



**PEABODY ENERGY**  
Peabody Plaza  
701 Market Street  
St. Louis, MO 63101-1826  
314.342.3400

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VIA E-MAIL ( [GCC.guidance@ceq.eop.gov](mailto:GCC.guidance@ceq.eop.gov) )

Mr. Horst Greczmiel  
Associate Director for NEPA Oversight  
Council on Environmental Quality  
722 Jackson Place, NW  
Washington, D.C. 20503

Re: Revised Draft Guidance for Federal Departments and Agencies Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews, 79 Fed. Reg. 77,802 (December 24, 2014)

Dear Mr. Greczmiel:

Peabody Energy Corporation (“Peabody”) submits the following comments in response to the Council on Environmental Quality’s (“CEQ’s”) Revised Draft Guidance for Federal Departments and Agencies Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews, 79 Fed. Reg. 77,802 (December 24, 2014) (“Revised Draft Guidance”).

## **INTRODUCTION AND SUMMARY OF COMMENTS**

Peabody is the world’s largest private-sector publicly-traded coal company and the largest producer of coal in the United States. Peabody’s products fuel approximately 10 percent of America’s and 2 percent of the world’s electricity. In 2013, 73% of Peabody’s total coal sales (by volume) were to U.S. electricity generators in nearly 40 states. Peabody has over 7 billion tons of proven and probable coal reserves in the United States. In addition to Peabody’s mining operations, Peabody markets and brokers coal from its operations and other coal producers, and trades coal and freight-related contracts in the U.S. and abroad. Peabody also has an ownership interest in a 1,600 megawatt coal-fueled electricity generation plant in the United States. Peabody thus has an important interest in the manner in which federal agencies consider greenhouse gas (“GHG”) emissions and “climate change” as part of their review under the National Environmental Policy Act (“NEPA”).

In expanding NEPA’s purview to considerations of speculative GHG-related “impacts” from proposed Federal actions, the Revised Draft Guidance is an answer in search of a problem.

It constructs a pretext to regulate a non-existent harm and is based on flawed assumptions and conjectures that defy actual data. The most ubiquitous “greenhouse gas,” carbon dioxide, is a benign gas that is essential for all life. While the benefits of carbon dioxide are proven, the alleged risks of climate change are contrary to observed data, are based on admitted speculation, and lack adequate scientific basis. To presume, as the Revised Draft Guidance does, that particular federal actions might have measurable relationships to “climate change” at all is also baseless. It would be arbitrary and illegal to expand NEPA’s reach based on speculative and flawed considerations.

The Administration’s efforts to unilaterally impose restrictions on development of energy resources based on supposed climate change implications raises significant constitutional implications as well. The Revised Draft Guidance implements a fundamental policy approach toward severely restricting the country’s energy resource development, among other activities, without approval by Congress. It is one thing for federal agencies to take internal actions to address their own greenhouse gas emissions, but it is quite another for CEQ to require federal agencies to incorporate speculative “climate change” considerations into the determinations that affect and will likely halt many private projects, absent congressional authority to do so. Such overreaching exceeds CEQ’s authority and violates the separation of powers.

EPA is attempting a similarly unauthorized and unconstitutional action with its so-called “Clean Power Plan.” As noted constitutional scholar Laurence Tribe recently testified in Congress regarding the “Clean Power Plan,” “EPA possesses only the authority granted to it by Congress. It lacks ‘implied’ or ‘inherent’ powers. Its gambit here raises serious questions under the separation of powers, Article I, and Article III, because EPA is attempting to exercise lawmaking power that belongs to Congress and judicial power that belongs to the federal courts. The absence of EPA legal authority in this case makes the Clean Power Plan, quite literally, a ‘power grab.’”<sup>1</sup>

Professor Tribe continued: “Even if the [Clean Air] Act could be stretched to usurp state sovereignty and confiscate business investments the EPA had previously encouraged and in some cases mandated, as this plan does, the duty to avoid clashing with the Tenth and Fifth Amendments would prohibit such stretching.”<sup>2</sup> “EPA is attempting an unconstitutional trifecta: usurping the prerogatives of the States, Congress and the Federal Courts – all at once. Burning the Constitution should not become part of our national energy policy.”<sup>3</sup>

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<sup>1</sup> Testimony of Laurence H. Tribe, “EPA’S Proposed 111(d) Rule for Existing Power Plants: Legal and Cost Issues,” Hearing before the Subcommittee on Energy and Power, House Committee on Energy and Commerce, at ii (Mar. 17, 2015), available at <http://docs.house.gov/meetings/IF/IF03/20150317/103073/HHRG-114-IF03-Wstate-TribeL-20150317-U1.pdf>.

<sup>2</sup> *Id.*

<sup>3</sup> *Id.*

The same concerns are apparent here. By instructing Federal agencies to consider the “foreseeable effects” of GHG emissions (even though there are no demonstrated foreseeable effects of *any* GHG emissions), CEQ has essentially issued its own *de facto* climate change regulation, which can be used by project opponents and agencies alike to thwart otherwise desirable and beneficial projects. The expansion of CEQ’s power is not authorized by law and will upset well-settled, investment-based expectations of those who have been encouraged to develop energy resources on federal land and elsewhere. Accordingly, Peabody objects to CEQ’s attempt to require federal agencies to consider supposed climate change impacts in their assessment of proposed Federal actions.

This is not the first time that CEQ has attempted to confront “climate change.” In 1981, CEQ issued a report,<sup>4</sup> based on nothing more than predictive modeling of the same type it relies on now, asserting climate risks in a way that is comparable (if not almost identical) to current warnings of apocalyptic dangers – risks that observational data since 1981 have proven to be non-existent.

In 1981, CEQ predicted that if no action were taken to curb fossil-fuel use, the world would face a temperature increase of approximately 3 degrees C by the year 2025.<sup>5</sup> The 1981 report stated that a CO<sub>2</sub>-related global warming running up to the 3-degree increase “should be observable now or sometime within the next 2 decades.”<sup>6</sup> Yet real-world data disprove the CEQ’s original model-based prediction of dramatic increases in global temperatures.

CEQ predicted that if “little global action is taken to control CO<sub>2</sub> emissions over the next several decades,” the world could be “faced with a drastically altered climate sometime in the next half of the next century.”<sup>7</sup> CEQ described the scenario:

In the short time span of a little more than a decade, the earth’s average temperature increases several degrees Celsius, much larger increases occur in the polar regions. Precipitation patterns shift dramatically from the average of the previous several hundred years. . . . U.S. agricultural production declines sharply due to the extremely arid conditions over most of what were prime agricultural regions. Marginal agricultural areas in many arid and semi-arid regions of the world become unproductive, with particularly serious impacts on many less developed countries.<sup>8</sup>

*None* of these dire predictions has come to pass. In fact, in the nearly 35 years since the CEQ issued its report, reliance on carbon-based fuels has powered unparalleled human progress,

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<sup>4</sup> CEQ, *Global Energy Futures and the Carbon Dioxide Problem* (1981) (“1981 Report”).

<sup>5</sup> *Id.* at 5, 35.

<sup>6</sup> *Id.* at 52

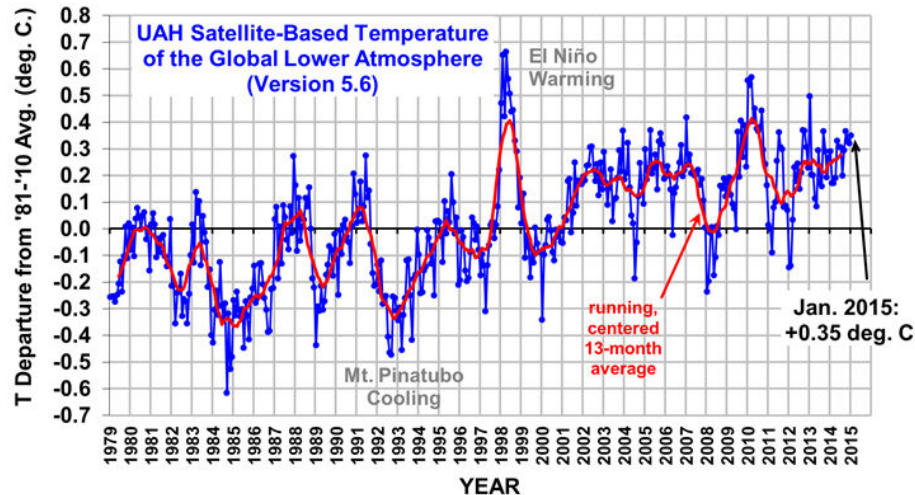
<sup>7</sup> *Id.* at 28-29

<sup>8</sup> *Id.* at 29.

with hundreds of millions of people lifted out of poverty, and people the world over living longer and better lives. Agricultural production has repeatedly hit record levels, and the Earth is *greening*, not becoming more arid. Increases in CO<sub>2</sub> emissions worldwide have led to prosperity, not to the predicted global temperature increases or adverse effects.

Thus, the Revised Draft Guidance is premised on a series of errors and false assumptions, which render it unfit for adoption:

- Observational Data Disprove Alarmist Predictions of Significant Climate Change.** Contrary to CEQ’s modeling-based predictions published in 1981, real-world observational data show that global average surface temperatures have not significantly increased. The latest global average tropospheric temperatures based on NOAA satellite data (the most reliable form of measurements) show a warming of (at most) **0.35° C**, or a rate of approximately 1° C per century —significantly *less* than CEQ’s speculated warming of 3 degrees C by 2025.<sup>9</sup>



A March 2015 report by 13 esteemed scientists (including the Assistant Director of Programs, Science and Technology Policy at the United States Department of the Interior) explained that “[t]he temperature is virtually unchanged from that at the beginning of the century. . . . [T]he question is not about warming per se but about how much warming there will be compared to natural variability. The available evidence is entirely consistent with the answer ‘not much.’”<sup>10</sup>

<sup>9</sup> Source: <http://www.drroyspencer.com/latest-global-temperatures/>.

<sup>10</sup> Prof. Robert Carter, Prof. Ross McKittrick, Prof. Vincent Courtillot, Prof. Ian Plimer, Prof. Freeman Dyson, Dr. Matt Ridley, Prof. Christopher Essex, Sir Alan Rudge, Dr. Indur Goklany, Prof. Nir Shaviv, Prof. Will Happer, Prof. Fritz Vahrenholt, Prof. Richard Lindzen, “The Small Print: What The Royal Society Left Out” 1, 8 (Global Warming Policy Foundation March 2015).

- **Observational Data Contradict Predictive Computer Models, Demonstrating Their Scientific Unreliability.** The computer models on which global warming predictions rely cannot account for the real-world lack of warming. In fact, a 2008 report from the National Oceanic and Atmospheric Administration (NOAA) acknowledged that a “pause” or “hiatus” in warming of 15 years or more would invalidate current models: “The simulations rule out (at the 95% level) zero trends for intervals of 15 yr or more . . . .”<sup>11</sup> That trend has now occurred, and it demonstrates that the existing models are fatally flawed. The models contain further defects and cannot meet the NEPA standard for assessments because they are unduly speculative.
- **The Revised Draft Guidance Would Allow Federal Agencies to Ignore The Proven Benefits Of Higher CO<sub>2</sub> Levels For Plants And Vegetation.** Any assessments under NEPA must account for the environmental benefits of a given project. CO<sub>2</sub> is essential to plant growth, and numerous studies have documented that rising CO<sub>2</sub> levels will increase vegetation, even in arid regions such as the Sahara Desert. “[S]cientists are agreed that the extra carbon dioxide in the air has contributed to an improvement in crop yields and a roughly 14% increase in the amount of all types of green vegetation on the planet since 1980.”<sup>12</sup> That effect is documented and already occurring. A recent study by the Commonwealth Scientific and Industrial Research Organisation (Australia’s national science agency), in collaboration with the Australian National University, found (based on satellite observations) that higher levels of CO<sub>2</sub> have helped increase green foliage across the world’s arid regions over the past 30 years. The study found an 11 percent increase in foliage cover from 1982-2010 across Australia, North America, the Middle East and Africa.<sup>13</sup>

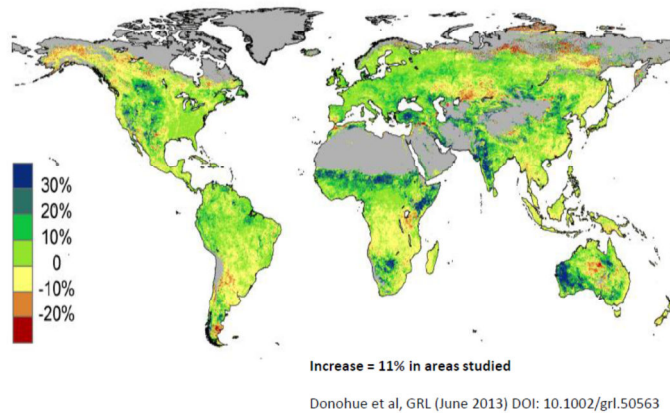
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<sup>11</sup> Peterson, T. C., and M. O. Baringer, Eds., 2009: State of the Climate in 2008. *Bull. Amer. Meteor. Soc.*, **90**, S1–S196.

<sup>12</sup> Matt Ridley, *Fossil Fuels Will Save the World (Really)*, Wall St. J., Mar. 13, 2015 (available at <http://on.wsj.com/1CdXe05>)

<sup>13</sup> CSIRO, *Deserts “Greening” from Rising CO<sub>2</sub>*, July 3, 2013, available at <http://www.csiro.au/Portals/Media/Deserts-greening-from-rising-CO2.aspx> (summarizing recent study by Donohue, et al.)

Global Greening From CO2 Fertilization: 1982-2010



Similarly, a National Geographic report found that “[s]cientists are now seeing signals that the Sahara desert and surrounding regions are greening due to increasing rainfall. If sustained, these rains could revitalize drought-ravaged regions, reclaiming them for farming communities.”<sup>14</sup> The report added that “[t]his desert-shrinking trend” could lead to a “return to conditions that turned the Sahara into a lush savanna some 12,000 years ago” and that “rising temperatures could benefit millions of Africans in the driest parts of the continent.”<sup>15</sup> According to Robert Mendelsohn of Yale’s School of Forestry and Environmental Studies and Department of Economics, “projections suggest that global warming may be slightly beneficial to American agriculture.”<sup>16</sup>

- **Any Assessment Of Environmental Impacts Must Include Consideration Of The Most Important “Environment” Of All: The *Human Environment*.** The Revised Draft Guidance fails to allow consideration of the societal impacts of a project, which intrinsically biases NEPA against future development of our country’s energy resources, including coal. This flies in the face of NEPA’s own statutory mandate, which requires Federal agency consideration of the *human environment*.<sup>17</sup> Under CEQ’s own NEPA regulations, the human environment includes economic and social effects of an action as well as environmental effects, necessarily including beneficial effects.<sup>18</sup>

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<sup>14</sup> Sahara Desert Greening Due to Climate Change?, National Geographic News (July 31, 2009), available at <http://news.nationalgeographic.com/news/2009/07/090731-green-sahara.html>.

<sup>15</sup> *Id.*

<sup>16</sup> Mendelsohn et al., *The Impact of Global Warming on Agriculture: A Ricardian Analysis*, 84 AM. ECON. REV. 753, 769 (1994).

<sup>17</sup> NEPA § 102(2)(c), 42 U.S.C. § 4332(2)(c) (requiring federal agencies to prepare impact statements for “major Federal actions significantly affecting *the quality of the human environment*”).

<sup>18</sup> CEQ defines human environment at 40 CFR 1508.14:

The importance of the human environment was recognized by governments worldwide shortly after NEPA's enactment. In the seminal "Declaration of the United Nations Conference on the Human Environment" in 1972 ("Stockholm Declaration"), the countries of the United Nations emphasized that alleviating poverty is a precondition to environmental improvement, and that environmental regulation cannot ignore, and must support, improving the social welfare of all peoples. As the Stockholm Declaration made clear, "[o]f all things in the world, people are the most precious. It is the people that propel social progress, create social wealth, [and] develop science and technology..."<sup>19</sup> The Stockholm Declaration further recognized that:

- "Both aspects of man's environment, the natural and the man-made, are essential to his well-being and to the enjoyment of basic human rights, the right to life itself."<sup>20</sup>
- "Economic and social development is essential for ensuring a favorable living and working environment for man and for creating conditions on earth that are necessary for the improvement of the quality of life."<sup>21</sup>
- "Millions continue to live far below the minimum levels required for a decent human existence, deprived of adequate food and clothing, shelter and education, health and sanitation."<sup>22</sup>

The Declaration also set forth a series of principles central to human progress, including the propositions that "[d]evelopment is needed to improve the environment," that "[e]nvironment policy must not hamper development," and that "[s]cience and technology must be used to improve the environment."<sup>23</sup> Thus from the Stockholm Declaration was born national and international environmental regulation based on

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"Human environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. (See the definition of "effects" (Sec. 1508.8).) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.

<sup>19</sup> Declaration of the United Nations Conference on the Human Environment, June 16, 1972, available at <http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=97&ArticleID=1503>.

<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

known health risks and improvements in pollution control technology, without sacrificing social welfare.

The United Nation reaffirmed in a 2012 Rio Declaration that “[e]radicating poverty is the greatest global challenge facing the world today and an indispensable requirement for sustainable development. In this regard we are committed to freeing humanity from poverty and hunger as a matter of urgency.”

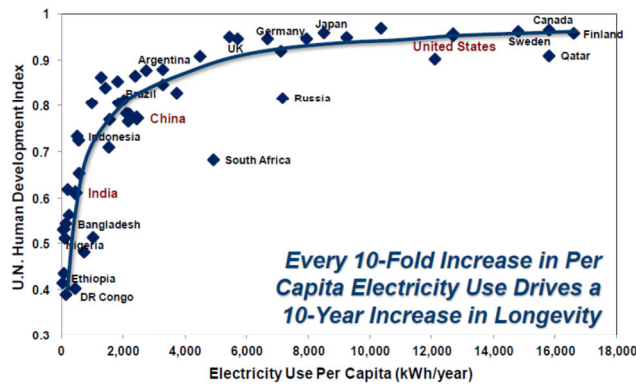
Coal, which provides reliable and affordable energy, is central to achieving these goals. Not only have worldwide GDP, life expectancy, and crop production soared since 1981 (contrary to the predictions of the 1981 CEQ Report), but for the last two centuries global life expectancy has doubled, population has increased eight times, and incomes have increased eleven times. Fossil fuels, chiefly coal, have helped power this progress.

Coal has helped raise society after society out of poverty and supply the benefits of modern life across the globe. In the words of the Chief Economist and Director of Global Energy Economics at the International Energy Agency in Paris, “The importance of coal in the global energy mix is now the highest since 1971 [... Coal is] the fuel underpinning the rapid industrialization of emerging economies, helping to raise living standards and lift hundreds of millions of people out of poverty.”<sup>24</sup> Quite simply, electricity is essential for human progress, welfare and longevity:

### Electricity Enables People to Live Longer and Better



United Nations Links Affordable Energy to Quality of Life



Source: CIA World Fact Book, United Nations Development Program's Human Development Report.

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<sup>24</sup> Fatih Birol, “Coal’s Role in the Global Energy Mix: Treading Water or Full Steam Ahead?”, “The Official Journal of the World Coal Industry, (May 20, 2013), available at <http://cornerstonemag.net/coal-roles-in-the-global-energy-mix-treading-water-or-full-steam-ahead/>.



- **Consideration of Speculated “Climate Change” Impacts Violates NEPA’s Limitation to Only Effects That Have Proximate Causation.** Under NEPA, an agency has no duty to consider indirect effects unless there is a “reasonably close causal relationship” that would qualify as a “proximate cause” under tort law.<sup>25</sup> In addition to the above-described issues, climate change cannot meet that standard because it is a global issue. U.S. emissions of CO<sub>2</sub> inevitably intermingle with emissions from other countries, and the U.S. is not the top or fastest growing emitter. Secretary of State John Kerry has acknowledged that “[e]ven if the United States somehow eliminated all of our domestic greenhouse gas emissions, it still wouldn’t be enough to counteract the carbon pollution coming from China and the rest of the world.”<sup>26</sup> Even if carbon emissions were to lead to indirect effects (and the observational data refute that claim), the NEPA “proximate cause” standard could not be satisfied.
- **The Federal Social Cost of Carbon Is Flawed And Should Not Be Used In Any NEPA Assessment.** The Federal Social Cost of Carbon (“SCC”) statistic should not be used in NEPA assessments because it is a flawed and arbitrary figure, and is based on the same speculations that are controverted by observed fact.
- **The Revised Draft Guidance Should Not Be Applied to Federal Land Management Decisions.** The Revised Draft Guidance reverses the 2010 original draft guidance and would require application of the guidance to all federal land management decisions and projects. This reversal is a mistake. The 2010 guidance properly recognized that there are no established federal protocols for assessing the GHG impacts of land management techniques, and CEQ does not propose any. Agencies are ill-equipped to conduct any kind of analysis of climate-related effects from land use decisions, and the lack of any protocol or guidance instructing the agencies will lead to widely varying results, greater uncertainty, and likely greater opportunity for litigation from those who might challenge any particular project.
- **The Revised Draft Guidance will halt significant, beneficial projects.** The Revised Guidance will aggravate the already-well known delays for major projects under NEPA. Beneficial projects will be halted altogether due to the complete speculation that would be required of the Federal agencies (and the courts that review their actions) and the certain litigation that will result over any project subject to the Revised Draft Guidance. The Revised Draft Guidance will take an already cumbersome and unpredictable NEPA process and turn it into an unworkable, project-killing disaster that will result in lost jobs, reduced investment, and stifled economic growth. The Revised Draft Guidance should be withdrawn.

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<sup>25</sup> *Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 774 (1983).

<sup>26</sup> John Kerry, “China, America and Our Warming Planet,” N.Y. Times, Nov. 11, 2014, available at <http://www.nytimes.com/2014/11/12/opinion/john-kerry-our-historic-agreement-with-china-on-climate-change.html>.

## DISCUSSION

### I. History Demonstrates that CEQ's Predictions of GHG-Related "Climate Change" Are Mere Speculation and Unfounded.

The Revised Draft Guidance states that "Federal agencies, to remain consistent with NEPA, should consider the extent to which a proposed action and its reasonable alternatives contribute to climate change through GHG emissions and take into account the ways in which a changing climate over the life of the proposed project may alter the overall environmental implications of such actions."<sup>27</sup> However, under CEQ's NEPA regulations, an agency's obligation to evaluate indirect and cumulative impacts is limited to those effects that are "reasonably foreseeable."<sup>28</sup> Indeed, CEQ has reaffirmed that "[t]he focus should be and remains on the foreseeability of identifying potential effects and the extent of those effects."<sup>29</sup>

However, "[r]easonable foreseeability" does not include 'highly speculative harms' that 'distort[] the decisionmaking process.'<sup>30</sup> The relationship between GHG emissions and any climate change has not been proven and, if anything, has been refuted by observed data over the last three decades. Yet the Revised Draft Guidance would allow (if not force) federal agencies to consider highly speculative causes and effects based on flawed science, which will surely result in "distorted" decisionmaking.

#### A. CEQ's Predictions About Climate Change Are as Wrong Today as They Were in 1981.

In 1981, CEQ issued its report on *Global Energy Futures and the Carbon Dioxide Problem*. The 1981 Report opened with warnings of "far-reaching diverse consequences, affecting our ability to feed a hungry and increasingly crowded world, the habitability of coastal areas and cities, and the preservation of natural areas as we know them today."<sup>31</sup> CEQ's dire outlook at the time was based on its prediction that, if no action were taken to curb fossil-fuel use, the world would face a temperature increase of approximately 3 degrees C by the year

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<sup>27</sup> 79 Fed. Reg. at 77825.

<sup>28</sup> 40 C.F.R. §§ 1508.7, 1508(b).

<sup>29</sup> 79 Fed. Reg. at 77815.

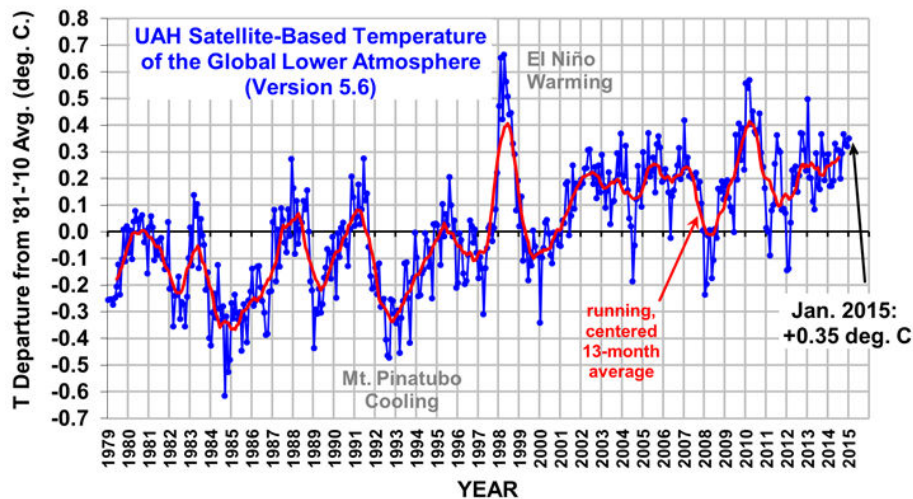
<sup>30</sup> *City of Shoreacres v. Waterworth*, 420 F.3d 440, 453 (5th Cir. 2005) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 356 (1989)) (alteration in original).

<sup>31</sup> CEQ, *Global Energy Futures and the Carbon Dioxide Problem*, at iii - iv. (1981)

2025.<sup>32</sup> This prediction was based on the “most widely accepted models” of climate change at that time.<sup>33</sup>

To CEQ’s credit, its Report acknowledged uncertainties and set forth the criteria for evaluating whether the models it relied upon were correct or erroneous based on future observable data.<sup>34</sup> CEQ explained that, if these “widely accepted models are correct,” a CO<sub>2</sub>-related global warming running up to the 2025 critical 3 degree increase “should be observable now or sometime within the next 2 decades.”<sup>35</sup>

We now have 34 years of actual observed temperature data since the 1981 Report to determine if those models were correct. **We now know they were not correct.** As the following chart shows, from 1979 to 2015, observational data show a warming of (at most) **0.35 degrees C**—significantly *less* than CEQ’s speculated warming of 3 degrees C by 2025.<sup>36</sup>



This chart displays the latest global average tropospheric temperatures based on National Oceanic and Atmospheric Administration (“NOAA”) satellite data, and it is corroborated (with 97% agreement) with data from weather balloons.<sup>37</sup> These measurements are the best available,

<sup>32</sup> *Id.* at 35, 56.

<sup>33</sup> *Id.* at 52

<sup>34</sup> *Id.* at iv-v, 52.

<sup>35</sup> *Id.* at 52

<sup>36</sup> Source: <http://www.drroyspencer.com/latest-global-temperatures/>.

<sup>37</sup> Marc Morano, *Scientists Balk at ‘Hottest Year’ Claims: Ignores Satellites Showing 18 Year ‘Pause’—We Are Arguing Over the Significance of Hundredths of a Degree*—*The ‘Pause’ Continues*, Climate Depot (Jan. 16, 2015) available at <http://www.climatedepot.com/2015/01/16/scientists-balk-at-hottest-year-claims-we-are-arguing->

more accurate and reliable than surface temperature data because surface monitoring stations have been plagued by a host of irregularities, including siting standard violations.<sup>38</sup>

A March 2015 report by 13 esteemed scientists (including the Assistant Director of Programs, Science and Technology Policy at the United States Department of the Interior) explained that “[t]he temperature is virtually unchanged from that at the beginning of the century. . . . [T]he question is not about warming per se but able how much warming there will be compared to natural variability. The available evidence is entirely consistent with the answer ‘not much.’”<sup>39</sup> “The relation of other observations such as sea-level rise, Arctic sea ice extent and ocean heat content all depend on more factors than global mean temperature, and are hardly incontrovertible evidence of warming.”<sup>40</sup> Moreover, “global sea ice levels declined for several decades but are now above their long-term mean.”<sup>41</sup> Himalayan glaciers are not retreating.<sup>42</sup> “There has been no increase in the frequency or severity of storms or droughts, no acceleration of sea-level rise. Arctic sea ice has decreased, but Antarctic sea ice has increased.”<sup>43</sup>

In short, actual *observed* global average temperatures have not risen as predicted.<sup>44</sup> In fact, there has been a much-discussed “pause” or “hiatus” in warming since 1998, during which global average surface temperatures have not significantly increased.<sup>45</sup> The “hiatus” may now be

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[over-the-significance-of-hundredths-of-a-degree-the-pause-continues/](http://www.drroyspencer.com/2015/01/2014-as-the-mildest-year-why-you-are-being-misled-on-global-temperatures/); Roy Spencer, *2014 as the Mildest Year: Why You are Being Misled on Global Temperatures*, Global Warming (Jan. 18, 2015), available at <http://www.drroyspencer.com/2015/01/2014-as-the-mildest-year-why-you-are-being-misled-on-global-temperatures/>

<sup>38</sup> The GAO found that the network of surface-temperature monitoring stations maintained by NOAA are not sited in accordance with NOAA’s standards, which state that temperature instruments should be located away from extensive paved surfaces or obstructions such as buildings and trees. *See* GAO, *Climate Monitoring: NOAA Can Improve Management of the U.S. Historical Climatology Network*, GAO 11-800 (Aug. 2011).

<sup>39</sup> Prof. Robert Carter, Prof. Ross McKittrick, Prof. Vincent Courtillot, Prof. Ian Plimer, Prof. Freeman Dyson, Dr. Matt Ridley, Prof. Christopher Essex, Sir Alan Rudge, Dr. Indur Goklany, Prof. Nir Shaviv, Prof. Will Happer, Prof. Fritz Vahrenholt, Prof. Richard Lindzen, “The Small Print: What The Royal Society Left Out” 1, 8 (Global Warming Policy Foundation March 2015).

<sup>40</sup> *Id.* at 1.

<sup>41</sup> *Id.*

<sup>42</sup> Bahuguna, et al., Are the Himalayan Glaciers Retreating?, *CURRENT SCIENCE* 1008 (Apr. 10, 2014).

<sup>43</sup> Matt Ridley, *Fossil Fuels Will Save the World (Really)*, *Wall St. J.*, Mar. 13, 2015 (available at <http://on.wsj.com/1CdXe05>)

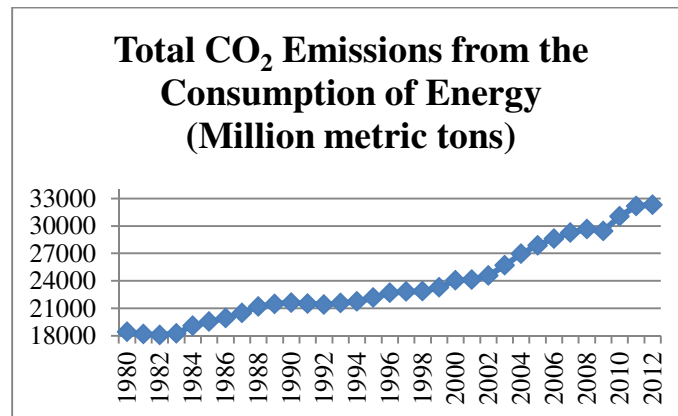
<sup>44</sup> Nick Cater, *Time for Cooler Heads to Prevail*, *The Australian*, Oct. 21, 2014, available at <http://www.theaustralian.com.au/news/time-for-cooler-heads-to-prevail/story-e6frg6n6-1227096554835>.

<sup>45</sup> Matt Ridley, *Whatever Happened to Global Warming?*, *WALL ST. J.*, (Sep. 4, 2014), online at <http://online.wsj.com/articles/matt-ridley-whatever-happened-to-global-warming-1409872855>.

as long as 26 years.<sup>46</sup> To put temperature changes in perspective: there were 30 years of slight cooling after 1940, then a burst of warming that lasted about 20 years, and then a plateau of between 17-26 years.<sup>47</sup> “It has been roughly two decades since there was a trend in temperature significantly different from zero.”<sup>48</sup>

Temperature has remained essentially static, despite rising emissions (primarily from developing countries) and CO<sub>2</sub> concentrations. The climate, in other words, is not as sensitive to CO<sub>2</sub> emissions as models predict.

Total Global CO<sub>2</sub> emissions, 1980-2012:<sup>49</sup>



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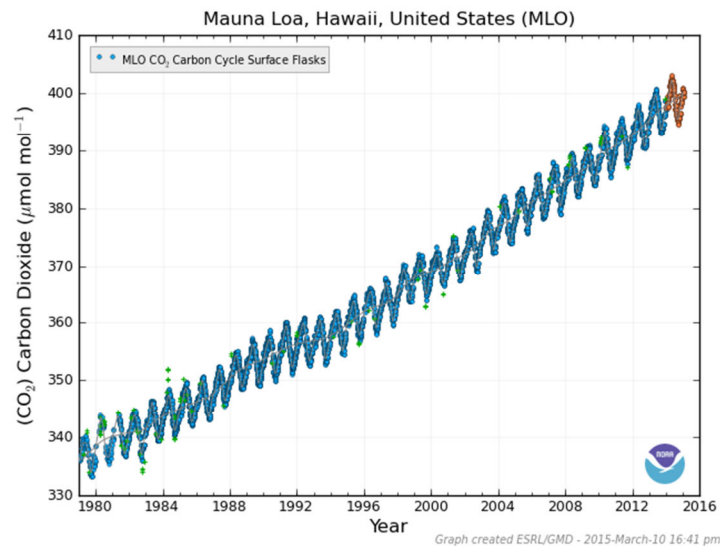
<sup>46</sup> McKittrick, R. (2014) HAC-Robust Measurement of the Duration of a Trendless Subsample in a Global Climate Time Series. *Open Journal of Statistics*, 4, 527-535. doi: [10.4236/ojs.2014.47050](https://doi.org/10.4236/ojs.2014.47050).

<sup>47</sup> Matt Ridley, *Whatever Happened to Global Warming?*, WALL ST. J., (Sep. 4, 2014), available at <http://online.wsj.com/articles/matt-ridley-whatever-happened-to-global-warming-1409872855>.

<sup>48</sup> *Id.*

<sup>49</sup> U.S. Energy Information Administration, International Energy Statistics, <http://www.eia.gov/cfapps/ipdbproject/iedindex3.cfm?tid=90&pid=44&aid=8&cid=regions&syid=1980&eyid=2012&unit=MMTCD>.

Total CO<sub>2</sub> concentrations, 1980-2015:<sup>50</sup>



The failure of the predicted increases in temperature is consistent with the most recent research regarding the earth’s “climate sensitivity,” or how much the earth’s average surface temperature is expected to rise in association with a doubling of the atmosphere’s carbon dioxide concentration. A group of noted scientists explains that the direct effect of CO<sub>2</sub> on warming “is known to be relatively small: about 1°C for a doubling of carbon dioxide levels. Most of the warming predicted in climate models arises from knock-on effects (‘feedbacks’) associated with changes to cloud cover, atmospheric humidity, and so forth. Feedback processes are mostly hypothetical and are therefore much more uncertain, and some may even have cooling effects.”<sup>51</sup> Moreover, the role of “feedback” mechanisms in predictions is enhanced, because “[e]ach additional increase of carbon dioxide levels is expected to produce less and less greenhouse warming, so it takes far more emissions to produce the second degree of warming than the first.”<sup>52</sup>

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<sup>50</sup> Source: National Oceanic & Atmospheric Administration Data Visualization, <http://www.esrl.noaa.gov/gmd/dv/iadv/>.

<sup>51</sup> Prof. Robert Carter, Prof. Ross McKittrick, Prof. Vincent Courtillot, Prof. Ian Plimer, Prof. Freeman Dyson, Dr. Matt Ridley, Prof. Christopher Essex, Sir Alan Rudge, Dr. Indur Goklany, Prof. Nir Shaviv, Prof. Will Happer, Prof. Fritz Vahrenholt, Prof. Richard Lindzen, “The Small Print: What The Royal Society Left Out” 2 (Global Warming Policy Foundation March 2015).

<sup>52</sup> *Id.* at 8.

Thus, the theory at the heart of the predictions reported by CEQ in 1981 and also at the heart of the projections assumed by CEQ for the Revised Draft Guidance, is that climate sensitivity would be greatly amplified by these “feedbacks” and result in warming of two to four degrees C a century or more (as in the case of CEQ’s 3-degree prediction by 2025). That “feedback” assumption of high “sensitivity” remains in virtually all of the mathematical models used to this day by the U.N. Intergovernmental Panel on Climate Change (IPCC), and has led to exaggerated proclamations about potential rise in global temperatures concurrent with increases in carbon dioxide concentrations.

However, the science has failed to support the assumption of strong “feedback” mechanisms. *Since 2011*, at least 14 peer-reviewed papers, published by 42 authors, many of whom are key contributors to the reports of the IPCC, have concluded that climate sensitivity is low because net feedbacks are modest or even close to zero.<sup>53</sup> They arrive at this conclusion based on observed temperature changes, ocean-heat uptake and the balance between warming and cooling emissions (mainly sulfate aerosols).<sup>54</sup> Most of these sensitivities are at least 40% below the average climate sensitivity of the models used by the U.N.’s Intergovernmental Panel on Climate Change (IPCC).<sup>55</sup> In other words, these climate sensitivities would suggest warming upon doubling of carbon dioxide concentrations significantly lower than the projections assumed by CEQ,<sup>56</sup> and well within the range that would actually benefit the environment and society, as described further below.

These conclusions would explain the failure of the Earth’s surface to warm nearly as fast as predicted over the past 35 years, despite carbon-dioxide levels rising faster than expected. During this period the warming rate has never reached even two-tenths of a degree C per decade and has slowed down to virtually nothing in the past 15 to 20 years. Indeed, the latest IPCC report did not give a “best estimate” of sensitivity and, it lowered its estimate of near-term warming.<sup>57</sup> Researchers who examined discrepancies between previous IPCC reports and observable data conclude that the impact of anthropogenic global warming over the next century,

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<sup>53</sup> Patrick Michaels and Patrick Knappenberger, *The Collection of Evidence for a Low Climate Sensitivity Continues to Grow*, September 25, 2014, available at <http://www.cato.org/blog/collection-evidence-low-climate-sensitivity-continues-grow>.

<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

<sup>56</sup> *Id.* For example, a recent paper published by scientists Judith Curry and Nicholas Lewis concludes that the best climate sensitivity estimate is just a 1.64 degree C increase upon doubling of CO<sub>2</sub> concentrations. See Lewis, N. and J.A. Curry, 2014, *The implications for climate sensitivity of AR5 forcing and heat uptake estimates*. Climate Dynamic, September 25, 2014 (prepublication version available at [https://niclewis.files.wordpress.com/2014/09/lewiscurry\\_ar5-energy-budget-climate-sensitivity\\_clim-dyn2014\\_accepted-reformatted-edited.pdf](https://niclewis.files.wordpress.com/2014/09/lewiscurry_ar5-energy-budget-climate-sensitivity_clim-dyn2014_accepted-reformatted-edited.pdf).)

<sup>57</sup> Climate Change 2014: Synthesis Report (released Nov. 1, 2014), discussed *infra*.

and even as far as equilibrium many millennia hence, may be no more than one-third to one-half of IPCC's current projections.<sup>58</sup>

Thus, there exists a "large difference of observed data from the forecasts that underlie much current policy."<sup>59</sup> In 1981, CEQ predicted significant temperature increases by now, but acknowledged uncertainty and the ability to test its models in the future. Notwithstanding the uncertainty and a complete lack of supporting observable data at the time, CEQ recommended that the federal government "should give a high priority to ensure full consideration of the CO2 problem in U.S. energy policy and planning."<sup>60</sup> We now know, with the best temperature data available, that the basis of CEQ's dire predictions and call for regulation were not only unsound, but simply wrong.

Yet, in 2015, CEQ disregards observed facts and relies on assessments and reports such as the IPCC reports that are based on the same type of flawed models, with the same dire predictions, in an attempt to affect a dramatic shift in federal policy through the NEPA review process. This is no more justified than the previous attempt in 1981, which we now know to be unsupported and based on flawed science.

**B. CEQ's Earlier Predictions of Dire Human Consequences Have Been Proven Wrong: The Human Environment Has Prospered, Not Suffered, During the Period of Projected "Warming".**

In 1981, CEQ set forth dire predictions of a hypothetical future if its call to drastically reduce fossil fuel use was not heeded:

In the short time span of a little more than a decade, the earth's average temperature increases several degrees Celsius, much larger increases occur in the polar regions. Precipitation patterns shift dramatically from the average of the previous several hundred years. . . . U.S. agricultural production declines sharply due to the extremely arid conditions over most of what were prime agricultural regions. Marginal agricultural areas in many arid and semi-arid regions of the world become unproductive, with particularly serious impacts on many less developed countries. . . . Agricultural disruption causes widespread food shortages and hunger. Massive inflation occurs as the prices of declining quantities of basic crops rapidly increase. Migration out of climatically impoverished areas is restricted by political boundaries and cultural differences.<sup>61</sup>

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<sup>58</sup> Monckton, et al., *Why Models Run Hot: Results from an Irreducibly Simple Climate Model*, SCIENCE BULLETIN 122 (Jan. 8, 2015), available at <http://wmbriggs.com/public/Monckton.et.al.pdf>.

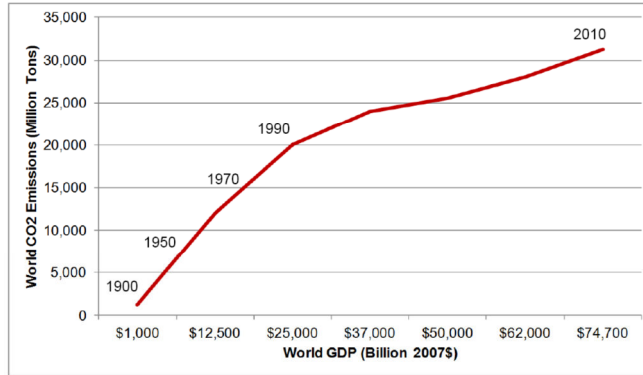
<sup>59</sup> Paul Ballonoff, *A Fresh Look at Climate Change*, Cato Journal 113 (Feb. 24, 2014), available at <http://www.insideronline.org/summary.cfm?id=21673>.

<sup>60</sup> 1981 Report, at 65

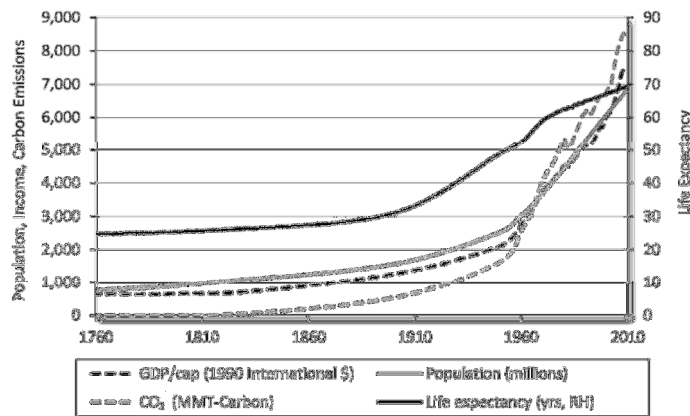
<sup>61</sup> *Id.* at 29.



Decades later, the real world we live in does not show any signs of succumbing to this apocalyptic prediction. Rather, since 1981, mankind has experienced significant growth in quality of life. Worldwide GDP has increased dramatically; there has been no “massive inflation.”

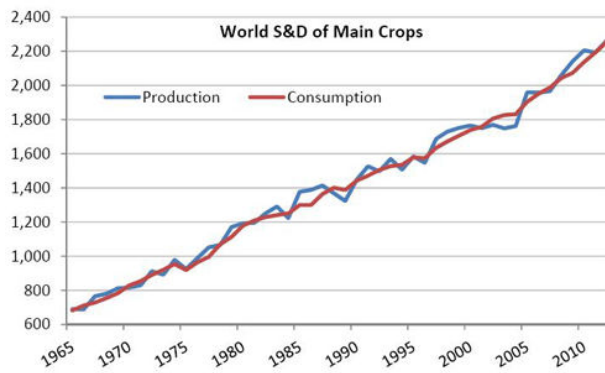
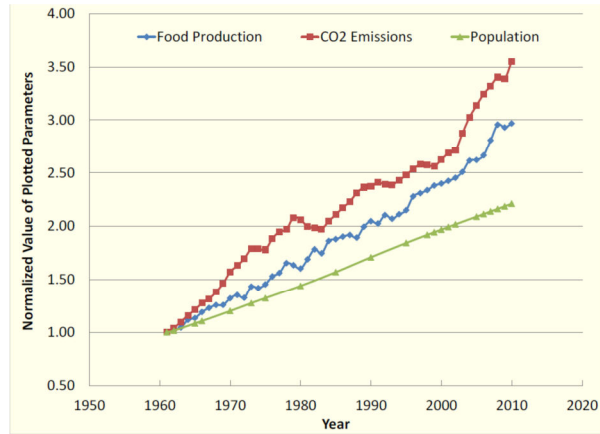


Life expectancy has increased dramatically:

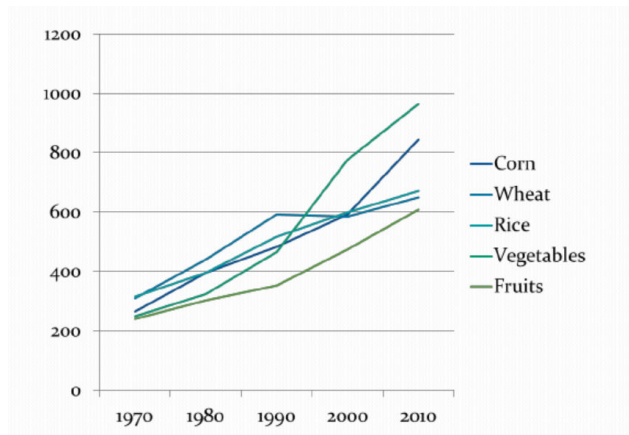


Global and U.S. crop production has increased dramatically and outpaced population growth; there have been no “declines” or “agricultural disruption”:

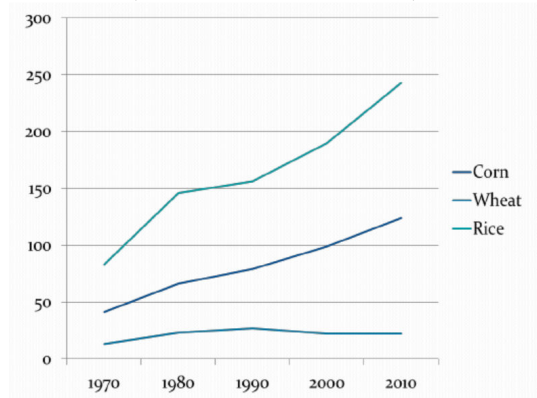
## Global Population, CO2 Emissions, and Food Production



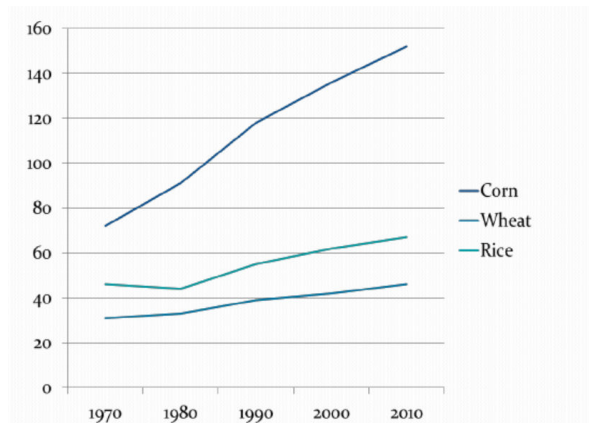
## Global Crop Production (Million Metric Tons)



### U.S. Crop Production (Million Metric Tons)



### U.S. Crop Yields Per Acre (Bushels Per Acre)



In short, CEQ’s 1981 report has been thoroughly disproven. It is deeply ironic that CEQ seeks to repeat its mistake. CEQ was wrong then, and it is wrong now.

## II. Current Climate Modeling Does Not Support or Justify the Revised Draft Guidance’s Mandate for an Analysis of Climate Change Impacts.

### A. Modern Computer Models Are Refuted by Real World Data.

The computer climate models on which global warming predictions rest cannot account for the real-world observable data. Climate scientists have conceded that a pause of 15 years or more would invalidate current models. A 2008 NOAA report explained: “The simulations rule out (at the 95% level) zero trends for intervals of 15 yr or more.”<sup>62</sup> Thus, there exists a “large

<sup>62</sup> Peterson, T. C., and M. O. Baringer, Eds., 2009: State of the Climate in 2008. *Bull. Amer. Meteor. Soc.*, **90**, S1–S196.

difference of observed data from the forecasts that underlie much current policy.”<sup>63</sup> The discrepancy between the models and observational data has led many researchers to call into question the reliability of climate models.<sup>64</sup> Many experts have noted the models’ “systematic failure.”<sup>65</sup> “The computer models in which so much faith was invested got it wrong.”<sup>66</sup> Simply put, the climate models “expected much more warming to have taken place” than what actually occurred, and the models overestimated “the sensitivity of the Earth’s average temperatures to increases in atmospheric greenhouse gas concentrations (such as carbon dioxide) . . .”<sup>67</sup> “[T]his flat period of global average temperature occurred despite that CO<sub>2</sub> emissions from human sources continued at an increased rate. The total human-produced CO<sub>2</sub> emissions in that period of flat temperatures represent a quarter of all such emissions *ever produced*.”<sup>68</sup> Some researchers have even detected a cooling trend, caused by reduced solar activity, which is thought to be the primary driver of Earth’s climate patterns.<sup>69</sup>

In short, observational data consistently refuted global warming predictions, including CEQ’s predictions in its 1981 report. In fact, the history of climate modeling reveals a persistent error in exaggerating projected warming:<sup>70</sup>

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<sup>63</sup> Paul Ballonoff, *A Fresh Look at Climate Change*, Cato Journal (Feb. 24, 2014), p. 113, available at <http://www.insideronline.org/summary.cfm?id=21673>.

<sup>64</sup> See Barbara Hollingsworth, *Climate Scientist: 73 UN Climate Models Wrong, No Global Warming in 17 Years*, CNS News, Sept. 30, 2013, available at <http://www.cnsnews.com/news/article/barbara-hollingsworth/climate-scientist-73-un-climate-models-wrong-no-global-warming-17>; see also Paul Ballonoff, *A Fresh Look at Climate Change*, Cato Journal (Feb. 24, 2014), p. 113, available at <http://www.insideronline.org/summary.cfm?id=21673>.

<sup>65</sup> *Id.* (citing Fyfe, Gillett & Zwiers, *Overestimated Global Warming Over the Past 20 Years*, *Nature*, Aug. 28, 2013; Knappenberger & Michaels, “Policy Implications of Climate Models on the Verge of Failure,” Paper delivered at the American Geophysical Union Science Policy Conference, Washington, D.C., June 24–26, 2013).

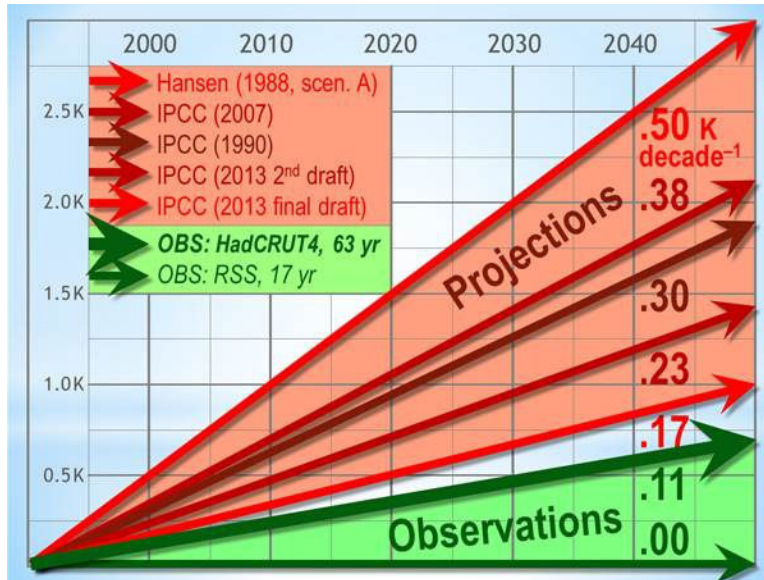
<sup>66</sup> *Id.*

<sup>67</sup> Michaels & Knappenberger, *What the New IPCC Global Warming Projections Should Have Looked Like*, Cato Institute (Oct. 4, 2013), available at <http://www.cato.org/blog/what-ipcc-global-warming-projections-should-have-looked>.

<sup>68</sup> Ballonoff, *supra*, p. 113 (emphasis added); see also *id.*, p. 114.

<sup>69</sup> John Casey, *DARK WINTER: HOW THE SUN IS CAUSING A 30-YEAR COLD SPELL* (2014).

<sup>70</sup> Christopher Monckton, *IPCC Silently Slashes Its Global Warming Predictions in the AR5 Final Draft, WATTS UP WITH THAT?* (Jan. 1, 2014), available at <http://wattsupwiththat.com/2014/01/01/ipcc-silently-slashes-its-global-warming-predictions-in-the-ar5-final-draft/>.



Attempts to resuscitate the models have failed. One theory, namely, that the “hiatus” in warming is only a short-term phenomenon because warmth is being trapped in the oceans, was recently discredited by a NASA study.<sup>71</sup> NASA’s “latest data from satellite and direct ocean temperature measurements . . . found the ocean abyss below 1.24 miles (1,995 meters) *has not warmed measurably.*”<sup>72</sup> A joint study by the University of Washington and the National Oceanic and Atmospheric Administration, published in the *Proceedings of the National Academy of the Sciences*, examined some of the few long-term oceanic observations available (the Northeast Pacific Arc, bounded roughly by Alaska, California, and Hawai’i, going back to 1900).<sup>73</sup> When the time frame is extended back to such a scope, the study shows that virtually all temperature changes can be explained by shifts in circulation and pressure: “dynamical forcing accounts for virtually all of the observed warming in NE Pacific Arc SST over the 1900–2012 period.”<sup>74</sup>

The study then applied a model for anthropogenic climate change and found that *it could not show any temperature impact* from human influence.<sup>75</sup> The largest changes in temperature

<sup>71</sup> AFP, *Lack of Ocean Heat Puzzles NASA Hunt for Warming “Hiatus,”* Oct. 21, 2014, available at <http://news.yahoo.com/lack-ocean-heat-puzzles-nasa-hunt-warming-hiatus-201944793.html>.

<sup>72</sup> See *id.* (emphasis added, internal quotation omitted).

<sup>73</sup> James A. Johnstone & Nathan J. Mantua, *Atmospheric Controls on Northeast Pacific Temperature Variability and Change, 1900-2012*, *Proceedings of the Nat’l Acad. of Sciences Early Edition 1* (published ahead of print) (Sept. 22, 2014), available at <http://www.pnas.org/content/early/2014/09/16/1318371111.short> (subscription required).

<sup>74</sup> *Id.* at 5.

<sup>75</sup> *Id.*

and circulation occurred before 1940 – before climate modelers claim a human impact.<sup>76</sup> If there has been a human impact, it has been vanishingly small, prompting one commentator to note, “The man-made warming of the past 20 years has been so feeble that a shifting current in one ocean was enough to wipe it out altogether.”<sup>77</sup> Thus, if climate modelers are right that oceans can absorb warming caused by greenhouse gases, then they have dramatically *underestimated* the ocean’s capacity to store warmth.<sup>78</sup> One recent study found that feedbacks between trade winds and sea surface temperatures in the Pacific Ocean may explain the plateau in temperatures as well as the failure of computer models to match real-world data, showing that the models are overly sensitive to warming.<sup>79</sup>

Nor are climate models supported by the recent claim that 2014 was “the hottest year on record.” This announcement was based on flawed surface-level measurements that are inaccurate and unreliable.<sup>80</sup> For example, the surface-level measurements are corrupted by the urban heat island effect.<sup>81</sup> Satellite datasets, which on the other hand are much more reliable, do not confirm the recent alarmist finding, and instead confirm the continuing hiatus in warming.<sup>82</sup>

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<sup>76</sup> *Id.*

<sup>77</sup> Matt Ridley, *Whatever Happened to Global Warming?*, WALL ST. J. (Sep. 4, 2014), available at <http://online.wsj.com/articles/matt-ridley-whatever-happened-to-global-warming-1409872855>. The study is Xianyao Chen and Ka-Kit Tung, *Varying Planetary Heat Sink Led to Global-Warming Slowdown and Acceleration*, 345 SCIENCE 897 (Aug. 2014), available at <http://www.sciencemag.org/content/345/6199/897> (subscription required).

<sup>78</sup> Eli Kintisch, *Climate Models May Have Missed Massive Ocean Warming*, SCIENCE (Oct. 5, 2014), available at <http://news.sciencemag.org/climate/2014/10/climate-models-may-have-missed-massive-ocean-warming>.

<sup>79</sup> Douville, et al., *The Recent Global Warming Hiatus: What is the Role of Pacific Variability?*, GEOPHYSICAL RESEARCH LETTERS 880 (Feb. 16, 2015).

<sup>80</sup> See NASA, *NASA, NOAA Find 2014 Warmest Year in Modern Record*, available at <http://www.nasa.gov/press/2015/january/nasa-determines-2014-warmest-year-in-modern-record/#.VOPGYPnF9dc> (Jan. 16, 2015) (discussing surface temperature collection data). See also [supra/infra] note [15] [(citing GAO, *Climate Monitoring: NOAA Can Improve Management of the U.S. Historical Climatology Network*, GAO 11-800 (Aug. 2011))] which discusses the unreliable nature of the surface temperature data used for this finding.

<sup>81</sup> See Roy Spencer, *2014 a Record Warm Year? Probably Not*, Global Warming (Dec. 4, 2014), available at <http://www.drroyspencer.com/2014/12/2014-a-record-warm-year-probably-not/> (“2014 No Record”).

<sup>82</sup> See Lubos Motl, *NOAA, NASA: 2014 Was Probably Not the Warmest Year on Our Record*, Climate Depot (Jan. 18, 2015), available at <http://www.climatedepot.com/2015/01/18/breaking-noaa-nasa-quietly-conceded-2014-was-probably-not-the-warmest-year-on-record/> (“2014 Not the Warmest”); see also Marc Morano, *Scientists Balk at ‘Hottest Year’ Claims: Ignores Satellites Showing 18 Year ‘Pause’—We Are Arguing Over the Significance of Hundredths of a Degree’—The ‘Pause’ Continues*, Climate Depot (Jan. 16, 2015) available at <http://www.climatedepot.com/2015/01/16/scientists-balk-at-hottest-year-claims-we-are-arguing-over-the-significance-of-hundredths-of-a-degree-the-pause-continues/> (“Scientists Balk”) (“The satellites show an 18 year plus global warming ‘standstill and the satellite was set up to be “more accurate” than the surface records.”); Roy Spencer, *2014 as the Mildest Year: Why You are Being Misled on Global Temperatures*, Global Warming (Jan. 18, 2015), available at <http://www.drroyspencer.com/2015/01/2014-as-the-mildest-year-why-you-are-being-misled-on->

Indeed, satellite data show that the warmest year was 1998.<sup>83</sup> “The satellite and balloon data of the deep atmosphere have 2014 in a cluster of warmish years well below the hottest two of 1998 and 2010.”<sup>84</sup> Overall, however, even the surface-level data confirm that global warming has been on hiatus for almost two decades.<sup>85</sup>

The recent findings announcement became a political and media event,<sup>86</sup> but the truth—that the scientists found a less than 50% chance that 2014 was the hottest year on record rather than a definitive conclusion based on the data—was obfuscated.<sup>87</sup> The scientists were not sure, even, that 2014 was truly the warmest year; rather, they stated that it was statistically probable.<sup>88</sup> But this “conclusion” was based on a differences of hundredths of a degree, which is not even within the margin of error for the faulty surface temperature measuring gauges.<sup>89</sup>

Most importantly, it is clear that despite this data and the claims regarding 2014, computer-modeled climate projections continue to be disproven by real-world data.<sup>90</sup> To be clear, even with 2014 being slightly warmer than other years—and statistically similar in

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[global-temperatures/](#) (“2014 the Mildest Year”) (“our only truly global temperature measurements, the satellites, are ignored because they don’t show a record warm year in 2014”).

<sup>83</sup> See Motl, 2014 Not the Warmest, *supra*.

<sup>84</sup> Morano, Scientists Balk, *supra* (quoting climatologist Dr. John Christy, professor of atmospheric sciences at the University of Alabama-Huntsville).

<sup>85</sup> David Whitehouse, 2014: Global Temperature Stalls another Year—Global Warming Pause Continues Despite Warm Year, The Global Warming Policy Forum (Jan. 16, 2015), available at <http://us4.campaign-archive1.com/?u=c920274f2a364603849bbb505&id=c8bbc1ccfe&e=f4e33fdd1e> (“2014 Global Warming Pause”) (“The addition of 2014 global temperature data confirms that the post-1997 standstill seen in global annual average surface temperature has continued for one more year making it now about 17 years in duration.”).

<sup>86</sup> See Roy, 2014 the Mildest Year, *supra*.

<sup>87</sup> See Motl, 2014 Not the Warmest, *supra*.

<sup>88</sup> See *id.*

<sup>89</sup> See Morano, Scientists Balk, *supra*; see also Marcelo Gleiser, Was 2014 the Hottest Year on Record—Or Not?, NPR Commentary on Science and Society (Jan. 21, 2015), available at <http://www.npr.org/blogs/13.7/2015/01/21/378665687/was-2014-the-hottest-year-on-record-or-not> (“the difference of only 0.02 degrees Celsius ‘is within the uncertainty of the measurement.’”) (citing Hansen et al., *Global Temperature in 2014 and 2015*, Climate Science, Awareness and Solutions (Jan. 16, 2015)); see also David Rose, *NASA Climate Scientists: We Said 2014 Was the Warmest Year on Record . . . But We’re Only 38% Sure We Were Right*, THE DAILY MAIL (Jan. 17, 2015), available at <http://www.dailymail.co.uk/news/article-2915061/Nasa-climate-scientists-said-2014-warmest-year-record-38-sure-right.html>.

<sup>90</sup> See Whitehouse, 2014 Global Warming Pause, *supra*.

temperature to 2005 and 2010, demonstrating no impactful trend between 2005 and 2014—any temperature increase is still inconsistent with computer model forecasts.<sup>91</sup>

## **B. Uncertainties in Climate Models Make Them Unfit for Policymaking.**

There are so many uncertainties and flaws in the data and models on which global warming predictions depend that they are not fit for reasoned decisionmaking. Professor Michael Kelly, a member of the Royal Society and the Prince Philip Professor Of Technology At Cambridge University, criticized climate models on March 14, 2015:

[T]here is even more uncertainty than previously thought. Carbon dioxide levels in the atmosphere have continued to rise, but since 1998 there has been no statistically significant rise in global temperatures at all.

This flies in the face of the confident predictions made by nearly all the climate computer models that the temperature would continue to rise as it did from 1975 to 1998. More than 60 different explanations have been proposed to explain why this ‘pause’ or ‘hiatus’ has happened, and their sheer number is the clearest evidence that the system that climate scientists are seeking to model is irreducibly complex. Human-sourced carbon dioxide is at best one of many factors in causing climate change, and humility in front of this complexity is the appropriate stance.<sup>92</sup>

Steven Koonin, former undersecretary for science in the Department of Energy during the first Obama Administration and Director of the Center for Urban Science and Progress at New York University, has written:

The idea that “Climate science is settled” runs through today’s popular and policy discussion. Unfortunately, that claim is misguided. It has not only distorted our public and policy debates on issues related to energy, greenhouse-gas emission and the environment. But it has inhibited the scientific and policy discussions that we need about our climate future.<sup>93</sup>

He points to multiple gaps where current understanding is crucially sparse:

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<sup>91</sup> See Jason Samenow, *Scientists React to Warmest Year: 2014 Underscores “Undeniable Fact” of Human-Caused Climate Change*, THE WASHINGTON POST (Jan. 16, 2015) (quoting Judith Curry); see also Roy, 2014 No Record, *supra*.

<sup>92</sup> Michael Kelly, *Why my own Royal Society is wrong on climate change: A devastating critique of world's leading scientific organisation by one of its Fellows*, The Mail On Sunday (Mar. 14, 2015), available at <http://www.dailymail.co.uk/news/article-2995239/Why-Royal-Society-wrong-climate-change-devastating-critique-world-s-leading-scientific-organisation-one-Fellows.html>.

<sup>93</sup> Steven Koonin, *Climate Science is Not Settled*, WALL ST. J., (Sep. 19, 2014), available at <http://online.wsj.com/articles/climate-science-is-not-settled-1411143565>.



The first fundamental problem with establishing causality is the size of the problem: no matter how measured, human influences on climate are dwarfed by the scope of natural shifts over time. Koonin notes that, even under EPA's models, human additions to GHG emissions are predicted to affect the climate by at most 1-2%, which is well within the natural variation in climate over time.<sup>94</sup> A group of 13 scientists concluded that "[a] major error of modelling is the failure to account for natural variability."<sup>95</sup>

The second problem with establishing causality is the complexity of the oceanic systems and our regrettable lack of understanding about them. As one would expect from a planet that is over 70% covered by water, the oceans have a dramatic effect on climate: "The oceans, which change over decades and centuries, hold most of the climate's heat and strongly influence the atmosphere."<sup>96</sup> But, as Koonin points out, our study of the oceans is immature: most records only go back several decades.<sup>97</sup> The group of 13 scientists observed that "major ocean circulations are not correctly captured in the current climate models."<sup>98</sup> A recent study found that

The third difficulty Koonin points to in establishing a causal link between an emissions reduction program and any climate impacts is the complexity of natural feedback mechanisms, such as clouds and water vapor.<sup>99</sup> As noted earlier, climate models assume significant feedback effects; in the absence of such feedbacks, a doubling of CO<sub>2</sub> levels would produce only about 1°C in warming. Yet existing feedback mechanisms are speculative and increasingly disproven, meaning that climate models consistently "run hot" and overestimate climate change.

Other confounding factors are natural processes such as agricultural plant absorption of CO<sub>2</sub>, which neutralize increased emissions, as discussed further in Part III, *supra*. Aerial fertilization of plants via higher CO<sub>2</sub> concentrations, which has typically been discounted by climate scientists because they assumed that warming would inhibit plant growth, has instead

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<sup>94</sup> Steven Koonin, *Climate Science is Not Settled*, WALL ST. J. (Sept. 19, 2014), available at <http://online.wsj.com/articles/climate-science-is-not-settled-1411143565>.

<sup>95</sup> Prof. Robert Carter, Prof. Ross McKittrick, Prof. Vincent Courtillot, Prof. Ian Plimer, Prof. Freeman Dyson, Dr. Matt Ridley, Prof. Christopher Essex, Sir Alan Rudge, Dr. Indur Goklany, Prof. Nir Shaviv, Prof. Will Happer, Prof. Fritz Vahrenholt, Prof. Richard Lindzen, "The Small Print: What The Royal Society Left Out" 9 (Global Warming Policy Foundation March 2015).

<sup>96</sup> Steven Koonin, *Climate Science is Not Settled*, WALL ST. J. (Sept. 19, 2014), available at <http://online.wsj.com/articles/climate-science-is-not-settled-1411143565>.

<sup>97</sup> *Id.*

<sup>98</sup> Prof. Robert Carter, Prof. Ross McKittrick, Prof. Vincent Courtillot, Prof. Ian Plimer, Prof. Freeman Dyson, Dr. Matt Ridley, Prof. Christopher Essex, Sir Alan Rudge, Dr. Indur Goklany, Prof. Nir Shaviv, Prof. Will Happer, Prof. Fritz Vahrenholt, Prof. Richard Lindzen, "The Small Print: What The Royal Society Left Out" 10 (Global Warming Policy Foundation March 2015).

<sup>99</sup> Steven Koonin, *Climate Science is Not Settled*, WALL ST. J. (Sept. 19, 2014), available at <http://online.wsj.com/articles/climate-science-is-not-settled-1411143565>.

caused significantly increased global biomass, “reducing deserts, turning grasslands to savannas, savannas to forests, and expanding existing forests” and “in nearly all regions and globally, the overall effect in recent decades is decidedly toward greening” which is “the opposite of what the [International Panel on Climate Change] expected.”<sup>100</sup> “Climate trend models have not fully accounted for the ability of plants to use water more efficiently at higher CO<sub>2</sub> concentrations and have underrated the capacity for aerial fertilization to sharply improve sequestration via plant growth.”<sup>101</sup> As one scholar noted:

The empirically demonstrated evidence on water use by plants in an enhanced CO<sub>2</sub> environment is the opposite of the commonly claimed effect from models that look only at assumed increased heating due to CO<sub>2</sub> increases. Empirically, CO<sub>2</sub> has recently been associated with warming only until increased green growth set in. That increased growth however continues so long as the extra CO<sub>2</sub> is present. Despite reluctant rhetoric, other climate modelers recently studying the process have also created models that show higher CO<sub>2</sub> concentration increases biomass.<sup>102</sup>

Climate science has documented so many uncertainties in existing models that including them in NEPA would be impermissibly speculative. For example, one recent study evaluated how well the models’ descriptions of the past (known as “hindcasts” rather than “forecasts”) compared with actual historical precipitation records and found that for the tropics and subtropics, there was a “lack of reliable and consistent estimations” that “might be connected with model deficiencies in the representation of organized convective systems.”<sup>103</sup> Another study found a failure to predict monsoons.<sup>104</sup> Yet another assessment of model performance showed that not only do the models fail to match observed rainfall over China, but the “improved” model (CMIP5) fared worse than its predecessor (CMIP3).<sup>105</sup>

These defects only scratch the surface. There is a large (and growing) literature documenting the flaws in climate models, which is summarized in the attached Appendix. The predictions of global warming have been proven to be inaccurate, unreliable, and unfit for inclusion in NEPA.

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<sup>100</sup> See Ballonoff, *supra*, p. 114-15.

<sup>101</sup> See *id.*, p. 124.

<sup>102</sup> See *id.*, p. 123 (citations omitted).

<sup>103</sup> Toreti, A., Naveau, P., Zampieri, M., Schindler, A., Scoccimarro, E., Xoplaki, E., Dijkstra, H.A., Gualdi, S. and Luterbacher, J. 2013. Projections of global changes in precipitation extremes from Coupled Model Intercomparison Project Phase 5 Models. *Geophysical Research Letters* 40: 4887-4892.

<sup>104</sup> Geil, K.L., Serra, Y.L. and Zeng, X. 2013. Assessment of CMIP5 model simulations of the North American monsoon system. *Journal of Climate* 26: 8787-8801.

<sup>105</sup> Chen, L. and Frauenfeld, O.W. 2014. A comprehensive evaluation of precipitation simulations over China based on CMIP5 multimodel ensemble projections. *Journal of Geophysical Research: Atmospheres* 19: 5767-5786.

### C. The IPCC Reports Cannot Provide a Basis for CEQ Action.

EPA and other federal agencies have looked to the reports of the International Panel on Climate Change (“IPCC”), but those reports cannot satisfy the NEPA standard. In fact, the IPCC has been significantly downgrading its projections of supposed warming. The IPCC now says that the temperature rise it expects as a result of man-made emissions of CO<sub>2</sub> is substantially lower than it thought in 2007.<sup>106</sup>

In 2007, the IPCC projected that the “transient climate response” (TCR)—the actual temperature change expected from a doubling of carbon dioxide — was “very likely” to be warming of 1 to 3° C. By 2013, that number was scaled back to “likely” to be 1 to 2.5° C and “extremely unlikely” to be greater than 3° C.<sup>107</sup>

Prior to September 2013, the IPCC projected warming of 0.4 to 1.0° C for the 30-year period from 2016-2035 against 1986-2005.<sup>108</sup> But in September 2013, the IPCC cut the 30-year projection to 0.3-0.7° C, saying the warming is more likely to be at the lower end of the range, equivalent to about 0.4° C over 30 years.<sup>109</sup> Interestingly, this decrease, which should have been headline material, was not mentioned in the “Summary for Policymakers” section.<sup>110</sup>

These overreactions and IPCC downgrades are significant, because the pace and magnitude of any warming are critical to any projections of harm. In fact, one of the models on which EPA has relied (the Climate Framework for Uncertainty, Negotiation and Distribution (FUND)) shows “negative damage functions” – i.e., *positive net economic benefits* -- for warming below 3° C.<sup>111</sup>

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<sup>106</sup> See Matt Ridley, “Dialing Back the Alarm on Climate Change,” *Wall Street Journal* (Sep. 17, 2013), available at <http://online.wsj.com/articles/SB10001424127887324549004579067532485712464> (repeating the findings).

<sup>107</sup> See Matt Ridley, “Dialing Back the Alarm on Climate Change,” *Wall Street Journal* (Sep. 17, 2013), available at <http://online.wsj.com/articles/SB10001424127887324549004579067532485712464> (repeating the findings).

<sup>108</sup> The 2007 AR4 Synthesis Report projected a rise of 0.2° C per decade, yielding 0.6° C over the 30-year span. IPCC, *AR4 Synthesis Report* 45 (2007). The second draft of the final AR5 report gave a range of 0.4 to 0.7° C, yielding a similar median of 0.6° C. Christopher Monckton, “IPCC Silently Slashes Its Global Warming Predictions in the AR5 Final Draft,” [WattsUpWithThat.com](http://wattsupwiththat.com) (Jan. 1, 2014), available at <http://wattsupwiththat.com/2014/01/01/ipcc-silently-slashes-its-global-warming-predictions-in-the-ar5-final-draft/>.

<sup>109</sup> Matt Ridley, *Whatever Happened to Global Warming?*, Wall St. J. (Sept. 4, 2014), available at <http://online.wsj.com/articles/matt-ridley-whatever-happened-to-global-warming-1409872855>.

<sup>110</sup> Christopher Monckton, *IPCC Silently Slashes Its Global Warming Predictions in the AR5 Final Draft*, WATTS UP WITH THAT? (Jan. 1, 2014), available at <http://wattsupwiththat.com/2014/01/01/ipcc-silently-slashes-its-global-warming-predictions-in-the-ar5-final-draft/>.

<sup>111</sup> U.S. Interagency Working Group on the Social Cost of Carbon, “Technical Support Document” at 9 (2010).

Richard Tol of the University of Sussex, who has been active in the IPCC since 1994, serving in various roles in all its three working groups, most recently as a convening lead author for a working group for the Fifth Assessment report, has stated that “[t]here is broad agreement” that “the initial benefits of a modest increase in temperature are probably positive, followed by losses as temperatures increase further. . . . The initial benefits arise partly from CO<sub>2</sub> fertilization, and partly from reduced heating costs and cold-related health problems in temperate zones.”<sup>112</sup> His academic paper shows *positive* effects on Gross Domestic Product (GDP) from temperature increases below about 2.2° C.<sup>113</sup>

As one commentator has observed, “[g]iven what we know now, there is almost no way that the feared large temperature rise is going to happen.”<sup>114</sup> “Taking the IPCC scenario that assumes a doubling of CO<sub>2</sub>, plus the equivalent of another 30% rise from other greenhouse gases by 2100, we are likely to experience a further rise of no more than 1°C” – even under the IPCC assumptions.<sup>115</sup> “A cumulative change of less than 2°C by the end of the century will do no net harm. It will actually do net good – that much the IPCC scientists have already agreed upon in the last IPCC report. Rainfall will increase slightly, growing seasons will lengthen, Greenland’s ice cap will melt only very slowly, and so on.”<sup>116</sup> “Most experts believe that warming of less than 2 degrees Celsius from preindustrial levels will result in no net economic and ecological damage. Therefore, the new report is effectively saying (based on the middle of the range of the IPCC’s emissions scenarios) that *there is a better than 50-50 chance that by 2083, the benefits of climate change will still outweigh the harm.*”<sup>117</sup> “Warming of up to 1.2 degrees Celsius over the next 70 years (0.8 degrees have already occurred), most of which is predicted to happen in cold areas in winter and at night, would extend the range of farming further north, improve crop yields, slightly increase rainfall (especially in arid areas), enhance forest growth and cut winter deaths (which far exceed summer deaths in most places).”<sup>118</sup> “Increased carbon dioxide levels also have caused and will continue to cause an increase in the growth rates of crops and the greening of the Earth—because plants grow faster and need less water when carbon dioxide

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<sup>112</sup> R.S.J. Tol, “Targets for global climate policy: An overview,” *Journal of Economic Dynamics & Control* 37 (2013) 911, 912.

<sup>113</sup> Richard S.J. Tol, Corrigendum to “Targets for global climate policy: An overview,” *Journal of Economic Dynamics & Control* 42 (2014) 121.

<sup>114</sup> Matt Ridley, *Cooling Down the Fears of Climate Change*, *Wall St. J.* (Dec. 19, 2012), at A19.

<sup>115</sup> *Id.*

<sup>116</sup> *Id.*

<sup>117</sup> See Matt Ridley, “Dialing Back the Alarm on Climate Change,” *Wall Street Journal* (Sep. 17, 2013), available at <http://online.wsj.com/articles/SB10001424127887324549004579067532485712464> (repeating the findings).

<sup>118</sup> See Matt Ridley, “Dialing Back the Alarm on Climate Change,” *Wall Street Journal* (Sep. 17, 2013), available at <http://online.wsj.com/articles/SB10001424127887324549004579067532485712464> (repeating the findings).

concentrations are higher.”<sup>119</sup> The IPCC’s 2007 assessment projected that, under such a scenario, yields of the world’s main crops—wheat, rice, maize and soybeans—would improve in temperate and cold climates, offsetting any declines elsewhere.<sup>120</sup>

The recently released IPCC Climate Change 2104: Synthesis Report (released November 2, 2014) is nothing new. The Fifth Synthesis report merely wraps together highlights from three earlier reports dating from September 2013, March 2014, and April 2014. It contains no new significant findings and no attempt to square the fatal flaws in the IPCC’s models with actual observational data. Indeed, the Fifth Synthesis report acknowledges the long “hiatus” in warming for the past decade and a half,<sup>121</sup> which is contrary to the projections of its models. As two commentators have noted, “[h]ad the IPCC been more interested in reflecting the actual science rather than in preserving a quickly crumbling consensus (that human greenhouse gas emissions are leading to dangerous climate change that requires urgent action), its Fifth Assessment Report would have been a much kinder and gentler document—as it well should have been.”<sup>122</sup>

Even scientists who previously warned of global warming have criticized the IPCC and have called into question the reliability of climate models:

- **Lennart Bengtsson**—Professor Lennart Bengtsson is a Swedish meteorologist who has conducted extensive and prize-winning research on climate. He was previously the Head of Research at the European Centre for Medium-Range Weather Forecasts from 1975 to 1981 and then Director until 1990, Director of the Max Planck Institute for Meteorology in Hamburg, and he is now a Senior Research Fellow at the Environmental Systems Science Centre in the University of Reading. He became a member of the Academic Advisory Council of the Global Warming Policy Foundation (“GWPF”). Quoted as stating that the “whole concept behind IPCC is basically wrong,” Bengtsson objected to the premise that the science is settled on questions regarding global warming. Indeed, Bengtsson stated in an interview in May 2014 that

I have increasingly been disturbed by the strong tendencies to politicization that has taken place in climate research in recent years. I believe most serious scientists are sceptics and are particularly frustrated that we are not able to properly validate climate change simulations. I have always tried to follow the philosophy of Karl Popper that I believe is

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<sup>119</sup> See Matt Ridley, “Dialing Back the Alarm on Climate Change,” *Wall Street Journal* (Sep. 17, 2013), available at <http://online.wsj.com/articles/SB10001424127887324549004579067532485712464> (repeating the findings).

<sup>120</sup> The IPCC has subsequently retreated from that position, but its retreat contradicts the evidence showing that rising CO<sub>2</sub> levels have indeed stimulated the growth of vegetation. See Part IV-D, *supra*.

<sup>121</sup> Climate Change 2014: Synthesis Report, Summary for Policymakers, SPM-3 through SPM 4 (released Nov. 1, 2014).

<sup>122</sup> Michaels & Knappenberger, *What the New IPCC Global Warming Projections Should Have Looked Like, supra*.

particularly important when you are dealing with complex systems of which the climate system is a primary example. For this reason empirical evidence is absolutely essential. The warming of the climate system since the end of the 19th century has been very modest by some 3/4 °C in spite of the simultaneous increase in greenhouse gas forcing by 2.5-3 W/m<sup>2</sup>.

I am concerned that this as well as the lack of ocean surface warming in some 17 years has not been properly recognized by IPCC. Nor have the cooling and increase in sea ice around Antarctica been properly recognized.<sup>123</sup>

Bengtsson's affiliation with the GWPF created such discord within the scientific community that he experienced pressure both professionally and personally that he feared for his safety and was compelled to resign from his membership on May 14, 2014, at which time he referenced "McCarthy"-like persecution.<sup>124</sup>

- **Claude Allegre**—Claude Allegre is a French scientist who has worked on global warming issues for decades.<sup>125</sup> Dr. Allegre received a Ph.D. in physics in 1962 from the University of Paris, became the Director of the geochemistry and cosmochemistry program at the French National Scientific Research Centre in 1967, in 1971 was appointed Director of the University of Paris's Department of Earth Sciences, in 1976 became Director of the Paris Institut de Physique du Globe, has authored more than 100 scientific articles and 11 books, many of them seminal studies on the evolution of the Earth using isotopic evidence, and is a member of the U.S. National Academy of Sciences and the French Academy of Science.<sup>126</sup> Twenty years ago, he expressed his position that human causes had raised global mean temperature by half a degree in the last century, and fifteen years ago Dr. Allegre signed the "World Scientists' Warning to Humanity" about global warming.<sup>127</sup> As more data accumulated, however, Dr. Allegre switched sides. In his view, climate models do not establish man-made warming and significant evidence indicates that warming is in fact a natural phenomenon.<sup>128</sup> Dr.

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<sup>123</sup> See Hans von Storch, "Interview with Lennart Bengtsson," Die Klimazwiebel, May 3, 2014, available at <http://klimazwiebel.blogspot.com.au/2014/05/interview-with-lennart-bengtsson.html?sref=tw>.

<sup>124</sup> See GWPF Press Release, Lennart Bengtsson Resigns: GWPF Voices Shock and Concern at the Extent of Intolerance Within the Climate Science Community, May 14, 2014, available at <http://www.thegwgf.org/lennart-bengtsson-resigns-gwgf-voices-shock-and-concern-at-the-extent-of-intolerance-within-the-climate-science-community>; see also Peter Foster, "Eminent Swedish Scientist Latest Victim of Climate McCarthyism," Fin. Post, May 15, 2014, available at <http://business.financialpost.com/2014/05/15/eminant-swedish-scientist-latest-victim-of-climate-mccarthyism/>

<sup>125</sup> See Lawrence Solomon, "Allegre's Second Thoughts," National Post, Mar. 6, 2007, available at <http://www.nationalpost.com/news/story.html?id=2f4cc62e-5b0d-4b59-8705-fc28f14da388>

<sup>126</sup> *Id.*

<sup>127</sup> *See id.*

<sup>128</sup> *See id.*

Allegre points in part to evidence that Antarctica is gaining ice and that other, retreating snow caps are retreating naturally. In his more recent words, “[t]he cause of this climate change is unknown,” and the science is not “settled.”<sup>129</sup>

- **Fritz Vahrenholt**—Fritz Vahrenholt is a German professor and environmental activist who was an early supporter of the German green movement.<sup>130</sup> He holds a Ph.D. in chemistry and is Honorary Professor at the Department of Chemistry at the University of Hamburg. From 1976 until 1997 he served in several public positions with environmental agencies such as the Federal Environment Agency, the Hessian Ministry of Environment, and as Deputy Environment Minister and Senator of the City of Hamburg. He then held top management positions in the renewable energy industry.<sup>131</sup> In 2013, he changed his views and published a book entitled *Die Kalte Sonne*, in which he argued in part that the sun rather than greenhouse gases driving climate change and that anthropomorphic impact was overstated.<sup>132</sup>
- **Hans H.J. Labohm**—Once a believer in man-made global warming, Labohm switched his view after conducting research and reviewing both an IPCC Summary for Policymakers and other research. He then coauthored a book skeptical of man-made global warming with chemical engineer Dick Thoenes, former chairman of the Royal Netherlands Chemical Society.<sup>133</sup>
- **Bruno Wiskel**—A Canadian geologist, Mr. Wiskel reversed his view on man-made climate change and wrote a book entitled “The Emperor's New Climate: Debunking the Myth of Global Warming.”<sup>134</sup>
- And there are many others.<sup>135</sup>

### III. CEQ’s Revised Draft Guidance Ignores Consideration of the Environmental Benefits of Carbon.

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<sup>129</sup> *See id.*

<sup>130</sup> *See* GWPF Press Release, “Professor Fritz Vahrenholt Joins GWPF Academic Advisory Council, July 14, 2014, available at <http://www.thegwpf.org/professor-fritz-vahrenholt-joins-gwpf-academic-advisory-council/>.

<sup>131</sup> *Id.*

<sup>132</sup> *See* Delingpole, *supra*.

<sup>133</sup> *See id.*

<sup>134</sup> *See* Marc Morano, “Climate Momentum Shifting: Prominent Scientists Reverse Belief in Man-made Global Warming—Now Skeptics,” U.S. Senate Comm. on Env’t & Public Works, May 15, 2007, available at [http://www.epw.senate.gov/public/index.cfm?FuseAction=Minority.Blogs&ContentRecord\\_id=927b9303-802a-23ad-494b-dccb00b51a12](http://www.epw.senate.gov/public/index.cfm?FuseAction=Minority.Blogs&ContentRecord_id=927b9303-802a-23ad-494b-dccb00b51a12).

<sup>135</sup> For example, Nir Shaviv, Zbigniew Jaworowski, David Evans, Tad Murty, Denis Rancourt, David Bellamy, Chris de Freitas, and Reid Bryson. *See* Morano, *supra*.

Any analysis of the environmental effects of carbon dioxide emissions must include the proven benefits of increased CO<sub>2</sub> levels for vegetation and plant growth. Put simply: CO<sub>2</sub> is plant food. Plants are nourished by CO<sub>2</sub> in the atmosphere, which they absorb and turn into fuel for growth. CO<sub>2</sub> is not a pollutant: It is the basis of life on Earth. If the world will be able to grow crops in more geographic areas for longer growing seasons that absorb more CO<sub>2</sub>, the net effect will be better and more crops with higher yields. The Revised Draft Guidance itself advises that “agencies should take into account both the short- and long-term effects *and benefits* based on what the agency determines is the life of a project and the duration of the generation of emissions.”<sup>136</sup>

According to Robert Mendelsohn of Yale’s School of Forestry and Environmental Studies and Department of Economics, “projections suggest that global warming may be slightly beneficial to American agriculture.”<sup>137</sup>

The Pew Center on Global Climate Change has noted that, if warming occurs, it would mean temperatures extends growing seasons, allowing agricultural activity for a larger part of the year.<sup>138</sup> “Clearly, the cold northern parts of the country could benefit from longer growing seasons and warmer temperatures, which would allow these areas to grow high-yielding crops and crop varieties consistent with soil resources. In addition, a reduced incidence of killing frosts could benefit southern regions growing heat tolerant crops such as citrus.”<sup>139</sup> Warmer temperatures could also create agricultural potential in many areas of the United States that have previously been unsuitable for that purpose.<sup>140</sup>

Comparison photos confirm the “greening” effect, on an observational basis:

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<sup>136</sup> Revised Draft Guidance, 79 Fed. Reg. at 77,826 (emphasis added). *See also* 40 C.F.R. § 1508.8(b) (defining “effects”).

<sup>137</sup> Mendelsohn et al., *The Impact of Global Warming on Agriculture: A Ricardian Analysis*, 84 AM. ECON. REV. 753, 769 (1994).

<sup>138</sup> *See* Pew Center on Global Climate Change, *A Review of Impacts to U.S. Agricultural Resources*, at 11 (1999), available at [http://www.c2es.org/docUploads/env\\_argiculture.pdf](http://www.c2es.org/docUploads/env_argiculture.pdf).

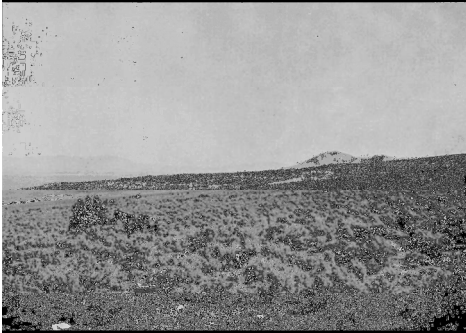
<sup>139</sup> *Id.*

<sup>140</sup> *Id.*



Repeat Photos of Section 13, T4S,R8W, Utah

1901



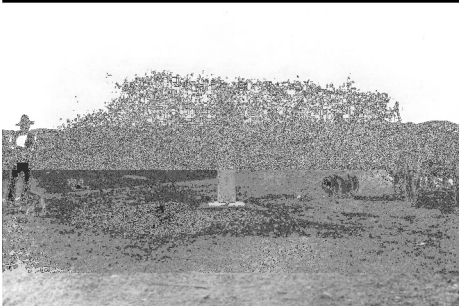
1976



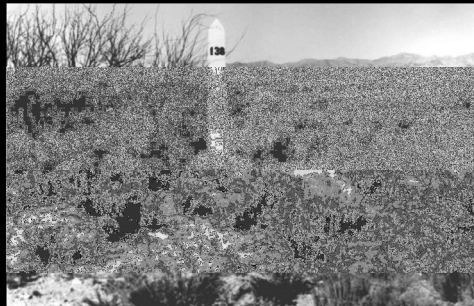
Juniper trees have greatly expanded their range

Repeat Photographs Taken Near Sasabe, AZ

1893



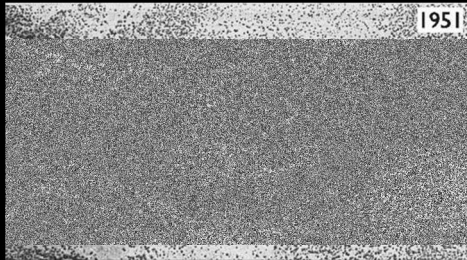
1984



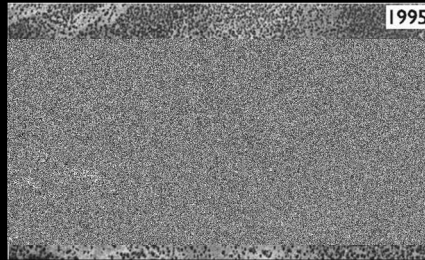
Devoid of shrubs in 1893, this area now boasts significant populations of mesquite, ocotillo, mimosa, snakeweed and burroweed

## Horse Ridge Natural Research Area, Central Oregon

1951



1995



1:15,840 aerial photographs reveal extensive increase  
in tree cover

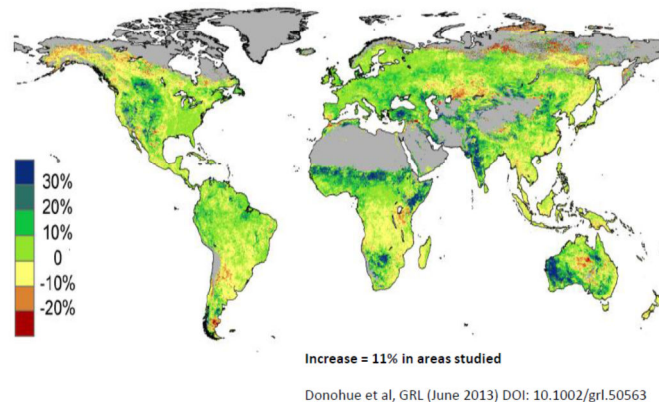
“Greening” is true outside the United States as well. One recent investigation of global satellite photos concluded that “from this remarkable 30-year archive of satellite imagery, we thus see evidence of a greening trend.”<sup>141</sup> Another recent study -- by the Commonwealth Scientific and Industrial Research Organisation (Australia’s national science agency), in collaboration with the Australian National University -- found that higher levels of CO<sub>2</sub> have helped increase green foliage across the world’s arid regions over the past 30 years. The study found an 11 percent increase in foliage cover from 1982-2010 across Australia, North America, the Middle East and Africa.<sup>142</sup>

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<sup>141</sup> Eastman, J.R., Sangermano, F., Machado, E.A., Rogan, J. and Anyamba, A. 2013. Global trends in seasonality of Normalized Difference Vegetation Index (NDVI), 1982-2011. *Remote Sensing* 5: 4799-4818.

<sup>142</sup> CSIRO, *Deserts “Greening” from Rising CO<sub>2</sub>*, July 3, 2013, available at <http://www.csiro.au/Portals/Media/Deserts-greening-from-rising-CO2.aspx> (summarizing recent study by Donohue, et al.)

Global Greening From CO2 Fertilization: 1982-2010



Stefan Kröpelin, a climate scientist at the University of Cologne's Africa Research Unit in Germany, has reported that the desert is turning green in the eastern Sahara area of southwestern Egypt and northern Sudan.<sup>143</sup> "Shrubs are coming up and growing into big shrubs. This is completely different from having a bit more tiny grass," said Kröpelin, who has studied the region for two decades.<sup>144</sup> "The nomads there told me there was never as much rainfall as in the past few years. They have never seen so much grazing land. Before, there was not a single scorpion, not a single blade of grass. Now you have people grazing their camels in areas which may not have been used for hundreds or even thousands of years. You see birds, ostriches, gazelles coming back, even sorts of amphibians coming back."<sup>145</sup> "The trend has continued for more than 20 years. It is indisputable."<sup>146</sup>

Another recent study confirmed that the Sahel could become suitable for significant vegetation:<sup>147</sup>

In spite of the gloomy predictions of even more frequent and severe droughts and famines caused by global warming, vegetation in the Sahel has significantly increased in the last three decades. This has been a very welcome and very beneficial development for the people living in the Sahel. The increase in rainfall, which was probably caused by rising temperatures, and rising CO<sub>2</sub> concentrations

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<sup>143</sup> Sahara Desert Greening Due to Climate Change?, National Geographic News (July 31, 2009), available at <http://news.nationalgeographic.com/news/2009/07/090731-green-sahara.html>.

<sup>144</sup> *Id.*

<sup>145</sup> *Id.*

<sup>146</sup> *Id.*

<sup>147</sup> See Philipp Mueller, *The Sahel is Greening*, Global Warming Policy Foundation, 2011, available at <http://www.thegwpcf.org/images/stories/gwpcf-reports/mueller-sahel.pdf>.

might even - if sustained for a few more decades - green the Sahara. This would be a truly tremendous prospect.<sup>148</sup>

CO<sub>2</sub> fertilization has been proven to increase crop yields.<sup>149</sup> “In greenhouse studies involving single-potted agricultural species, grown under well-watered conditions with adequate nutrients and light and with an ambient CO<sub>2</sub> concentration (about 660 parts per million or double the current CO<sub>2</sub> concentration), plant growth increases about 40% across a variety of young plants and about 26% for tree seedlings and mature plants.”<sup>150</sup> This impact has been recognized worldwide, particularly in areas with tropical forests.<sup>151</sup> A recent review of recent studies concluded that “forest productivity has been growing ever greater with the passing of time, rising hand-in-hand with the increasing CO<sub>2</sub> content of the air.”<sup>152</sup>

In another study, “scientists artificially elevated CO<sub>2</sub> levels in a US prairie grasslands ecosystem for eight years. They found that the added carbon had increased the overall volume of the plants and promoted the ecosystem’s stability by reducing the growth of normally dominant plant species.”<sup>153</sup> A recent meta-analysis of 90 studies involving wheat found that the beneficial effects of increased CO<sub>2</sub> concentrations would outweigh any harm on growth from higher temperatures or decreased precipitation.<sup>154</sup> Other studies have confirmed that plants have accelerated growth patterns when higher concentrations of CO<sub>2</sub> are present in the atmosphere.<sup>155</sup>

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<sup>148</sup> *Id.*

<sup>149</sup> See Prigg, *supra*; see also, generally, Donohue, et al., *Impact of CO<sub>2</sub> Fertilization on Maximum Foliage Cover Across the Globe’s Warm, Arid Environments*, June 19, 2013; Reem Khondakar, *CO<sub>2</sub> Fertilization and Climate Change*, The Cornell Daily Sun, Oct. 24, 2013, available at <http://cornellsun.com/blog/2013/10/24/co2-fertilization-and-climate-change/>; Sedjo & Sohngen, *supra*, at 97-98; Pew Center on Global Climate Change, *supra*, at 12.

<sup>150</sup> See Sedjo & Sohngen, *supra*, at 98.

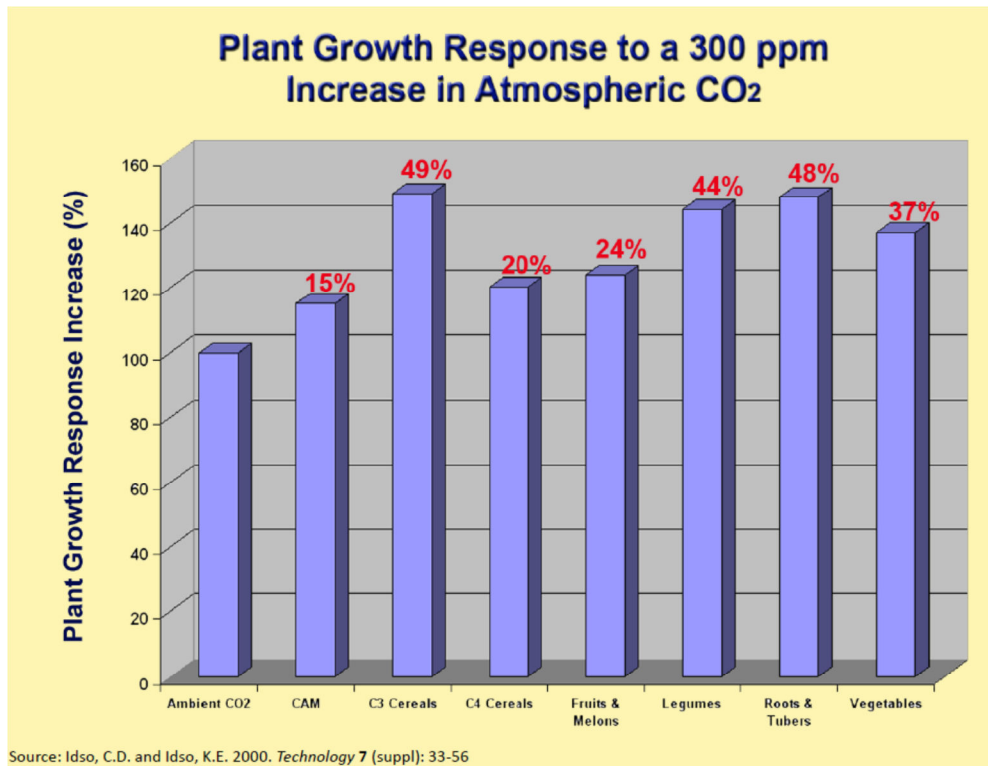
<sup>151</sup> See Center for the Study of Carbon Dioxide and Global Change, *Biospheric Productivity in South America*, Mar. 5, 2014, available at <http://www.co2science.org/subject/g/summaries/samergreen.php>.

<sup>152</sup> *Id.*

<sup>153</sup> See Prigg, *supra*.

<sup>154</sup> Wilcox, J. and Makowski, D. 2014. A meta-analysis of the predicted effects of climate change on wheat yields using simulation studies. *Field Crops Research* 156: 180-190.

<sup>155</sup> See generally CSIRO, *Deserts “Greening” from Rising CO<sub>2</sub>*, July 3, 2013, available at <http://www.csiro.au/Portals/Media/Deserts-greening-from-rising-CO2.aspx> (summarizing recent study by Donohue, et al.); see also Ballonoff, *supra*, p. 117; Sedjo & Sohngen, *supra*, at 98.



In fact, the principle is so well established that a failure properly to consider it would be arbitrary and capricious. As one study explained, “the recent increase in plant productivity has been attributed to the CO<sub>2</sub> fertilization effect,” citing a wealth of studies that have come to this conclusion, including those of Amthor (1995), Lloyd and Farquhar (1996), Cao et al. (2001), Lewis et al. (2004), Friedlingstein et al. (2006), Stephens et al. (2007), Ciais et al. (2009), Lewis et al. (2009), Malhi (2010), Ballantyne et al. (2012) and Higgins and Scheiter (2012).<sup>156</sup> And the study notes that African researchers similarly “found that gross primary production increased over the past 30 years even though soil moisture decreased.”<sup>157</sup> “[P]eer-reviewed scientific literature” indicates that “the ongoing rise in the air’s CO<sub>2</sub> content will likely lead to substantial increases in plant photosynthetic rates and biomass production, even in the face of stressful environmental conditions imposed by less-than-optimum soil moisture conditions.”<sup>158</sup> For this reason, evidence to date implies that the view that global temperature is far less sensitive to CO<sub>2</sub> than many fear, is likely correct. Simultaneously, demonstrated experimental evidence on plant

<sup>156</sup> Fisher, J.B., Sikka, M., Sitch, S., Ciais, P., Poulter, B., Galbraith, D., Lee, J.-E., Huntingford, C., Viogy, N., Zeng, N., Ahlstrom, A., Lomas, M.R., Levy, P.E., Frankenberg, C., Saatchi, S. and Malhi, Y. 2013. African tropical rainforest net carbon dioxide fluxes in the twentieth century. *Philosophical Transactions of the Royal Society B* 368: 10.1098/rstb.2012.0376.

<sup>157</sup> *Id.*

<sup>158</sup> Center for the Study of Carbon Dioxide and Global Change, *Growth Response of Grassland Species to Elevated CO<sub>2</sub> when Water Stressed*, Jul. 9, 2013, available at <http://www.co2science.org/subject/g/summaries/growthwatergrass.php>.

growth predicted exactly what the now extensive empirical literature shows: Enhanced CO<sub>2</sub> is associated with greatly increased biomass production, even in dry climates. The extent of increased CO<sub>2</sub> sequestration both in soil and in biomass associated with increased atmospheric concentration has also been documented.<sup>159</sup>

Plants also utilize hydration more efficiently in an atmosphere containing increased amounts of CO<sub>2</sub>.<sup>160</sup> Enhanced photosynthesis occurs because when there is “more CO<sub>2</sub> in the air outside the leaf, then the diffusion of water molecules inward appears to be greater.”<sup>161</sup> The conclusion regarding plant growth is telling, because increased atmospheric carbon dioxide would offset negative effects even if precipitation decreased.<sup>162</sup>

The empirically demonstrated evidence on water use by plants in an enhanced CO<sub>2</sub> environment is the opposite of the commonly claimed effect from models that look only at assumed increased heating due to CO<sub>2</sub> increases. Empirically, CO<sub>2</sub> has recently been associated with warming only until increased green growth set in. That increased growth however continues so long as the extra CO<sub>2</sub> is present. Despite reluctant rhetoric, other climate modelers recently studying the process have also created models that show higher CO<sub>2</sub> concentration increases biomass.<sup>163</sup>

Greater concentrations of CO<sub>2</sub> “generally result in higher net photosynthetic rates and may also reduce transpiration losses from plants (i.e. water loss). The photosynthetic rate is enhanced as additional carbon is available for assimilation; thus, productivity and yields generally rise.”<sup>164</sup> Many studies have demonstrated this effect, and although different crops respond differently, “the overall effect was certainly found to be favorable.”<sup>165</sup>

A recent study shows that these processes help explain why the predominant warming CO<sub>2</sub> models have been incorrect, with plant absorption of CO<sub>2</sub> being much higher than expected

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<sup>159</sup> See Paul Ballonoff, *A Fresh Look at Climate Change*, Cato Journal, Feb. 24, 2014, p. 117, available at <http://www.insideronline.org/summary.cfm?id=21673> (citation omitted).

<sup>160</sup> Paul Ballonoff, *A Fresh Look at Climate Change*, Cato Journal, Feb. 24, 2014, p. 115-16, available at <http://www.insideronline.org/summary.cfm?id=21673>.

<sup>161</sup> See Roger A. Sedjo & Brent Sohngen, *What are the Impacts of Global Warming on U.S. Forests, Regions, and the U.S. Timber Industry?*, 12 PENN ST. ENVTL. L. REV. 95, 97 (2004).

<sup>162</sup> *Id.*

<sup>163</sup> Ballonoff, *supra*, p. 123 (citations omitted).

<sup>164</sup> See Michael Bastasch, *Studies: Increased CO<sub>2</sub> Emissions are Greening the Planet*, Daily Caller, Mar. 14, 2014, available at <http://dailycaller.com/2014/03/14/studies-increased-co2-emissions-are-greening-the-planet/>; see also Pew Center on Global Climate Change, *supra*, at 12.

<sup>165</sup> Ballonoff, *supra*, p. 116; see also *id.*, p. 116-17.

or integrated into such models.<sup>166</sup> According to that study, “a 16 per cent ‘correction’ would be ‘large enough to explain the persistent overestimation of growth rates of historical atmospheric CO<sub>2</sub> by earth system models.’”<sup>167</sup> Indeed, the research shows that “[p]revious climate models have not fully accounted for how much carbon dioxide plants actually absorb.”<sup>168</sup> For this reason, Lianhong Gu, from the Climate Change Institute at Oak Ridge National Laboratory, has said “most carbon-cycle models had over-predicted the growth rate” of CO<sub>2</sub>.<sup>169</sup> Another recent study reached the same conclusion.<sup>170</sup> Plants not only perform the function of stripping the CO<sub>2</sub> out of the atmosphere, which impacts warming directly by decreasing net CO<sub>2</sub>, but the CO<sub>2</sub> that they take in and the warmer temperatures both actually help the plants grow.

All of this helps explain why global climate models have been incorrect for almost two decades:

A distinct kind of greenhouse effect is also predicted from increased CO<sub>2</sub> concentration—namely, the aerial fertilization effect, which is that plants grow better in an atmosphere of higher CO<sub>2</sub>. Many analysts, *such as the IPCC*, clearly thought the greater effect would be from heating, not plant growth. One must assume this was *an intentional judgment*, as the IPCC was aware of the CO<sub>2</sub> aerial fertilization effect from its 1995 Second Assessment Report, which contained empirical evidence of increased greening in enhanced CO<sub>2</sub> environments (Reilly 2002: 19). In contrast, climate analysts such as those with the Cato Center for the Study of Science have argued since 1999 that atmospheric temperature is much less sensitive to increased concentration of CO<sub>2</sub> (Michaels 1999b).

*While in fact heating has not occurred as the IPCC forecasted, greatly increased global biomass is indeed demonstrated.* Well documented evidence shows that concurrently with the increased CO<sub>2</sub> levels, extensive, large, and continuing increase in biomass is taking place globally—reducing deserts, turning grasslands to savannas, savannas to forests, and expanding existing forests (Idso 2012). That survey covered 400 peer-reviewed empirical studies, many of which included

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<sup>166</sup> See Mark Prigg, *Climate Change Is Being Slowed by Plants Far More than Expected, Researchers Reveal*, Mail Online, Oct. 13, 2014, available at <http://www.dailymail.co.uk/sciencetech/article-2791771/climate-change-slowed-plants-far-expected-researchers-reveal.html>.

<sup>167</sup> *Id.*

<sup>168</sup> Paul Fiddian, *Plant CO<sub>2</sub> Absorption Levels Underestimated*, Enviro News, October 14, 2014, available at <http://www.enviro-news.com/news/plant-co2-absorption-levels-underestimated.html>.

<sup>169</sup> Mark Prigg, *Climate Change Is Being Slowed by Plants Far More than Expected, Researchers Reveal*, Mail Online, Oct. 13, 2014, available at <http://www.dailymail.co.uk/sciencetech/article-2791771/climate-change-slowed-plants-far-expected-researchers-reveal.html>.

<sup>170</sup> Sun, et al., *Impact of Mesophyll Diffusion on Estimated Global Land CO<sub>2</sub> Fertilization*, PNAS 15774 (Sept. 19, 2014), available at <http://www.pnas.org/content/111/44/15774.full> (concluding that the magnitude of CO<sub>2</sub> fertilization underestimation in current models matches the long-term positive growth bias in the historical atmospheric CO<sub>2</sub> predicted by such models).

surveys of dozens to hundreds of sources. Comprehensive study of global and regional relative greening and browning using NOAA data showed that shorter-term trends in specific locations may reflect either greening or browning, and also noted that the rapid pace of greening of the Sahel is due in part to the end of the drought in that region. Nevertheless, in nearly all regions and globally, the overall effect in recent decades is decidedly toward greening (de Jong et al. 2012). *This result is also the opposite of what the IPCC expected.*<sup>171</sup>

At the same time, even more CO<sub>2</sub> emissions could help agriculture even further.

[A] doubling of the air's CO<sub>2</sub> concentration likely would lead to a 50% increase in photosynthesis in C3 plants, a doubling of water use efficiency in both C3 and C4 plants, significant increases in biological nitrogen fixation in almost all biological systems, and an increase in the ability of plants to adapt to a variety of environmental stresses. . . . [M]any other studies have been conducted on hundreds of different plant species, repeatedly confirming the growth-enhancing, water-saving, and stress-alleviating advantages that elevated atmospheric CO<sub>2</sub> concentrations bestow upon Earth's plants and soils.<sup>172</sup>

Further, any NEPA assessment must consider the fact the most immediate impact of warming on human welfare would be positive. Studies show that human mortality and morbidity drop when temperature increases (for example, fewer people freeze to death in the winter) and that such impacts far outweigh any harms from warmer weather.<sup>173</sup> Historical cycles of warming (such as the Medieval Warm Period) led to temperatures higher than today's, and these historical warming periods had positive impacts for humanity.<sup>174</sup>

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<sup>171</sup> Ballonoff, *supra*, p. 114-15 (emphasis added).

<sup>172</sup> Idso, et al., *Climate Change Reconsidered II: Biological Impacts*, Nongovernmental International Panel on Climate Change, 2014, available at <http://heartland.org/media-library/pdfs/CCR-IIb/Summary-for-Policymakers.pdf> (citations omitted).

<sup>173</sup> Cheng, et al., Impact of Diurnal Temperature Range on Human Health: A Systematic Review, INTERNATIONAL JOURNAL OF BIOMETEOROLOGY 2011 (Feb. 18, 2014) (compiling 11 studies investigating the relationship between Diurnal Temperature Range ("DTR") and mortality as well as 14 studies examining the impact of DTR on morbidity and explaining that the studies showed that a decrease in DTR, such as typically occurs when Earth's climate is in a warming mode, leads to decreases in both morbidity and mortality); Bennett, C.M., Dear, K.B.G. and McMichael, A.J. 2014. Shifts in the seasonal distribution of deaths in Australia, 1968-2007. International Journal of Biometeorology 58: 835-8428 (finding that ratio of mortality in summer months versus winter months has risen since 1968, driven by fewer deaths in winters (which have been milder) and that the rate at which winters warm is greater than the rate at which summers warm, suggesting that temperature-related mortality may net decrease as climate warms); Christidis, N., Donaldson, G.C. and Stott, P.A. 2010. Causes for the recent changes in cold- and heat-related mortality in England and Wales. Climatic Change 102: 539-553 (finding that lives saved due to increased temperatures in the coldest portion of the year outweigh any increased mortality during the hottest portion of the year, and adaptation increases the benefit even more).

<sup>174</sup> Kress, A., Hangartner, S., Bugmann, H., Buntgen, U., Frank, D.C., Leuenberger, M., Siegwolf, R.T.W. and Saurer, M. 2014. Swiss tree rings reveal warm and wet summers during medieval times. Geophysical Research



There is an extensive literature documenting the environmental benefits of increased CO<sub>2</sub>, which is summarized in the attached Appendix. The literature included in the Appendix also addresses arguments about ocean acidification, impacts on sea life, levels of Antarctic ice, extreme weather effects, and other asserted impacts of global warming.

The scientific literature does not support those asserted impacts. For example, a group of 13 esteemed scientists wrote in March 2015:

Speculation that wet areas become wetter and dry areas become drier are claims about increases in gradients and differences, which the global warming hypothesis does not contain. In fact models call for a decrease in gradients between equator and poles, which would imply a reduction in storminess. Drought levels have, if

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Letters 41: 1732-1737 (explaining that the Medieval Warm Period resulted in “beneficial conditions for agriculture and human well-being”); Olafsdottir, G.A., Westfall, K.M., Edvardsson, R. and Palsson, S. 2014. Historical DNA reveals the demographic history of Atlantic cod (*Gadus morhua*) in medieval and early modern Iceland. *Proceedings of the Royal Society B* 281: 10.1098/rspb.2013.2976 (suggesting that Medieval Warm Period may have been much warmer than the Current Warm Period); Salzer, M.W., Bunn, A.G., Graham, N.E. and Hughes, M.K. 2014. Five millennia of paleotemperature from tree-rings in the Great Basin, USA. *Climate Dynamics* 42: 1517-1526 (temperature data going back 5,000 years shows that Current Warm Period is not unusual and that periods prior to Industrial Revolution showed even greater temperature swings); Stancikaite, M., Sinkunas, P., Risberg, J., Seiriene, V., Blazauskas, N., Jarockis, R., Karlsson, S. and Miller, U. 2009. Human activity and the environment during the Late Iron Age and Middle Ages at the Impiltis archaeological site, NW Lithuania. *Quaternary International* 203: 74-90 (noting that “the transition from the first to the second millennium AD, also the onset of the 'Medieval Warm Period,' coincided with a period of intensive human activity” and that “the favorable climatic conditions of [this] 'Medieval Warm Period' may have supported human activity during its maximum phase”); Black, D.E., Abahazi, M.A., Thunell, R.C., Kaplan, A., Tappa, E.J. and Peterson, L.C. 2007. An 8-century tropical Atlantic SST record from the Cariaco Basin: Baseline variability, twentieth-century warming, and Atlantic hurricane frequency. *Paleoceanography* 22: 10.1029/2007PA001427 (“on average, twentieth-century temperatures are not the warmest in the entire record”); Vinther, B.M., Jones, P.D., Briffa, K.R., Clausen, H.B., Andersen, K.K., Dahl-Jensen, D. and Johnsen, S.J. 2010. Climatic signals in multiple highly resolved stable isotope records from Greenland. *Quaternary Science Reviews* 29: 522-538 (“temperatures [in Greenland] during the warmest intervals of the Medieval Warm Period,” which they defined as occurring some 900 to 1300 years ago, “were as warm as or slightly warmer than present day”); Frisia, S., Borsato, A., Spotl, C., Villa, I.M. and Cucchi, F. 2005. Climate variability in the SE Alps of Italy over the past 17,000 years reconstructed from a stalagmite record. *Boreas* 34: 445-455 (describing the Roman Warm Period and a Medieval Warm Period, both of which were “characterized by temperatures that were similar to the present,” and in the case of the Roman Warm Period, “temperatures [that] were similar to those of today or even slightly warmer”); Zhang, D.D., Lee, H.F., Wang, C., Li, B., Zhang, J., Pei, Q. and Chen, J. 2011. Climate change and large-scale human population collapses in the pre-industrial era. *Global Ecology and Biogeography* 20: 520-531 (historically, and for the Northern Hemisphere as a whole, warming and warmer times have most often been good times for humanity, as exemplified by the greater numbers of people the earth was able to support under such conditions, while cooling and colder times were typically just the opposite, with many significant population collapses).

anything, fallen worldwide in recent decades and there is little evidence of global changes in floods.<sup>175</sup>

With respect to “ocean acidification,” the scientists explain:

The oceans absorb some of the extra carbon dioxide released into the atmosphere. It would form a weak acid if it were not already mostly alkaline. Human emissions of carbon dioxide will tend to make sea water less alkaline and more chemically neutral. The projected change over the next century is between 0.1 and 0.5 pH units. However, seawater pH naturally varies from 7.5 to 8.5 between regions of the ocean, between habitats, between days, and even between times of day. It is therefore misleading to talk of ‘ocean acidification’. Shallow-water coral reefs are already subjected to hourly, daily and seasonal changes in pH that encompass the full range of ocean variability, hence the effects of changes in pH can be studied. Claims that corals and shellfish will find it harder to grow in acidic water are overly simplistic, not only because the water is not expected to be acidic but because the dissolved carbon dioxide forms bicarbonate and carbonate ions, the raw material for shellfish shells. Most studies find mixed effects, with some groups of organisms thriving as a result of increased dissolved carbon dioxide and some doing less well.<sup>176</sup>

With respect to sea level rise, the scientists observe:

[S]ea level has been rising for thousands of years – since long before GHG emissions became significant. Claims of an acceleration in sea level rise from 2 to 3mm per year and its attribution to mankind must be treated with caution. In particular, it is not currently possible to reconcile estimates of sea level rise with estimates of the factors that are thought to contribute to it. The picture is even more unclear at the local scale where, depending on the location, many contributions have nothing to do with climate, such as tectonics, vegetation cover, hydrology, etc.<sup>177</sup>

Any NEPA assessment must therefore weigh the proven environmental benefits of increased CO<sub>2</sub>.

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<sup>175</sup> Prof. Robert Carter, Prof. Ross McKittrick, Prof. Vincent Courtillot, Prof. Ian Plimer, Prof. Freeman Dyson, Dr. Matt Ridley, Prof. Christopher Essex, Sir Alan Rudge, Dr. Indur Goklany, Prof. Nir Shaviv, Prof. Will Happer, Prof. Fritz Vahrenholt, Prof. Richard Lindzen, “The Small Print: What The Royal Society Left Out” 13 (Global Warming Policy Foundation March 2015).

<sup>176</sup> *Id.* at 15.

<sup>177</sup> *Id.* at 14.

#### **IV. CEQ's Revised Draft Guidance Ignores the Societal Benefits of Carbon and Fossil Fuels.**

NEPA's implementing regulations provide that "Federal agencies shall to the fullest extent possible" use "all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the *human environment* and avoid or minimize any possible adverse effects of their actions upon the quality of the *human environment*." 40 C.F.R. § 1500.2(f) (emphasis added). However, the Revised Draft Guidance will, when applied, disproportionately stifle fossil fuel development and use, despite the proven critical benefits that fossil fuels have produced for society. The Revised Draft Guidance does not appear to allow consideration of these benefits, and it thereby overwhelmingly tips the scales against development and use of such resources in the future.

The issue here is the continued improvement of the *human environment*, a concept recognized since the "Declaration of the United Nations Conference on the Human Environment" in 1972 and reaffirmed to this day. The Stockholm Declaration recognized that, "[o]f all things in the world, people are the most precious. It is the people that propel social progress, create social wealth, develop science and technology." The Stockholm Declaration set forth a series of principles central to human progress:

- "Both aspects of man's environment, the natural and the man-made, are essential to his well-being and to the enjoyment of basic human rights, the right to life itself."
- "Economic and social development is essential for ensuring a favorable living and working environment for man and for creating conditions on earth that are necessary for the improvement of the quality of life."
- "Millions continue to live far below the minimum levels required for a decent human existence, deprived of adequate food and clothing, shelter and education, health and sanitation."

Subsequent declarations have reiterated these principles:

- 1992 - "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life." (World Health Organization, Rio).
- 2009 - "Social and economic development and poverty eradication are the first and overriding priorities of developing countries." (Copenhagen)
- 2012 - "Eradicating poverty is the greatest global challenge facing the world today and an indispensable requirement for sustainable development. In this regard we are committed to freeing humanity from poverty and hunger as a matter of urgency." (United Nations, Rio).
- 2014 - "Modern energy services are the key to changing people's quality of life." (UN Secretary-General Ban Ki-moon).

The Stockholm Declaration and related pronouncements have defined the criteria necessary to improve the human environment: adequate food, sanitation and clean water, economic development, shelter, education, control of toxic substances, and the well-being of peoples. Any NEPA assessment must also include the recognition that fossil fuels — primarily coal — are key to achieving all of these objectives. Coal produced the modern civilized world. Coal and fossil fuels facilitated successive industrial revolutions (including the 21st century electricity-based information revolution), created our advanced technological society, and permit the high quality of life that we take for granted.<sup>178</sup> Over the past 250 years, global life expectancy has doubled, population has increased eight times, and incomes have increased eleven times.<sup>179</sup> As one commentator has noted, “[t]he result of this great boost in energy is what the economic historian and philosopher Deirdre McCloskey calls the Great Enrichment. In the case of the U.S., there has been a roughly 9,000% increase in the value of goods and services available to the average American since 1800, almost all of which are made with, made of, powered by or propelled by fossil fuels.”<sup>180</sup> During this period, CO<sub>2</sub> levels in the atmosphere increased from approximately 320 parts per million (ppm) to approximately 400 ppm — from 0.032% of the atmosphere to 0.040%.<sup>181</sup>

Thus, there is a strong relationship between coal and fossil fuel use and global prosperity.<sup>182</sup>

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<sup>178</sup> Presentation by Roger Bezdek on Social Cost of Carbon (George C. Marshall Institute, Feb. 26, 2014), available at <http://marshall.org/climate-change/presentation-by-roger-bezdek-on-social-cost-of-carbon/>.

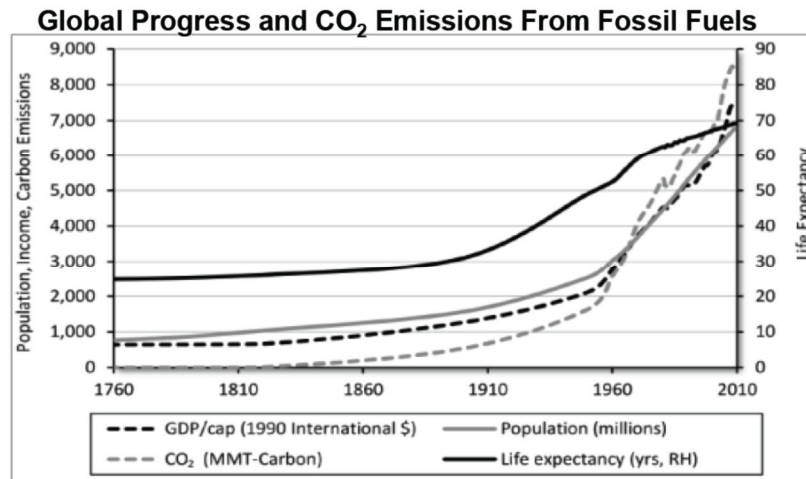
<sup>179</sup> *Id.*

<sup>180</sup> Matt Ridley, *Fossil Fuels Will Save the World (Really)*, Wall St. J., Mar. 13, 2015 (available at <http://on.wsj.com/1CdXe05>)

<sup>181</sup> Presentation by Roger Bezdek on Social Cost of Carbon (George C. Marshall Institute, Feb. 26, 2014), available at <http://marshall.org/climate-change/presentation-by-roger-bezdek-on-social-cost-of-carbon/>.

<sup>182</sup> *Id.*

## FOSSIL FUELS = GROWTH & PROSPERITY



**“Technologies dependent on cheap, abundant, reliable fossil fuels such as coal enabled these improving trends.”**

5

Not surprisingly, the United Nations Development Fund has cited electrification as the world’s most significant engineering achievement of the past century and ranked it as the second most significant innovation of the past 6,000 years, after the printing press.<sup>183</sup> Coal is essential to the achievement of the United Nations’ Millennium Development Goals, which range from halving extreme poverty rates to achieving universal primary education.<sup>184</sup> As one commentator has written, “more than a billion people on the planet have yet to get access to electricity and to experience the leap in living standards that abundant energy brings. This is not just an inconvenience for them: Indoor air pollution from wood fires kills four million people a year. The next time that somebody at a rally against fossil fuels lectures you about her concern for the fate of her grandchildren, show her a picture of an African child dying today from inhaling the dense muck of a smoky fire.”<sup>185</sup>

Quite simply, electricity is essential for human progress, and there is a strong relationship between electricity consumption and increases in longevity:

<sup>183</sup> *Id.*

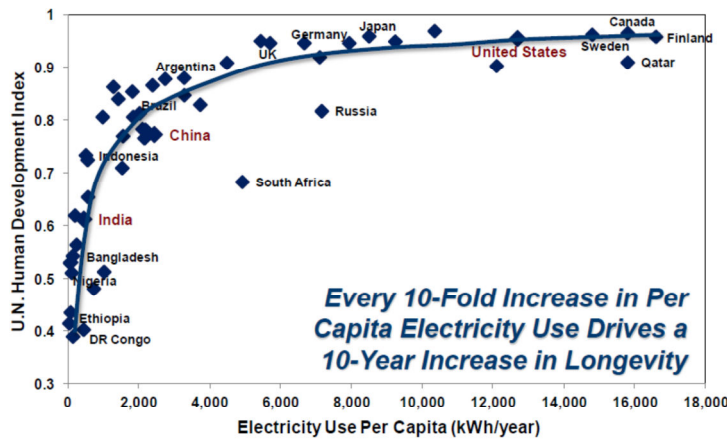
<sup>184</sup> United Nations, Millennium Development Goals, available at <http://www.un.org/millenniumgoals/> (last viewed on Oct. 16, 2014).

<sup>185</sup> Matt Ridley, *Fossil Fuels Will Save the World (Really)*, Wall St. J., Mar. 13, 2015 (available at <http://on.wsj.com/1CdXe05>)

## Electricity Enables People to Live Longer and Better



United Nations Links Affordable Energy to Quality of Life



Source: CIA World Fact Book, United Nations Development Program's Human Development Report.

9

A wide range of distinguished scholars supports the link between fossil fuels — primarily coal — and prosperity. As noted by Robert U. Ayres (former Carnegie-Mellon professor and now INSEAD Emeritus Professor of Economics and Political Science and Technology Management in Fontainebleau, France), historically economic growth has been driven primarily not by “technological progress” in some general and undefined sense, but specifically by “the availability of ever cheaper energy - and useful work - from coal, petroleum, or gas.”<sup>186</sup> Professor Ayres continues: “The rather standard assumption that economic growth is independent of energy availability must be discarded absolutely. It is not tenable. It implies, wrongly, that energy-related emissions (GHGs) can be reduced or eliminated without consequences for growth.”<sup>187</sup> In the words of Vaclav Smil (Distinguished Professor Emeritus in the Faculty of Environment at the University of Manitoba), “[t]he most fundamental attribute of modern society is simply this: Ours is a high energy civilization based largely on combustion of fossil fuels.”<sup>188</sup> Professor David Stern of the Australian National University explains that “[t]he theoretical and empirical evidence indicates that energy use and output are tightly coupled, with energy availability playing a key role in enabling growth. Energy is important for growth

<sup>186</sup> Robert U. Ayres & Benjamin Warr, *The Economic Growth Engine: How Energy and Work Drive Material Prosperity* (2009).

<sup>187</sup> Robert U. Ayres, Jeroen C.J.M. van don Bergh, Dietmar Lindenberger, & Benjamin Warr, *The Underestimated Contribution of Energy to Economic Growth*, (INSEAD, Working Paper No. 2013/97/TOM/EPS/SOCIAL Innovation Centre, 2013), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2328101](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2328101).

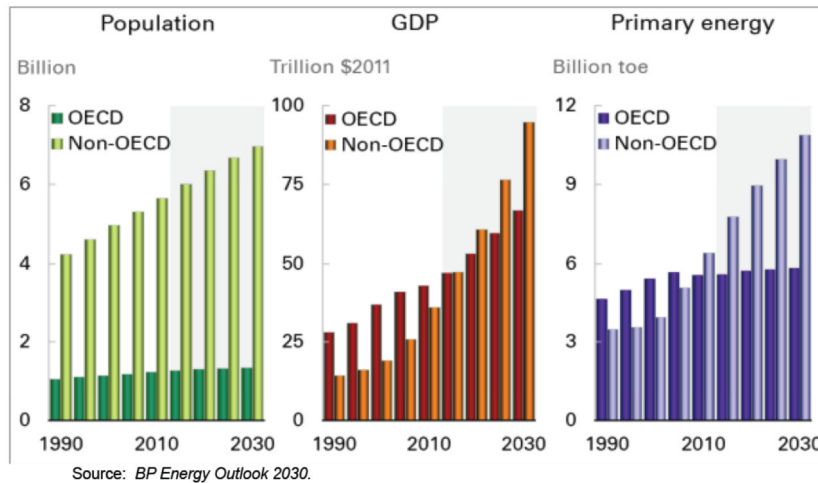
<sup>188</sup> Vaclav Smil, *Energy at the Crossroads: Global Perspectives and Uncertainties*, MIT PRESS (2005).

because production is a function of capital, labor, and energy, not just the former two . . . .”<sup>189</sup> Another group of scholars concluded: "The bottom line is that an enormous increase in energy supply will be required to meet the demands of projected population growth and lift the developing world out of poverty without jeopardizing current standards of living in the most developed countries.”<sup>190</sup>

The data strongly bear out the scholars’ work: Increased energy consumption generally is required for economic growth.<sup>191</sup>

## ENERGY REQUIRED FOR ECONOMIC GROWTH

**Forecast of World Population, GDP, and Energy Growth**



Accordingly, there is a strong relationship between economic growth and energy use.<sup>192</sup>

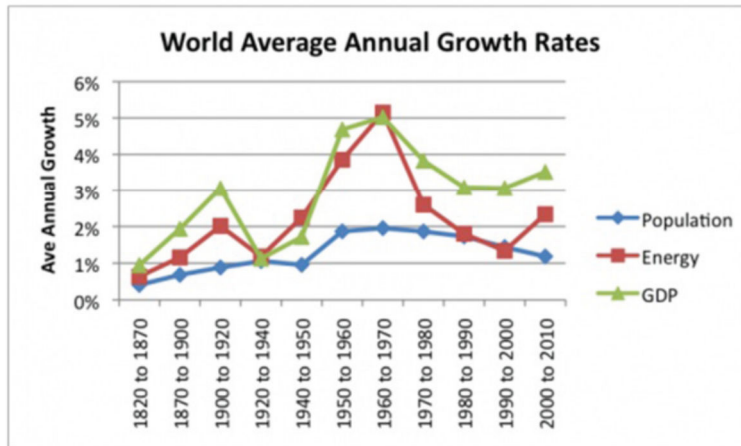
<sup>189</sup> David I. Stern, *The Role of Energy in Economic Growth*, (The United States Association for Energy Economics and the International Association for Energy Economics, USAEE-IAEE Working Paper No. 10-055, Nov. 2010).

<sup>190</sup> James H. Brown, William R. Burnside, Ana D. Davidson, John P. DeLong, William C. Dunn, Marcus J. Hamilton, Jeffrey C. Nekola, Jordan G. Okie, Norman Mercado-Silva, William H. Woodruff, and Wenyun Zuo, “*Energetic Limits to Economic Growth*,” 61 *BIOSCIENCE* 1 (Jan. 2011).

<sup>191</sup> Presentation by Roger Bezdek on Social Cost of Carbon (George C. Marshall Institute, Feb. 26, 2014), available at <http://marshall.org/climate-change/presentation-by-roger-bezdek-on-social-cost-of-carbon/>.

<sup>192</sup> *Id.*

## CLOSE LINK BETWEEN ENERGY & GDP

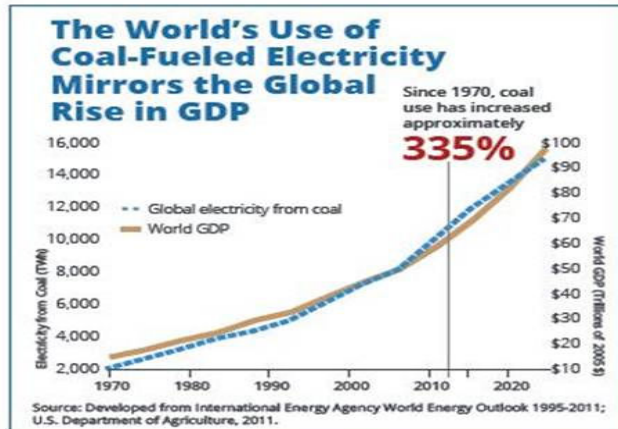


Source: Gail Tverberg, 2012.

**“Fossil fuels created an economic miracle that has lifted billions of people out of hopeless poverty.”**

15

And also a strong relationship between coal and economic growth:



*There is a near perfect correlation between expanding coal use and growing economies. A rapid rise in the world's use of coal-fueled electricity mirrors the global rise in GDP.*

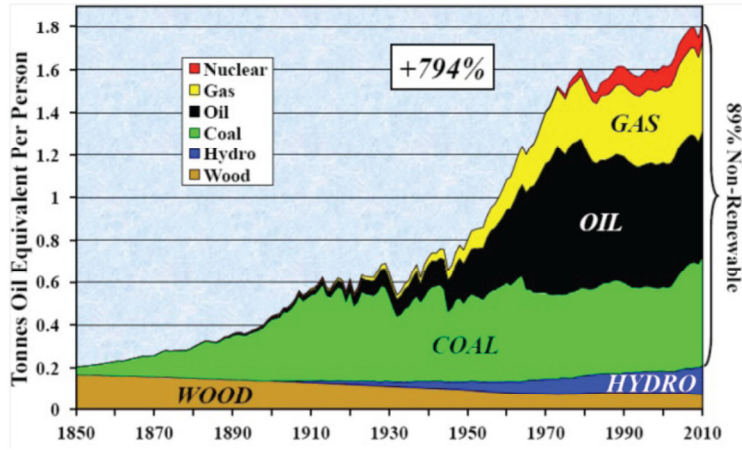
Coal has played a critical role in the development of the modern world. Per capita energy consumption of coal has been historically significant and is growing today:<sup>193</sup>

<sup>193</sup> *Id.*



## FOSSIL FUELS POWER THE WORLD

World Per Capita Annual Primary Energy Consumption by Fuel

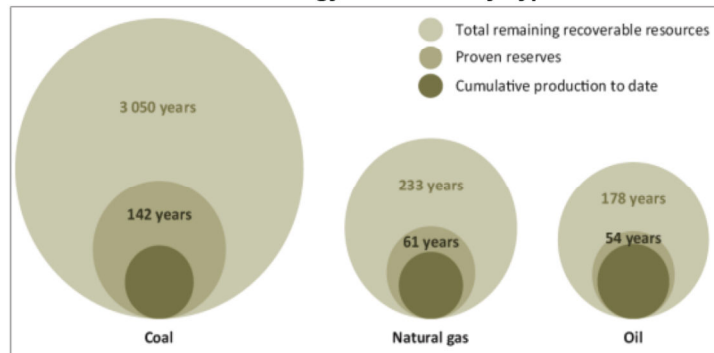


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The reason is that coal is a plentiful, affordable resource and will therefore be essential to continued economic progress:<sup>194</sup>

## COAL > 80% OF ALL FOSSIL FUELS

Fossil Energy Resources by Type



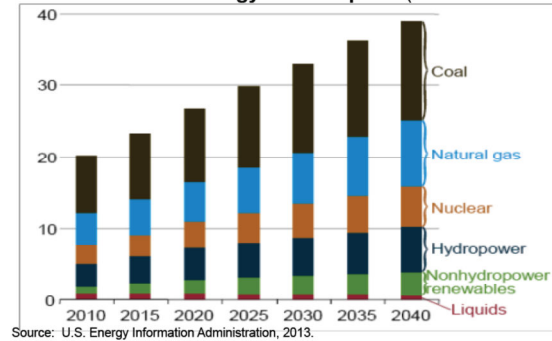
**Coal resources are many times > natural gas & oil combined.**

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<sup>194</sup> *Id.*

## FOSSIL FUELS ESSENTIAL FOR ELECTRICITY

Growth in World Total Electricity Generation and Total Delivered Energy Consumption (Index: 1990 = 1)

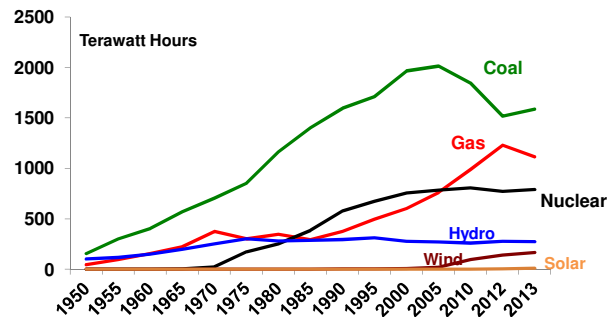


Electricity use doubles: **Coal is currently world's predominant fuel for electricity generation & is forecast to remain so**

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Coal remains the critical fuel in the United States as well:

U.S. Power Generation: Coal is the Workhorse

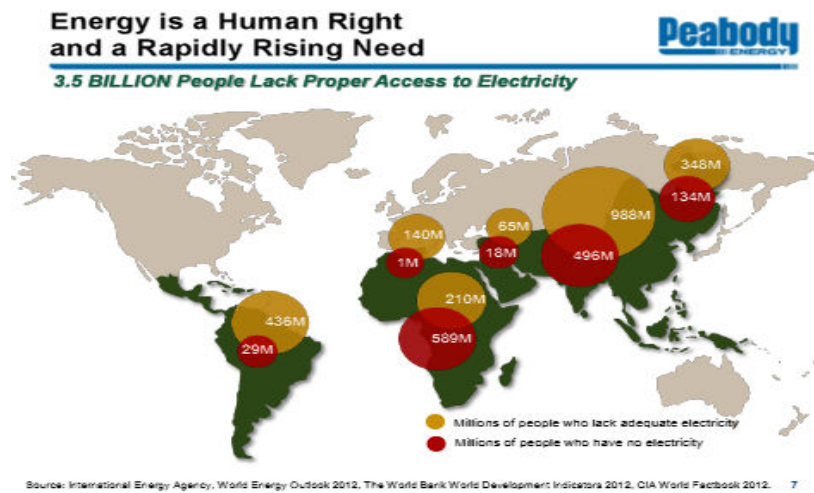


Source: EIA

“The importance of coal in the global energy mix is now the highest since 1971 [... Coal is] the fuel underpinning the rapid industrialization of emerging economies, helping to raise living standards and lift hundreds of millions of people out of poverty.”<sup>195</sup> As the developing world continues its efforts at industrialization, promotion of education, and attainment of health and sustainability, the availability of coal will be of utmost importance and will dictate success or failure.

<sup>195</sup> Fatih Birol, “Coal’s Role in the Global Energy Mix: Treading Water or Full Steam Ahead?,” “The Official Journal of the World Coal Industry, (May 20, 2013), available at <http://cornerstonemag.net/coal-its-role-in-the-global-energy-mix-treading-water-or-full-steam-ahead/>.

Nearly 40 percent of global electricity is produced from coal.<sup>196</sup> The need for increased affordable energy cannot be ignored:



Indeed, “study after study – and pure common sense – tells us that access to electricity helps people live longer and better. For every agency voicing a 2050 GHG goal ... we need 10 working toward the goal of broad energy access to reduce global poverty.”<sup>197</sup> For example, coal has provided China the resources and power to provide electricity to the nation. Such electricity brings with it jobs, health care, and better social and economic opportunities. “Electrification in China is a remarkable success story ... the most important lesson for other developing countries [is] that electrified countries reap great benefits, both in terms of economic growth and human welfare.”<sup>198</sup>

In fact, the U.S. has historically supported coal development through its support of multilateral institutions such as the World Bank. Although the World Bank initially announced in 2012 that it would no longer issue loans for coal-fired plants, it changed its mind in the face of the desperate need for stable power in the developing world.<sup>199</sup> The international lender realized that Africa was experiencing “almost energy apartheid,” according to its president, Jim Yong

<sup>196</sup> International Energy Agency, *Coal*, available at <http://www.iea.org/topics/coal/> (last viewed on Oct. 16, 2014). See also INTERNATIONAL ENERGY AGENCY, *WORLD ENERGY OUTLOOK 2013*.

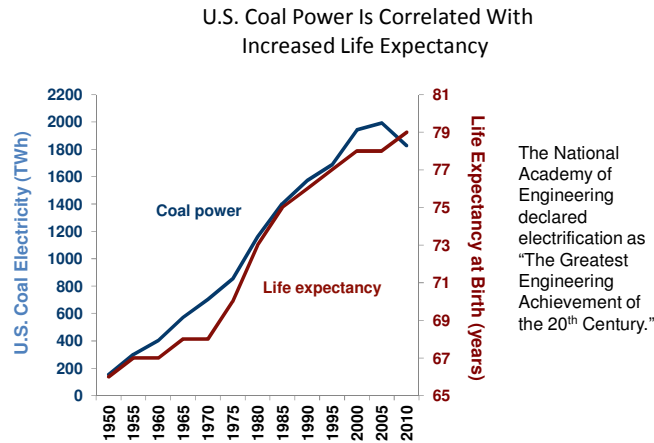
<sup>197</sup> Gregory H. Boyce, *Empowered: The Peabody Plan and the Social Benefit of Coal – A Model for the World*, U.S. Energy Association (May 26, 2014), available at <http://www.usea.org/sites/default/files/event-PEABODY%20PRESENTATION%20%20USEA%206th%20Annual%20Energy%20Supply%20Forum%202013%20FIN.pdf>.

<sup>198</sup> International Energy Agency, *World Energy Outlook 2007*, at 281-87 (2007) available at [http://www.worldenergyoutlook.org/media/weowebiste/2008-1994/weo\\_2007.pdf](http://www.worldenergyoutlook.org/media/weowebiste/2008-1994/weo_2007.pdf).

<sup>199</sup> Nina Glinski, “*World Bank May Support African Coal Power*,” *Kim Says*, BLOOMBERG (Aug. 5, 2014) (“The proposition would force the lender and its biggest shareholder, the U.S., to make an exception in their clean-energy commitments and concede that burning coal can be the fastest route out of poverty.”), available at <http://www.bloomberg.com/news/2014-08-05/world-bank-may-support-african-coal-power-kim-says.html>.

Kim.<sup>200</sup> “There’s never been a country that has developed with intermittent power,” he stated, recognizing that coal could provide stability that other sources of energy could not.<sup>201</sup> In the end, the World Bank and “its biggest shareholder,” the United States, recognized that raising the developing world out of poverty depends on intelligent development and utilization of coal.

That is an important lesson for the United States to learn domestically as well. Low-cost electricity from coal allows American business to prosper and lower-income Americans to improve their quality of life. Studies have found that a 10 percent increase in the electricity price will result in a one percent decrease in GDP and jobs.<sup>202</sup> U.S. coal use has a strong relationship with increased life expectancy:



Sources: EIA, Electricity, Generation & Thermal Output, Electricity Net Generation, Electric Power Sector, 1949-2011; CDC, Life Expectancy; National Academy of Engineering

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Coal fuels approximately 40 percent of our domestic electricity production.<sup>203</sup> It is one of the least expensive ways to generate electricity:<sup>204</sup>

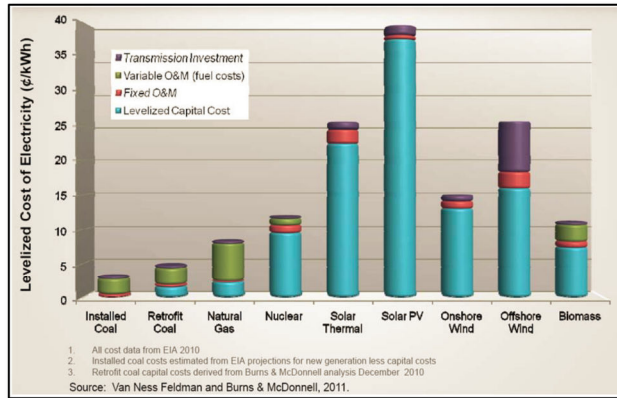
<sup>200</sup> *Id.*

<sup>201</sup> *Id.*

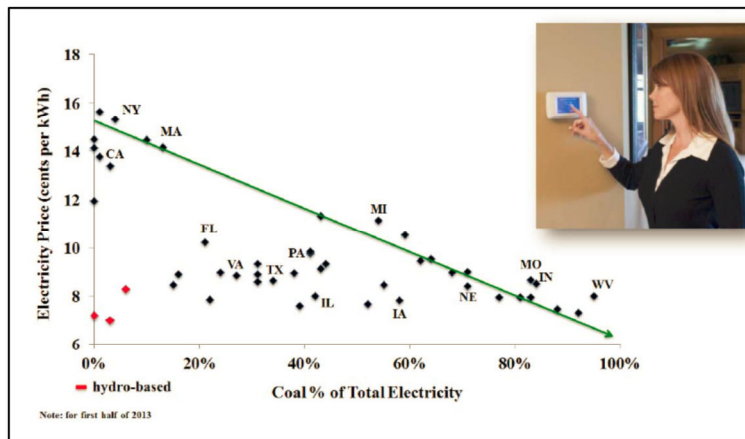
<sup>202</sup> See AMERICAN COALITION FOR CLEAN COAL ELECTRICITY, THE SOCIAL COSTS OF CARBON? NO, THE SOCIAL BENEFITS OF CARBON, Appendix III, at 175-181 (Jan. 2014), available at [http://www.americaspower.org/sites/default/files/Social\\_Cost\\_of\\_Carbon.pdf](http://www.americaspower.org/sites/default/files/Social_Cost_of_Carbon.pdf).

<sup>203</sup> Statement by Dr. S. Julio Friedmann, Dep’t Asst. Secretary for Clean Coal, U.S. Dep’t of Energy before the Committee on Energy and Commerce, Subcommittee on Oversight and Investigations, U.S. House of Representatives (Feb. 11, 2014).

<sup>204</sup> AMERICAN COALITION FOR CLEAN COAL ELECTRICITY, THE SOCIAL COSTS OF CARBON? NO, THE SOCIAL BENEFITS OF CARBON, at Fig. Ex.-10, at 9 (Jan. 2014), available at [http://www.americaspower.org/sites/default/files/Social\\_Cost\\_of\\_Carbon.pdf](http://www.americaspower.org/sites/default/files/Social_Cost_of_Carbon.pdf).



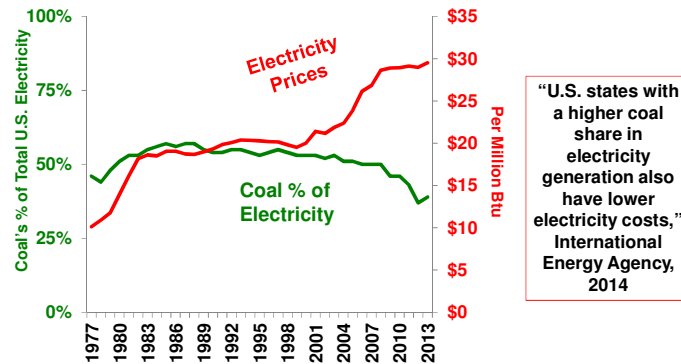
As a result, the higher percentage of coal used to generate electricity, the lower the electricity rate:<sup>205</sup>



Conversely, the data show that less coal means high electricity prices:

<sup>205</sup> *Id.* Ex-11, at 10.

### Less Coal = Higher Electricity Prices



Sources: EIA; IEA, The Impact of Global Coal Supply on Worldwide Electricity Prices, 2014

“U.S. states with a higher coal share in electricity generation also have lower electricity costs,” International Energy Agency, 2014

The Revised Draft Guidance “advises agencies to consider the particular impacts of climate change on vulnerable communities.”<sup>206</sup> Yet the cost of energy is especially important for low-to- middle-income families. The average energy costs for heating, cooling, and other energy needs represent a greater percentage of their budget than the same costs for high-income families. Households with pre-tax incomes less than \$50,000 (49% of American households) devote 20% of their after-tax budget to energy costs.<sup>207</sup> For households with less than \$30,000 in pre-tax income (consisting of 37 million families), energy costs this year are expected to be 26% of their post-tax expenditures.<sup>208</sup> This fact is more alarming when considering that household incomes have not returned to their pre-recession peaks.<sup>209</sup> Fixed-income seniors are also vulnerable to increased energy costs.<sup>210</sup> In 2012, the median gross income of seniors fell one-third below the national average.<sup>211</sup>

<sup>206</sup> 79 Fed. Reg. at 77821.

<sup>207</sup> AMERICAN COALITION FOR CLEAN COAL ENERGY, ENERGY COST IMPACTS ON AMERICAN FAMILIES, 2001-2014, (Feb.2014).

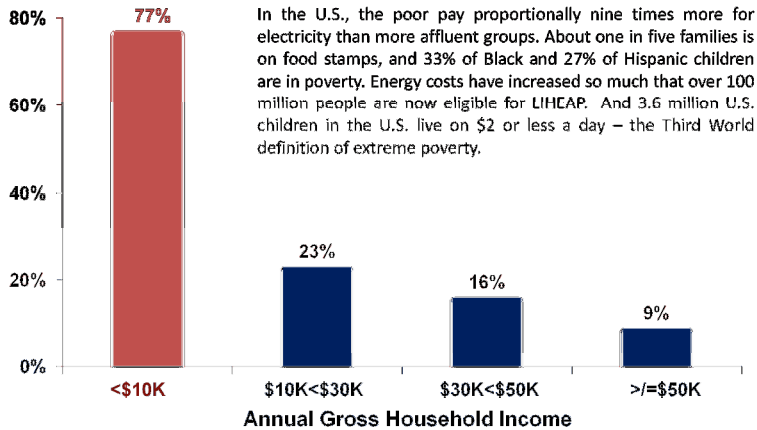
<sup>208</sup> *Id.*

<sup>209</sup> *Id.*

<sup>210</sup> *Id.*

<sup>211</sup> *Id.*

**The Poor Will Notice First:  
American Family Energy Costs as % of After-Tax Income**



Source: Gene Trisko, *Energy Cost Impacts on American Families*, January 2013

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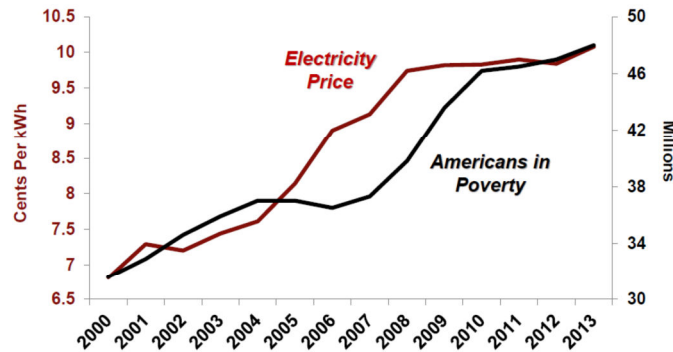
For millions of households – especially senior citizens, single parents, and minorities – high energy costs force hard decisions about what bills to pay: housing, food, education, health care, and other necessities. Energy costs are highly regressive, since energy expenditures consume larger shares of the budgets of low-income families than they do for those of higher-income families. Inability to pay utility bills is the second-leading cause of homelessness in U.S., after domestic abuse.<sup>212</sup> It is no surprise that consumer electricity prices correlate strongly with the poverty rate:

<sup>212</sup>THE AFFORDABLE POWER ALLIANCE, *POTENTIAL IMPACT OF THE EPA ENDANGERMENT FINDING ON LOW INCOME GROUPS AND MINORITIES* (March 2010); Roger Bezdek, *Maximum Burden: The Electricity Price Increases From the Proposed EPA Utility MACT Will Act as a Regressive Tax on the Elderly*, PUB. UTILS. FORTNIGHTLY, (Dec. 2012); Roger Bezdek, *Florida Will be Hit Hard by MACT*, MODERN POWER SYSTEMS, 15—16. (Sept. 2012).

## Rising Power Prices Correlates With Growing U.S. Poverty



Since 2008, U.S. Population in Poverty Grew 20%, in Parallel with Power Costs



Sources: EIA, "Geography, US States, State Electricity Summaries (US)," "Electric Power Monthly, February 2014," US Census Bureau, "Poverty 2000-2012," The Washington Times, January 7, 2014, "That's rich: Poverty level under Obama breaks 50-year record"

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Any NEPA assessment must take into account the critical impact of coal on human welfare and the *human* environment.

### V. Unilateral Action by the United States Would Lack Any Measurable Impact in Any Event.

Under NEPA, an agency has no duty to consider indirect effects unless there is a "reasonably close causal relationship" that would qualify as a "proximate cause" under tort law.<sup>213</sup> An agency need not consider environmental effects of subsequent actions over which it lacks control.<sup>214</sup>

But there is a qualitative difference between climate change and other issues typically subject to NEPA. In the words of a leading environmental lawyer, the relationship between carbon emissions and climate change "does not operate like the kind of simple, short-term, more linear relationship between cause and effect that most people . . . assume is at work when they contemplate pollution."<sup>215</sup> The Supreme Court has similarly observed that "greenhouse gases permeate the world's atmosphere rather than a limited area near the earth's surface."<sup>216</sup> There is

<sup>213</sup> *Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 774 (1983).

<sup>214</sup> See *National Association of Home Builders v. Defenders of Wildlife*, 551 U.S. 644, 667 (2007); *Dep't of Transp. v. Public Citizen*, 541 U.S. 752, 770 (2004).

<sup>215</sup> Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153, 1164 (2009).

<sup>216</sup> *Massachusetts v. EPA*, 549 U.S. 497, 529 n.26 (2007).



simply no cause-and-effect relationship between the actions of any individual emitter and any specific harm. Even the CEQ has noted “the difficulties in attributing specific climate impacts to individual projects.”<sup>217</sup>

Carbon dioxide emissions have a uniquely and inescapably global and systemic character. All of us are emitters, and all of our contributions are commingled. Former EPA Administrators Lisa Jackson and William Reilly have also agreed that GHG emissions cannot be solved through unilateral action.<sup>218</sup> Secretary of State John Kerry has acknowledged that “[e]ven if the United States somehow eliminated all of our domestic greenhouse gas emissions, it still wouldn’t be enough to counteract the carbon pollution coming from China and the rest of the world.”<sup>219</sup> Even Intergovernmental Panel on Climate Change (IPCC) Chair R.K. Pachauri has stated that “addressing climate change” “can only be achieved through cooperative responses, including international cooperation.”<sup>220</sup>

The small and diminishing role of U.S. sources is apparent when compared to the growing emissions by other nations. In 2013, CO<sub>2</sub> emissions worldwide rose 2.5% and hit a record high.<sup>221</sup> The growth is being led by China, the world’s largest emitter, which this past year surpassed the European Union in per capita emissions.<sup>222</sup> India and Brazil are also substantial sources of emissions and are rapidly increasing.<sup>223</sup>

To put emissions in perspective, China’s emissions are roughly double those of the U.S.<sup>224</sup> Hence, China will wipe out *one year’s worth* of emissions reduction under the Proposed

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<sup>217</sup> 79 Fed. Reg. at 77808.

<sup>218</sup> Matt Dempsey, Press Release, Sen. Comm. on Env’t and Public Works, *Jackson Confirms EPA Chart Showing No Effect on Climate Without China, India* (Jul. 7, 2009) (quoting Lisa Jackson (then EPA Administrator): “I believe the central parts of the [EPA] chart are that U.S. action alone will not impact world CO<sub>2</sub> levels”), available at [http://www.epw.senate.gov/public/index.cfm?FuseAction=Minority.PressReleases&ContentRecord\\_id=564ed42f-802a-23ad-4570-3399477b1393](http://www.epw.senate.gov/public/index.cfm?FuseAction=Minority.PressReleases&ContentRecord_id=564ed42f-802a-23ad-4570-3399477b1393); William Reilly, Testimony, *Climate Change: The Need to Act Now*, Hearing, Comm. on Energy and Public Works, Subcomm. on Clean Air and Nuclear Safety, at 3 (June 18, 2014) (“Absent action by China, India, and other fast-growing economies, what we do alone will not suffice.”), available at [http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore\\_id=c2d43bbc-e60c-4a4f-b794-35bdd51e5ad3](http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=c2d43bbc-e60c-4a4f-b794-35bdd51e5ad3).

<sup>219</sup> John Kerry, “China, America and Our Warming Planet,” N.Y. Times, Nov. 11, 2014, available at <http://www.nytimes.com/2014/11/12/opinion/john-kerry-our-historic-agreement-with-china-on-climate-change.html>.

<sup>220</sup> Available at <http://www.un.org/climatechange/blog/2014/11/climate-change-threatens-irreversible-dangerous-impacts-options-exist-limit-effects/>.

<sup>221</sup> *Promises Aside, Emissions Increasing*, WASHINGTON POST, A4 (Sept. 24, 2014).

<sup>222</sup> *Id.*

<sup>223</sup> *Promises Aside, Emissions Increasing*, WASHINGTON POST, A4 (Sept. 24, 2014).

<sup>224</sup> The best estimate of emissions from China is 9.86 Gt/yr in 2012. PBL Netherlands Env’t Rsch. Agency, Eur. Comm’n Joint Rsch. Ctr., *Trends in Global CO<sub>2</sub> Emissions: 2013 Report*, 16-17 (table 2.2) (Oct. 2013). Notably, this study accounts for the slightly reduced emissions as a result of the global recession, which include

Rule in *only 13.5 days*, using 2030 projections.<sup>225</sup> Other countries relying upon coal for energy also swamp the minimal reductions the Proposed Rule would cause under EPA's estimate.<sup>226</sup> This is because of an "insatiable demand for power from emerging markets," and the trend will continue.<sup>227</sup> Russia recently announced the construction of the largest coal-fired plant in the world (8,000 Mw), with plans to sell the energy to China.<sup>228</sup> And India's prime minister recently rejected the idea of GHG cuts, even though the country is the world's third largest carbon emitter: "What cuts? That's for more developed countries."<sup>229</sup> He continued: "India's first task is eradication of poverty."<sup>230</sup> India has announced plans to double its use of domestic coal from 565 million tons in 2013 to more than a billion tons annually by 2019.<sup>231</sup>

In November 2014, the U.S. and China entered a non-binding and unenforceable agreement on emission, which provides merely that "China *intends* to achieve the peaking of CO<sub>2</sub> emissions *around* 2030."<sup>232</sup> A study by the Lawrence Berkeley National Laboratory found that, under current policies, Chinese CO<sub>2</sub> emissions would peak sometime between 2030 and 2035 anyway.<sup>233</sup> Thus, from China's perspective, the November 2014 agreement simply reflects the status quo. Even so, a Chinese government climate policy advisor was quick to make clear that "the timeline China has committed to is not a binding target."<sup>234</sup> Although the official Joint Announcement states that China "intends" to increase the share of non-fossil fuels in electricity generation, whether China would actually meet such a target seems dubious. The target envisions that China would add 800 to 1,000 gigawatts of nuclear, wind, solar and other zero-emission

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massive efforts on China's part to reduce GHG emissions. Even so, the United States as a whole (power plants plus all other sources) emitted about 52% of China's total emissions. *Id.*

<sup>225</sup> The Energy Information Administration projects that China will emit more than 14 *billion* tons of CO<sub>2</sub> in 2030. Source: <http://www.eia.gov/forecasts/ieo/table21.cfm>

<sup>226</sup> International Energy Agency, *Coal's Share of Global Energy Mix to Continue Rising, with Coal Closing in on Oil as World's Top Energy Source by 2017*, (Dec. 17, 2012), available at <http://www.iea.org/newsroomandevents/pressreleases/2012/december/name,34441,en.html> (commenting on demand for coal in China and globally and stating that "coal demand is not likely to stop growing even with more bearish economic perspectives").

<sup>227</sup> *Id.* (quoting International Energy Agency Executive Director Maria van der Hoeven).

<sup>228</sup> *Russian Firm Studying World's Largest Coal-Fired Plant to Supply China*, REUTERS (May 26, 2014), available at <http://www.reuters.com/article/2014/05/26/russia-interrao-plant-idUSL6N0OC30R20140526>.

<sup>229</sup> *Emissions from India Will Increase, Official Says*, N.Y. TIMES, at A5 (Sept. 25, 2014).

<sup>230</sup> *Id.*

<sup>231</sup> *Coal Rush in India Could Tip Balance on Climate Change*, N.Y. TIMES, at A4 (Nov. 18, 2014).

<sup>232</sup> Available at [chinadaily.com.cn/Agencies](http://chinadaily.com.cn/Agencies) (emphasis added).

<sup>233</sup> Lawrence Berkeley National Laboratory, "China's Energy and Carbon Emissions Outlook to 2050" at ix (April 2011).

<sup>234</sup> Reuters, "China, US agree limits on emissions, but experts see little new," (Nov. 12, 2014) available at <http://www.reuters.com/article/2014/11/12/china-usa-climatechange-idUSL3N0T21YK20141112>.

generating capacity by 2030, which is more than all the coal-fired power plants that exist in China today and close to the total electricity generating capacity of the United States.<sup>235</sup>

Nor is the U.S-China climate agreement likely to have an effect on other nations. India did not announce any reduction target for emissions cuts in response to the U.S.-China agreement. In fact, its power minister recently announced, “India’s development imperatives cannot be sacrificed at the altar of potential climate changes many years into the future. . . . The West will have to recognize we have the needs of the poor.”<sup>236</sup> A former Indian ambassador to the EU predicted, “I doubt the Indian government is going to change anything at this time.”<sup>237</sup>

Even developed countries such as Germany, Japan, and Canada are missing their targets for GHG reductions.<sup>238</sup> A recent EU agreement on greenhouse gas emissions pledged a “40% reduction” in emissions – but as measured against 1990 levels, when old and inefficient technologies meant that carbon emissions were particularly high.<sup>239</sup> In fact, the deal is pro-coal: it includes hundreds of millions of euros in free allowances to Poland to modernize coal-fired power plants.<sup>240</sup> In addition, the deal includes a provision reconsidering the carbon reduction target if an international treaty is not reached next year.<sup>241</sup> Separate targets for renewable energy and improving energy efficiency were made non-binding.<sup>242</sup> A news account observed that “recently there has been less enthusiasm among Europeans for a green agenda. The reasons include the stagnant economy that has depressed manufacturing, jobs, and wages, and an unwillingness to adopt new regulations that could worsen Europe’s declining international competitiveness.”<sup>243</sup>

The Lima Climate Change Conference in December 2014, and the deal resulting from those talks, will not lead to a reduction in emissions by other countries. The United Nations countries, after two weeks of negotiations, did not really decide anything. The agreement coming out of Peru was to “elaborate[e] the elements of the new agreement, scheduled to be agreed in Paris in late 2015, while also agreeing the ground rules on how all countries can submit

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<sup>235</sup> “China and US strike ‘historic’ greenhouse gas emissions deal,” *The Week*, Nov. 12, 2004, available at <http://www.theweek.co.uk/world-news/61299/china-and-us-strike-historic-greenhouse-gas-emissions-deal#ixzz3IrCm4kBm>.

<sup>236</sup> *Coal Rush in India Could Tip Balance on Climate Change*, N.Y. TIMES, at A4 (Nov. 18, 2014).

<sup>237</sup> *Climate Accord Relies on Environmental Policies Now in Place*, N.Y. Times, Nov. 13, 2014, at A10.

<sup>238</sup> *Promises Aside, Emissions Increasing*, WASHINGTON POST, A4 (Sept. 24, 2014).

<sup>239</sup> *See E.U. Greenhouse Gas Deal Falls Short of Expectations*, N.Y. Times, Oct. 25, 2014, at A11.

<sup>240</sup> *See* Arthur Neslen, EU Leaders Agree to Cut Greenhouse Gas Emissions by 40% by 2030, THE GUARDIAN (October 23, 2014), <http://www.theguardian.com/world/2014/oct/24/eu-leaders-agree-to-cut-greenhouse-gas-emissions-by-40-by-2030>.

<sup>241</sup> *See E.U. Greenhouse Gas Deal Falls Short of Expectations*, N.Y. Times, Oct. 25, 2014, at A11.

<sup>242</sup> *Id.*

<sup>243</sup> *Id.*

contributions to the new agreement during the first quarter of next year.”<sup>244</sup> Rather than a concrete deal, the agreement was to lay out a “wide range of options,” and represents “a watered-down version of the original deal,” which took extra days of negotiations in order to salvage anything from the session.<sup>245</sup> Notably, China and major developing countries oppose plans for a review process and the draft agreed to in Peru defanged requirements by changing the obligation of countries to include quantifiable information showing how they intend to meet their emissions targets to “may” instead of “shall.”<sup>246</sup> The fact that the text no longer makes it mandatory for countries to provide detailed information about their prospect reductions targets makes some believe it unlikely that any deal to be struck will reduce warming in any meaningful way.<sup>247</sup>

An agreement to make an agreement, the Peru talks left unresolved the major disagreements regarding how to distribute, between rich and poor countries, the burdens of reducing emissions.<sup>248</sup> Indeed, “progress in Lima was limited, and many decisions were simply postponed.”<sup>249</sup> Sam Smith, chief of climate policy for the WWF went so far as to say the Peru text “went from weak to weaker to weakest and it’s very weak indeed.”<sup>250</sup> And it is not clear that the real agreement, to be made in Paris later in 2015, will happen; United Kingdom climate change minister Ed Davey admitted that Paris will not “be a walk in the park”<sup>251</sup> and any agreement there will be “even more difficult.”<sup>252</sup> To be sure, there were many attendees in Lima who believe the deal was ineffectual, and therefore any deal in Paris will be “even more difficult

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<sup>244</sup> See United Nations Framework Convention on Climate Change, Newsroom: Lima Call for Climate Action Puts World on Track to Paris 2015 (Dec. 14, 2014), available at <http://newsroom.unfccc.int/lima/lima-call-for-climate-action-puts-world-on-track-to-paris-2015/>.

<sup>245</sup> See Aljazeera, *Weakened Deal Reached in Peru Climate Talks* (Dec. 14, 2014), available at <http://www.aljazeera.com/news/americas/2014/12/weakened-deal-reached-peru-climate-talks-201412146525258501.html>.

<sup>246</sup> See *id.*

<sup>247</sup> See Suzanne Goldenberg, *Lima Climate Change Talks Reach Global Warming Agreement*, The Guardian (Dec. 14, 2014), available at <http://www.theguardian.com/environment/2014/dec/14/lima-climate-change-talks-reach-agreement>.

<sup>248</sup> See BBC, *UN Members Agree Deal at Lima Climate Talks* (Dec. 14, 2014), available at <http://www.bbc.com/news/science-environment-30468048>.

<sup>249</sup> *Id.*

<sup>250</sup> *Id.*

<sup>251</sup> *Id.*

<sup>252</sup> See Steve Connor, *UN Climate Change Deal in Peru Attacked by Environmental Activists as “Weak” and “Ineffectual,”* The Independent (Feb. 18, 2015), available at <http://www.independent.co.uk/environment/climate-change/un-climate-change-deal-in-peru-attacked-by-environmental-activists-as-weak-and-ineffectual-9924528.html>.

to reach.”<sup>253</sup> At end, there are many significant and profound hurdles to making any deal in Paris, including determining what countries will pay to help poor countries under any regime and whether or not to make any agreement either non-binding or an actual treaty.<sup>254</sup>

Even if the negotiating countries can overcome their differences and create an agreement in Paris, it will likely be non-binding due to China’s already-stated position on the issue.<sup>255</sup> And, as stated, any possible gains could be unrealized, as the agreement cannot address the fact that even developed countries are missing their targets for emissions reductions in the status quo.<sup>256</sup> As such, any regime, even if there is a miraculous turn of events in Paris, will be ineffectual.

Because of the global need for reliable, affordable energy, much of the rest of the world will depend on coal for stable development in the twenty-first century. Any reduction made in carbon emissions from generating units will be inconsequential given the international demand for affordable, reliable electricity from coal. As Australian Prime Minister Tony Abbott recently explained, “Coal is vital for the future energy needs of the world. Energy is critical if the world is to continue to grow and prosper.” “So let’s have no demonization of coal.” “Coal is good for humanity. Coal is good for prosperity. Coal is an essential part of our economic future here in Australia.”<sup>257</sup>

Accordingly, CEQ should not adopt the Revised Draft Guidance because it would result in no net environmental or societal benefit, and as discussed further below would only result in economic and societal impairment.

## **VI. The Federal Social Cost of Carbon is Based on Flawed and Highly Speculative Assumptions and Should Not Be Applied in NEPA Analyses.**

The Revised Draft Guidance directs federal agencies to apply the Federal Social Cost of Carbon (SCC) metric when monetizing the costs and benefits of a proposed action and alternatives.<sup>258</sup> However, it is impermissible to rely on this metric, for several reasons: (i) it is

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<sup>253</sup> *See id.*

<sup>254</sup> *See* Ben Jervey, *Weak Deal at Lima Climate Talks Disappoints Climate Hawks*, *Grist* (Dec. 15, 2014), available at <http://grist.org/climate-energy/weak-deal-at-lima-climate-talks-disappoints-climate-hawks/>.

<sup>255</sup> *See* Section IV, [*infra/supra*].

<sup>256</sup> *Id.*

<sup>257</sup> Jamie McKinnell, *Coal good for humanity, says Abbott*, *THE WEST AUSTRALIAN*, (Oct. 14, 2014), available at <https://au.news.yahoo.com/thewest/national/a/25247625/>; *see also* *Coal is good for humanity*, *THE AUSTRALIAN*, (October 15, 2014), available at <http://www.theaustralian.com.au/opinion/editorials/coal-is-good-for-humanity/story-e6frg71x-1227090541610> (“Coal still fuels more than 40 per cent of all energy needs on the planet. So, energy is good and required; and coal is its most important source.... If bread is the stuff of life, as they say, it is not too much of a stretch to suggest coal is the stuff of civilisation.”)

<sup>258</sup> 79 Fed. Reg. at 77,827.

inherently flawed and ultimately meaningless; (ii) it ignores the real-world observational data and ascribes undue certainty and reliability to the scientific evidence; and (iii) it ignores the environmental and social *benefits* of carbon.

The SCC is a classic case of “garbage in, garbage out.” The Integrated Assessment Models (IAMs) on which it depends rest on the fatally flawed climate science discussed in Part I, *supra*. For example, the SCC assumes “a two-third probability that climate sensitivity is between 2.0°C and 4.5°C.”<sup>259</sup> But as noted in Part I, real-world data disprove those estimated sensitivity values. The SCC’s assumptions cannot be squared with observational data showing that global average surface temperatures have not significantly increased since 1998. And, as noted in Part I, there are many other flaws in climate models. For example, DICE relies on a model of climate change (rising emissions creates “radiative forcing,” which raises temperatures and lowers economic output) that has already been disproven by scientific data.<sup>260</sup>

The SCC’s models then compound their error by adding arbitrary and unproven assumptions regarding impacts on human welfare from climate change, without any theoretical or empirically sound justifications.<sup>261</sup> For example, none of the models adequately accounts for the documented changes in agricultural productivity and environmental *benefits* from “greening” discussed in Part II, *supra*. Two of the models (DICE and PAGE) do not even permit consideration of “negative damages” – i.e., social benefits from CO<sub>2</sub> emissions – even though the third model (FUND) shows *positive net benefits* for warming below 3° C.<sup>262</sup> Thus, DICE and PAGE skew the analysis from the very beginning. Further, the models only assume human adaptation and fail to include evolutionary adaptation by plants or animals.

In addition, the SCC’s models make assumptions about the vulnerability of society to climate change, which is primarily driven by levels of economic development. Ironically, the economic damage inflicted by attempts to cut fossil-fuel use would increase society’s vulnerability to the very impacts that the SCC seeks to avoid. A richer, more productive world will be able to withstand challenges of all kinds.

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<sup>259</sup> Frank Ackerman & Elizabeth A. Stanton, *Climate Risks and Carbon Prices: Revising the Social Cost of Carbon*, ECONOMICS: THE OPEN-ACCESS, OPEN-ASSESSMENT E-JOURNAL, Apr. 4, 2012, available at <http://www.economics-ejournal.org/economics/journalarticles/2012-10>.

<sup>260</sup> Compare Frank Ackerman and Ian J. Finlayson, *The Economics of Inaction on Climate Change: A Sensitivity Analysis 2* (Global Dev. & Env. Inst., Working Paper No. 06-07, 2006) (explaining the climate portion of the DICE model, including radiative forcing) with James A. Johnstone and Nathan J. Mantua, *Atmospheric Controls on Northeast Pacific Temperature Variability and Change, 1900-2012*, Proceedings of the Nat’l Acad. of Sciences Early Edition 5 (published ahead of print, Sept. 22, 2014), available at <http://www.pnas.org/content/early/2014/09/16/1318371111.short> (subscription required) (demonstrating that changes in ocean and air temperatures are *not* the result of anthropogenic radiative forcing).

<sup>261</sup> Stephanie Waldhoff, et al., *The Marginal Costs of Different Greenhouse Gases: An Application of FUND*, ECONOMICS: THE OPEN-ACCESS, OPEN-ASSESSMENT E-JOURNAL, Oct. 1, 2014, available at <http://www.economics-ejournal.org/economics/journalarticles/2014-31>.

<sup>262</sup> U.S. Interagency Working Group on the Social Cost of Carbon, “Technical Support Document” at 9 (2010).

In short, the SCC is fatally flawed. It is based on speculative assumptions (disproven by the actual evidence) and much-criticized integrated assessment model simulations. The SCC assumes that climate science is settled and uncontroversial, when in fact the opposite is true. The SCC lacks theoretical and empirical foundation for the impacts of asserted climate change that form the key parts of its analysis. It is entirely unsuitable for NEPA.

As MIT economist Robert S. Pindyck has written, the SCC contains “crucial flaws” and *ad hoc* assumptions that make it “close to useless as [one of the] tools for policy analysis.”<sup>263</sup> In Professor Pindyck’s words, the SCC creates “a perception of knowledge and precision, but that perception is illusory and misleading.”<sup>264</sup> Other economists have cited the shortcomings of the SCC for policymaking purposes.<sup>265</sup> “There is no fact-of-the-matter concerning the social cost of carbon that can provide an objective and value-free guide for policy evaluation.”<sup>266</sup>

Even Cass Sunstein, the former Administrator of the Office of Information and Regulatory Affairs for the Obama Administration, has acknowledged that “[m]any people believe that the [SCC’s technical supporting data] relies on unreliable integrated assessment models.”<sup>267</sup>

A study by the National Research Council of the National Academies of Science<sup>268</sup> found that the SCC suffers from uncertainty, speculation, and lack of information about:

- future emissions of greenhouse gases,
- the effects of past and future emissions on the climate system,
- the impact of changes in climate on the physical and biological environment, and
- the translation of these environmental impacts into economic damages.

The federal Interagency Working Group that helped create the SCC acknowledged that “[t]he limited amount of research linking climate impacts to economic damages makes this

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<sup>263</sup> Robert S. Pindyck, *Climate Change Policy: What Do the Models Tell Us?*, (NBER, Working Paper No. 19244, 2013).

<sup>264</sup> *Id.*

<sup>265</sup> *E.g.*, Richard B. Howarth, et al., *Risk Mitigation and the Social Cost of Carbon*, 24 GLOBAL ENV’T’L CHANGE 123 (2014).

<sup>266</sup> *Id.* at 130. *See also* Gary D. Libecap, *Addressing Global Environmental Externalities: Transaction Costs Considerations*, 52 J. ECON. LIT. 424 (2014) (discussing difficulty of applying SCC to global externalities of environmental policy, given debates over SCC and inherent scientific uncertainty).

<sup>267</sup> Cass R. Sunstein, *On Not Revisiting Official Discount Rates: Institutional Inertia and the Social Cost of Carbon*, 104 AM. ECON. REV.: PAPERS & PROCEEDINGS 547, 548 (2014).

<sup>268</sup> National Research Council (2009). *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use*. National Academies Press. See docket ID EPA-HQ-OAR-2009-0472-11486.

modeling exercise even more difficult” and that the exercise is subject to “simplifying assumptions and judgments reflecting the various modelers’ best attempts to synthesize the available scientific and economic research characterizing these relationships.”<sup>269</sup> Even EPA has conceded: “As a result, any effort to quantify and monetize the harms associated with climate change will raise serious questions of science, economics, and ethics and should be viewed as provisional.”<sup>270</sup>

But even taking the SCC at face value, it is clear that it is deeply flawed conceptually. Because the SCC counts only the *cost* of carbon, it is a one-sided statistic. It ignores the other side of the equation: the benefit of carbon. Only if both the *cost* of carbon and the *benefit* of carbon are considered, could a balanced equation result.<sup>271</sup> And it is both contrary to agency practice and the familiar “arbitrary and capricious” standard of administrative law<sup>272</sup> to quantify only one side of the analysis.

Any comparison between carbon benefits and EPA’s asserted “costs” reveals that the benefits are *orders of magnitude* larger. CO<sub>2</sub> “is not a pollutant: It is the basis of life on Earth. It facilitates plant growth and enhances agricultural productivity. It is the primary raw material utilized by plants to produce the organic matter out of which they construct their tissues, which subsequently become the food source for animals and humans. The more CO<sub>2</sub> there is in the air, the better plants grow.”<sup>273</sup> Using GDP figures to compare CO<sub>2</sub> “costs” and “benefits” (on a per ton basis) based on EPA’s own SCC estimates demonstrate that the proven, documented benefits of CO<sub>2</sub> overwhelmingly outweigh EPA’s conjectural CO<sub>2</sub> costs—regardless of what assumptions, models, or discount rates are used.<sup>274</sup> Notably, this comparison takes EPA’s SCC estimates *on their face*—despite the many uncertainties and criticisms surrounding them—and contrasts them with the simple, straightforward benefits of CO<sub>2</sub> based on over two centuries of historical fact. The comparison shows that any of the SCC estimates of CO<sub>2</sub> costs “are relatively so small as to be in the statistical noise of the CO<sub>2</sub> benefits.”<sup>275</sup>

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<sup>269</sup> U.S. Interagency Working Group, 2010 and 2013, op. cit.

<sup>270</sup> U.S. Env’t Prot. Agency, Regulatory Impact Analysis for the Proposed Carbon Pollution Guides for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants, at 4-9 to 4-10 (2014), online at <http://www2.epa.gov/sites/production/files/2014-06/documents/20140602ria-clean-power-plan.pdf>.

<sup>271</sup> See Paul Driessen & Lawrence Kogan, *Breaking EPA’s Climate Science Secrecy Barrier*, Townhall, Jul. 1, 2014, available at <http://townhall.com/columnists/pauldriessen/2014/07/01/breaking-epas-climate-science-secrecy-barrier-n1857403/page/full>.

<sup>272</sup> 5 U.S.C. § 706(2)(A); see also *New Mexico ex rel. Richardson, v. Bureau of Land Management*, 565 F.3d 683, 704 (10th Cir. 2009) (agency decision is arbitrary and capricious if it “failed to base its decision on consideration of the relevant factors”).

<sup>273</sup> Roger Bezdek, *Benefits of Carbon Use Far Outweigh its Costs*, The Hill, Sept. 25, 2014, available at <http://thehill.com/blogs/congress-blog/energy-environment/218795-benefits-of-carbon-use-far-outweigh-its-costs>.

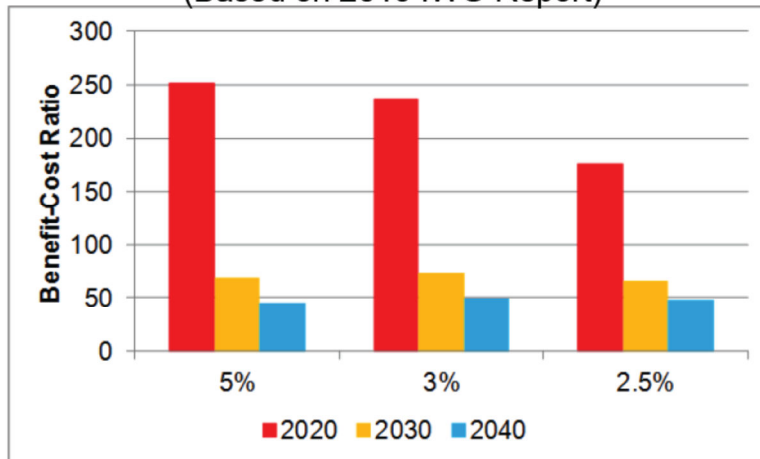
<sup>274</sup> See *id.*

<sup>275</sup> *Id.*; see also Presentation by Roger Bezdek on Social Cost of Carbon (George C. Marshall Institute, Feb. 26, 2014), available at <http://marshall.org/climate-change/presentation-by-roger-bezdek-on-social-cost-of-carbon/>.



## CO<sub>2</sub> BENEFITS FORECAST TO CONTINUE TO GREATLY EXCEED SCC

**Forecast Reference Case CO<sub>2</sub> Benefit-Cost Ratios**  
(Based on 2013 IWG Report)



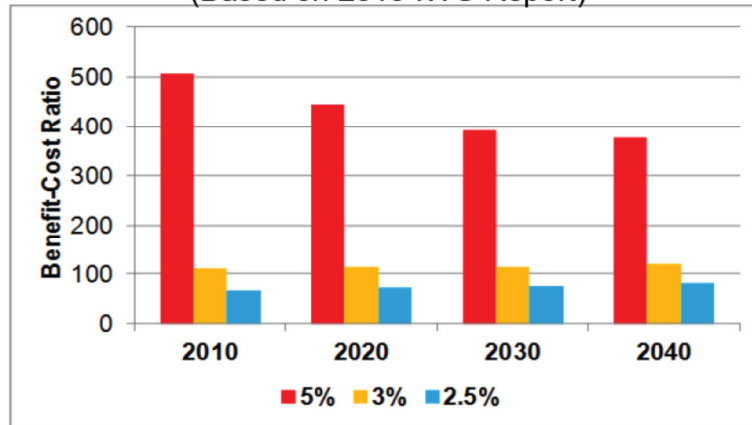
Source: U.S. Energy Information Administration, U.S. Bureau of Economic Analysis, U.S. Interagency Working Group, and Management Information Services, Inc.

**Using 2013 IWG report, forecast CO<sub>2</sub> benefits > forecast SCC by 70-to-1 to 250-to-1.**

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## CO<sub>2</sub> BENEFITS FORECAST TO CONTINUE TO GREATLY EXCEED SCC

**2010 and Forecast Reference Case CO<sub>2</sub> Benefit-Cost Ratios**  
(Based on 2010 IWG Report)



Source: U.S. Energy Information Administration, U.S. Bureau of Economic Analysis, U.S. Interagency Working Group, and Management Information Services, Inc.

**Using 2010 IWG report, forecast CO<sub>2</sub> benefits > forecast SCC by 100-to-1 to 500-to-1.**

25

Other studies have confirmed that “[t]he inclusion of the benefits of carbon dioxide fertilization on agriculture and forestry . . . substantially reduces the social cost of carbon dioxide.”<sup>276</sup> When looking at the entire picture,

CO<sub>2</sub> benefits outweigh the costs by, literally, orders of magnitude: Anywhere from 50-to-1 to 220-to-1. Normally, [benefit-cost] ratios in the range of 2-to-1 or 3-to-1 are considered very favorable. In other words, the benefits of CO<sub>2</sub> overwhelmingly outweigh the estimated CO<sub>2</sub> costs. In fact, the CO<sub>2</sub> costs are relatively so small as to be in the statistical noise of the CO<sub>2</sub> benefits.<sup>277</sup>

Even EPA has admitted that “[t]he limited amount of research linking climate impacts to economic damages makes the modeling exercise even more difficult.”<sup>278</sup> Further, it acknowledges that the SCC will need to be revised over time: “The U.S. government has committed to updating the current estimates as the science and economic understanding of climate change and its impacts on society improves over time.”<sup>279</sup>

Moreover, the SCC is highly sensitive to inputs like the discount rate.<sup>280</sup> This arbitrariness results in a statistic that can be manipulated to say whatever the agency wants it to say. Thus, the Office of Management and Budget (OMB) has prescribed discount rates of 3% and 7% for administrative agencies to use.<sup>281</sup> When the models on which the SCC draws are recalculated using a 7% discount rate, the SCC goes to zero or even negative—showing a *net benefit* to increased emissions *under the SCC’s own analysis*.<sup>282</sup>

Reasoned decision-making under NEPA cannot be premised on such a capricious metric. “Without standards to cabin agency discretion, cost-benefit analysis may become mere window dressing, providing a veneer of scientific backing for agencies’ arbitrary choices.”<sup>283</sup>

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<sup>276</sup> Waldhoff, et al., *supra*, p. 26.

<sup>277</sup> Bezdek, The Hill, *supra*; see also generally American Coalition for Clean Coal Electricity, *The Social Costs of Carbon? No, the Social Benefits of Carbon*, Jan. 2014, available at [http://www.americaspower.org/sites/default/files/Social\\_Cost\\_of\\_Carbon.pdf](http://www.americaspower.org/sites/default/files/Social_Cost_of_Carbon.pdf).

<sup>278</sup> RIA at 8-10.

<sup>279</sup> *FACT SHEET: Social Cost of Carbon*, U.S. ENVTL. PROT. AGENCY, available at <http://www.epa.gov/climatechange/Downloads/EPAactivities/scc-fact-sheet.pdf> (last visited Oct. 16, 2014).

<sup>280</sup> U.S. EPA REGULATORY IMPACT ANALYSIS at 4-10.

<sup>281</sup> OFFICE OF MGMT. AND BUDGET, REGULATORY ANALYSIS, CIRCULAR A-4, (Sep. 17, 2003), available at [http://www.whitehouse.gov/omb/circulars\\_a004\\_a-4/](http://www.whitehouse.gov/omb/circulars_a004_a-4/).

<sup>282</sup> Kevin Dayaratna and David Kreutzer, *Unfounded FUND: Yet Another EPA Model Not Ready For The Big Game 3*, HERITAGE FOUNDATION (Apr. 29, 2014), available at <http://www.heritage.org/research/reports/2014/04/unfounded-fund-yet-another-epa-model-not-ready-for-the-big-game>.

<sup>283</sup> Edward R. Morrison, Comment, *Judicial Review of Discount Rates Used in Regulatory Cost-Benefit Analysis*, 65 U. CHI. L. REV. 1333, 1351 (1998). Morrison quotes one EPA official as stating that “many discounting procedures are subject to manipulation. . . . This can lead to manipulation of the outcomes by some

Even CEQ acknowledges that “climate impacts are not attributable to any single action,”<sup>284</sup> and that the Supreme Court has held that “NEPA requires a reasonably close causal relationship between the environmental effect and the alleged cause.”<sup>285</sup> Thus, even though CEQ has not identified any standard protocols and knows that the measurement it calls for is very difficult to render - the linkage between a given project and a climate impact is diffuse and tenuous<sup>286</sup> - it insists on a “measure it anyway” approach, regardless of the accuracy.<sup>287</sup> Such an insistence on quantification violates the understanding that NEPA assessments “not be based on misleading economic assumptions.”<sup>288</sup>

CEQ recommends use of the SCC<sup>289</sup> without disclosing that is exactly such a “misleading economic assumption.” To its credit, the CEQ suggests that agencies “should disclose the fact that these estimates vary over time, are associated with different discount rates and risks, and are intended to be updated as scientific and economic understanding improves.”<sup>290</sup> But the Technical Support Documents (TSDs) go even further in qualifying the utility of the SCC, describing the inherent uncertainty in the SCC. That original TSD, issued in 2010, admitted that, “[t]he limited amount of research linking climate impacts to economic damages makes this modeling exercise

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clever (or perhaps ignorant) analyst.” *Id.* at 1351 n.92 (quoting Joel D. Scheraga, *Perspectives on Government Discounting Policies*, 18 J ENVIR ECON & MGMT S-65, S-66 (1990)).

<sup>284</sup> *Id.*, 79 Fed. Reg. at 77,825.

<sup>285</sup> *Dep’t of Transp. v. Public Citizen*, 541 U.S. 752, 767 (2004) (quotation omitted). The Court analogized the relevant causal relationship to proximate cause in tort law. *Id.*

<sup>286</sup> Although CEQ does not go into the details, quantifying such an impact would require 1) quantifying the change in emissions due to a given project with some degree of certainty, 2) quantifying the change in temperature due to that change in emissions, and 3) quantifying the impacts (harms and benefits) that come from that change in temperature. Such a multilayered quantification is prone to uncertainty and error at all levels.

<sup>287</sup> CEQ refers agencies to its regulations regarding uncertainty in handling difficult measurements. *See* 40 C.F.R. § 1502.22 (describing how to deal with incomplete or unavailable information).

<sup>288</sup> *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446 (4th Cir. 1996). *See also Johnston v. Davis*, 698 F.2d 1088, 1094-95 (10th Cir. 1983) (noting “misleading” information in an environmental impact statement based on an arbitrarily low discount rate).

<sup>289</sup> Revised Draft Guidance, 79 Fed. Reg. at 77,827.

<sup>290</sup> *Id.* (citing Interagency Working Group, *Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis* (Nov 2013), available at <http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-updatesocial-cost-of-carbon-for-regulator-impactanalysis.pdf>). The variation in discount rates is significant, however, to the point that it drives the outcome of the SCC analysis, resulting in negative costs (*i.e.*, benefits) at around 7%. (Kevin Dayaratna and David Kreutzer, “Unfounded FUND: Yet Another EPA Model Not Ready For The Big Game,” *Heritage Foundation* (Apr. 29, 2014), available at <http://www.heritage.org/research/reports/2014/04/unfounded-fund-yet-another-epa-model-not-ready-for-the-biggame>.) The arbitrary selection of a low discount rate, such as the EPA has done in its calculation (no higher than 5%), is the same form of arbitrary and capricious agency action struck down in *Johnston*, 698 F.2d at 1094-95.

even more difficult.”<sup>291</sup> EPA, in its recent major rulemaking regarding GHGs, conceded that “any effort to quantify and monetize the harms associated with climate change will raise serious questions of science, economics, and ethics and *should be viewed as provisional*.”<sup>292</sup> The inherently arbitrary nature of the SCC renders it exactly the sort of “misleading economic assumption” the CEQ should not be suggesting that agencies use.

In any event, any consideration of costs must also include a consideration of project benefits, and in this regard agencies must also consider the social *benefits* of carbon if they are to consider the social costs of carbon. The SCC itself fails to evaluate the social benefits of carbon, and were an agency to consider the SCC without also weighing the social benefits of carbon, the action would be invalid. The Revised Draft Guidance itself advises that “agencies should take into account both the short- and long-term effects *and benefits* based on what the agency determines is the life of a project and the duration of the generation of emissions.”<sup>293</sup> On these terms, the Revised Draft Guidance demonstrates that an agency would be arbitrary and capricious to consider the SCC without also measuring the social benefits of carbon from the project in question. CEQ’s guidance fails to take into account this fatal flaw in the SCC.

## **VII. The Revised Draft Guidance Should Not Be Applied to Federal Land Management Decisions.**

The original draft guidance, issued in February 2010, was explicitly not applied to federal land use decisions because “CEQ was not aware of any established Federal protocols for assessing land management techniques, including changes in land use or land management strategies, and their effect on atmospheric carbon release and sequestration at a landscape scale.”<sup>294</sup> However, the Revised Draft Guidance drops this exemption and requires application of the guidance to all federal land management decisions and projects.

But CEQ does not propose any new protocols for assessing land management techniques or strategies,<sup>295</sup> leaving agencies to their own devices. Even though CEQ notes “the difficulties in attributing specific climate impacts to individual projects,”<sup>296</sup> CEQ nevertheless suggests that

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<sup>291</sup> Interagency Working Group on Social Cost of Carbon, *Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866*, at 33 (Feb. 2010).

<sup>292</sup> U.S. Env’t Prot. Agency, *Regulatory Impact Analysis for the Proposed Carbon Pollution Guides for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants*, at 4-9 to 4-10 (2014), available at <http://www2.epa.gov/sites/production/files/2014-06/documents/20140602ria-clean-power-plan.pdf> (“RIA”) (emphasis added).

<sup>293</sup> Revised Draft Guidance, 79 Fed. Reg. at 77,826 (emphasis added). *See also* 40 C.F.R. § 1508.8(b) (defining “effects”).

<sup>294</sup> *Id.*, 79 Fed. Reg. at 77,802.

<sup>295</sup> *Id.*, 79 Fed. Reg. at 77,806.

<sup>296</sup> *Id.*, 79 Fed. Reg. at 77,825.

agencies use proxy measures such as projected emissions and carbon sequestration as a second-best method for approximating GHG emissions impacts.<sup>297</sup> As noted above, agencies are ill-equipped to conduct any kind of analysis of climate-related effects from land use decisions, and the lack of any protocol or guidance instructing the agencies will lead to widely varying results, greater uncertainty, and likely greater opportunity for litigation from those who might challenge any particular project.

### **VIII. The Revised Draft Guidance Will Grind Project Development to a Halt, Resulting in Lost Jobs and Lost Economic Opportunity.**

Despite many bipartisan efforts to make the NEPA process more efficient, the NEPA process continues to require the expenditure of significant amounts of time and money that can hinder or ultimately prevent the development of significant projects. *See Nat'l Parks & Conservation Ass'n v. BLM*, 586 F.3d 735, 754 (9th Cir. 2009) (dissenting opinion) (explaining the arduous and costly EIS/EIR process for a mine project near Joshua Tree National Park); *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 533 (8th Cir. 2003) (“In all, the environmental review process took nearly four years and generated roughly 8,600 public comments.”)

For example, between January 1, 1998 and December 31, 2006, 53 Federal executive branch entities made available to the public 2,236 final environmental impact statement (EIS) documents; the time to prepare an EIS during this time ranged from 51 days to 6,708 days (18.4 years).<sup>298</sup> The average time for all Federal entities to prepare an EIS was 3.4 years, but most of the shorter EIS documents occurred in the earlier years.<sup>299</sup>

These lengthy delays result in canceled projects and withdrawn investments, which ultimately means lost jobs and reduced economic growth. In March 2011, the U.S. Chamber of Commerce published a study of 351 proposed energy projects (many of which would clearly be within the ambit of the current Revised Draft Guidance) - solar, wind, wave, bio-fuel, coal, gas and nuclear - that were delayed or cancelled altogether due to extensive delays in the Federal permitting process.<sup>300</sup> If these projects had been built, there would have been direct investment in

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<sup>297</sup> *Id.*, 79 Fed. Reg. at 77,825. Agencies are instructed to use whatever tools are available. *Id.*, 79 Fed. Reg. at 77,827.

<sup>298</sup> Responsibly And Professionally Invigorating Development (RAPID) Act of 2012: Hearing before the Subcomm. on Courts, Commercial and Administrative Law of the H. Comm. on the Judiciary, 112th Cong. (Apr. 25, 2012), at 39 (Testimony of William Kovacs).

<sup>299</sup> *Id.*

<sup>300</sup> Steve Pociask & Joseph P. Fuhr, Jr., Progress Denied: A Study on the Potential Economic Impact of Permitting Challenges Facing Proposed Energy Projects (Mar. 11, 2011), available at [http://www.projectnoproject.com/wp-content/uploads/2011/03/PNP\\_EconomicStudy.pdf](http://www.projectnoproject.com/wp-content/uploads/2011/03/PNP_EconomicStudy.pdf) (last accessed March 13, 2015).

the 2010 timeframe of \$576 billion, resulting in a \$1.1 trillion boost to the economy and it would have created 1.9 million jobs through the 7 years of construction.<sup>301</sup>

In 2010, Reps. Joe Barton and Michael Burgess provided comments to CEQ on the first version of the Revised Draft Guidance:

Given the evolving, complex, controversial, uncertain and global nature of climate science, we have significant concerns that layering more analyses and requirements contemplated in the draft guidance will further delay the NEPA process, increase overall permitting and project costs, lead to protracted litigation, and adversely impact new energy and other infrastructure development in the United States.<sup>302</sup>

Peabody believes those concerns are even more pronounced with the Revised Draft Guidance. Individual federal agencies now would have to engage in speculative attempts to quantify emissions associated with proposed actions; consider conjectural effects on climate change; consider climate models and scenarios which have been proven to be invalid; somehow evaluate and disclose scientific uncertainties associated with projections; and consider mitigation measures and reasonable alternatives to reduce emissions.<sup>303</sup> To make the process more unpredictable and arbitrary, the agencies would have to conduct these evaluations under the threat of litigation from anyone who wants to challenge or attempt to halt a project, forcing courts to be the ultimate arbiter on the causes and effects of climate change, a subject that is ultimately unsuited for judicial determination.<sup>304</sup>

Federal agencies, and the courts, are ill-equipped to make these evaluations, and the resulting delays from the untold burdens placed on the agencies and certain litigation would virtually eliminate the chances of any project subject to review under the Revised Draft Guidance from ever proceeding. The Revised Draft Guidance will take an already cumbersome and unpredictable NEPA process and turn it into an unworkable, project-killing disaster.

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<sup>301</sup> *Id.*, at 16.

<sup>302</sup> Letter from Rep. Joe Barton and Rep. Michael Burgess to Nancy Sutley, Chair, CEQ, March 8, 2010, at 2.

<sup>303</sup> *See id.*

<sup>304</sup> *See, e.g., Native Village of Kivalina v. ExxonMobil Corp.*, 663 F. Supp. 2d 863, 876-77 (N.D. Cal. 2009), *aff'd*, 696 F.3d 849 (9<sup>th</sup> Cir. 2012), *cert. denied*, 133 S.Ct. 2390 (2013) (finding that weighing the benefits against the risks of GHG emissions would require the court to determine an acceptable emissions level, as well as “who should bear the cost of global warming,” which the court found was an initial policy determination not within the discretion of the judiciary); *Comer v. Murphy Oil USA*, 585 F.3d 855 (5<sup>th</sup> Cir. 2009), *reh’g en banc granted*, 598 F.3d 208 (5<sup>th</sup> Cir. Feb. 26, 2010), *appeal dismissed and vacated by* 607 F.3d 1049 (5<sup>th</sup> Cir. May 28, 2010).

## CONCLUSION

Peabody appreciates the opportunity to present comments on the Revised Draft Guidance. We urge the CEQ not to base its decision on flawed scientific data, to ignore the real-world observational data, or to overlook the environmental and social benefits of carbon. We look forward to meeting with CEQ and, as appropriate, the relevant agencies to discuss these comments at the earliest convenience.

Respectfully submitted,

Peabody Energy Corporation

Alexander C. Schoch  
Executive Vice President, Law

Frederick D. Palmer  
Senior Vice President of Government  
Relations

Scott T. Jarboe  
Associate General Counsel - Corporate

Peabody Energy Corporation Headquarters  
Peabody Plaza  
701 Market Street  
St. Louis, MO 63101-1826  
314-342-3400

Counsel:  
Tristan L. Duncan  
Thomas J. Grever  
Shook, Hardy & Bacon L.L.P.  
2555 Grand Boulevard  
Kansas City, MO 64108  
816-474-6550

Jonathan Massey  
Massey & Gail L.L.P.  
1325 G St. NW, Suite 500  
Washington, D.C. 20005  
202-652-4511