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on the

Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews

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Comment:

Summary

Our comment primarily focuses on that aspect of the CEQ's draft guidance which directs the use of greenhouse gas (GHG) emissions as a "proxy" for climate change in considering the environmental impacts of proposed federal actions in accordance with the National Environmental Policy Act (NEPA).

This aspect of the CEQ guidance is internally inconsistent, contrary to the intentions of NEPA, and ultimately misdirects policymakers and the general public alike.

Additionally, it illustrates a lack of understanding and comprehension of environmental *science*—yet this guidance is supposedly being developed to provide direction to federal agencies in their reporting of science-based environmental impacts.

Instead, the draft guidance appears to have been created to elevate policy initiatives over actual science. This is inappropriate. In its current form, the guidelines should be rescinded and redeveloped with a more appropriate emphasis on environmental and climate science.

Analysis and Discussion

The purpose of the National Environmental Policy Act (NEPA) is described in Section IIA of these draft guidelines as (pg. 4):

> NEPA is designed to promote disclosure and consideration of potential environmental effects on the human environment resulting from proposed actions, and to provide decisionmakers with alternatives to mitigate these effects. NEPA ensures that agencies take account of environmental effects as an integral part of the agency's own decision-making process before decisions are made. It informs decisionmakers by ensuring agencies consider environmental consequences as they decide whether to proceed with a proposed action and, if so, how to take appropriate steps to eliminate or mitigate adverse effects. NEPA also informs the public, promoting transparency of and accountability for consideration of significant environmental effects. A better decision, rather than better—or even excellent—paperwork is the goal of such analysis.

Clearly the emphasis of NEPA is on the "environment" and better informing policymakers and the public as to the potential impacts of proposed federal actions on the environment.

And yet, the CEQ's draft guidelines are a roadmap for how to *circumvent* the determination and reporting of environmental impacts from greenhouse gas emissions.

This intent is clearly laid out in Section I ("Introduction", pg 3):

> Agencies should consider the following when addressing climate change:
>
> (1) the potential effects of a proposed action on climate change as indicated by its GHG emissions;

This is the fundamental scientific error—greenhouse gas (GHG) emissions are not themselves a measure of an "environmental effect" or an indicator of "climate change."

The environmental effects that are produced by GHG emissions are two-fold: 1) the primary component of GHG emissions is carbon dioxide which directly acts to enhance the health of all vegetation types—including food crops; and 2) GHG emissions act impact of the earth's climate through an alteration of the radiative flow in the earth/atmosphere system.

GHG emissions alone tell you nothing of the size and scope of these impacts. If you are working to develop a quantification of the "environmental effects" of these emissions, it is a scientific necessity that any analysis not be limited to GHG emissions, but that it quantifies the "potential environmental effects on the human environment resulting from proposed actions"—as required under the NEPA. This would include the impact of any GHG emissions on vegetative health (including crop production) as well as the impact of the emissions on the course of the future evolution of the earth's climate, including regional and local impacts.

Reporting GHG emissions alone does nothing to "inform decisionmakers" or "the public"—as to the potential environmental consequences. As such, limiting the analysis to GHGs, as these draft guidelines direct, verges on being uninformative, or worse, disinformative and misdirectional.

That GHG emission are *not* a measure of environmental impacts is evident from these draft guidelines themselves. For example, in Section II.B. "Climate Change" (pgs. 6-8) the CEQ describes the potential effects of greenhouse gas emissions in actual terms of environmental impacts via climate change. For example:

> Adverse health effects and other impacts caused by elevated atmospheric concentrations of GHGs occur via climate change. Broadly stated, the effects of climate change observed to date and projected to occur in the future include more frequent and intense heat waves, more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea-level rise, more intense storms, harm to water resources, harm to agriculture, and harm to wildlife and ecosystems.

Immediately following Section II.B., in the introductory remarks of Section III (pg. 8) CEQ offers this guidance in a form that is scientifically correct and in keeping with the intent if NEPA:

> 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…

"Climate change through GHG emissions." In other words, to be consistent with NEPA, agencies should provide a description of the *climate change* that may result from the proposed actions as a result of their influence on greenhouse gas emissions.

However, throughout the rest of Section III ("Considering the effects of GHG emissions and climate change") CEQ then goes on to explain why agencies should *ignore* the NEPA requirements, and rather substitute greenhouse gas emissions in place of climate change—thus removing the focus from the environmental effects and onto a topic that is at least once removed.

Here is the course of action that the CEQ prefers in this draft set of guidelines (and one that is *inconsistent* with the NEPA requirements) (pgs. 8-9):

> "In light of the difficulties in attributing specific climate impacts to individual projects, CEQ recommends agencies use the projected GHG emissions and also, when appropriate, potential changes in carbon sequestration and storage, as the proxy for assessing a proposed action's potential climate change impacts. This approach allows an agency to present the environmental impacts of the proposed action in clear terms and with sufficient information to make a reasoned choice between the no-action and proposed alternatives and mitigations, and ensure the professional and scientific integrity of the discussion and analysis."

The CEQ has this completely wrong.

Discussing greenhouse gas emissions in lieu of actual climate impacts does not "present the environmental impacts of the proposed action in clear terms and with sufficient information to make a reasoned choice" but rather serves to mislead decisionmakers and the public as to the potential environmental impacts and their magnitude. Again, GHG emissions are not "environmental impacts."

CEQ justifies its NEPA end-around this way (pg. 9):

> CEQ recognizes that many agency NEPA analyses to date have concluded that GHG emissions from an individual agency action will have small, if any, potential climate change effects. Government action occurs incrementally, program-by-program and step-by-step, and climate impacts are not attributable to any single action, but are exacerbated by a series of smaller decisions, including decisions made by the government. Therefore, the statement that emissions from a government action or approval represent only a small fraction of global emissions is more a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether to consider climate impacts under NEPA. Moreover, these comparisons are not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations. This approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make relatively small additions to global atmospheric GHG concentrations that collectively have huge impact.

Stating the obvious does not provide a reason by which to ignore it.

Tallying up GHG emissions of federal projections is no better (in fact, it is considerably less informative, as we have described) than tallying up the climate change impacts of the projects.

Not only is it less informative, but it is potentially misleading if the information is used inappropriately.

And there is plenty of evidence that it *will* be used inappropriately. Consider how the EPA has used greenhouse gas emissions to deflect attention away from the climate impacts of its recently proposed regulations limiting GHG emissions from existing power plants.

Last summer, the EPA unveiled a new set of proposed regulations aimed at reducing carbon dioxide emissions from existing U. S. power plants. The motivation for the EPA's plan was to address and mitigate anthropogenic climate change.

In an attempt to make their case and develop support of the action from policymakers and the general public, the EPA highlighted what the proposed regulations would achieve in an fact sheet (titled "By the Numbers") that accompanied the release of their regulations.

The "fact sheet" focused entirely on the magnitude of the greenhouse gas emissions that the new regulations were calculated to avoid without a single mention of any actual climate impacts (i.e., climate changes averted). This seemed a strange omission since the reason for the new regulations was to mitigate climate change.

In light of these draft CEQ guidelines, the reason for this omission is illuminated—it is the preferred Administrative strategy to deflect attention away from a quantification of what actually matters—i.e., the impact on climate change.

This is the antithesis of one NEPA's stated goals—"promote transparency." It is an attempt to avoid and obscure the real issue. If the issue is climate change, the guidelines should direct federal agencies to describe impacts of new actions in climate change terms.

And the tools to do so are available.

Climate models, from the simplest energy balance models that can be run on a desktop computer to highly complicated coupled atmosphere-ocean general circulation models that take weeks to run on supercomputers, all have been developed to provide one type of information—translating greenhouse gas emission into climate change.

Federal agencies have spent billions of dollars in the development of climate models, in the dissemination and promotion of projections from climate models, in the incorporation of those projections into international and national climate assessment reports, and have relied upon climate model projections as justification for all type of federal rules and regulations—including guidelines such as these.

Yet, in these draft guidelines, the CEQ is suggesting, going forward, that individual agencies avoid these tools and essentially to conduct their environmental impact analyses as if they do not exist. Telling federal agencies to avoid translating GHG emissions to climate change—even though general guidance on how to do so is readily available—is unacceptable.

Yet, it typifies current federal information delivery—that is, providing general and grandiose warnings about human-caused climate change, yet avoiding specifics when it comes it how proposed legislation/regulations/guidelines are expected to impact climate change or other aspects of the environment.

Just because this is the operating procedure of the current Administration, does not mean that it should be codified into federal guidelines.

It is especially appalling that Section III.B (pg. 14-15) is all about the "tools" that are available to help agencies perform their GHG emissions analyses and yet there is nary a mention of the tools available to translate those findings into climate or environmental impacts.

One such readily available tool is the Model for the Assessment of Greenhouse-gas Induced Climate Change (MAGICC)—a simple climate model emulator that was, in part, developed

through support of the federal government for the expressed reason of examining the climate impact through GHG emissions of proposed federal regulations.

It is straightforward to use.

For example, building upon the EPA's "By the Numbers" fact sheet described above, we describe how MAGICC can be used to translate the emissions numbers into a climate change impact.

MAGICC Example

MAGICC version 6 is available as an on-line tool.

We analyzed the climate impact of the EPA regulations on GHG emissions from existing power plants by modifying future emissions scenarios that have been established by the United Nation's Intergovernmental Panel on Climate Change (IPCC) to reflect the new EPA proposed emissions targets.

Specifically, the three IPCC scenarios we examined were the Representative Concentration Pathways (RCPs) named RCP4.5, RCP 6.0 and RCP8.5. RCP4.5 is a low-end emissions pathway, RCP6.0 is more middle of the road, and RCP8.5 is a high-end pathway.

The emissions prescriptions in the RCPs are not broken down on a country by country basis, but rather are defined for country groupings. The U.S. is included in the OECD90 group.

To establish the U.S. emissions pathway within each RPC, we made the following assumptions:

1) U.S. carbon dioxide emissions make up 50 percent of the OECD90 carbon dioxide emissions.
2) Carbon dioxide emissions from electrical power production make up 40 percent of the total U.S. carbon dioxide emissions.

Figure 1 shows the carbon dioxide emissions pathways of the original RCPs along with our determination within each of the contribution from U.S. electricity production.

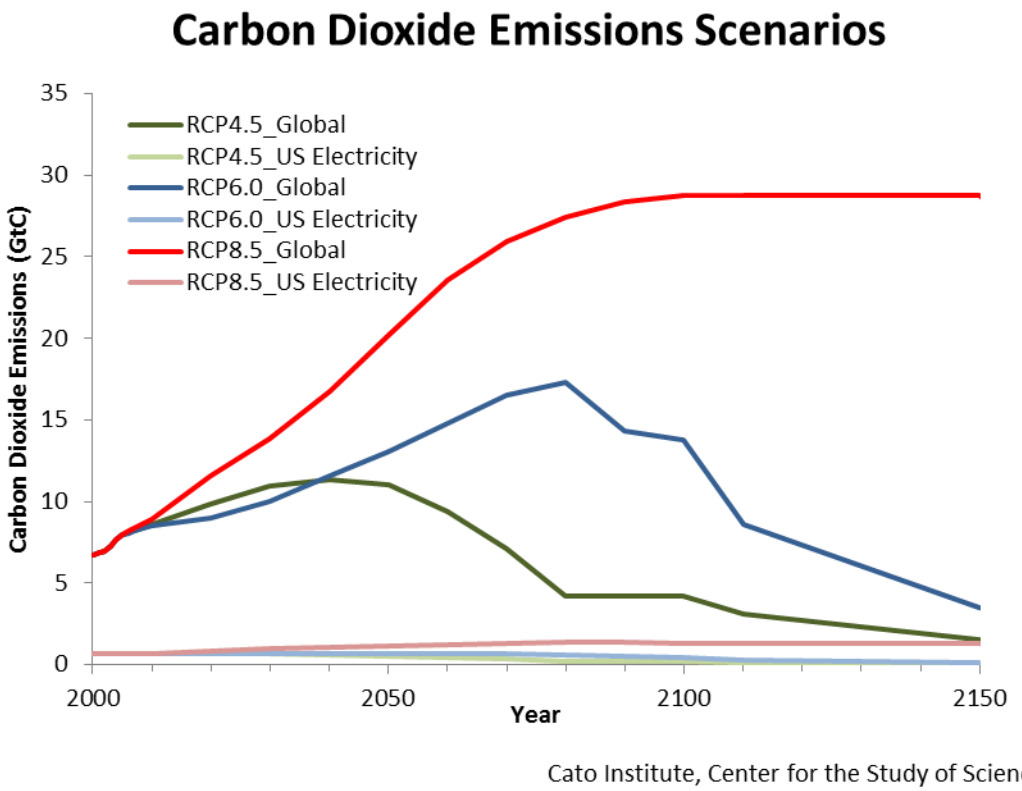

Figure 1. Carbon dioxide emissions pathways defined in, or derived from, the original set of Representative Concentration pathways (RCPs), for the global total carbon dioxide emissions as well as for the carbon dioxide emissions attributable to U.S. electricity production.

The projected contribution of U.S. carbon dioxide emissions from electricity production to the total global carbon dioxide emissions is quite small.

The new EPA regulations apply to the lower three lines in Figure 1.

To examine the impact of the EPA proposal, we replace the emissions attributable to U.S. power plants in the original RCPs with targets defined in the new EPA regulations. We determined those targets to be (according to the EPA's Regulatory Impacts Analysis accompanying the regulation), 0.4864 GtC in 2020 and 0.4653 GtC in 2030. Thereafter, the U.S. power plant emissions were held constant at the 2030 levels until they fell below those levels in the original RCP prescriptions (specifically, that occurred in 2060 in RPC4.5, 2100 in RCP6.0, and sometime after 2150 in RCP8.5).

We then used MAGICC to calculate the rise in global temperature projected to occur between now and the year 2100 when with the original RCPs as well as with the RCPs modified to reflect the EPA proposed regulations (we used the MAGICC default value for the earth's equilibrium climate sensitivity (3.0°C)).

The output from the six MAGICC runs is depicted as Figure 2.

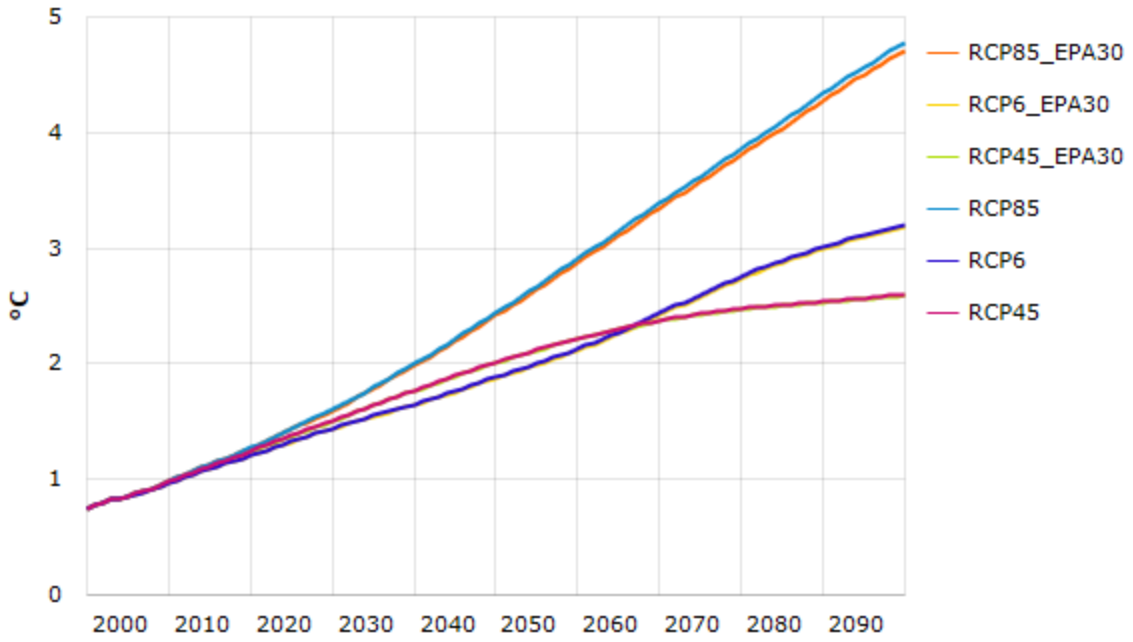

Figure 2. Global average surface temperature anomalies, 2000-2100, as projected by MAGICC run with the original RCPs as well as with the set of RCPs modified to reflect the EPA 30% emissions reductions from U.S power plants.

We've summarized the results of Figure 2 in Table 1.

Table 1. Projected surface temperature anomaly (°C).

Scenario	2013	2100	Temp. Change (°C)
RCP4.5	1.060	2.598	1.538
RCP6.0	1.042	3.203	2.161
RCP8.5	1.072	4.777	3.705
RCP4.5 – EPA	1.060	2.591	1.531
RCP6.0 – EPA	1.042	3.185	2.143
RCP8.5 – EPA	1.072	4.710	3.638

In Table 2, we quantify the amount of projected temperature rise that is averted by the new EPA regulations.

Table 2. Future global temperature rise averted by EPA power plant regulations.

	Averted Temperature Rise (°C)
RCP4.5 – EPA	0.007
RCP6.0 – EPA	0.018
RCP8.5 – EPA	0.067

The rise in projected future temperature rise that is averted by the proposed EPA restrictions of carbon dioxide emissions from existing power plants is less than 0.02°C between now and the end of the century assuming the IPCC's middle-of-the-road future emissions scenario.

This result—one in terms of an actual measure of climate change—should serve as the first step in determining the potential environmental changes (at every scale) that the EPA regulations may result in. Even at this stage of the analysis, it serves to much better inform policymakers and the general public as to the potential environmental consequences of the regulations.

This is the type of analysis that the CEQ guidance should be recommending.

But in doing so, it would become quickly obvious that all federal actions, whether resulting in fewer or additional GHG emissions from the U.S., would produce little to no detectable impacts on the environment through changes to the climate.

This can be confirmed by using MAGICC to analyze the climate impact of an immediate and complete cessation of all GHG emissions from the U.S. Such an analysis (the results of which are available at http://www.cato.org/blog/current-wisdom-we-calculate-you-decide-handy-dandy-carbon-tax-temperature-savings-calculator), shows that stopping all U.S. GHG emissions now through the end of the century would only avert about 0.14°C of future global warming. Such mitigation is largely undetectable and environmentally inconsequential. Lesser actions will have lesser impacts.

As such, the climate change analyses such as those being directed under this draft CEQ guidance are completely unnecessary as they will show that the climate impacts are meaningless. Thus, the CEQ guidelines serve only to increase the cost burden of all proposed actions—an undesirable and unneeded outcome.

Conclusion

To best serve policymakers and the general public, the CEQ should state that all but the largest federal actions have an undetectable and inconsequential impact on the environment through changes in the climate. And for the largest federal actions, an analysis of the explicit environmental impacts resulting from greenhouse gas emissions arising from the action should be detailed, with the impacts assessment not limited to climate change but also to include other environmental effects such as impacts on overall vegetative health (including crop yield and production).

As called for in the guidelines described in this current draft—substituting greenhouse gas emissions for climate change and other environmental impacts—is not only insufficient, but is scientifically inadequate and potentially misleading. As such, these CEQ guidelines should be rescinded and discarded.