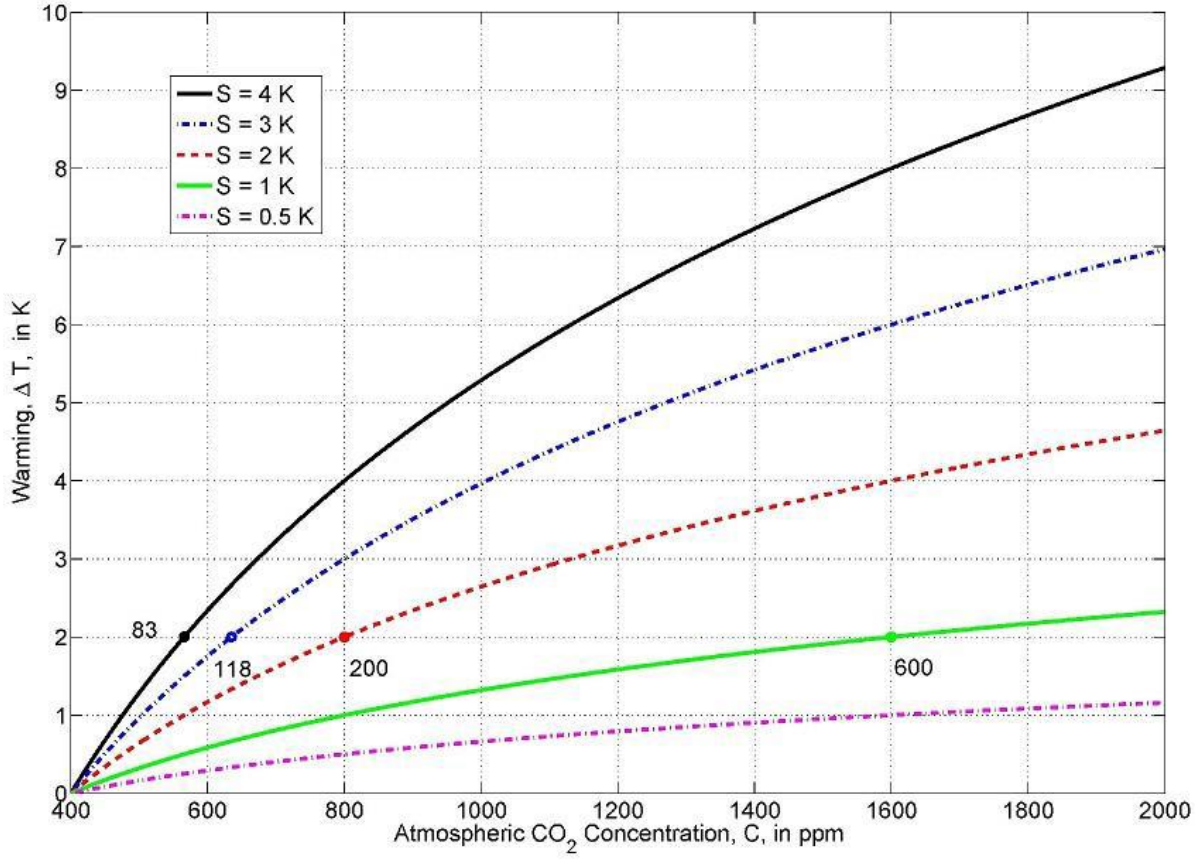
The relationship between carbon dioxide levels and temperature is not one-to-one: If carbon dioxide levels in the atmosphere double, this does not mean temperatures will double. But how much *will* the temperature increase? That is a key question in the ongoing scientific debate over anthropogenic climate change. As explained by Orr and Palmer:

> "The temperature change associated with a doubling of atmospheric carbon dioxide concentrations is referred to as Equilibrium Climate Sensitivity (ECS).[23]
> The logarithmic nature of ECS means each additional molecule of carbon dioxide released into the atmosphere traps heat less effectively than the previous molecule. In other words, as more carbon dioxide is emitted into the atmosphere, the rate at which the temperature rises will slow…."[24]

Figure 4 below, from Princeton physicist William Happer, projects how long it would take to get 2 degrees C of warming for various doubling sensitivities with a logarithmic response.

Figure 5
Projections, Logarithmic Warming
In Response to Atmospheric Carbon Dioxide

[23] International Panel on Climate Change, "Climate Sensitivity and Feedbacks," Fourth Assessment Report, 2007.
[24] Isaac Orr and Fred Palmer, "How Obama-Era Regulations Are Shutting Down Perfectly Good Power Plants," *Policy Study* No. 146, The Heartland Institute, February 2018, p. 17.



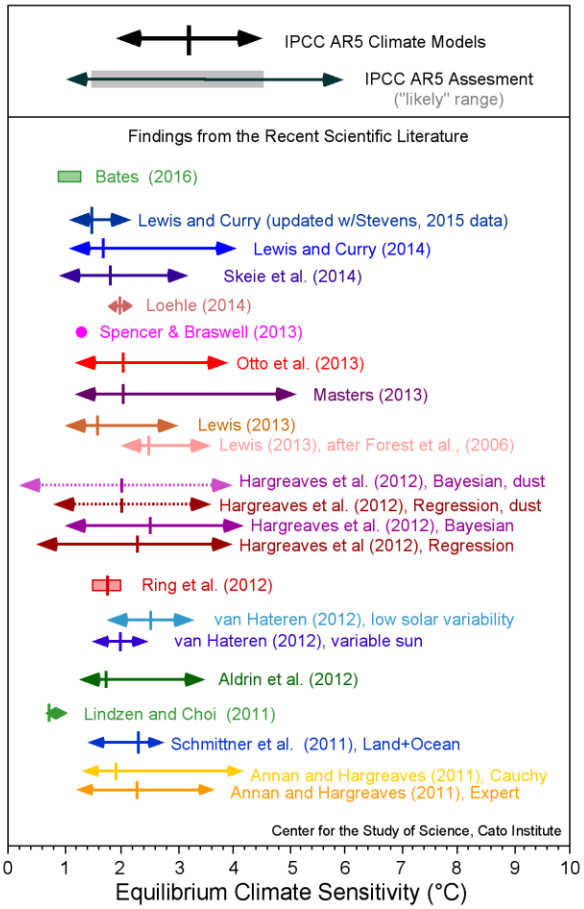
The impact of carbon dioxide on temperatures is logarithmic; meaning, as more carbon dioxide is emitted into the atmosphere (x-axis), it has less impact on temperatures (y-axis). This graph projects how many years it would take to get 2 degrees C of warming for various doubling sensitivities with a logarithmic response. *Source*: William Happer, Princeton University, private correspondence to the authors."

IPCC's 2007 AR-4 report assumes that for every doubling of atmospheric carbon dioxide concentrations, the world will experience a temperature increase between 2 and 4.5 degrees C, with their "best estimate" to be 3 degrees C. It is now widely agreed that this estimate is too high. A 2013 paper by Alexander Otto and colleagues—a group who previously led climate modeling for IPCC—concluded the likely range of temperature increase from a doubling of carbon dioxide would be between 1.2 and 3.9 degrees C, with their "best estimate" being 2 degrees C, a reduction of 33 percent compared to the values provided in AR-4 (see Figure 6). Alexander Otto, *et al*., "Energy Budget Constraints on Climate Response," *Nature Geoscience*, May 19, 2013. Happer opines the best estimate would be 1 degree C. William Happer Interview, Focused Civil Dialogue on Global Warming, TheBestSchools.org (2019) https://thebestschools.org/special/karoly-happer-dialogue-global-warming/william-happer-interview/.

The Otto team's finding was published in IPCC's Fifth Assessment Report (AR-5) in 2013. The Endangerment Finding, which was based on AR-4, was not amended

to reflect this most up-to date science. This is an additional legally and scientifically sound basis for reopening, if not rescinding, the Endangerment Finding.

Figure 6
Model Ranges of Equilibrium Climate Sensitivity Estimates



Equilibrium climate sensitivity estimates of several studies show the values used by IPCC in its AR-4 and AR-5 assessments are likely too high, causing the models to run hot. Two notable distributions are the Otto *et al*. study (red), which puts the "best guess" at 2 degrees C, and the Lewis and Curry (updated w/Stevens 2015 data) study (dark blue), which shows a very small range of possible outcomes for a doubling of carbon dioxide, with a likely mean climate sensitivity of 1.4 degrees C. *Source*: Pat Michaels and Paul Knappenberger, "You Ought to Have a Look: Ontario's Energy Plan, Evidence-Based Policy and a New Climate Sensitivity Estimate," *Cato at Liberty* (blog), Cato Institute, May 25, 2016.

Even the lower values for ECS presented by Otto *et al*. are subject to uncertainty and could be further revised downward. For example, the estimates might reflect unrealistically high estimates of the cooling effects from sulfate aerosols.

Nathanael Massey, "IPCC Revises Climate Sensitivity," *Scientific American,* September 27, 2013.

Although sulfate aerosols come from natural sources such as phytoplankton and volcanoes, according to the IPCC AR4, International Panel on Climate Change, Climate Change 2007: Working Group I: The Physical Science Basis, 2.4.4.1 Sulphate Aerosol, they are largely the result of the combustion of fossil fuels. Regardless of their source, these particles are thought to cool the Earth. According to NASA:

> The sulfate aerosols absorb no sunlight but they reflect it, thereby reducing the amount of sunlight reaching the Earth's surface. The sulfate aerosols also enter clouds where they cause the number of cloud droplets to increase but make the droplet sizes smaller. The net effect is to make the clouds reflect more sunlight than they would without the presence of the sulfate aerosols.[25]

Recent studies of the impact of sulfate-aerosol cooling on global temperatures have found these particles have less cooling impact than estimated by IPCC. IPCC models had estimated sulfate aerosols will reduce temperatures between 0.1 and 1.4 degrees C. Bjorn Stevens, "Rethinking the Lower Bound on Aerosol Radiative Forcing," *Journal of Climate,* June 2015. The new studies find the likely cooling effect of sulfate aerosols to be between 0.2 and 0.8 degrees C, with additional studies suggesting the most likely cooling value to be 0.4 degrees C. This means the amount of cooling that is likely occurring from sulfate aerosols is approximately 3.5 times less than expected by IPCC.

This is an important finding because global temperatures have been essentially flat since 1998, even though approximately one-third of all human carbon dioxide emissions have occurred since that year. The lower cooling effects of sulfate aerosols plus more carbon dioxide in the atmosphere should have led to a large increase in global temperatures. That didn't happen. With the exception of 2015–2016, during which the planet experienced the warming of a record El Niño, global temperatures have been essentially flat. This strongly suggests IPCC is still overestimating the warming impact of carbon dioxide in the atmosphere.

If sulfate aerosols are not cooling the planet to "hide" carbon dioxide-induced global warming, and global temperatures have not been rising for nearly two

[25] National Aeronautics and Space Administration, "Atmospheric Aerosols: What Are They, and Why Are They So Important?"

decades despite large amounts of carbon dioxide being released into the atmosphere, then clearly carbon dioxide emissions result in less warming than predicted by IPCC computer models. Those models have predicted the planet would experience two or three times more global warming than has actually been observed by temperature satellites and weather balloons.

The importance of accurately determining how much global warming will occur from doubling carbon dioxide concentrations in the atmosphere cannot be overstated. If Earth's climate is less sensitive to increasing concentrations of carbon dioxide than IPCC says it is, efforts to prevent future global warming by radically reducing carbon dioxide will be both ineffective and expensive. Reducing the "best estimate" for ECS from IPCC's 2007 finding of 3 degrees C to the 1.4 degrees C found in more recent studies would effectively reduce the impact of reducing carbon dioxide emissions by one-half. Nic Lewis, "Updated Climate Sensitivity Estimates," *Climate Etc.* (blog), April 25, 2016.

Because these models, the basis of the Endangerment Finding, have been unable to accurately predict future temperatures, the Competitive Enterprise Institute has put forward a Petition for Reconsideration of the Endangerment Finding, noting:

> A rulemaking proceeding is appropriate when new developments demonstrate that an existing rule or finding rests on erroneous factual premises, and a rulemaking petition is a proper vehicle for asking an agency "to reexamine" the "continuing vitality" of a rule.

Sam Kazman and Hans Bader, "Petition of the Competitive Enterprise Institute and the Science and Environmental Policy Project for Rulemaking on the Subject of Greenhouse Gases and Their Impact on Public Health and Welfare, in Connection with EPA's 2009 Endangerment Finding, 74 FR 66,496 (Dec. 15, 2009)," Competitive Enterprise Institute, February 23, 2017.

Based on that Petition, and this present one, and others already filed or on the way, EPA should reopen its Endangerment Finding for reconsideration.

D. Based on the record of CO2 surrogates, the Earth's concentration of CO2 has been several times higher in geological history, with no record of any catastrophic results.

Carbon Dioxide surrogates include deep ice core samples dredged up from glaciers and polar ice caps, and stalactites and stalagmites accumulating since time immemorial deep in caves. *Why Scientists Disagree About Global Warming* states, "At the current level of 400 parts per million, we still live in a CO2-starved world. Atmospheric levels 15 times greater existed during the Cambrian Period (about 550 million years ago) without known adverse effects."[26]

That reference to CO2 starvation refers to the role of atmospheric carbon dioxide in the survival of plants, which, of course, are at the foundation of the entire food pyramid. That CO2 concentration had dipped below 300 parts per million before the Industrial Revolution and its vastly increased use of fossil fuels. The minimum for plant survival is estimated as somewhere near 200 to 250 parts per million. So the Industrial Revolution and fossil fuels may have saved mankind in more ways than the most obvious.

E. Based on that same surrogate record, the historical pattern is for temperatures to rise first, and CO2 to rise centuries later, which reverses the notion that increased CO2 causes increased warming.

The historical surrogate record for carbon dioxide shows that temperatures do not rise in response to rising carbon dioxide concentrations in the atmosphere. The record shows that temperature has risen first, and then hundreds of years later, atmospheric carbon dioxide concentrations have increased, which reverses the supposed cause and effect of hypothetical anthropogenic global warming.[27]

As Idso and colleagues note,

> Establishing the historic phase relationship between atmospheric carbon dioxide and temperature is a necessary step toward understanding the physical relationship between CO2 forcing and climate change. When such analyses are conducted, changes in CO2 are frequently seen to *lag* changes in temperature by several hundred years.[28]

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[26] Craig D. Idso et al., *Why Scientists Disagree About Global Warming: The NIPCC Report on Scientific Consensus* (Arlington Heights, Ill: The Heartland Institute, 2016), p. 3.
[27] Craig D. Idso et al., *Climate Change Reconsidered II, Physical Science*, Nongovernmental International Panel on Climate Change (NIPCC) (Arlington Heights, Ill: The Heartland Institute, 2013).
[28] Id., p. 149

F. The oceans are not rising any faster than they have since the end of the last ice age, polar ice caps and glaciers are not uniformly melting, and weather is not getting more extreme.

The Executive Summary of the U.S. government's draft Climate Science Special Report (CSSR) (Page 26, line 8) reads: Global mean sea level (GMSL) has risen about 7-8 inches (about 16-21 cm) since 1900, with about 3 of those inches (about 7 cm) occurring since 1993 (very high confidence). Steven Koonin, "Critique of the Draft CSSR discussion of post-1900 Sea Level Rise," Oct. 10, 2017.

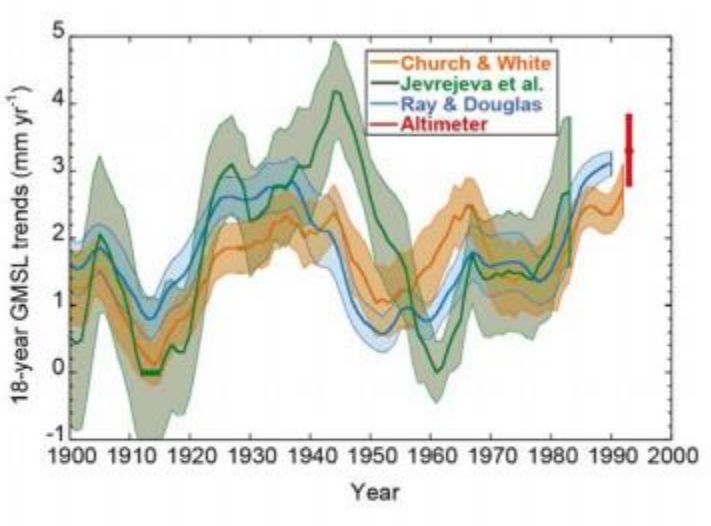
Steve Koonen, who served as Energy Department Undersecretary under President Obama, writes:

> "In discussing global sea level rise since 1990, the draft of the Climate Science Report (CSSR) notes that the rate of rise since 1993 is significantly greater than the average rate of rise from 1900-1990, but fails to mention the substantial and well-established decadal fluctuations during the 20th century. In fact, the rates since 1993 are statistically indistinguishable from the rates in the first half of the 20th century."

Koonin, Id.

Considerable decadal scale fluctuations in sea level rise during the 20th Century are well established and discussed extensively in the literature, as Koonin notes. IPCC's Fifth Assessment Report (AR5) provided the figure below and notes it is likely that similar rates of global average sea level rise occurred between 1920 and 1950 as from 1993 to 2010. International Panel on Climate Change, *Climate Change 2013: The Physical Science Basis*, p. 289. (See Figure 7).

Figure 7
Sea Level Rise

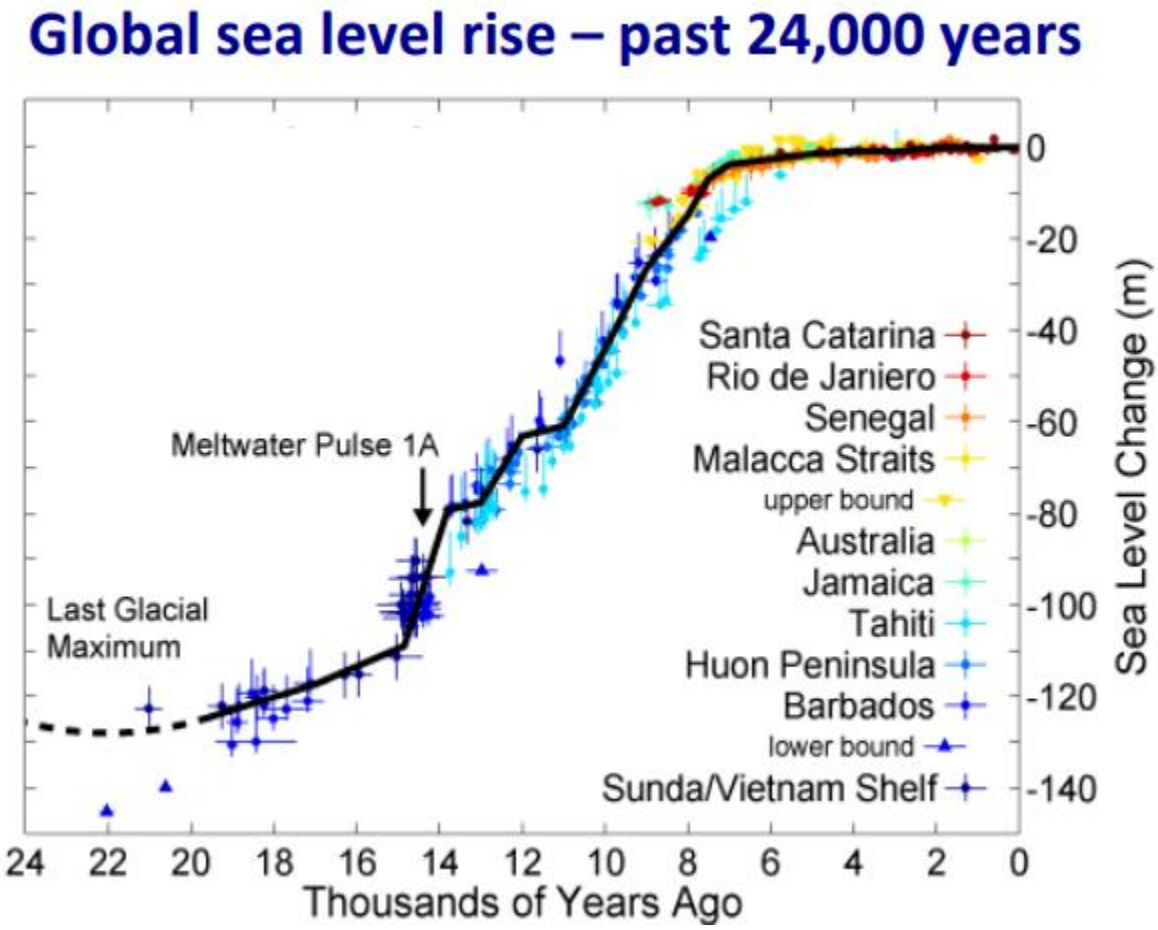


18-year trends of GMSL rise estimated at 1-year intervals. The time is the start date of the 18-year period, and the shading represents the 90% confidence. The estimate from satellite altimetry is also given, with the 90% confidence given as an error bar. Uncertainty is estimated by the variance of the residuals about the fit, and accounts for serial correlation in the residuals as quantified by the lag-1 autocorrelation. Data source: IPCC's Fifth Annual Report (2013), Working Group I, Figure 3.14

Figure 7 shows, in fact, that the most recent sea-level trends are not significantly different from what they were seven to nine decades ago, when Carbon Dioxide levels were 310 parts per million (ppm) or less, compared to Carbon Dioxide concentrations currently around 410 ppm today. As Ben Zycher of AEI explains, "the sea level has been oscillating about the same almost perfectly linear trend line all over the 20th century and the first 17 years of this century." Ben Zycher, "The Union of Concerned Activists: Let the Lawsuits Begin!" AEI.org, November 2, 2017. Or in plainer terms, "Increases in sea levels have not accelerated over the last 117 years despite increases in [greenhouse gas] concentrations." Id.

Indeed, despite claims about rapid sea level rise (SLR), oceans are not rising any faster than they have since the end of the last ice age approximately 20,000 years ago when sea level was approximately 130 meters lower than present levels (See Figure 7). Rud Istvan, "Sea Level Rise, Acceleration and the Closure Problem," Climate Etc., July 20, 2016. In fact, as shown in the figure below, sea level rise has been much slower over the last 7,000 years than it has at any other time over the last 20,000 years.

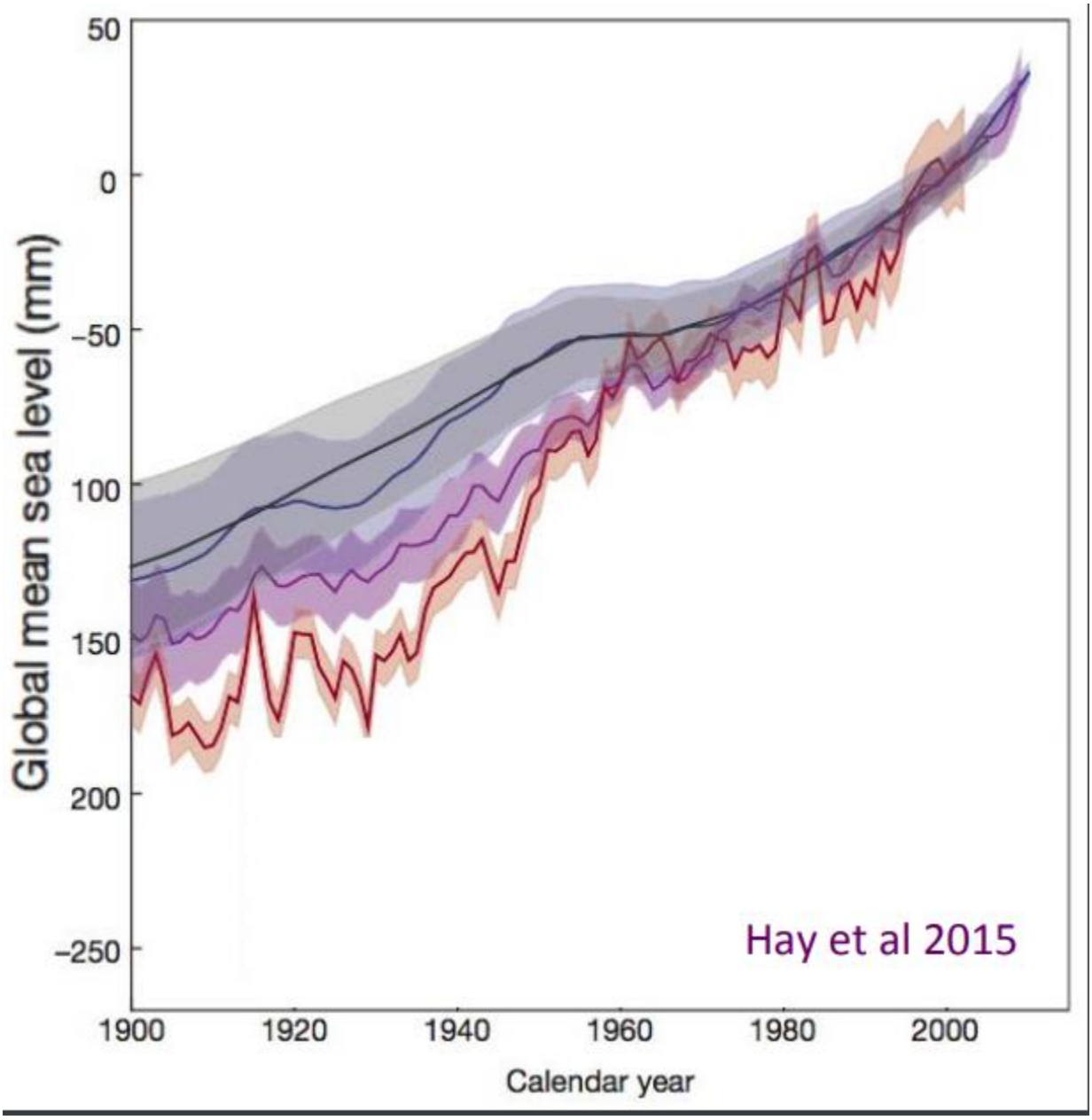
Figure 8
Sea Level Rise Over Last 24,000 Years



Sea level rise has been consistent on recent geologic timescales. Sea levels rose dramatically after the Laurentide Ice Sheet, a massive sheet of ice that covered much of North America, began to retreat approximately 20,000 years ago. *Source*: David Ullman, "The Retreat Chronology of the Laurentide Ice Sheet During the Last 10,000 Years and Implications for Deglacial Sea-Level Rise," University of Wisconsin Madison.

More recently, sea level has risen by approximately 8 inches since 1900, with a substantial portion of that rise between 1900 and 1950, when humans had emitted only one-tenth of the carbon dioxide into the atmosphere since the Industrial Revolution (See Figure 9). Carling Hay et al., "Probabilistic Reanalysis of Twentieth Century Sea-Level Rise," Nature, January 14, 2015.

Figure 9
Sea Level Rise Since 1900



Sea level has risen since 1900, but much of the rise in sea level pre-dated human-caused carbon dioxide emissions after 1950. This suggests natural variation also played a significant role in the sea level rise of the 20th century. Source: Carling Hay, *et al*., "Probabilistic Reanalysis of Twentieth Century Sea-Level Rise," *Nature*, January 14, 2015.

Concerns about sea level rise are based on the potential for two major ice sheets, the Greenland Ice Sheet (GIS) and the Antarctic Ice Sheet (AIS), to melt, potentially causing large increases in sea level. The Greenland Ice Sheet covers

660,000 square miles, is more than a mile thick, and has a volume of 684,000 cubic miles. If this ice sheet were to melt completely, it would result in a 25 foot rise in sea levels.[29]

However, historical evidence suggests fears of a rapid, catastrophic collapse of the Greenland Ice Sheet may be unfounded. During the Eemian period, the last interglacial period, sea level was approximately 6.6 meters higher than present levels. Global temperatures then were approximately 2°C higher than present, and Arctic summers were between 3° to 5°C higher, with some areas of Greenland experiencing temperatures 8°C higher than present.[30] These warmer temperatures persisted for a 6,000 year period between 122,000 and 128,000 years ago.

Despite the much-warmer arctic temperatures persisting for 6,000 years, the Greenland ice sheet only lost about 10 percent of its ice during the Eemian, though ice loss could have been as high as 30 percent in lower-elevation areas.[31] Climate models project a future warming of 3°C over northwestern Greenland by around 2100. Based on ice-loss rates observed in the Eemain, it would take 12,000 summers to melt less than 30 percent of the ice mass in Greenland.[32]

The Antarctic Ice Sheet (AIS) is split into two distinct ice sheets, the East Antarctic Ice Sheet (EAIS) and the West Antarctic Ice Sheet (WAIS). The EAIS is 10 times larger than the WAIS, and estimates are that it would raise sea level nearly 200 feet if it completely melted.[33]

However, recent studies indicate that the EAIS would remain stable even if the smaller WAIS were to melt. Studies indicate the WAIS may be more susceptible to melting because the ice is grounded below sea level, and the largest volcanic region on Earth lies under the WAIS.[34]

Sea levels not rising is consistent with the polar ice caps not melting. Steve Koonin noted in 2014 “the shrinking extent of Arctic sea ice observed over the past two

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1. [29] Andreas P. Ahlstrøm et al., “Abrupt Shift in the Observed Runoff From the Southwestern Greenland Ice Sheet,” Science Advances, December 13, 2017.
[30] Audrey M. Yau et al., “Reconstructing the Last Interglacial at Summit, Greenland: Insights from GISP2,” Proceedings of the National Academy of Sciences, December 16, 2015.
[31] Patrick Michaels and Chip Knappenberger, “Lukewarming: The New Climate Science that Changes Everything,” CATO Institute, 2016, p.204.
[32] Ibid.
[33] Science Daily, “Study Validates East Antarctic Ice Sheet to Remain Stable Even if Western Ice Sheet Melts,” Science News, August 17, 2017.
[34] Maximillian van Wyk de Vries et al., “A new volcanic province: an inventory of subglacial volcanoes in West Antarctica,” Geological Society of London, May 29, 2017.

decades," was more than offset by "the comparable growth of Antarctic sea ice, which is now at an all-time high."[35] *Why Scientists Disagree About Global Warming* notes as well, "Melting of Arctic sea ice and polar ice caps is not occurring at 'unnatural' rates and does not constitute evidence of a human impact on climate."[36]

Moreover, weather is not getting more extreme, as has been repeatedly falsely hyped in recent years. Hurricanes, tornadoes, and droughts are following in line with the historical record, and the United States recently experienced a record 11-year period with no serious hurricanes making landfall (which ended before the serious hurricanes of 2018). Global weather patterns show no threat of ultimately catastrophic, anthropogenic, climate change.

As *Why Scientists Disagree About Global Warming* reports, "No convincing relationship has been established between warming over the past 100 years and increases in extreme weather events. Meteorological science suggests just the opposite: A warmer world will see milder weather patterns."[37]

Bottom line: The catastrophic global warming nightmare is not happening, and there is no evidence that is going to change in the future. The rate of sea level rise has been consistent since the end of the last ice age, and fears of a rapid, melting of the Greenland and Antarctic Ice Sheet due to human CO2 emissions are not supported by historical ice core data. Polar ice caps and glaciers are not uniformly melting, and weather is not getting more extreme.

Of course, that is what should be expected with temperatures actually not rising any more over the past 20 years, and the pattern of temperature variation over the 20th century actually not outside the range of normal variability.

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[35] Steven E. Koonin, "Climate Science Is Not Settled," *The Wall Street Journal*, Sept. 9, 2014

[36] Idso et al., *Why Scientists Disagree About Global Warming: The NIPCC Report on Scientific Consensus*, *supra*, p. xxi.

[37] Idso et al., *Why Scientists Disagree About Global Warming: The NIPCC Report on Scientific Consensus*, *supra*, pp. xx-xxi.

IV. Fossil Fuels Are Essential to American Prosperity and the American Dream

A. Worldwide, and for hundreds of years since the Industrial Revolution, fossil fuel use is associated with higher economic growth, GDP, incomes, wages, health, life expectancy, population, and reduced poverty.

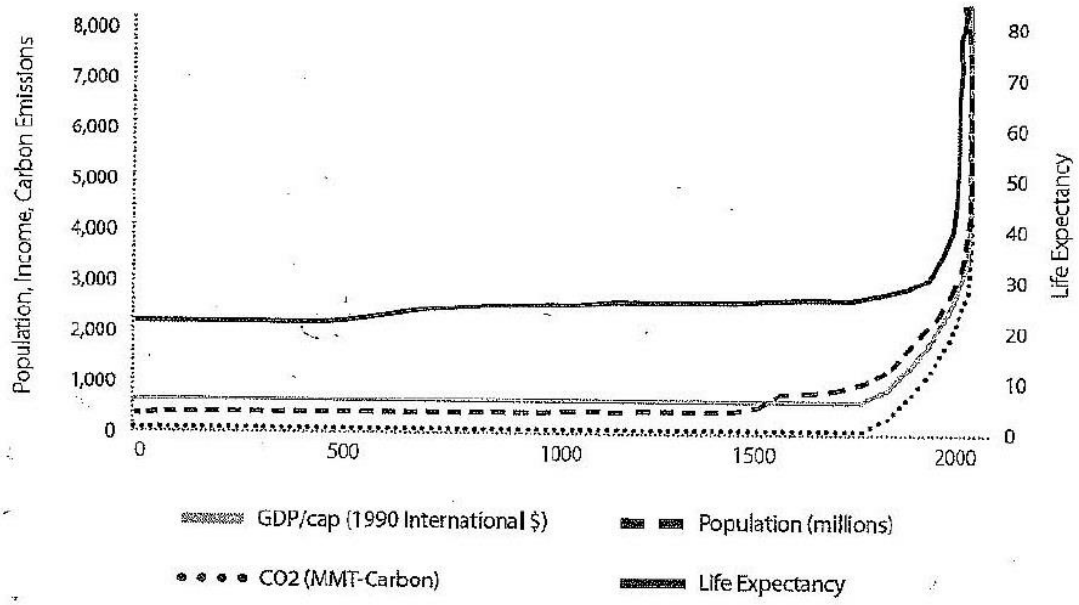
In their book, *Fueling Freedom: Exposing The Mad War on Energy*[38], Stephen Moore and Kathleen Hartnett White explain the economics of energy. They write,

> "Our book begins by recognizing the "Great Fact" of human progress. Something monumental happened around 1800, something that had never happened before. For millennia, the average human life was short and lived at subsistence level. The growth of the human population was slower than a crawl. But in the nineteenth century, there began a substantial and sustained improvement in the fundamental measures of human well-being."[39]

What happened was the Industrial Revolution. They illustrate the impact in Figure 10, Global Progress, 1 AD—2009 AD.

[38] Stephen Moore and Kathleen Hartnett White, *Fueling Freedom: Exposing the Mad War on Energy* (Washington, DC: Regnery Publishing 2016).
[39] Id., p. 2.

Figure 10
Global Progress, 1 AD—2009 AD.



Sources: Updated from Indur Goklany, "Have Increases in Population, Affluence and Technology Worsened Human and Environmental Well-being?" Electronic Journal of Sustainable Development 1, no. 3 (2009); based on Bruce W. Frier (2001). "More is worse: some observations on the population of the Roman empire", in Walter Scheidel, Debating Roman Demography, URL = https://books.google.com/books?id=vh3pmAodawEC&pg=PA144#v=onepage&q&f=false; Angus Maddison, Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD, University of Groningen, 2010, http://www.ggdc.net/MADDISON/Historical_Statistics/vertical-file_02-2010.xls; World Bank, World Development Indicators 2015, http://databank.worldbank.org/; T.A. Boden, R. J. Andres, Global CO2 Emissions from Fossil-Fuel Burning, Cement Manufacture, and Gas Flaring, 1751-2011, at http://cdiac.ornl.gov/ftp/ndp030/global.1751_2011.ems, visited December 15, 2015; CDIAC, Preliminary 2011 and 2012 Global & National Estimates, at http://cdiac.ornl.gov/ftp/trends/co2_emis/Preliminary_CO2_emissions_2012.xlsx, visited February 2, 2016. Notes: Data are sporadic until 1960. This figure assumes that trends between adjacent data points are linear. Life expectancy is a surrogate for human well-being; living standards are depicted by affluence, or GDP per capita; and CO2 is a proxy for fossil-fuel usage.

Figure 10 "charts four basic measures of human welfare over the past two thousand years—life expectancy, real income per capita, population, and energy consumption."[40] Emissions of carbon dioxide resulting from human activity are used in the chart as a surrogate for consumption of energy derived from fossil fuels. The figure shows all four almost flat for almost the entire 2000 years, until 1800, when all four start shooting almost straight up together, which designates the arrival of the modern world.[41]

The authors explain,

[40] Id., p. 5.
[41] Id.

> "The almost vertical trajectory of our graph that begins around 1800 coincides with the beginning of the English Industrial Revolution….an energy enrichment that spawned phenomenal economic productivity and dramatic improvements in human living conditions. What textbooks call the Industrial Revolution might be better described as mankind's Great Energy Enrichment."[42]

The authors quote historian Carlo Cibolla explaining, "the Industrial Revolution can be defined as the process by which a society acquired control over vast sources of inanimate energy."[43] Moore and White add, "Those sources were fossil fuels, first coal in England, soon followed by natural gas, and then crude oil in the twentieth century."[44]

Moore and White add further,

> "few people appreciate that this spectacular improvement in the human condition is really a story of the fossil fuels revolution. The world moved away from inefficient and limited 'green' energy like the medieval windmill to coal and other modern forms of energy that could be adopted on an industrial scale. Fossil fuels were a necessary condition of the Industrial Revolution's unprecedented improvements."[45]

The authors elaborate, "Is it not startling that most of humanity had been stuck with a real average income of $1 to $7 per day until the past two centuries?"[46] They explain, "Average real income per capita—on a global basis—is now ten to twenty times higher than at the beginning of the industrial revolution."[47]

The authors further explain the implications for economic growth.

> "The same graph also depicts the unprecedented economic growth driven by industrialization. The economic historian Deirdre McCloskey puts it in perspective: 'The scientific fact established over the past 50 years by the labors of economists and economic historians is that modern economic growth has been astounding, unprecedented, unexpected, the greatest surprise in economic history.' Economic growth and increased energy

[42] Id., pp. 4-5.
[43] Id., p. 5.
[44] Id.
[45] Id., pp. 2-4.
[46] Id., p. 4.
[47] Id., p. 5.

> consumption were tightly connected over the past century. In 2000, the correlation between energy consumption and income per capita across sixty-three countries was an extremely close 96 percent."[48]

Both energy consumption and gross world product increased 16 fold in the 100 years of the 20th century.[49] "The rise of gross world product from $2 trillion to $32 trillion within a century is nothing less than astonishing,"[50] Moore and White note.

A similar explosion resulted in population. Moore and White again explain, "In our graph of human progress, population barely increases over the first millennium A.D. Between the years 1000 and 1750, the global population increases substantially, tripling to 760 million. But from 1750 to 2009, population rises eightfold, to almost 7 billion human beings—a decisive departure from all previous epochs."[51]

Moore and White add,

> "Never before has mankind been better nourished. As we shall show, you can thank fossil fuels for a global food supply that exceeds the demand of more than seven billion mouths….In America, we produce three times as much food as we did a century ago, in one-third fewer manhours, on one-third fewer acres, and at one-third the cost. In the past, more than half of Americans were employed in agriculture, and food was still relatively scarce and expensive. Now about 3 percent of the population produces all the food that 300 million Americans consume. We even have to often pay farmers to stop growing so much food."[52]

With the increased fossil fuel use of the Industrial Revolution came increased carbon dioxide emissions. Moore and White note, "Before the Industrial Revolution, man-made emissions of carbon dioxide were marginal. The United States now uses about two hundred times more energy than in 1800, and almost all of it comes from fossil fuels."[53]

Fossil fuels are consequently essential for economic growth, the prosperity of the American people, and the survival of the American Dream, especially for working

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[48] Id., pp. 6-7.
[49] Id., p. 7
[50] Id.
[51] Id. p. 6.
[52] Id.
[53] Id., p. 4

people, blue collar workers, and the middle class. They are also essential to sharply reducing, and ultimately eliminating poverty in America entirely.

B. Even after decades of government subsidy and favoritism, alternative energy such as solar and wind play only a niche role in U.S. energy supplies.

In sharp contrast, Moore and White discuss alternative, renewable energy,

> "For many centuries mankind relied on what is now called 'renewable energy' – windmills, wood, water, and the sun. The notion that green energy is 'in its infancy' is laughable. These sources of energy go back thousands of years. And the data recently gathered by economic historians…show that wind and water wheels never provided much power. It wasn't until man harnessed fossil fuels—primarily oil, gas and coal—that industrialization achieved unprecedented productivity."[54]

Christopher Horner of the Competitive Enterprise Institute adds, "[Y]ou can build windmills with steel, but you can't build steel with windmills."[55] Moore and White elaborate, "The great steel works of Pittsburgh could not have built America's industrial framework if their power had come from windmills. Detroit's automobiles could not have replaced horses (and horse manure) if they had run on solar power."[56]

Moore and White summarize,

> "With this book, we aim to document and explain the extent to which fossil fuels have vastly improved human life across the planet, releasing whole populations from abject poverty. Virtually everything needed to sustain the life of a human being—food, heat, clothing, shelter—depends upon access to and conversion of energy. The productivity fueled by hydrocarbon energy sources, coupled with economic freedom, allowed the emergence of an enduring middle class for the first time in history."[57]

Moore and White conclude,

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[54] Stephen Moore and Kathleen Hartnett White, *Fueling Freedom: Exposing the Mad War on Energy*, supra, p. xiv.
[55] Id., p. xiv.
[56] Id.
[57] Id.

> "Today, hundreds of years after the Industrial Revolution began, most of the human population is dependent on fossil fuels for 80 to 90 percent of its energy supply. That will surely be the case at least for many decades. The long-held superstition that America is running out of oil and gas has been disproved with the latest shale oil and gas revolution."[58]

Yet, despite the obvious dominance of and continued need for fossil fuels, wind and solar receive more subsidies than any other source of energy, both in absolute terms and on a per-unit-of-energy-generated basis.[59]

In 2013, wind received more subsidies than any other energy source at $5.9 billion (see Figure 11). Solar was the second largest with $5.3 billion. By contrast, nuclear energy received $1.66 billion, coal received $1.07 billion, and oil and natural gas received $2.35 billion.[60] In recent years, federal renewable energy subsidies have totaled *more than three times the subsidies paid for all fossil fuels and nuclear energy combined*.[61]

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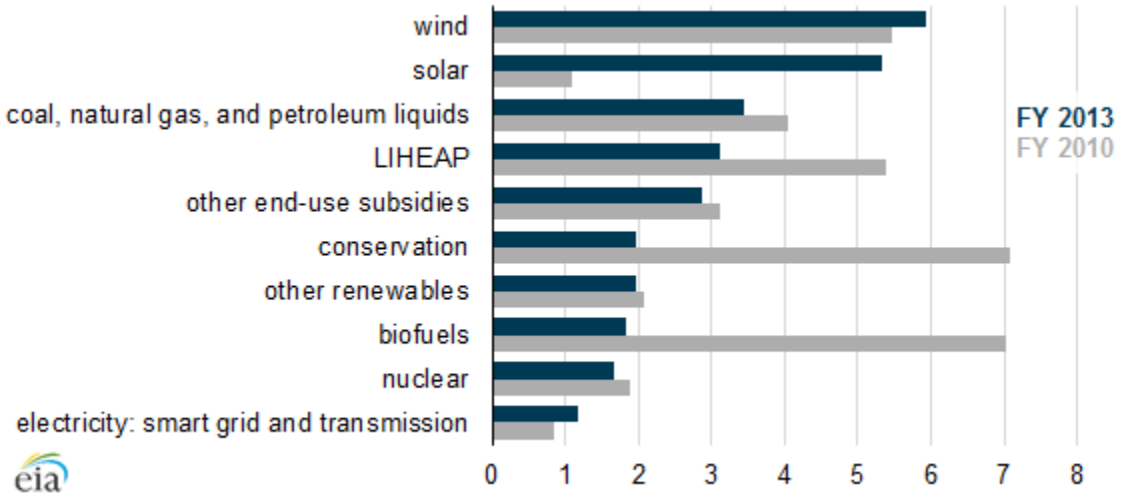
[58] Id.
[59] U.S. Energy Information Administration, "Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2013," *Analysis and Projections*, March 23, 2015.
[60] U.S. Energy Information Administration, "Total Energy Subsidies Decline Since 2010, With Changes in Support Across Fuel Types," *Today in Energy* (website), March 13, 2015.
[61] Management Information Services, Inc. *Two Thirds of a Century and $1 Trillion+ U.S. Energy Incentives Analysis of Federal Expenditures for Energy Development, 1950–2016*, prepared for the Nuclear Energy Institute, May 2017.

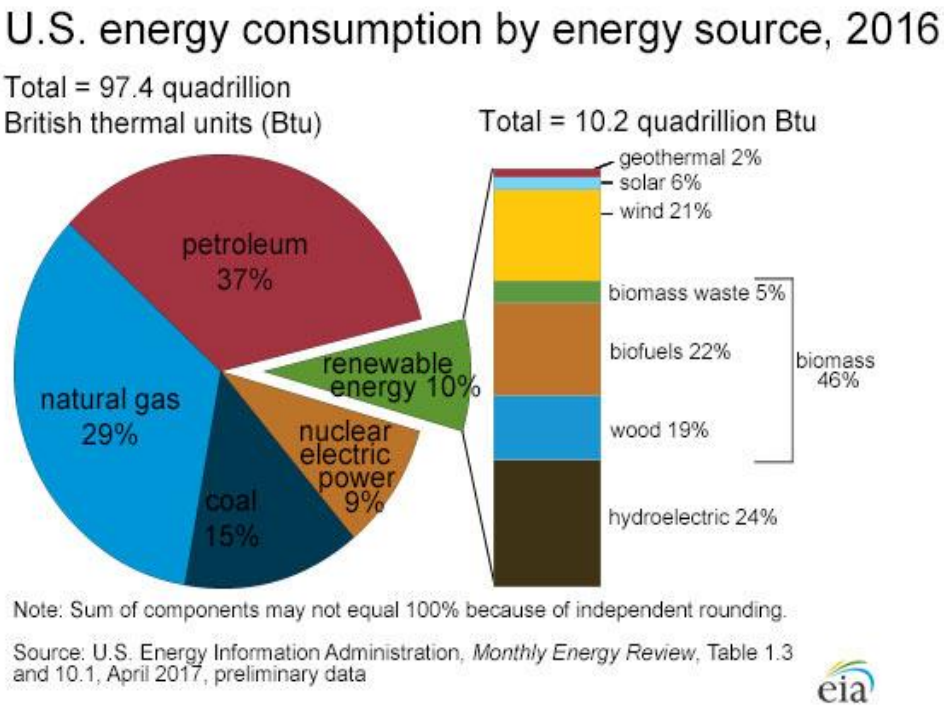
Figure 11
Quantified Energy-Specific Subsidies and Support by Type
Fiscal Years 2010 and 2013
(in billions of 2013 dollars)



Government subsidies supporting wind and solar combined for $11.2 billion in 2013, while coal received $1.07 billion. LIHEAP is the Low Income Home Energy Assistance Program, which helps families pay their energy bills. Spending on that program increased by nearly 50% in just three years from 2010 to 2013. *Source*: U.S. Energy Information Administration, "Total Energy Subsidies Decline Since 2010, With Changes in Support Across Fuel Types," *Today in Energy* (website), March 13, 2015.

Despite the fact that renewable energy sources are the most highly-subsidized forms of energy, they accounted for only 2.7 percent of the total energy consumed in the United States in 2016. In contrast, oil provided 37 percent, natural gas 29 percent, coal 15 percent and nuclear energy 9 percent of total energy consumption (See Figure 12).

Figure 12

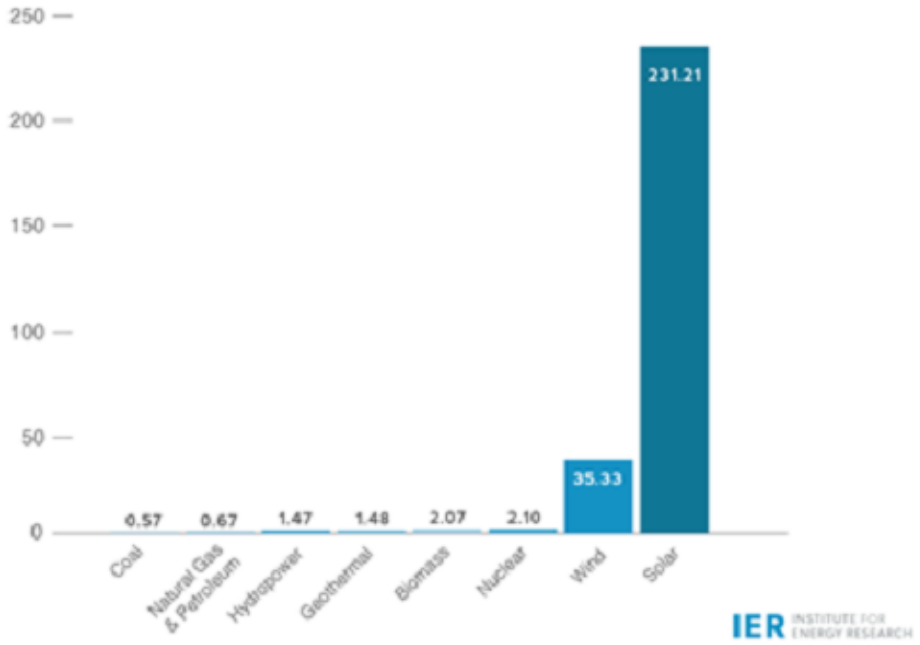


Wind and solar power are the most heavily subsidized forms of energy, yet they provide almost no energy in terms of total energy consumption. Combined, these two forms of energy provide less than 3 percent of energy use in the United States.

Subsidies to wind and solar are large in absolute terms and even larger when considered per unit of energy produced. In these terms, wind received $35.33 per MWh and solar received $231.21/MWh, while coal received only $0.57/MWh and natural gas and petroleum received only $0.67/MWh. Wind and solar consequently received 52 times and 345 times more in subsidies than coal, respectively (see Figure 13).[62]

[62] Institute for Energy Research, "EIA Report: Subsidies Continue to Roll In For Wind and Solar," March 18, 2015.

Figure 13
Federal Electric Subsidies
Per Unit of Production, FY 2013
(2013 dollars per megawatt hour)



Federal subsidies for wind and solar grew dramatically from 2010 to 2013. On a per unit of energy basis, wind and solar received 52 times and 345 times more subsidies than coal, respectively. *Source*: Institute for Energy Research, "EIA Report: Subsidies Continue to Roll In For Wind and Solar," March 18, 2015.

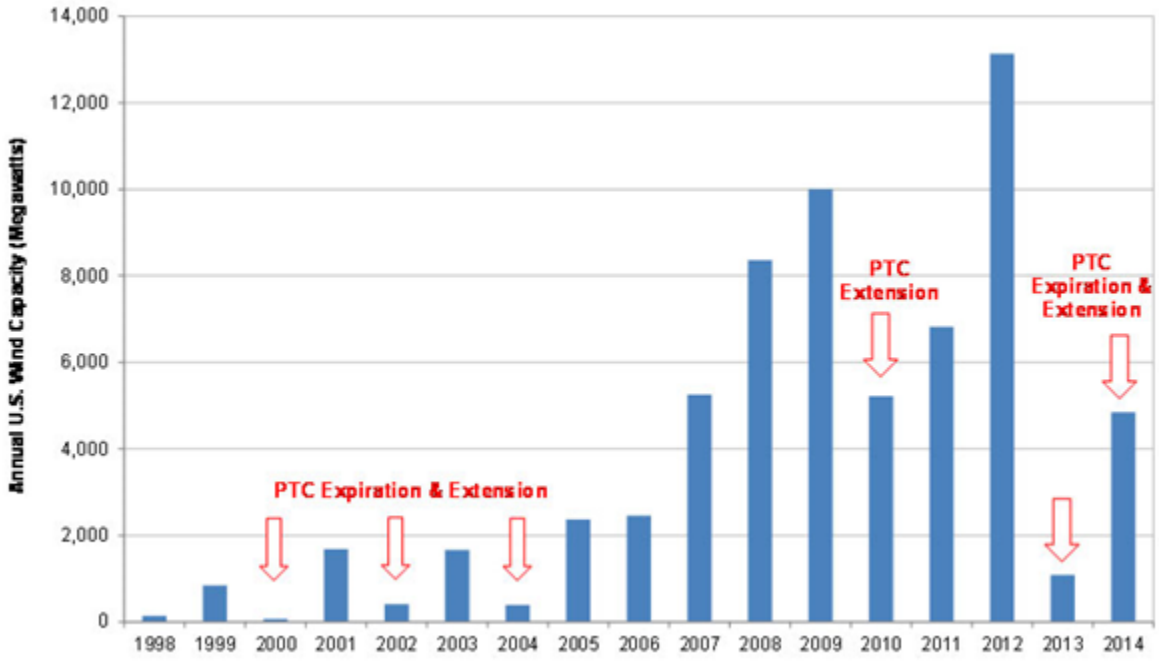
Recent data suggest very few wind power facilities would be built without the federal wind PTC (see Figure 14). Without federal, state, and local government subsidies and mandates, the renewable energy industry would not survive in the United States. As Warren Buffet, CEO of Berkshire Hathaway, and "one of the most successful investors of all time,"[63] stated, "We get a tax credit if we build a lot of wind farms. That's the only reason to build them. They don't make sense without the tax credit."[64]

Federal subsidies distort wholesale power markets by artificially increasing the amount of wind and solar generation on the grid. Although wind and solar receive more subsidies in absolute terms and on a per-unit-of-energy basis than any other

[63] Profile: Warren Buffet, *Forbes* (website), accessed November 28, 2017.
[64] Grant Kidwell, "Iowa Wind Farm Generates More Tax Credits than Electricity," *The Hill*, October 6, 2016.

source of energy, they account for just 6.5 percent of electricity generation. It is difficult to argue this money has been well spent.

Figure 14
Impact of Production Tax Credit Expiration and Extension
On U.S. Annual Installed Wind Capacity



In the years following expiration of the wind PTC, wind power installations dropped between 76 and 93 percent, suggesting wind installations are not competitive without federal subsidies. *Source*: Union of Concerned Scientists, "Production Tax Credit for Renewable Energy" (website), accessed September 27, 2017.

Discussing the subsidies and total energy contributions of renewables only tells part of the story. Even in states where large portions of electricity are derived from renewable energy sources like California, which mandates 50 percent of the state's energy must come from renewables by 2030, natural gas fired power plants must be ready to provide electricity because renewable energy sources like wind and solar are intermittent (the wind does not always blow, and the sun does not always shine – see, e.g., night time). The need to maintain and continue fossil fuel energy production as a backup is a primary reason why renewables cost so much more

than fossil fuels.[65] In other words, alternative energy is not truly an alternative to fossil fuels.

Germany is an ideal example of the folly of a nation that tried to switch from fossil fuels to renewables, with full support of the government. Businesses and households in Germany paid an extra 125 billion euros in increased electricity bills from 2000 to 2015 to subsidize renewables.[66] As a result, "Germans join Danes in paying the highest household electricity rates in Europe, and German companies pay near the top among industrial users."[67] Indeed, German households pay 3 times the costs for electricity that American households pay.[68] Yet, despite all of that economically crippling cost burden, only one-third of German electricity comes from renewables today, compared to still 40% for coal.[69]

Fundamental laws of physics explain why fossil fuels are so much more effective and less expensive than renewables. The energy in fossil fuels is so much more concentrated than in renewables. The energy blowing in the wind, or dancing on sunbeams, is highly disparate. So collecting it in usable form is inherently difficult, challenging and expensive.

The mandates of the old Clean Power Plan (CPP) that states build more renewable generation would do nothing but decrease the reliability and affordability of electricity while still requiring that reliable coal or natural gas power plants be available to supply power when intermittent generation sources are not delivering electricity. That would mean much higher electricity costs, which translates into slower economic growth, reduced prosperity, and increased poverty in America. Niche renewables could never power the modern, 21st Century, American economy. The American economy could not remain viable, let alone prosperous, with its energy industries surviving only as "welfare queens."

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[65] As Bernie Peiser at the Global Warming Policy Foundation explains, "(Every 10 new units worth of wind power installation has to be backed up with some eight units worth of fossil fuel generation. That is because fossil fuel units have to power up suddenly to meet the deficiencies of intermittent renewables. In short, renewables do not provide an escape route from fossil fuel use, without which [the renewables] are unsustainable….To avoid blackouts [with renewables], the government has to subsidize uneconomic [because part-time backup] gas and coal power plants." http://www.thegwpf.com/benny-peiser-eus-green-energy-debacle-shows-the-futility-of-unilateral-climate-policies/): (April 4, 2015).

[66] "Germany's Green Energy Meltdown," *The Wall Street Journal*, Saturday/Sunday November 18-19, 2017, p. A12.

[67] Id.

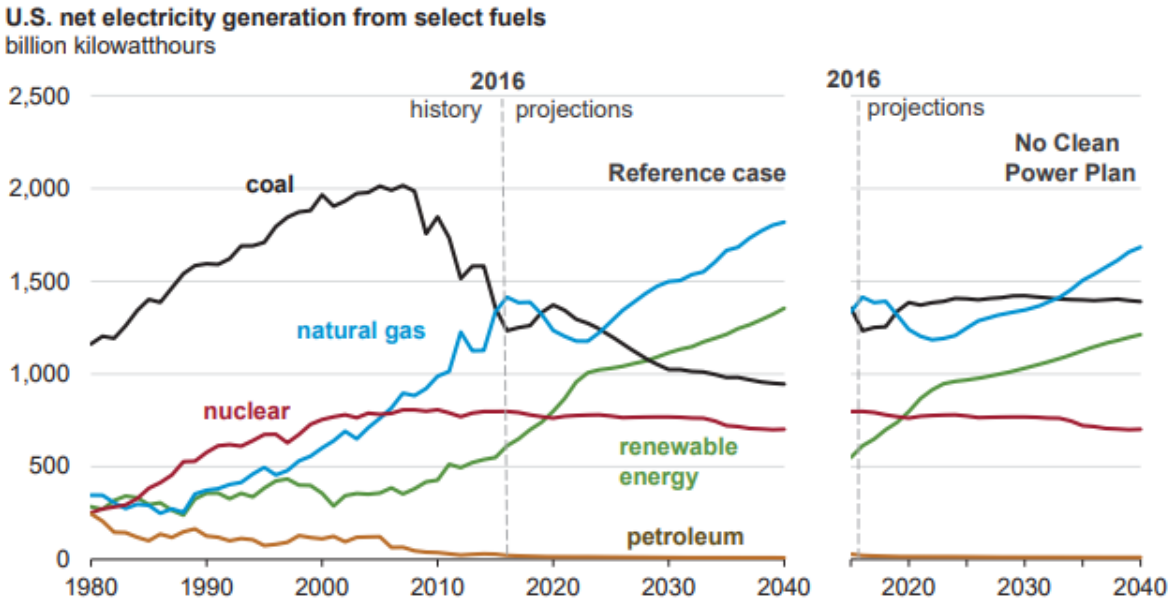
[68] Id.

[69] Id.

C. Official U.S. government projections show this will be true for the foreseeable future, for decades (50 to the next 100 years at least).

According to the United States Energy Information Administration, fossil fuels will still be the most important energy sources in the coming decades for the United States, and globally. Fossil fuels will remain the dominant fuel sources under every economic scenario, even those incorporating the Clean Power Plan into their analysis. Under the no-CPP scenario, natural gas and coal will be the dominant fuel sources for electricity generation, with gains in renewable generation driven primarily by federal tax subsidies (See Figure 15).

Figure 15

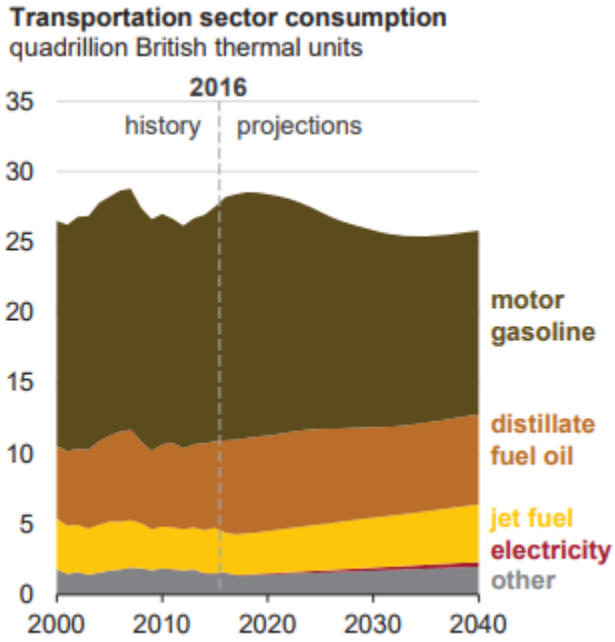


According to the EIA's Annual Energy Outlook, growth in renewable energy sources will depend heavily upon the tax credits available to them because these sources of energy are not competitive without them. This makes it more likely that renewables will account for an even smaller share than either of the scenarios above predict.

Additionally, the transportation sector, which accounted for 29 percent of the nation's energy consumption in 2016, will continue to rely almost exclusively on oil-based fuels for the coming decades, with electric cars constituting a tiny fraction of the American automobile fleet.[70]

[70] U.S. Energy Information Administration, "Energy Use for Transportation," Energy Explained, May 17, 2017.

Figure 16



Globally, EIA projects that world energy consumption will grow by 28 percent between 2015 and 2040, with most of this growth occurring in developing nations, primarily in Asia. EIA projects fossil fuels will account for 77 percent of total energy use in 2040. [71]

Liquid fuels—mostly petroleum-based— are predicted to remain the largest source of world energy consumption, accounting for 31 percent of global energy production in 2040. Natural gas is projected to account for 24 percent of energy use, and EIA estimates that coal will count for 22 percent of total world energy consumption in 2040.

However, these projections, particularly those regarding coal usage, may be unrealistic, as China and India have continued to aggressively build coal-fired power plants to meet their growing electricity needs. For example, Chinese companies are building or planning to build more than 700 new coal-fired power plants over the next decade.[72] Most of those plants will be built in China, but about one-fifth will be built in other countries. All told, some 1,600 coal plants are planned or under construction in 62 countries worldwide.[73] Coal will continue to be the main source of energy for China for decades to come.

[71] U.S. Energy Information Administration, "International Energy Outlook 2017," Executive Summary, September 14, 2017.

Similarly, India's reliance on coal will persist even in 2047 with an envisaged share of 42%-50% in the energy mix. India would like to use its abundant coal reserves as they provide a cheap source of energy and ensure energy security as well. However, imports of coal have risen at a CAGR of 18% from 2005-06 (39 MT) to 2015-16 (200 MT). The modeling exercise of NITI shows that India will achieve peak production of coal in 2037, after which production will decline and India will need imports to meet its requirements (See Figure 17).

Figure 17

Energy Mix of India:

	2012	2047	
TWh		BAU Scenario	Ambitious Scenario
Nuclear	1%	2%	4%
Renewable Energy	3%	7%	12%
Agriculture/waste	15%	5%	8%
Coal	46%	50%	42%
Oil	27%	28%	23%
Natural gas	8%	8%	10%

Coal will remain the dominant fuel in India for the next 30 years, as the business as usual scenario indicated India will derive 50 percent of its energy from coal and only 7 percent from renewable sources.[72]

Renewables, by contrast, are still projected to account for less than 22 percent of total energy consumption worldwide, despite the billions if not trillions of dollars in subsidies that have been provided to these technologies on a global scale. In addition to accounting for a small overall share of global energy generation, the majority of renewables, 53 percent, will be derived from hydroelectric generating sources, not wind or solar.

The United States should acknowledge the physical and economic limits of renewable energy sources such as wind and solar and decriminalize affordable, reliable energy in the form of allowing existing coal-fired power plants, and High Efficiency Low Emissions (HELE) power plants to shoulder significant loads for electricity generation now, and decades into the future.[73]

[72] Harendra Kumar et al., "Energizing India," Joint Project Report of NITI Aayog and IEEJ, June 16, 2017 http://niti.gov.in/writereaddata/files/document_publication/Energy%20Booklet.pdf.
[73] U.S. Energy Information Administration, "International Energy Outlook 2017," September 14, 2017.

Niche renewables like wind and solar will never be able to power the modern, 21st century global economy. Renewables are not the future. Renewables are inherently limited in their reach by fundamental laws of physics. There are fundamental reasons why the industrial revolution, economic growth and modern prosperity took off when fossil fuels became widely utilized through technological innovation. We are not going to be able to power the modern, global economy of the 21st century with the energy sources of the Roman Empire.

D. Phasing out fossil fuels would amount to a policy of mass poverty for the American people, unless America turns to nuclear power on a crash course, which is opposed by the same hysterical extremists who oppose fossil fuels.

Reversing the fossil fuel revolution to go back to renewables is not going to be a happy time for America, or for the human race globally. Moore and White explain,

> "The governments of many of the most developed countries of the world have
>
> mandated as rapid a transition as possible from carbon-rich energy to zero-carbon energy like wind, solar, and biomass. The inherent limitations of wind and solar are physically intractable. We are facing a regression to the limited energy horizons of pre-industrial societies. Never before have the rulers of a society intentionally driven it backward to scarcer, more expensive, and less efficient energy…and raise[d] prices for financially strapped families."[74]

Michael Kelly, a Fellow of the Royal Society of the United Kingdom, adds, "A decarbonized global economy is going to have to outperform the achievement of fossil fuels. If not, mankind's progress will have to go in reverse in terms of aggregate standard of living. We should be honest and upfront about the sheer scale and enormity of the challenge implied by decarbonization."

Moore and White elaborate that those who benefitted the most from the booming economic growth of the Industrial Revolution were the poorest, forgotten at the bottom of pre-enlightenment, pre-industrial, medieval times. They write,

> "Those who have gained the most from that growth have not been the wealthiest but the poorest. With the Industrial Revolution,…'[f[or the first

[74] Stephen Moore and Kathleen Hartnett White, *Fueling Freedom: Exposing the Mad War on Energy*, supra, p. xv.

> time the economy performed for the People instead of mainly for the Privileged.' From the beginning, it was not the aristocracy, clerisy, warrior class, or industrial titans who gained the most, but the average worker and the most impoverished. No longer was intractable poverty the common lot of mankind. An enduring middle class emerged. The historian Robert Fogel concludes that "the average real income of the bottom fifth of the [American] population has multiplied some twenty-fold [over the twentieth century], several times more than the gain realized by the rest of the population."[75]

To illustrate that more concretely, Moore and White offer this example: "In 1875, the average American family spent 74 percent of its income on food, clothing and shelter, not unlike the rest of the world. In 1995, the same American family spent 13 percent of its income on these fundamental necessities."[76]

If Kelly is right, and we are going to have to go in reverse in terms of aggregate standard of living, what does that mean for working people, the middle class, and the poor? Moore and White explain,

> "Most green policies undermine human progress. They are regressive, disproportionally hurting low and middle income families by driving energy prices higher, thus eroding their standard of living. As the Obama Administration was drawing to a close, the lower end of middle class income in the United States appeared to be sliding toward the poverty level. Numbers revealed by the Social Security Administration in the fall of 2015 show that 51 percent of all U.S. workers were making less than $30,000 a year—only $2,500 a month after taxes. Income for middle class families declined by 3 percent on Obama's watch, and the average worker went ten years without a raise."[77]

Moore and White directly implicate the Clean Power Plan in that regard,

> "The [CPP] is futile—all pain and no gain. By EPA's own admission, the mandated carbon cuts will not meaningfully reduce predicted warming. Gina McCarthy, the Administrator of the EPA, justifies it as a gesture of sacrifice by the wealthiest country in the world. Americans should embrace economic decline for its symbolic value? Even before the Clean Power Plan took

[75] Id., pp. 7- 8.
[76] Id., p. 8.
[77] Id., pp. 8-9.

> effect, many coal fired power plants had closed and major power companies had declared bankruptcy, at a cost of thousands of jobs. In response, President Obama, by executive action, froze coal production on federal lands, where 40 percent of total U.S. production is located. The Left's strategy is to make American coal so expensive that the industry cannot survive in global markets. The environmentalists want an utterly debilitating 'production tax' of as much as $40 per ton…Obama [chose] 'to pander to special interest groups whose stated goal is to shut down the U.S. coal industry'—and the economies of our coal producing states—Illinois, Ohio, Kentucky, Pennsylvania, West Virginia, Wyoming and West Virginia—be damned."[78]

That list of coal producing states seems to include the former Democrat states that flipped to Trump in the last election, and put him in the White House. Moore and White conclude,

> "President Obama and some leaders of the wealthiest countries in the world are adamant about phasing out fossil fuels when there are no *alternative energy sources* capable of providing the countless goods and services that fossil fuels make possible. Modern societies remain utterly dependent on fossil fuels…The climate crusade is indeed a mad war on human welfare.[79]

Even worse, eliminating fossil fuels will not only raise prices for energy, goods, and services for poor and middle-class families, making them increasingly poor and marginalized. Eliminating fossil fuels will greatly increase energy prices for factories and other businesses, including hospitals and schools, destroying millions of jobs for those very same blue-collar families, and driving more and more people onto welfare rolls. At the same time, local, state, and federal governments will have less and less tax revenue to pay for welfare, because the entire U.S. economy will be driven into a downward death spiral. Millions of American families will see their living standards, health, welfare, and life spans decline precipitously, for no climate or environmental benefit whatsoever.

As Bjorn Lomborg noted in January 2018 for *The Wall Street Journal*,[80]

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[78] Id., p. 9.
[79] Id., p. 10.
[80] Bjorn Lomborg, "Climate-Change Policies Can Be Punishing for the Poor," *The Wall Street Journal*, January 5, 2018.

> Freezing temperatures in the U.S. Northeast have pushed up heating costs, creating serious stress for many Americans. Although the rich world's energy poor are largely forgotten in discussions about climate policies, they bear an unfair burden for well-meaning proposals. That reality is being laid bare this icy winter as energy and electricity prices surge.
>
> When we think about energy poverty, we imagine a lack of light in the world's worst-off nations, where more than one billion people still lack electricity. This is a huge challenge that the world can hope to address as it reduces poverty and expands access to grid electricity, largely powered by fossil fuels.
>
> But there is a less visible form of energy poverty that affects even the world's richest country. Economists consider households energy poor if they spend 10% of their income to cover energy costs. A recent report from the International Energy Agency shows that more than 30 million Americans live in households that are energy poor—a number that is significantly increased by climate policies that require Americans to consume expensive green energy from subsidized solar panels and wind turbines.

Moore and White contrast the fundamental economic choice this frames – Economic Growth or Decline:

> "The contrast between these two forces is stark and simple. The shale energy boom increased the economic pie. Taxpayer subsidized green energy shrinks the economic pie. The kind of economic growth we take for granted in the modern world would have been impossible if we had been limited to sources of energy that depend on taxpayer subsidies. Climate policies to decarbonize human society augur energy scarcity, exponentially higher prices for basic goods, loss of personal freedoms, and an end to the prosperity achieved in the twentieth century that has lifted billions out of grinding poverty.[81]

V. Continued use of fossil fuels will produce an American economic boom, creating millions of new jobs and restoring rising real wages for the middle class and blue collar workers.

A. America now has the natural resources to be the world's no. 1 producer of oil, no. 1 producer of natural gas, and no. 1 producer

[81] Moore and White, *supra*, p. 11.

of coal, achieving energy independence, even energy dominance, as President Trump calls it.

The United States has an abundance of fossil fuel resources that give America distinct geopolitical and economic advantages. In fact, the United States has more energy resources than any other nation on Earth. Only one nation, Russia, has even half as many energy resources as the United States. The United States truly has an opportunity to become energy dominant, but to do so, it must remove all the unnecessary restrictions on energy production stemming from the Endangerment Finding.

Among these fossil fuel resources, the most abundant is coal, which offers approximately 283 years of supply that are more resistant to price shocks and the manipulation of foreign markets than any other source of fuel.[82] The United States has the largest oil reserves in the world, with more recoverable oil reserves than either Saudi Arabia or Russia.[83] Lastly, the US is the largest producer of natural gas in the world. The EIA estimates current natural gas supplies are large enough to last for nearly 100 years at current rates of consumption.[84]

Giving up on those abundant energy resources would involve the largest opportunity cost literally in world history.

Under the previous administration, these resources were treated as liabilities, rather than assets. That has already changed under the Trump administration. By focusing on truly environmentally responsible development of domestic energy resources, thereby ensuring the United States has abundant access to affordable energy, federal and state policymakers are taking concrete steps toward reviving the American economy and putting Americans first.

Indeed, enjoying the world's leading oil industry, the world's leading natural gas industry, and the world's leading coal industry, all in one economy is already

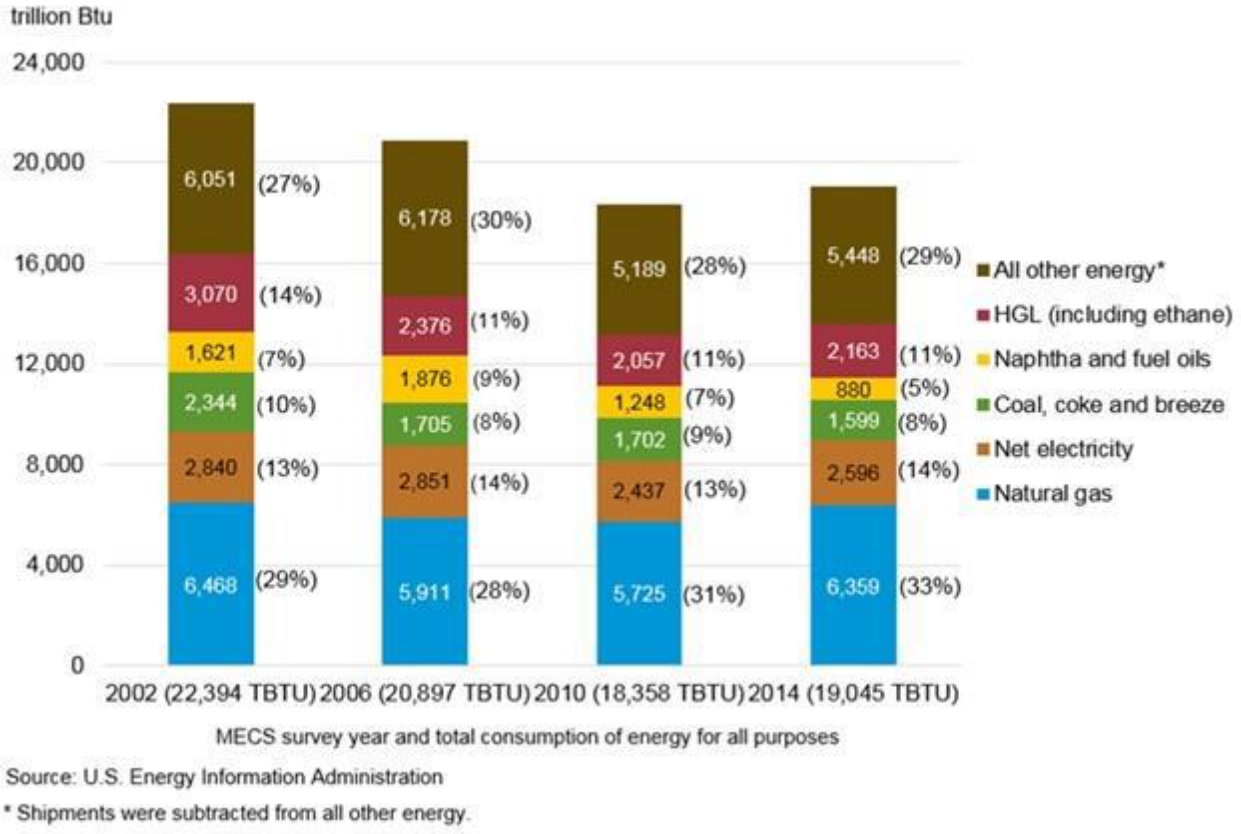
[82] U.S. Energy Information Administration, "How Much Coal is Left?" *Energy Explained,* April 18, 2017, https://www.eia.gov/energyexplained/index.cfm?page=coal_reserves.
[83] Per Magnus Nysveen, "United States Now Holds More Recoverable Oil than Saudi Arabia," Rystad Energy, July 04, 2016, https://www.rystadenergy.com/NewsEvents/PressReleases/united-states-now-holds-more-oil-reserves-than-saudi-arabia.
[84] U.S. Energy Information Administration, "How Much Natural Gas Does the US have, and How Long will it Last?" Accessed July 24, 2017, https://www.eia.gov/tools/faqs/faq.php?id=58&t=8.

restoring the American economy to world leadership, and reinvigorating the American Dream that has inspired the world for three centuries. To think we would be foolish enough to give all that up for an erroneous fairy tale about catastrophic, anthropogenic, global warming is to imply madness to what has been formerly called the world's leading hyperpower.

B. That virtually unlimited supply of reliable, low cost energy will bring manufacturing back to the U.S., which has already begun in fact.

President Trump has made increasing manufacturing in the United States a key goal of his Presidency. However, this effort will be severely hampered if manufacturers and businesses do not have access to affordable energy resources, particularly oil, natural gas, and electricity. These fuels make up the largest components of energy used by industry in the U.S. (See Figure 18).

Figure 18
Manufacturing Energy Consumption Has Increased for the First Time Since 2002



Source: U.S. Energy Information Administration

* Shipments were subtracted from all other energy.

Natural gas accounts for the largest share of energy used by industry, at 33 percent. Electricity accounts for the second largest primary or secondary source of energy at 14 percent, followed by coal and oil. "All other energy" represents a combination of technologies such as heat capture, waste re-use, and other energy efficiency measures. *Source*: U.S. Energy Information Administration, "Manufacturing Energy Consumption Survey," October 13, 2016.[85]

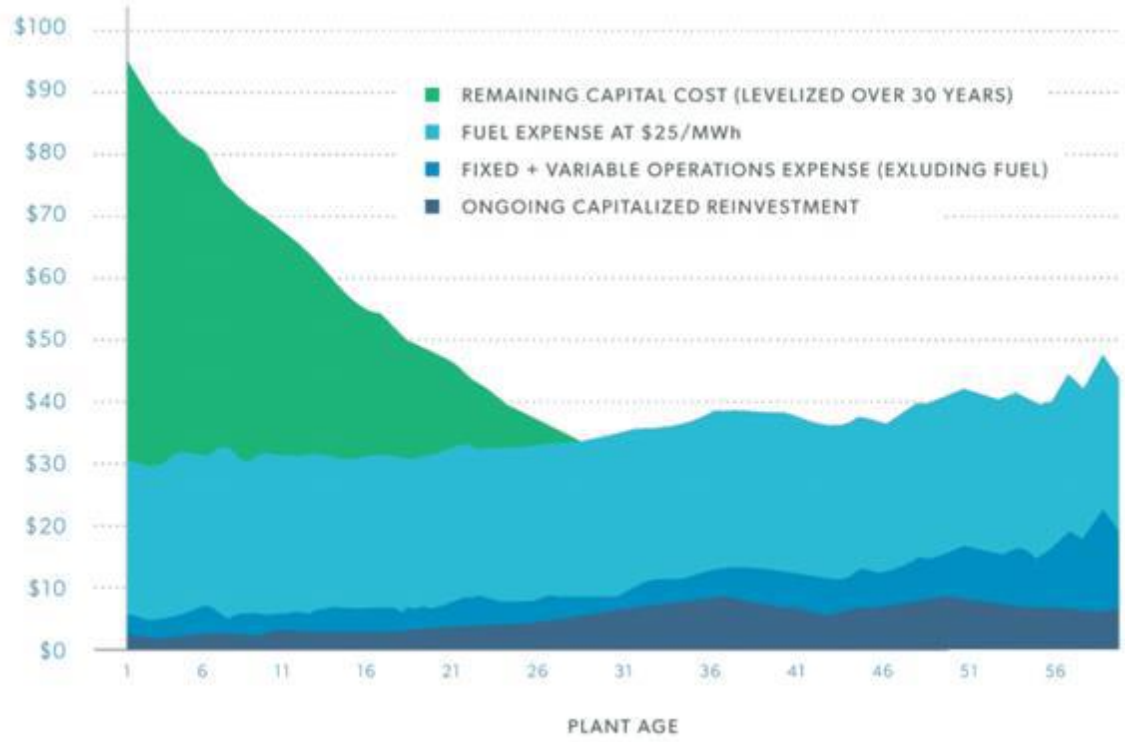
Higher energy costs are much like higher taxes, lower energy costs like lower taxes, particularly for manufacturing, which is energy intensive. America's world leading supply of reliable, low cost energy gives America a major advantage in the global economy, particularly regarding manufacturing, aiding President Trump in achieving his goal. America's booming energy supplies, already lowering energy costs, are already causing a renaissance in American manufacturing, which is a major factor promoting booming American economic growth.

But under unnecessary, counterproductive regulation like the old, Obama-era Clean Power Plan, this crucial energy advantage enjoyed by America would be lost. Energy prices would soar, like they have in Germany, because 1) coal-fired electricity generation will decline, increasing electricity prices, and 2) increasing use of natural gas for electricity generation will put upward price pressure on natural gas prices. That would preempt the opportunity for the renaissance of American manufacturing, a central President Trump policy.

Prematurely shuttering existing coal plants would further cause electricity prices to increase because existing plants can generate electricity more affordably than new power plants, since they have already paid off much of the up-front capital and financing costs. Much like it is less expensive to live in a house after the mortgage has been completely paid off, these power plants are able to reduce their prices and still make a profit on the electricity they sell (See Figure 19).

[85] U.S. Energy Information Administration, "Manufacturing Energy Consumption Survey," October 13, 2016, https://www.eia.gov/consumption/manufacturing/reports/2014/pre_estimates/?src=%E2%80%B9%20Consumption%20%20%20%20%20%20Manufacturing%20Energy%20Consumption%20Survey%20(MECS)-f1

Figure 19
LCOE from Coal in 2012 $/MWh by Plant Age
30-Year Outlook

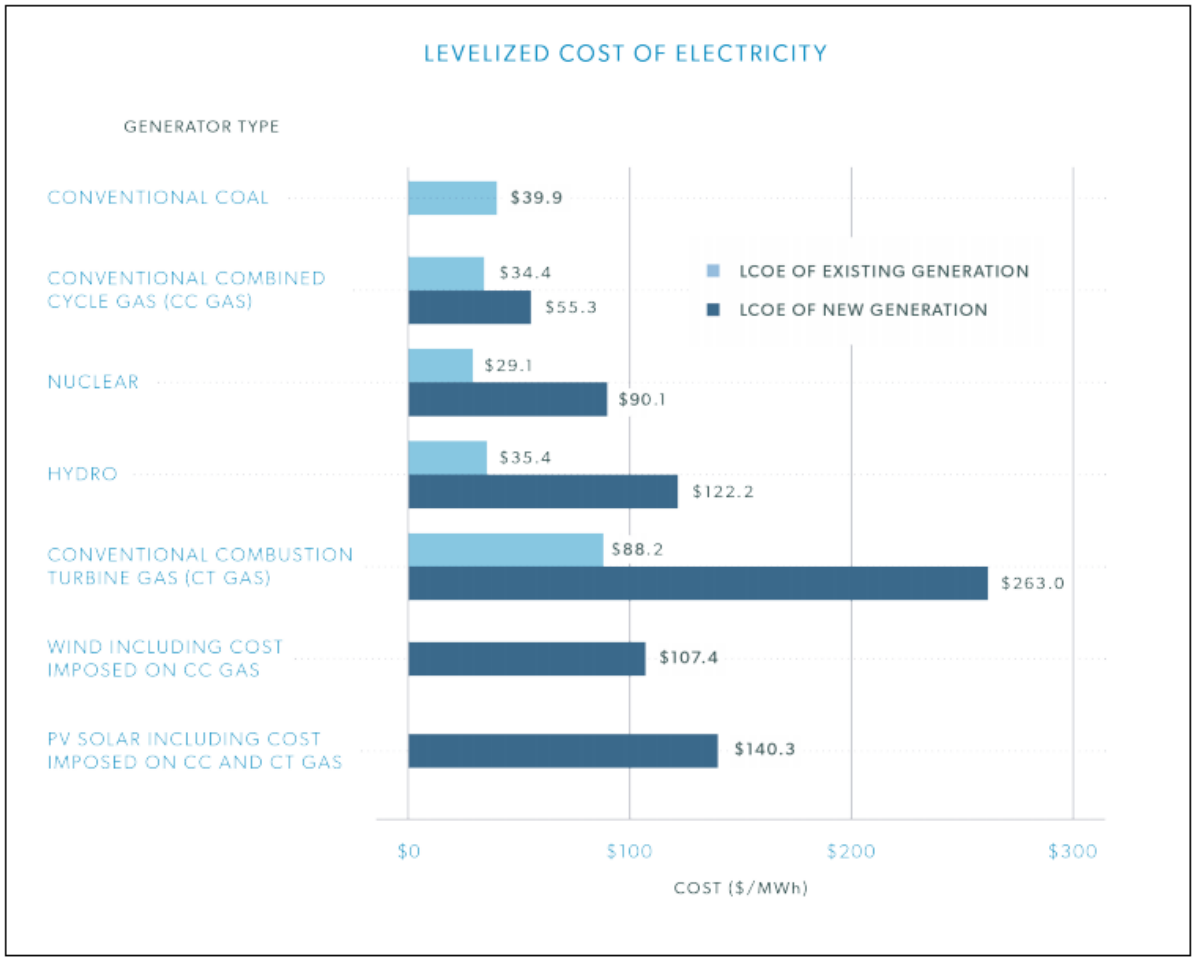


Analyses of the changes in going-forward costs for both coal and nuclear plants show these costs increase by less than 1 percent per year over the observed age distribution of existing plants. At an average age of 38 years, the typical existing coal-fired power plant will likely not be economic to retire and replace for another decade or more. *Source*: Tom Stacy and George Taylor, *The Levelized Cost of Electricity from Existing Generation Resources*, Institute for Energy Research, July 2016, page 22.

Electricity generation from existing natural gas, coal, nuclear, and hydro power is consequently significantly less expensive than new generating resources. In many cases, existing electricity resources can generate electricity for one-third the cost of new wind power and one-quarter of the cost of new solar. For example, Stacey and Taylor say existing coal-fired power plants generate reliable electricity at a cost of $39.9 per megawatt-hour on average, existing nuclear for $29.1/MWh, natural gas $34.4/MWh, and hydroelectric for $35.4. Each of these resources is about one-third of the cost of new wind production, which generates electricity at a cost of

$107.4/MWh (see Figure 20).[86] So, less reliable renewable energy costs three times as much as reliable conventional energy.

Figure 20



Electricity generation from existing natural gas, coal, nuclear, and hydro power is significantly less expensive than new generating resources. In many cases, existing electricity resources can generate electricity for one-third of the cost of new wind power and one quarter of the cost of new solar.

The lowest possible electricity rates will only be achieved by keeping existing generating resources in operation until their product becomes uneconomic compared to the cost of replacing it.[87]

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[86] Tom Stacy and George Taylor, "The Levelized Cost of Electricity From Existing Generation Resources," The Institute for Energy Research, July 2016, http://instituteforenergyresearch.org/wp-content/uploads/2016/07/IER_LCOE_2016-2.pdf.

[87] Tom Stacy and George Taylor, "The Levelized Cost of Electricity From Existing Generation Resources," The Institute for Energy Research, July 2016, http://instituteforenergyresearch.org/wp-content/uploads/2016/07/IER_LCOE_2016-2.pdf.

The manufacturing and industrial sectors of the economy accounted for approximately one-third of total energy consumption in the U.S in 2015.[88] Aside from labor, the cost of energy is one of the largest expenses for energy-intensive businesses such as steelmaking, manufacturing, fertilizer production, aluminum processing, and plastics manufacturing.

Revolutionary improvements in horizontal drilling technology and exploration technology, combined with increased use of hydraulic fracturing (a proven technique more than 70 years old), produced a natural gas boom in the U.S. As a result, the United States has the lowest natural gas prices of any developed nation, which gives American firms a distinct competitive advantage when competing against foreign firms in the global marketplace (See Figure 21). This advantage has already begun to produce a significant renaissance in American manufacturing.

Figure 21

Natural gas prices in the United States are significantly lower than in other industrialized nations because hydraulic fracturing has made the United States the largest producer of natural gas in the world. Although the price differential

[88] National Academies of Science, Engineering and Medicine, "How We use Energy," Accessed July 30, 2017. http://needtoknow.nas.edu/energy/energy-use/industry/.

between the US and the world has declined in the most recent years due to larger supplies of liquid natural gas, large differences are estimated to persist for the foreseeable future.[89]

Industries differ significantly in their inherent technological energy intensities. For example, around 10 percent of the overall input costs for 'chemical manufacturing' and 'primary metal manufacturing' constitutes energy costs, while the nondurable consumer goods energy cost share is less than 5 percent.[90] Manufacturing overall tends to be energy intensive. The reduction in these primary energy costs has already begun to translate into energy-intensive manufacturing companies moving to the United States.

For example, low natural gas prices are one reason why Voestalpine, an Austrian steel firm, Japanese oil refiner Idemitsu Kosan, and trading house Mitsui & Co. have opened operations in the United States.[91] In total, lower energy prices generated $47 billion in economic opportunity, nearly $25 billion in labor income, and the equivalent of 387,500 jobs in 2015. [92]

Gains in investment and job creation are only expected to grow in the coming years. The American Chemical Society recently announced the chemicals industry will invest more than $130 billion in the coming decade, creating roughly 462,000 new jobs for workers at these facilities.[93] A PricewaterhouseCoopers report found the annual costs savings from low natural gas prices could spur nearly a million manufacturing jobs by 2030 and 1.41 million jobs by 2040.[94]

In contrast, the International Energy Agency estimates Europe will *lose* one-third of its global market share of energy-intensive exports over the next two decades because European energy prices will stay stubbornly higher than US energy prices. European gas import prices are significantly higher than in the US while industrial

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[89] BP Global, "Natural Gas Prices," BP Statistical Review, Accessed July 30, 2017, http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/natural-gas/natural-gas-prices.html

[90] Rabah Arezki, "Fracking Has Made U.S. Manufacturing More Competitive," *The London School of Economics and Political Science*, December 16, 2016, http://blogs.lse.ac.uk/businessreview/2016/12/16/fracking-has-made-us-manufacturing-more-competitive/.

[91] "Shale Boom Sparks U.S. Industrial Revival," CNBC, March 26, 2013, http://www.cnbc.com/id/100592605.

[92] U.S Chamber of Commerce Institute for 21st Century Energy, "What if America's Energy Renaissance Never Actually Happened?" September 22, 2016, http://www.energyxxi.org/sites/default/files/er-fullreport-16.pdf.

[93] Id.

[94] Beth Gillin, "Shale Gas Provides Major Boost to US Manufacturing," PricewaterhouseCoopers Business Advocate, January 10, 2015, https://mcdonaldhopkins.com/Insights/Blog/Energy-Insights/2015/01/10/shale-gas-provides-major-boost-to-us-manufacturing.

electricity prices are about twice as high, creating an energy price gap some experts expect to last "at least 20 years."[95]

Low energy prices provide a large competitive advantage to American manufacturing firms and other energy-intensive industries. Therefore, energy policies that prioritize domestic production, including coal, oil, and natural gas, truly put "America First" in both a tangible and metaphorical sense, with the resulting investments creating hundreds of thousands of advanced, good paying, manufacturing jobs. The choices facing the American economy are indeed stark as Moore and White say – booming, world leading growth once again, versus long term American economic stagnation and decline.

C. The resulting American economic renaissance would ultimately eliminate poverty in America.

With the world leading oil industry, the world leading natural gas industry, and the world leading coal industry all in one economy, America is now poised to finally win the War on Poverty after all these years, eliminating poverty in America entirely. That is because a good paying job is the world leading solution for poverty, especially if welfare and education policies are also reformed.

President Trump has already reignited booming American economic growth, which over the past year has already increased by more than 50% from the stagnant, less than 2% real growth per year averaged by President Obama over his entire 8 years in office. The stock market used to be recognized as a leading economic indicator, and the all-time records already set in the markets during Trump's first year portend further, even faster growth.

That was achieved by President Trump's deregulation, and expected tax reforms that have now been enacted. Now the further extension of that through further energy deregulation will liberate America for energy independence and even dominance, leading the world in all three of the fossil fuels that powered the Industrial Revolution, and the booming growth that created the modern world and rapidly declining poverty throughout the globe.

Indeed, under current U.S. law, any job will eliminate poverty for any family. That is because the minimum wage under current law, plus the current Earned Income

[95] Pilita Clark, "Energy Price Gap with the US to Hurt Europe for 'At Least 20 Years," *Financial Times*, January 29, 2014, https://www.ft.com/content/80950dfe-8901-11e3-9f48-00144feab7de.

Tax Credit, plus the newly increased child tax credit under tax reform, equals or exceeds the poverty line for every possible family combination – a single mother with one child, single mom with two children, single mom with three children, etc.[96]

The just enacted tax reform now going into effect will stimulate the economy to even faster growth, achieving the long overdue full recovery from the 2008-09 recession.[97] That will mean even more good paying jobs, and even faster elimination of poverty in America. The alternative roads for America grow even more stark.

Granting this Petition to Reopen and Reconsider the Endangerment Finding would provide the opportunity to further President Trump's policies that are producing these dramatically positive results.

CONCLUSION

For all the foregoing reasons, the FAIR Energy Foundation respectfully submits that the EPA should grant this Petition to Reopen and Reconsider the Endangerment Finding, and ultimately withdraw and rescind that finding, opening the way to even more pro-growth energy deregulation.

Respectfully submitted,

Dave Wallace
President
FAIR Energy Foundation
805 15th St. NW, Suite 100
Washington, DC 20005
Phone: 410-984-2194
dave.wallace@fairenergyfoundation.org

[96] Peter J. Ferrara, *Power to the People: The New Road to Freedom and Prosperity for the Poor, Seniors, and Those Most in Need of the World's Best Health Care* (Arlington Heights, IL: The Heartland Institute, 2015).
[97] Peter J. Ferrara, Why the United States Has Suffered the Worst Economic Recovery Since the Great Depression, Heartland Institute Policy Brief, August 1, 2016.