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COUNCIL ON ENVIRONMENTAL QUALITY

Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews

AGENCY: Council on Environmental Quality.

ACTION: Notice of Availability, Request for Public Comments on Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews.

SUMMARY: The Council on Environmental Quality (CEQ) is publishing revised draft guidance on how National Environmental Policy Act (NEPA) analysis and documentation should address greenhouse gas (GHG) emissions and the impacts of climate change. Many projects and programs proposed by, or requiring the approval of, the Federal Government have the potential to emit or sequester GHG, and may be potentially affected by climate changes. It follows, under NEPA, that Federal decisionmakers and the public should be informed about the proposal's GHG emissions and climate change impacts. Such information can help a decisionmaker make an informed choice between alternative actions that will result in different levels of GHG emissions, or consider mitigation measures to reduce the impacts of climate change.

This revised draft guidance supersedes the draft guidance CEQ issued on February 18, 2010, entitled "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions."[1] The February 2010 draft guidance

[1] A Notice of Availability for the 2010 draft guidance was published in the *Federal Register*. *See* 75 FR 8046 (Feb. 23, 2010).

specifically did not apply to land and resource management activities. That distinction is no longer retained, and this revised draft guidance applies to all proposed Federal agency actions subject to NEPA.

This revised draft guidance: (1) discusses direct, indirect, and cumulative impacts analysis of a proposed action's reasonably foreseeable emissions and effects; (2) highlights the consideration of reasonable alternatives and points to the need to consider the short-term and long-term effects and benefits in the alternatives analysis and mitigation to lower emissions; (3) recommends that agencies use a reference point to determine when GHG emissions warrant a quantitative analysis taking into account available GHG quantification tools and data that are appropriate for proposed agency actions; (4) recommends that an agency select the appropriate level of action for NEPA review at which to assess the effects of GHG emissions and climate change, either at a broad programmatic or landscape-scale level or at a project- or site-specific level, and that the agency set forth a reasoned explanation for its approach; (5) counsels agencies to use the information developed during the NEPA review to consider alternatives that are more resilient to the effects of a changing climate; and (6) advises agencies to use existing information and tools when assessing future proposed action, and provides examples of some existing sources of scientific information.

DATES: Comments should be submitted on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: The NEPA Draft Guidance documents are available at http://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa. Comments 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" should be submitted electronically to *GCC.guidance@ceq.eop.gov*, or in writing to the Council on Environmental Quality, ATTN: Horst Greczmiel, 722 Jackson Place, NW, Washington, DC 20503.

FOR FURTHER INFORMATION CONTACT: Horst Greczmiel, Associate Director for National Environmental Policy Act Oversight, at (202) 395–5750.

SUPPLEMENTARY INFORMATION: Enacted by Congress in 1969, the National Environmental Policy Act (NEPA), 42 U.S.C. 4321-4370, is a fundamental tool used to harmonize our environmental, economic, and social aspirations and is a cornerstone of our Nation's efforts to protect the environment. NEPA recognizes that many Federal activities affect the environment and mandates that Federal agencies consider the environmental impacts of their proposed actions before deciding to adopt proposals and take action.[2] On February 18, 2010, CEQ announced the issuance of three proposed draft guidance documents to modernize and reinvigorate NEPA, in conjunction with the 40th anniversary of the statute's signing into law.[3]

One of those three draft guidance documents, entitled "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions" (hereinafter "2010 draft guidance"), described how agencies should analyze GHG

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[2] For more information on the applicability of NEPA, *see* the Council on Environmental Quality (CEQ), "A Citizen's Guide to the NEPA," *available at* https://ceq.doe.gov/nepa/Citizens_Guide_Dec07.pd*f*.

[3] Two of these guidance documents have since been finalized. *See* CEQ, "Establishing, Applying, and Revising Categorical Exclusions under the National Environmental Policy Act," (Nov. 23, 2010), *available at* https://ceq.doe.gov/ceq_regulations/NEPA_CE_Guidance_Nov232010.pdf; *see also* CEQ, "Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact," (Jan. 14, 2011), *available at* https://ceq.doe.gov/current_developments/docs/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf.

emissions and climate change impacts in NEPA reviews prepared for agency actions.[4] CEQ did not propose to make the 2010 draft guidance applicable to Federal land and resource management actions. 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. Consequently, the 2010 draft guidance invited public comment on how NEPA reviews for proposed land and resource management actions should take GHG emissions and climate change into account. CEQ specifically requested public comment on seven questions, listed in section VI of the 2010 draft guidance, regarding the applicability of the guidance to land and resource management actions.

CEQ appreciates the thoughtful responses to its request for comments on the 2010 draft guidance. CEQ received more than 100 sets of comments. Commenters included private citizens, corporations, environmental organizations, trade associations, and Federal and state agencies. Those comments that raised policy or substantive concerns have been grouped thematically, summarized, and addressed in this notice.[5]

After considering the public's responses to the questions set out generally on page 4 and in section VI of the 2010 draft guidance, comments on the 2010 draft guidance itself, and after further consultation with Federal agencies, CEQ proposes this revised draft guidance applicable to all NEPA reviews regardless of action or resource. The revised draft guidance is provided below, after the comment summary and response. The first set of comments and responses is the Summary of Responses to Questions Asked in

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[4] CEQ, "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions," (Feb. 18, 2010), *available at* www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance.

[5] All of the public comments can be viewed online at www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/comments.

the 2010 Draft Guidance. These refer to the CEQ request for public comment on how NEPA reviews of proposed land and resource management actions should consider GHG emissions and impacts of climate change. The second set of responses to comments, the Summary of Comments on the 2010 Draft Guidance, are summarized thematically by the topic to which they pertain.

I. Summary of Responses to Questions Asked in the 2010 Draft Guidance on Whether CEQ Should Issue Guidance on the Consideration of GHG Emissions from, and Climate Change Effects on, Land and Resource Management Actions

Many commenters made a general observation that NEPA already requires agency consideration of GHG emissions and impacts of climate change, by mandating that agencies take a hard look at all reasonably foreseeable impacts of major Federal actions at the earliest practicable time as well as provide information about the affected environment, regardless of the existence of established protocols for doing so. Commenters also stated that this requirement is not subject to agency discretion, but is often referred to as the "rule of reason."

Commenters had different views about whether the available science supports NEPA guidance applicable to land and resource management actions. Some believe that analysis of the climate effects of land and resource management actions would likely be judged arbitrary and capricious, because it is not currently possible to determine those effects. In the forestry context, for example, those commenters were concerned that the carbon benefits from sequestration, as well as potential indirect GHG emissions, and cumulative impacts, would be difficult to calculate with any certainty with respect to any particular action or set of actions. Other commenters cited the "rule of reason" by which

agencies determine whether to prepare an environmental impact statement (EIS) based on the usefulness of potential new information in the decision-making process and noted that the 2010 draft guidance properly directs agencies to acknowledge the scientific limits of their ability to predict climate change effects and avoid analyzing speculative effects.

Other commenters urged CEQ to apply the guidance to Federal land and resource management actions, due to the urgency of the climate change threat and the possibility that confusion and litigation could result if agencies independently adopt different approaches to NEPA analysis of climate impacts for different types of Federal actions. Additionally, some commenters found it important for agencies not only to consider alternatives, including the no action alternative, to reduce GHG emissions, but also to consider the benefits of retaining terrestrial ecosystems to sequester and store atmospheric carbon to stem the tide of global climate change. Analysis of direct and indirect emissions from proposed Federal forest management actions, they believe, will require Federal decisionmakers to consider carbon emissions and sequestration and promote accountability for the Federal role in the loss of domestic forestland.

Response to Comments:

CEQ is issuing this revised draft guidance applicable to all proposed Federal agency actions, including land and resource management actions, for several reasons. CEQ was asked to provide guidance on this subject informally by Federal agencies and formally by a petition under the Administrative Procedure Act to consider regulations and guidance on analyzing GHG emissions and the impacts of climate change under NEPA.[6]

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[6] "Recommendations of the State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience," November 2014, at page 20 (recommendation 2.7) *available at* www.whitehouse.gov/sites/default/files/docs/task_force_report_0.pdf; *see* GAO report: "Future Federal Adaptation Efforts Could Better Support Local Infrastructure Decision Makers," (Apr. 12, 2012), *available*

CEQ's consideration of the effects of GHG emissions and impacts of climate change dates back to CEQ's first Annual Report in 1970, which concluded that "[m]an may be changing his weather."[7] By issuing guidance applicable to all Federal agencies, CEQ aims to ensure consistency and certainty about whether and how agencies should address GHG emissions and impacts of climate change in their NEPA analyses and documents. The revised draft guidance affirms that NEPA and the CEQ Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR parts 1500 – 1508 (hereinafter "CEQ Regulations"), establish a process which accounts for uncertainty and requires agencies to address the relevance of, and ability to obtain, incomplete and unavailable information.[8] It also highlights the existence of widely-available tools and methodologies that can be used to calculate estimates of GHG emissions and carbon storage.

The revised draft guidance emphasizes that the NEPA analysis and documentation should present a reasonably thorough discussion of probable environmental consequences.[9] Similarly, this revised guidance affirms that agencies should take into account both short- and long-term effects and benefits of their actions over their entire duration. We welcome the public's further comments on this issue.

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at gao.gov/products/GAO-13-242; see also International Center for Technology Assessment, Natural Resources Defense Council, and Sierra Club, "Petition Requesting That the Council on Environmental Quality Amend its Regulations to Clarify That Climate Change Analyses be Included in Environmental Review Documents," (Feb. 28, 2008) (the petition requested CEQ issue guidance and the petition to amend the regulations was denied on August 7, 2014).

[7] Council on Environmental Quality, "Environmental Quality: The First Annual Report," at 93.

[8] *See* 40 CFR 1502.22.

[9] Agencies apply the "rule of reason" to ensure that their discussions pertain to the issues that deserve study and deemphasize issues that are less useful to the decisions regarding the proposal, its alternatives, and mitigation options. *See* 40 CFR 1500.4(f), 1500.4(g), 1501.7 and 1508.25.

1. ***How Should NEPA Documents Regarding Long-Range Energy and Resource Management Programs Assess GHG Emissions and Climate Change Impacts?***

Several commenters pointed to programmatic environmental impact statements on long-range energy and resource management programs as providing the best level for analysis, and which could be relied upon in subsequent, tiered analyses of specific proposed actions if necessary. Commenters maintained that such an approach would address long-range energy and resource management program or planning activities guided by the terms and mandates of land and resource management statutes, such as the Federal Land Policy and Management Act. It would also enable agencies to take both short- and long-term impacts of actions or sets of actions into account. These commenters generally touted this approach as offering an effective framework for identifying and implementing policy choices that would improve the process as well as the outcomes. Finally, some commenters, focusing on projects or activities involving energy production and use, recommended the guidance clarify that combustion of extracted fuel sources should be evaluated, and others recommended evaluating a life-cycle analysis that considered the entire fuel chain. Others stated that such an analysis would include actions too far removed from the agencies' statutory obligations to be meaningful for decisionmakers.

Commenters generally recommended that CEQ guidance ensure some level of consistency in assessing GHGs and climate change for land and resource management actions, and allow for the consideration of tradeoffs between long- and short-term impacts and benefits. Several commenters proposed that long-term forest and grassland health and habitat should be considered when assessing short-term emissions from

proposed land and resource management actions.[10] The use of prescribed burns is an example of where balancing long- and short-term impacts and benefits are useful to the decisionmaker and the public (for example, while short-term emissions will result, there is the potential for long-term benefits for ecosystem health). Several commenters expressed the view that agencies taking land and resource management actions need to be afforded sufficient flexibility and discretion to develop specific protocols that build on existing procedures and experience.

Response to Comments:

The revised draft guidance makes it clear that agencies should apply their best judgment and expertise when determining how to consider the level of GHG emissions and impacts of climate change at the programmatic and project- or site-specific level of NEPA analysis and documentation. The revised draft guidance also provides for agencies to use their discretion to determine the appropriate comparison and balancing of long- and short-term emissions and impacts of climate change with other long- and short-term resource impacts and benefits. The guidance acknowledges that there are many established tools and methods for GHG calculation and provides several examples. The revised draft guidance calls upon agencies to exercise their expert judgment and provide the basis for determining whether and how to analyze GHG emissions. We welcome the public's further comments on this issue.

2. *What Should Be Included in Specific NEPA Guidance for Projects Applicable to the Federal Land Management Agencies?*

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[10] This is important in avoiding unintended consequences of management actions. *See* "Global Climate Change Impacts in the United States," Karl, Thomas R., Melillo, Jerry M., Peterson, Thomas C. (eds.) at 156, Cambridge University Press (2009).

and

3. ***What Should Be Included in Specific NEPA Guidance for Land Management Planning Applicable to the Federal Land Management Agencies?***

Several commenters expressed the concern that without CEQ guidance, agencies would overlook or fail to analyze GHG emissions and climate change impacts. Focusing on land and resource management actions, many comments referred to both broad, programmatic land and resource management actions and to more focused, project-level land and resource management actions. Consequently, comments on Questions 2 and 3 are presented together, followed by a response.

Several commenters expressed concerns that NEPA analysis of climate-related impacts for site-specific projects was much more difficult than analysis at the programmatic level because of the lack of scientific study and modeling at smaller scales and the difficulty in establishing a foreseeable causal link between emissions associated with agency proposed actions and localized climate impacts. Several other commenters noted that scientific study of climate change is increasingly focused on regional and localized impacts on the environment and human populations, and this scientific study will continue to expand our knowledge of regional and localized impacts.

Some commenters went on to remind CEQ that precise quantification is not necessary when analyzing GHG emissions and climate change impacts. Most commenters on this issue maintained that CEQ should stress the basic requirements and principles of the NEPA process and guide Federal agencies to identify and consider credible climate information as it becomes available. An interagency effort to establish a clearinghouse for climate change information and modeling was proposed by several

commenters who noted that such a clearinghouse would help avoid duplicative efforts and ensure a more robust coverage of issues.

Several commenters pointed to the Interagency Climate Change Adaptation Task Force and noted that the Task Force was studying models to predict changes in large-scale vegetation and population patterns that should be used when assessing the long-term environmental effects of climate change at a landscape or resource level. One of the most commonly-cited recommendations for broad scale programmatic analyses, as well as project specific analyses, was to support decision-making that would protect landscape linkages that allow species to migrate or disperse to a more favorable habitat as climate conditions change.

For analyses that consider a particular use or treatment of Federal lands that is repeated over a large area, commenters maintained that the guidance should set the temporal and spatial boundaries for analysis based on projected cumulative impacts. Additionally, commenters noted that agencies conducting analysis of permitted activities that contribute to climate change, where these activities are considered as ongoing management practices, should consider the cessation of the permitted activity as a reasonable alternative.

A few commenters made specific recommendations for agencies that have multiple use mandates. For example, they asked that the guidance include a summary of options or tools for measuring the relationships between land and water systems and climate change, and for considering each individual use relative to other multiple uses (including fossil fuel extraction, electric generation, and transmission). Some commenters argued that CEQ should direct Federal agencies to use cooperative and

incentive-based programs to address climate change because Federal lands should not be managed primarily to offset unsustainable practices elsewhere. Finally, several commenters focused on forest management and urged CEQ to direct Federal agencies to conduct life-cycle analyses of the effects of timber management practices on forest carbon pools so that the reasonably foreseeable effects of management actions on sources and sinks of GHG could be considered in conjunction with natural disturbance regimes, efforts to maintain existing stores of carbon in mature and old growth forests (e.g., "carbon banks"), or re-growing plantations and other intensively managed forests to earlier conditions.

Some commenters suggested applying general NEPA principles and practices to land and resource management analyses. Their suggestions included: considering alternatives to mitigate emissions and climate change impacts; using the best available science and credible methodologies; and disclosing the methods and assumptions underlying the analysis. Other commenters provided practical advice (such as advocating the use of graphics in NEPA documents) while some focused on calling for specific types of analyses such as life-cycle and economic assessment of the consequences of GHG emissions and global climate change. Further, commenters cited the CEQ Regulations as providing a method to address incomplete or unavailable information. Similarly, it was noted that agencies engaged in land use and resource planning should consider how the cumulative effects of implementing the proposed plan alternatives will or will not adapt to, exacerbate, or mitigate the effects of climate change on the affected planning area.

Some commenters favored using programmatic analyses for land and resource management actions for various reasons. Some urged that programmatic analyses for

land and resource management actions that are repeated across a region can best assess the cumulative impacts on a broad, landscape scale. One commenter asserted that many Federal land and resource management activities are repeated with little variation across millions of acres of Federal land. Some commenters favored programmatic analyses to address climate change mitigation and consideration of alternative technologies and methods at the program level, while others called for Federal land management agencies to develop programmatic NEPA analyses that include full life-cycle modeling to evaluate the carbon released or stored by various types of land and resource management activities.

Response to Comments:

The revised draft guidance sets out the broad principles to assist agencies when they make determinations on how to conduct NEPA analyses with respect to the effects of GHGs and climate change and calls upon the agencies to provide reasoned analyses and an explanation of the determinations being made. The guidance recognizes the current limits of knowledge and science and calls upon agencies to consider future advancements tailored to the types of actions they undertake.

When using tiered analyses, agencies should consider whether and how the issues of GHG emissions and climate change effects should be addressed in NEPA analyses and documentation prepared at either or both the programmatic and project- or site-specific level of decision-making. It is the agency's responsibility to: determine the level and detail of analysis that is appropriate to the decision at hand; to set the temporal and spatial boundaries for the analysis of GHG emissions, carbon sequestration, and climate change; and to determine the appropriate level of discussion to accompany that information. The

information should be presented in a way that is useful to the public and decisionmakers. Agencies should also use their expertise and professional judgment to determine the appropriate comparison and balancing of long- and short-term emissions and impacts of climate change with other long- and short-term resource impacts and benefits, and to ensure that this is done when dealing with multiple uses.

In response to the comments received on the appropriate range of alternatives, the revised draft guidance incorporates the NEPA principle that agencies should consider a reasonable range of alternatives consistent with the purpose and need for the proposal, and, if such information would be useful to advance a reasoned choice, a comparison of alternatives and potential mitigation that addresses GHG emissions, carbon sequestration, and the impacts of climate change. This does not dictate that the decisionmaker must select the alternative with the lowest net level of GHG emissions, but simply allows for the careful consideration of GHG emissions, among all the factors being considered by the decisionmaker.

In response to commenters supporting the use of life-cycle analyses for GHG emissions, CEQ recommends that agencies rely on basic NEPA principles and consider all reasonably foreseeable effects that may result from their proposed actions using reasonable temporal and spatial parameters in their NEPA analyses rather than engaging in analyses that focus on speculative downstream emissions. We welcome the public's further comments on the issue of life-cycle analyses.

4. *Should CEQ Recommend Any Particular Protocols for Assessing Land Management Practices and Their Effect on Carbon Release and Sequestration?*

Many commenters did not support the identification of specific protocols by CEQ. Some commenters recommended against naming specific protocols so as not to discourage Federal agencies from using other, better-suited protocols or from adopting new protocols based on scientific advancements. Other commenters stated that no specific protocol could be recommended because of the inadequacy of existing science. Instead of focusing on consideration of a possible CEQ specification of particular protocols, commenters generally discussed either the existence of current protocols to support the issuance of this guidance or the absence of existing protocols to explain why no guidance should be issued.

In support of the issuance of this guidance, in general, many commenters cited existing protocols. These commenters provided ways to account for the consideration of carbon emissions and sequestration from land and resource management actions, including: (1) existing forest inventory data; (2) work being done pursuant to the U.S. Department of Energy's 1605(b) guidelines[11]; and (3) carbon sequestration accounting protocols. Also, commenters referenced the Climate Action Reserve's standardized measurement protocols. Commenters noted that well-developed scientific tools, including error estimates, confidence intervals, and sensitivity analyses, are already available for incorporation of uncertainty into decision processes. While citing existing protocols to support the ability of agencies to analyze land and resource management actions and their effects on carbon release and sequestration, most commenters did not support the idea of CEQ selecting specific protocols.

[11] Energy Policy Act of 1992, Pub. L. 102-486, 106 Stat. 2776.

Some commenters noted that, to the extent there may remain scientific uncertainty with protocols, NEPA already provides for how such uncertainty should be analyzed pursuant to 40 CFR 1502.22. According to these commenters, the existence of incomplete and unavailable information does not alter the NEPA requirement to consider scientific information or set forth the circumstances surrounding the unavailable information. Other commenters maintained there is a lack of an established Federal protocol for assessing the impacts of land and resource management actions on atmospheric carbon release and sequestration at a landscape level, and, therefore, no protocol should be recommended. Commenters raised concerns that current protocols were unreliable because they were only in the developmental stages. If, however, CEQ were to apply a specific protocol, commenters raised specific concerns that must be addressed. There would need to be more Federal research, analysis at the programmatic level of carbon sinks, consideration of land use changes, the establishment of appropriate temporal limitations, and consideration of biogenic carbon cycles.

Response to Comments:

CEQ reviewed all the comments and also met with agencies at various sites around the country regarding the establishment of scientific protocols. The meetings with agencies and other stakeholders provided valuable insight on existing protocols and those being implemented. Some agencies have applied GHG emission calculators and models when assessing land and resource management actions in their NEPA reviews. These are done on both the landscape and project- or site-specific levels. Finally, the agencies and stakeholders explained that there are many protocols, models, and calculators that are being developed and they expect the protocols and models to continue

to evolve over time. Agency experiences also helped CEQ shape its proposal for this revised draft guidance.

Basic sources of data already exist and are set forth in the revised draft guidance such as the U.S. Global Change Research Program's National Climate Assessment. Further, pursuant to Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* all agencies are required to report their GHG emissions at least at an aggregate level. Specific parameters and metrics for this reporting have been established. These sources are examples of studies that identify GHG emissions from particular actions and effects of climate change at various programmatic and project levels and can be incorporated by reference when appropriate.

Accordingly, CEQ did not identify particular protocols that would be required for assessing GHG emissions and climate change impacts for specific actions; however, examples are provided in the revised draft guidance. The revised draft guidance allows agencies to continue employing protocols that are currently working well and to apply new scientific information to update protocols on an ongoing basis when considering new projects. Not specifying a particular protocol that must be used allows agencies to select the most appropriate protocols on either a programmatic or project level basis, consistent with existing and evolving science. The guidance reminds agencies to provide a reasoned basis for their determinations. We welcome the public's further comments on this issue.

5. *How Should Uncertainties Associated with Climate Change Projections and Species and Ecosystem Responses Be Addressed in Protocols for Assessing Land Management Practices?*

Many commenters stated that the CEQ Regulations already provide the necessary framework to address uncertainties with climate change projections and species and ecosystem responses.[12] Commenters also noted that well-developed scientific tools, like error estimates, confidence intervals, and sensitivity analyses, are available for addressing uncertainty with decision processes. In addition, some commenters expressed a preference that agencies consider all factors and not simply those that are readily quantified using existing tools. Moreover, some commenters indicated that uncertainty can often be addressed with adaptive management.

Response to Comments:

In the revised draft guidance, CEQ advises Federal agencies to analyze GHG emissions and impacts of climate change consistent with the CEQ Regulations and by using available information. Section 1502.22 addresses how incomplete or unavailable information should be addressed in an EIS if it is essential to a reasoned choice among alternatives and there are reasonably foreseeable significant adverse effects on the human environment.[13] CEQ proposes that agencies should analyze reasonably foreseeable effects of a proposed action in light of incomplete or unavailable information when preparing an EA or an EIS and not stop developing their NEPA reviews to await projected or pending studies or methodologies. Agency analyses must reflect the reasoning behind the agency's conclusions and, as called for in the CEQ Regulations,

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[12] *See* 40 CFR 1502.22(b).

[13] Section 1502.22 requires that, if incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, then that information must be included in the EIS. If, however, the overall cost of obtaining incomplete or unavailable information is exorbitant or the means to obtain it are unknown, the agency must include in the EIS: (1) a statement that the information is incomplete or unavailable; (2) a statement of the relevance of the information to evaluating reasonably foreseeable significant adverse impacts; (3) a summary of relevant existing credible scientific evidence; and (4) evaluation of the impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

agencies shall ensure the scientific integrity of the discussions and analyses they prepare.[14] We welcome the public's further comments on this issue.

6. *How Should NEPA Analyses Be Tailored to Address the Beneficial Effects on GHG Emissions of Federal Land and Resource Management Actions?*

Many commenters observed that under NEPA, agencies are obligated to analyze the effects of proposed actions and reasonable alternatives, regardless of whether the effects are beneficial or adverse.[15] They contend that the anticipated effects of some actions, such as thinning forests, production of biofuels, or development of alternative energy projects, could be beneficial. Commenters wrote that the merits of agency proposals could be determined only after the proposal goes through an impartial and rigorous NEPA analysis.

Some commenters suggested that agencies will have to engage in substantial literature and project reviews in order to consider beneficial effects as well as adverse impacts of agency action with respect to climate change. For example, one commenter suggested that NEPA analysis involving a new natural gas-fired electric generating plant should be informed by comprehensive literature review of: the life cycle of the plant; releases during extraction through pipeline leaks and incomplete combustion; life cycles of nitrous oxide warming; and ground level ozone effects. This commenter went on to suggest that such NEPA analysis should compare all GHG emissions from the preferred option of plant construction to the GHG emissions produced by alternatives such as

[14] 40 CFR 1502.24 (requiring agencies to ensure the professional and scientific integrity of the discussions and analyses in environmental impact statements).
[15] *See* 40 CFR 1508.8(b).

renewable energy development, rate adjustments, and improvements for a smarter transmission grid.

Commenters suggested that the CEQ guidance should recommend the use of interagency consultation and independent, multi-disciplinary scientific consultation for NEPA reviews involving larger programs, new techniques, or complex assessments. Other commenters, however, noted examples of actions taken based on what was believed to be sound environmental review, but turned out to be premised on faulty information. Specifically, commenters raised concerns regarding the possible implications of such mistaken actions in the context of land and resource management actions.

Response to Comments:

CEQ recommends in the revised draft guidance that short- and long-term benefits can and should be considered as part of the analysis of a proposal and alternatives. The agency's purpose and need for action as well as the projected timeframe for the effects of the proposed action and any proposed mitigation will be important to this analysis, and agencies should explain how they have determined the appropriate lifespan for analysis of a project. This approach is consistent with the analysis of any potential impact under NEPA. For example, when analyzing the GHG emissions of a proposed prescribed burn conducted to minimize future ecosystem destruction through wildfires or insect infestations, agencies should consider both the immediate loss of stored carbon dioxide (CO_2) together with the long-term CO_2 sequestration that a resulting healthy ecosystem will provide. This would inform the public and the decisionmaker about both the detrimental and beneficial impacts of the proposal. The revised draft guidance clearly

indicates that the agency should describe how it considered both short-term actions and long-term effects in fully evaluating both beneficial and detrimental effects. We welcome the public's further comments on this issue.

7. *Should CEQ Provide Guidance to Agencies on Determining Whether GHG Emissions Are "Significant" for NEPA Purposes? At What Level Should GHG Emissions be Considered to Have Significant Cumulative Effects? In This Context, Commenters May Wish to Consider the Supreme Court Decision in Massachusetts v. EPA, 549 U.S. 497, 524 (2007).*

Most commenters expressed a preference that CEQ should not provide guidance to agencies about determining whether GHG emissions are significant for NEPA purposes. Some commenters urged CEQ simply to reaffirm that the multi-factor analysis set out in the CEQ Regulations is the appropriate way to consider significance, and to clarify that nothing in the draft GHG guidance modifies the CEQ Regulations. Other commenters said that CEQ should affirm in the introduction of the guidance that the level of GHG emissions is only one factor among many in determining significance. Within the existing NEPA framework, it would be inappropriate, according to some commenters, to establish a quantitative level of GHG emissions that would serve as a threshold for significance.

Commenters cited a passage in the 2010 draft guidance that encourages Federal agencies "to consider, in scoping their NEPA analysis, whether analysis of the direct and indirect GHG emissions from their proposed actions may provide meaningful information to decisionmakers and the public," and raised concerns that the word "meaningful" could be confused with "significant." Other commenters observed that CEQ was careful to

note that the suggested reference point in the 2010 draft guidance is not "an absolute standard of insignificant effects," or by inference, a standard for significant effects.

Many commenters said that the 2010 draft guidance leaves the question of what constitutes a "significant" GHG emission level to the Federal agencies, to be determined on a case-by-case basis. Some commenters supported that approach as consistent with current NEPA requirements. Other commenters said a case-by-case approach: gives agencies an unacceptable level of discretion; creates uncertainty for applicants and others working with Federal agencies; and gives project opponents grounds for litigation. Finally, CEQ received comments on the relevance of *Massachusetts v. EPA*, 549 U.S. 497 (2007), and one commenter maintained that the case should guide CEQ to instruct agencies to reduce cumulative effects of GHG emissions from their operations.

Response to Comments:

The revised draft guidance sets forth a reference point of 25,000 metric tons CO_2-equivalent emissions on an annual basis below which a quantitative analysis of GHG emissions is not recommended unless quantification is easily accomplished, taking into account the availability of quantification tools and appropriate input data. Neither the 2010 draft guidance nor this revised draft guidance intend the reference point to be equivalent to a determination of significance. In this revised guidance, CEQ reaffirms that significance remains subject to the standards set forth in CEQ Regulations. The CEQ Regulations require consideration of both context and intensity and set out ten factors that should be taken into account.[16] These include, among others, the degree to which the proposal affects public health or safety, the degree to which its effects on the

[16] 40 CFR 1508.27.

quality of the human environment are likely to be highly controversial from a scientific perspective (i.e., where there is disagreement over what the likely effects of an action will be), and the degree to which its possible effects on the human environment are highly uncertain or involve unique or unknown risks. This reaffirmation of the significance factors should eliminate any confusion over the utility of the GHG emission reference point in NEPA reviews and reasserts existing NEPA law and practice.

As the Supreme Court noted in *Massachusetts v. EPA*, 549 U.S. 497, 523-25 (2007), the issues of global climate change and GHG emissions cannot be addressed in one fell swoop and, although CEQ agrees, the guidance does not rely upon this case. CEQ recognizes that government action occurs program-by-program and step-by-step. Therefore, in evaluating the potential climate impacts, it is important for agencies to assess comparative emissions scenarios associated with alternatives, in situations where these may be meaningful to the decision, and pay particular attention to the duration of expected emissions-producing actions, cumulative effects, and the relative scale of emissions. We welcome the public's further comments on this issue.

II. Summary of Comments on 2010 Draft Guidance

1. Project-specific Greenhouse Gas Emissions and Qualitative and Quantitative Analyses

a. Climate change as a "global problem"

Many comments on the 2010 draft guidance focused on the subject of climate change as a global phenomenon. Many individuals and groups who submitted comments emphasized that climate impacts are different from most environmental impacts. Commenters highlighted that climate change is a global problem and there is little (if

any) relationship between greenhouse gas emissions from a project in a particular location and the possible environmental effects of climate change in that location. Instead, it is the total global accumulation of greenhouse gas emissions over a long period of time that matters, according to these commenters. The global climate change problem, therefore, is much more the result of numerous and varied sources, each of which might seem to make a relatively small addition to global atmospheric greenhouse gas concentrations. One commenter even urged CEQ to provide agencies with a suggested statement that would be appropriate and sufficient to include in their analyses to reflect the notion of climate change as a global problem. This statement would be: "[The proposed Federal project] may result, directly or indirectly, in an increase in greenhouse gas emissions. The increase is estimated to be approximately ____, which represents ____% of global greenhouse gas emissions. Because greenhouse gas emissions and climate change are a strictly global phenomenon, and because the estimated increase would be negligible, impacts of greenhouse gas emissions from this project would not be significant." Some commenters suggested, however, that there are major emitters of greenhouse gases and that these sources can be segregated from the relatively smaller sources, with insignificant effects. Commenters urged CEQ to clarify which sources are likely to be covered and provide definitive categorical exclusions (CEs) to those that are not, to prevent undue burden to not only small entities, but to those entities contributing negligible emissions.

Response to Comments:

This revised draft guidance notes the scientific record that has been created with substantial contributions from the United States Global Change Research Program

(USGCRP) on the effects of GHG emissions and climate change, and that NEPA requires Federal agencies to support international cooperation by recognizing the global character of environmental problems and lending support to initiatives, resolutions, and programs. While it is not useful, for NEPA purposes, to link GHG emissions from a proposal to specific climatological changes to a particular site, it is important to discuss these connections. When considering the GHG emissions, agencies do not need to calculate a proposal's GHG emissions as a percentage of nationwide or worldwide GHG emissions unless the agency determines that such information would be helpful to decisionmakers and the public to distinguish among alternatives and mitigations, or that the emissions and sequestration associated with a proposed action may rise to a significant level. Agencies should remain alert to those proposal-specific situations where the level of GHG emissions compared to agency-wide, nationwide, or worldwide emissions would provide a helpful point of comparison.

The revised draft guidance recommends that agencies address GHG emissions and the effects of climate change for all proposed actions. If revising or updating their NEPA implementing procedures, agencies should consider whether their categorical exclusions and extraordinary circumstances and procedures for developing environmental assessments and environmental impact statements take GHG emissions and climate change impacts into account. That consideration should reflect the aggregate nature of the climate challenge which decisionmakers will face when making relevant choices based on a programmatic or project-by-project NEPA review.

b. Project-level analyses

Many comments also detailed the legal barriers to requiring agencies to include in their NEPA analyses a discussion of project-level greenhouse gas impacts on climate change. They cite *Dep't of Transp. v. Public Citizen*, 541 U.S. 752, 767 (2004), where the U.S. Supreme Court stated that the obligation of an agency to discuss particular effects turns on "a reasonably close causal relationship between the environmental effect and the alleged cause." These same comments stressed that climate change is global in nature and the attempt to "qualitatively" link proposed individual project emissions and climate change would be arbitrary and speculative.

Response to Comments:

In light of the difficulties in attributing specific climate impacts to individual projects, the revised draft guidance provides a framework for agencies to use when analyzing GHG emissions from and the effects of climate change on a proposed action and its reasonable alternatives. The guidance requires agencies to exercise independent judgment and discretion in determining whether and how potential GHG emissions and climate change effects should be disclosed and considered in preparing their NEPA analyses and documentation. It also emphasizes that the extent of agency analyses should be proportional to the quantity of projected GHG emissions. Moreover, if an agency determines that evaluating the effects of GHG emissions or climate change would not be useful to the decisionmaker or the public in distinguishing between alternatives or mitigations, then the agency should document its rationale for not conducting such an analysis. Furthermore, agencies can rely on basic NEPA principles to determine and explain reasonable temporal and spatial parameters of their analyses to disclose the

reasonably foreseeable effect that may result from their proposed actions. However, agencies should still take into account the aggregate nature of the climate challenge which calls upon decisionmakers to make relevant choices on a programmatic or project-by-project basis.

c. Qualitative/quantitative analyses

As to qualitative and quantitative analyses, some comments stated that the issue merits a greater discussion of the "rule of reason" that must go into the agency's decision-making process. The U.S. Supreme Court has long held that NEPA's mandate is "essentially procedural … to insure a fully informed and well-considered decision," and the Federal agency is left with wide discretion to draw the conclusions.[17] The rule of reason is employed to determine whether an environmental impact statement contains a "reasonably thorough discussion of the significant aspects of probable environmental consequences."[18] Under this standard, the review consists only of ensuring that the agency has taken a "hard look" at the environmental consequences of the decision. The rule of reason, according to some comments, should "take the uncertainty and speculation involved with secondary impacts into account in passing on the adequacy of the discussion of secondary impacts."[19] Moreover, the agency is not constrained by NEPA from deciding that other values outweigh the environmental costs.[20] The guidance, according to these comments, should do a better job of discussing how the application of the "rule of reason" will affect the agency's decision-making process in light of the present uncertainty surrounding greenhouse gas emissions. Unlike most other

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[17] *See Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 558 (1978).
[18] *See Oregon Natural Resources Council v. Lowe*, 109 F.3d 521, 526 (1997).
[19] *See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 346 (1989).
[20] *Id.* at 350.

environmental consequences, according to these commenters, the analysis of whether a project's greenhouse gas emissions are significant cannot be determined by objectively comparing the projects emissions to commonly accepted scientific thresholds. As noted above by some comments, there is no consensus about the causes and effects of greenhouse gases. Consequently, these commenters believe that the agency's determination necessarily must be qualitative, not quantitative, in nature. Given the global scale of the problem as well as the limitations of the existing models, it is unclear whether a quantitative project-level analysis would provide meaningful information for decision-making. In addition, this type of analysis has the potential, according to the comments, to mislead decisionmakers and the public by creating the impression that there are meaningful differences among alternatives, when in fact there is no valid statistical basis for distinguishing among them. Their concern is that requiring such an analysis would create an additional source of complexity, cost, delay, and litigation risk, without contributing to informed decision-making. Qualitative assessments, focused on statewide and regional trends, have greater potential to provide useful information for decisionmakers. Some commenters stressed, however, that even qualitative assessments, given the global nature of climate change, are often difficult to accomplish and should not be required. Finally, other commenters felt that particularly in the face of the high level of uncertainty surrounding the effects of greenhouse gases, the guidance should unambiguously recognize wide discretion by the agencies to determine what information is relevant and adequate for their analysis.

Some commenters stated that while they value and indeed insist on the inclusion of credible scientific quantitative analyses when available, the lack of availability should

not in any way deter agencies from engaging in professionally accepted qualitative assessments and identification of appropriate alternatives and mitigation strategies. According to these comments, because agencies repeatedly state that the climate crisis is a classic, and the ultimate, cumulative impact problem, it is used as an excuse for not disclosing their analysis because the agency's sole action will not stop climate change by itself, and/or will only contribute a "small" amount to overall greenhouse gas levels or climate impacts when measured quantitatively. An exclusive or over emphasis on quantitative analysis can in fact increase the risk of agencies falling into this trap. This is especially true when agencies attempt to calculate the increase in global temperatures that will result from their actions.

Similarly, some commenters stated that because NEPA requires Federal agencies to take a "hard look" at the potential environmental consequences of the proposed action, agencies must link the effects of a proposed action (and alternatives) to specific environmental consequences. Commenters maintain that a general discussion of an environmental problem (e.g., climate change) across a large area does not satisfy NEPA. Simply quantitatively reporting an area or an amount of a resource impacted also does not satisfy this "hard look" requirement. The guidance, according to these commenters, takes exactly this quantitative reporting approach. Reporting of emission levels is not useful, according to these comments, and cannot serve as a proxy for an analysis of the impacts of greenhouse gas emissions on the environment. Many comments asked CEQ for examples of specific qualitative and/or quantitative analyses in NEPA environmental analyses.

Response to Comments:

This revised draft guidance gives each agency responsibility for selecting the appropriate level at which to disclose the effects of GHG emissions and climate change, so long as it sets forth a reasoned explanation based on accepted science and whether that information is helpful for decisions. The revised draft guidance recommends that agencies use a reference point to determine when GHG emissions warrant a quantitative analysis taking into account the availability of GHG quantification tools and input data that are appropriate for proposed agency actions. Agencies should evaluate emissions over the life of the project, including a quantitative comparison of the GHG emissions of the alternatives if this would be useful to decisionmakers and the public in deciding among alternatives. Such an evaluation would take into account the availability of reliable calculators for providing quantitative or qualitative analyses. As previously noted, the aggregate nature of the climate change challenge may require decisionmakers to consider a detailed analysis when making reasoned choices among alternatives and mitigations.

d. Other comments

Other comments received stressed the utility of using programmatic NEPA analyses to consider GHG emissions and climate. They encouraged CEQ to allow the use of a metropolitan planning organization, regional greenhouse gas analysis, or perhaps even statewide greenhouse gas analysis that can be incorporated by reference. This kind of information may provide a better perspective on greenhouse gas emissions rather than a specific project-level analysis, like a transportation project. In fact, some transportation commenters observed that the guidance should more explicitly recognize the applicability

of transportation system-level analyses and explicitly allow for analysis at the transportation planning level.

Response to Comments:

The revised draft guidance addresses the use of programmatic approaches. It can be useful to describe agency GHG emissions in the aggregate, as part of a programmatic analysis of agency activities or environmental trends that can be incorporated by reference into subsequent NEPA analyses for agency actions. In addition, Federal programs that affect emissions or sinks, and proposals such as those related to long-range energy, transportation, and resource management programs, may lend themselves to a programmatic NEPA review. For example, if GHG emissions or climate change and related effects are included in a broad (i.e., programmatic) NEPA review for a policy, plan, or program, then the subsequent NEPA analyses for project level actions implementing that policy, program, or plan should tier from the programmatic statement and summarize the relevant issues discussed in the programmatic statement.[21] A tiered approach is used for many types of Federal actions and is particularly relevant to addressing proposed land and resource management actions. When using a tiered approach, agencies should determine whether it is appropriate to compare GHG emissions and assess climate change impacts at either or both the programmatic and project-specific level of analysis.

2. Determining a Level of Significance and the 25,000 Metric Ton Disclosure Threshold

[21] 40 CFR 1502.20, 1508.28.

a. The level of significance in NEPA analyses

CEQ received many comments on the 25,000 metric ton disclosure threshold that the 2010 draft guidance indicated may warrant further quantitative or qualitative analysis in NEPA reviews. Some commenters expressed the view that the 25,000 metric ton threshold is not explained clearly. These commenters interpreted the 2010 draft guidance as meaning that the 25,000 metric ton emission level should serve as a threshold indicator for NEPA review. Simultaneously, they cited the 2010 draft guidance as saying that CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs. The commenters found this distinction unclear and urged CEQ to clarify the distinction. If CEQ intended to establish 25,000 metric tons of GHG emissions annually as a threshold for NEPA analysis of GHG emissions, this threshold would sufficiently meet the "may have a significant effect" standard requiring preparation of an EIS. Therefore, CEQ must clearly articulate this standard in the guidance. Some groups implored CEQ to ensure and further clarify in the guidance that agencies should not equate individual project greenhouse gas emissions at or above 25,000 metric tons per year as a "significant effect" warranting the preparation of an environmental impact statement. According to these commenters, some groups may treat the guidance limit as a threshold of "significance," rather than just a reporting or "meaningful analysis" standard. This increases the uncertainties and the different understandings that various groups will attach to the draft guidance.

Other commenters were adamant that the 2010 draft guidance was unacceptably vague on the key issue of the threshold level of GHG emissions that determines the depth of analysis required under NEPA. For example, they cited the draft guidance that would require, "Federal Agencies to consider, in scoping their NEPA analysis, whether analysis of the direct and indirect GHG emissions from their proposed actions may provide meaningful information to decisionmakers and the public." Then, the commenters noted that CEQ attempted to clarify the word "meaningful" by suggesting that if agencies actions are "reasonably anticipated to cause direct emissions of 25,000 metric tons or more of CO_2-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decisionmakers and the public." Some comments indicated that it was unclear if the 2010 draft guidance attempted to define the term "meaningful." Commenters noted that CEQ proposed a quantitative reference point as an indicator of a level of GHG emissions for which an agency "should" consider action-specific evaluation of GHG emissions and disclosure of that analysis in NEPA documents. The commenters observed that CEQ was careful to note in the 2010 draft guidance that the suggested reference point is not "an absolute standard of insignificant effects," or by inference, not a standard for significant effects. Therefore, many commenters said that the draft guidance leaves the question of what constitutes a "significant" greenhouse gas emission level to the Federal agencies to be determined on a case-by-case basis. This approach, according to the commenters, leaves agencies with an unacceptable level of discretion, entities seeking Federal permits with little certainty, and project opponents with important litigation tools.

Other commenters urged CEQ to reaffirm the multi-factor approach to determining significance in NEPA regulations and documents. They impress upon CEQ to affirm in the introduction of the guidance that the level of GHG emissions is only one factor, among other criteria, that should be considered within the existing NEPA framework and that evaluation of significance under NEPA is done by the agency based on the categorization of actions in agency NEPA procedures and action-specific analysis of the context and intensity of the environmental impacts as set forth in 40 CFR 1508.27. Within the existing NEPA framework, it would be inappropriate, according to these commenters, in a guidance memorandum to establish a single factor—a quantitative level of greenhouse gas emissions—that would be considered to mark significant impacts, thereby automatically triggering the preparation of an environmental impact statement without regard to other criteria laid out in CEQ's NEPA regulations.

Response to Comments:

This revised draft guidance sets forth a reference point of 25,000 metric tons CO_2-equivalent (CO_2-e) emissions on an annual basis below which a quantitative analysis of the GHG emissions is not recommended unless quantification is easily accomplished based on the availability of quantification tools and appropriate input data.

The 2010 draft guidance did not intend the disclosure threshold to be equivalent to or substitute for a determination of significance. In this revised draft guidance, CEQ reaffirms that significance remains subject to the standards set forth in CEQ Regulations. The Regulations require consideration of both context and intensity and set out ten factors that should be considered. These include, among others, the degree to which the proposal affects public health or safety, the degree to which its effects on the quality of

the human environment are likely to be highly controversial, and the degree to which its possible effects on the human environment are highly uncertain or involve unique or unknown risks. This reaffirmation of the significance factors should eliminate any confusion over the utility of the GHG emission reference point in NEPA reviews and reasserts existing NEPA law and practice.

b. The 25,000 metric tons of CO_2 disclosure threshold

Many comments called for the GHG disclosure threshold to be raised from 25,000 metric tons to between 75,000 to 100,000 metric tons per year in order to be consistent with the Environmental Protection Agency's ("EPA") Tailoring Rule. These commenters noted that, in fact, 25,000 metric tons represented only 5/100.000th of 1 percent (0.00005%,) of the 49 billion tons of global GHG emissions. In its final, Prevention of Significant Deterioration ("PSD") Tailoring Rule (announced May 13, 2010), EPA raised the thresholds of the PSD and Title V programs applicable to GHGs to 75,000 and 100,000 metric tons per year respectively, rather than the 25,000 metric tons per year identified in the initial, proposed rule. The rationale provided for the 2010 draft guidance's 25,000 metric tons threshold, according to these commenters, was that it has been used and proposed in rulemakings under the Clean Air Act, specifically referencing EPA's Mandatory Reporting of Greenhouse Gases Final Rule (40 CFR 86, 87, 89, et al.). Subsequently, EPA finalized the "Tailoring Rule," establishing GHG emissions thresholds for certain Clean Air Act permitting programs for stationary sources (40 CFR 51, 52, 70, and 71). There EPA set the initial threshold for Clean Air Act permitting requirements for GHG emissions at 75,000 metric tons CO_2-e per year. Beginning in July 2011, the triggering threshold was raised to 100,000 metric tons CO_2-e per year for

new sources, but remains at 75,000 metric tons CO_2-e per year for existing sources undergoing modifications. Since the Tailoring Rule establishes GHG emissions thresholds for Clean Air Act permitting programs, these commenters believed that these thresholds were more appropriate indicators of the levels of GHG emissions for which an agency may consider action-specific evaluation of GHG emissions under NEPA than the thresholds in the Clean Air Act's reporting program requirements. This is because, if EPA does not intend to require PSD review or Title V permits for a facility, one could easily argue that facilities below these thresholds should not be required to conduct more in-depth environmental impact analyses based on their GHG emission. Rather, facilities below these thresholds should normally meet NEPA requirements through an environmental assessment resulting in a finding of no significant impact. Therefore, many commenters urged CEQ to bring the indicator level of GHG emissions in the guidance in line with the thresholds in EPA's final Tailoring Rule, establishing the indicator at 75,000 or 100,000 metric tons CO_2-e per year.

Some commenters went so far as to say that there should be no analysis of GHG emissions in the NEPA context. Some stated that there is no reason to draw the draft guidance's 25,000 metric tons disclosure threshold from the EPA reporting and the Clean Air Act rules, for these rules and NEPA serve different ends and are considerably different in purpose and scope. Because NEPA is focused on providing information needed to make better decisions, NEPA necessarily sweeps in more than just those impacts that would violate substantive mandates in other laws. Thus, agencies should quantify and disclose GHG emissions levels and consider alternatives that may reduce those emissions, regardless of whether they ultimately determine that the impacts are

significant for NEPA purposes. Other commenters stated that, when compared with nationwide or global GHG emissions, a 25,000 metric ton disclosure threshold is too low to be meaningful for the purposes of a NEPA analysis. CEQ's guidance would be most helpful, according to these comments, if it indicated that individual project GHG emissions typically will be miniscule compared to global emissions and so do not need to be studied in any substantial detail in the NEPA context. The guidance should therefore be limited to requiring publication of the activity's projected annual GHG emissions levels and nothing more.

In contrast, some commenters noted that GHG emissions of less than 25,000 metric tons may have an adverse effect on climate and the environment, especially in the context of all worldwide emissions. Recent science, according to these commenters, suggests the target atmospheric level of CO_2 should be 350 ppm to achieve climate stabilization and avoid disastrous global consequences. Given atmospheric levels of 389 ppm at the time comments were made, commenters stated that we are already on a trajectory that is not sustainable, and we therefore must decrease GHG emissions more rapidly and to a greater extent than previously thought. Thus, any additional contribution of CO_2 would be a step further from target levels and would contribute to a significant cumulative effect. These current conditions coupled with the potential consequences of global warming, according to the commenters, further underscore the need for recommendation and adoption of a zero threshold standard.

Other comments did not quarrel, per se, with the 25,000 metric tons indicator proposed in the 2010 draft guidance. Rather, they strongly recommended CEQ revisit the language used in this guidance and either remove the language allowing the analysis of

projects emitting less than 25,000 metric tons of CO_2, or provide specific examples of projects that should be subject to this disclosure threshold despite falling below the minimum threshold. Similarly, the 25,000 metric tons reference point was developed for use in reporting emissions of stationary sources under the Clean Air Act. Some commenters detailed that the analysis of transportation projects differs greatly from that of stationary sources and questioned CEQ's proposal to specify one single reference point for all types of projects performed or authorized by every Federal agency. A comment recommended the CEQ guidance be revised to recognize that Federal and/or state agencies may already have developed thresholds/criteria for performing GHG analyses and that these thresholds/criteria may be more appropriate for agency use than the 25,000 metric tons disclosure threshold specified in the draft guidance.

Response to Comments:

The revised draft guidance sets forth a reference point of 25,000 metric tons CO_2-equivalent GHG emissions on an annual basis below which a quantitative analysis of GHG emissions is not recommended unless quantification is easily accomplished, in light of the availability of quantification tools and appropriate input data. CEQ strongly encourages agencies to use their experience and expertise to determine when a more detailed analysis of GHG emissions is required to ensure that they do not expend their analytical and environmental review resources on those actions for which a quantitative analysis is not helpful in analyzing the environmental impacts or comparing among alternatives and mitigations. When an agency determines that a quantitative analysis is not appropriate, an agency should complete a qualitative analysis and explain its basis for doing so. We welcome the public's further comments on this issue.

3. Adaptation and Considering the Effects of Climate Change

a. Comments indicating that climate change effects on proposed actions should not be a part of the guidance

Some commenters noted that the 2010 draft guidance suggests that NEPA documents should include the effects of climate change on the proposed project. This type of analysis and discussion, according to these commenters, would violate the "rule of reason" as it would necessarily involve a "crystal ball inquiry" into the complex interrelationships of ecosystems and local climates. Again, the rule of reason is employed to determine whether an environmental impact statement contains "reasonably thorough discussion of the significant aspects of probable environmental consequences.[22]

Even the most sophisticated climatological modeling, according to these commenters, cannot predict precisely how the climate in a particular area will change and how, for instance, water resources will be impacted. Because of the limits of climatological modeling, any such discussion would necessarily be pure conjecture and would not provide information helpful to decisionmakers or the public. Other comments noted that there is presently no generally accepted model for gauging broad-based climate change, let alone assessing how such change (if any) affects individual, Federally-permitted projects. In the absence of generally accepted emissions modeling, these commenters believe that advising agencies to examine the potential impacts of climate change invites agencies (and perhaps even the individual project analysts within an agency) to estimate climate change effects by whatever means they think reasonable, which would result in disparities and even conflicts between agencies and analysts

[22] *See Oregon Natural Resources Council v. Lowe*, 109 F.3d 521, 526 (1997).

inevitable. If the draft guidance goes forward as proposed, the resulting conflict and confusion will cause Federal permits to be significantly delayed if not completely gridlocked, according to the commenters. Some comments called for the use of adaptive management in localities, as opposed to the issuance of guidance for climate change effects. These commenters claim adaptive management works best when the local land managers have as much flexibility and tools as possible at their disposal to respond to changing conditions. Therefore, it was suggested by these comments that references to analysis of the effects of climate change on the project or Federal action be removed from the final guidance.

Response to Comments:

NEPA is intended to inform decision-making by disclosing not only the reasonably foreseeable effects of a proposed action on the environment, but also any effects that environmental processes may have on the proposed action and on resources anticipated to be impacted by the proposed action. As such, NEPA supports decision-making that helps strengthen Federal resources and investments and make them more resilient against environmental impacts. The revised draft guidance encourages agencies to determine whether and to what extent to prepare an analysis based on the availability of information, the usefulness of that information to the decision-making process, and the extent of the anticipated environmental consequences. See also the response to the next comment.

b. Comments indicating that climate change effects on proposed actions should be a part of the guidance

Other commenters believe that the effects of climate change should be included in the guidance. As the Intergovernmental Panel on Climate Change stated "climate changes are being imposed on ecosystems experiencing other substantial and largely detrimental pressures." CEQ therefore appropriately recognizes, in the view of these commenters, that "[c]limate change can increase the vulnerability of a resource, ecosystem, or human community," exacerbating the impacts of actions that previously might have had more limited effects. These commenters believe that this recognition and the attendant analysis under NEPA is essential in meeting the goals of Executive Order 13514 which requires Federal agencies to assess their risk and vulnerabilities in light of a changing climate and in meeting the goals of the Interagency Climate Change Adaptation Task Force. One comment even noted that climate change interactions are pervasive, making it rarely appropriate, if ever, to confine "discussion of climate change in an environmental assessment or environmental impact statement [in] a separate section," as CEQ suggested in its guidance. Instead, the commenter suggested that CEQ should recognize that such synergisms are not only common, but may render some minor impacts significant, either directly or by undermining mitigation strategies. This integrated consideration should extend from impact analysis to shaping alternatives and mitigation decisions. Agencies, according to the comment, should recognize that ecosystems may be declining or changing even under a "no action" alternative, and should forecast the likely nature of those changes. From this baseline, the comment suggested that agencies should design and select between alternatives with the

understanding that reducing ecosystem stressors, including those resulting from the proposed action, will often be necessary in order to limit significant environmental impacts. The comment emphasized that CEQ should provide guidelines to ensure that agencies: (a) analyze the impacts of climate change on the affected environment and include those effects in their baseline for analysis of alternatives, mitigation, and in the "no action" alternative; (b) include in their cumulative effects analysis the impacts of climate change on the affected environment combined with the impacts of the proposed action and other reasonably foreseeable effects; and (c) include in their alternatives analysis actions that may avoid, reduce, and/or otherwise ameliorate the direct, indirect, and cumulative effects of climate change and the proposed action on the affected environment.

Some comments indicated that climate change should be a consideration in project analysis when located in areas that are considered vulnerable to specific effects of climate change within the project's lifetime. Because the impacts from climate change are predictions and can vary so widely by region, NEPA, according to the comments, should be open to allowing for differences in analysis. As to geographic scale, comments noted that climate change effects on temperature, stream flow, and precipitation patterns are likely to be characterized at the regional level and interpolated to a more localized level, if possible. However, overall, the commenters praised the 2010 draft guidance for recognizing that there are "limitations and variability in the capacity of climate models to reliably project potential changes at the regional, local, or project level." Some other comments suggested that at present, there are few, if any, downscaling models that are sufficiently accurate and robust to make useful predictions about the effects of climate

change on local or even regional resources, including effects on water availability, at the watershed level or at a specific project location. Thus, until such downscaling models exist, the commenters suggested that any analysis of the regional and local effects of climate change on water resources, among other environmental resources, would be purely speculative and Federal courts have held that Federal agencies should not consider speculative effects under NEPA. These comments did not categorically rule out the assessment of climate change effects on projects, but were rather more tentative in their recommendations, conditioning their recommendations on the existence of appropriate models. One commenter cited recently introduced Federal legislation supporting the conduct of regional emission analysis and assessing regional adaptation to the effects of climate change as part of the metropolitan transportation planning process. Despite the aforementioned limits of the methods of assessing climate change impacts, one commenter said that it would be reasonable to use existing studies, such as the New York State Energy Research and Development Authority's ClimAID study, to qualitatively assess climate change effects occurring in a project area.

As a part of the broader effort to assess climate change impacts and undertake adaptation, one commenter proposed that CEQ direct agencies to produce their own specific procedures (whether in the form of guidance or rulemaking) to explain how they will consider environmental impacts on a changed environment. Many agencies have very specific mandates with very specific environmental effects, and directing them to tailor this consideration to their own efforts should produce improved analysis of climate changed environments related to the agencies' actions. By having each agency conduct its own process, the agencies will (1) benefit from input from the public that works most

closely with them; (2) be able to create protocols to gather all available and easily determined data on changed environments in areas under their jurisdiction; and (3) consider creating protocols to formally cooperate and share information with other Federal agencies, state and local government, and tribes on expected local changes in the environment. These commenters contend, as noted above, that much information is currently fragmented. If agencies had a formal procedure for continually consulting with other agencies, relevant information would be dispersed more quickly and effectively. Such an approach would require agencies that rely on "adaptive management" when accounting for unknown environmental changes to specify a regular procedure for gathering information and using that information to make decisions going forward, including revisiting earlier agency actions.

Other comments, which also called for CEQ's NEPA guidance to incorporate climate change effects, requested that CEQ limit the consideration of the impacts of climate change on proposed actions to those actions that will occur far enough in the future that changes might be both evident and material. It is a waste of agency resources and not relevant to the agency decision, according to these commenters, to require a consideration of climate change impacts on an action that will be concluded in 5, 10 or even 20 years. For purposes of NEPA analysis, it was suggested that the 2010 draft guidance be revised to advise agencies that NEPA documents should consider the potential impacts of climate change on those resources affected by climate only when those impacts are expected to extend at least beyond 2050.

Some commenters agreed that the observed and projected effects of climate change that warrant consideration in a NEPA document should typically be described as

part of the proposed action's "affected environment."[23] However, according to these commenters, as the 2010 draft guidance correctly recognized, "agencies should ensure that they keep in proportion the extent to which they document their assessment of the effects of climate change." In this light, the commenters suggested that the draft guidance should fully explain how climate change effects should be considered as part of the "affected environment." For example, the commenters requested that the guidance distinguish between a project's GHG emission-related effects on the environment and the effects of climate change on the area covered by a project. With respect to the former, climate change is a global phenomenon and, as recognized by the 2010 draft guidance, changes in global temperatures cannot be linked to specific sources of emissions. Consequently, the guidance should recognize that the "affected environment" of a GHG emitting project cannot be the entire world, and it should provide some direction on how the "affected environment" will be determined for climate change-related effects. Other commenters were confused as to why CEQ suggested that the observed and projected effects of climate change warranting consideration are most appropriately described as part of the current and future state of the proposed action's "affected environment." Section 1502.15 of the CEQ Regulations does not suggest, according to these commenters, that this section discuss future states of the affected environment, but instead states that the affected environment describe the environment of the area to be affected by the project alternatives. There is an implicit understanding that there is natural change in ecosystems and environmental resources; these systems and resources

[23] *See* 40 CFR 1502.1.

are not static. It was unclear to commenters why climate change effects would best be discussed as part of the affected environment rather than as a cumulative impact.

Response to Comments:

The revised draft guidance proposes that climate change effects should be considered in the analysis of projects that are designed for long-term utility and involve resources considered vulnerable to specific effects of climate change within the timeframe of the proposed project's anticipated useful life. The focus of this analysis should be on those aspects of the environment that, based on the interaction between the proposed action and the human environment, are affected by the proposed action and on the significance of climate change on those aspects of the environment. Agencies should consider the specific effects of the proposed action (including the proposed action's effect on the vulnerability of affected ecosystems and communities), the nexus of those effects with projected climate change effects on the same aspects of our environment, and the implications for the environment to adapt to the projected effects of climate change. In addition, the particular impacts of climate change on vulnerable communities may be considered in the design of the action or the selection among alternatives so that the proposed action will be more resilient and sustainable and thereby have lesser impacts on those communities. Using NEPA's "rule of reason" that governs the level of detail in any environmental effects analysis, agencies should ensure that they keep the extent to which they document their assessment of the effects of climate change in proportion to the potential for impacts.

4. Indirect Effects and Emissions

CEQ received many comments that used the terms "indirect effects" and "indirect emissions" interchangeably, when in fact these two terms have distinct meaning. Note that the summaries of the comments, below, also use the terms interchangeably to reflect how these comments were presented to CEQ.

a. Indirect effects

Many commenters noted that CEQ should clarify the circumstances under which it is necessary and appropriate to consider the indirect effects of GHG emissions. The 2010 draft guidance, according to these views, provides little instruction on how to analyze appropriately the indirect impacts (assuming that those impacts are brought about as a result of the Federal action and are reasonably foreseeable, which are prerequisites to analysis under NEPA), and could prompt more calls for similar modeling exercises. CEQ, according to these commenters, could provide valuable guidance to Federal agencies that such indirect impacts, which have been demonstrated to be negligible and predominantly attributable to other independent factors, need not be exhaustively analyzed as part of a NEPA review. Other commenters thought that agencies should be further reminded that the indirect effects of a proposed action are to be analyzed only if the impact is reasonably foreseeable.[24] Although they commended CEQ for acknowledging that any analysis of indirect impacts must be bounded by the limits of feasibility, they urged CEQ to include the "reasonable foreseeability" language consistent with 40 CFR 1508.8.

Additionally, they criticized CEQ for not providing an alternative threshold for considering indirect effects. Commenters noted that given the long-term nature of global

[24] *See* 40 CFR 1508.8.

warming, it is difficult to conceive of a climate change situation where the direct effects of a decision are significant, but the indirect effects are not significant. Other commenters agreed with CEQ and stated that only direct emissions should be considered when determining whether an environmental impact statement is required for a particular project above the threshold. The guidance should make clear, according to these commenters, that a project's indirect GHG emissions do not constitute a "significant impact" for two reasons. First, according to these commenters, these indirect emissions are inherently insignificant compared to global GHG emissions and do not cause "significant" impacts. NEPA directs Federal agencies to prepare an environmental impact statement for "major Federal actions significantly affecting the quality of the human environment." Second, they contend that indirect GHG emissions should not trigger the requirement that a Federal agency prepare an environmental impact statement because these indirect effects are too remote from the alleged cause. These commenters point out how the U.S. Supreme Court has held that if there is a reasonably close causal relationship between the environmental effect and the alleged cause, then an environmental impact statement is required. The court compared this type of causation to the tort law doctrine of proximate cause; a "but for" causal relationship is insufficient for an alleged cause to require an environmental impact statement for a project.

Some commenters thought that climate change impacts should be treated as indirect effects, rather than direct effects of GHG emissions. Under the CEQ's regulations, direct effects are those caused by the action and occur at the same time and place. However, because climate change does not occur at the same time and place as the GHG emissions, these commenters believe that these impacts are not properly considered

"direct effects." Rather, they conclude, it would be more appropriate to consider potential climate impacts as an indirect effect or cumulative impacts of a project's projected GHG emissions. Indirect effects are caused by the action but are removed in time and distance, even though the effects are reasonably foreseeable. The 2010 draft guidance conceded that climate change is the result of "numerous and various small sources," and that each of the sources only makes a "relatively small addition to the global atmospheric conditions." Accordingly, the commenters observed that because the climate impacts from the emissions from a single project are a tiny fraction of the global emissions, treatment of these impacts as an indirect effect, or a cumulative effect, is more appropriate.

b. Indirect emissions

CEQ should clarify its discussion of indirect emissions, according to some commenters. The guidance, according to these commenters, should state that only those indirect emissions that are reasonably foreseeable as a result of the project and meet the necessary level of significance, should be considered. Emissions, which are theoretical or otherwise not dependent on the proposed action for their occurrence, should be eliminated from the analysis. Thus, the final guidance should clarify that Federal agencies must recognize and discuss the known uncertainties of GHG emissions, and as the ability to quantify emissions or accurately assess the link between emissions and climate effects decreases. Some commenters suggest that the "indirect effects" definition helps establish "indirect emissions." At the same time, they emphasize that indirect emissions are not akin to indirect effects. Specifically, they contend that NEPA requires consideration of "indirect effects" (limited to non-speculative environmental

consequences that are proximately caused by a major Federal action). Commenters maintain that "indirect" GHG emissions are not truly "indirect effects" of an action. An emission is not an effect, and any resulting harm to the environment is the environmental consequence of interest to an agency. In applying the concept of "indirect effects," CEQ, according to these commenters, should advise agencies that they need not consider "indirect" GHG emissions unless those emissions (1) bear "a reasonably close causal relationship" to the major Federal action being reviewed; (2) are "reasonably foreseeable;" and (3) are not speculative. Thus, the issue of whether to consider "indirect emissions" should be governed by the same test applicable to "indirect effects." This clarification, they assert, will allow agencies to expend their resources wisely and focus their analysis without speculating about potential indirect emissions not clearly associated with or caused by the major Federal action being reviewed.

In terms of clarifying what is meant by "indirect emissions," other commenters believe that it may be helpful for CEQ to consider adopting, with one minor modification, the definition of "indirect emissions" from the EPA regulations implementing the conformity provisions of the Clean Air Act (CAA) for this purpose.[25] The conformity regulations apply only to emissions of criteria pollutants from Federal actions in nonattainment areas. Nevertheless, the commenters argue, these regulations provide a serviceable definition of indirect air emissions that has been applied by Federal agencies for many years. The conformity regulations define "indirect emissions" as those emissions that "(1) [a]re caused by the Federal action, but may occur later in time and/or may be further removed in distance from the action itself but are still reasonably

[25] *See* 40 CFR 93.152.

foreseeable; and (2) [t]he Federal agency can practicably control and will maintain control over due to the continuing program responsibility of the Federal Agency." Under the air conformity program, emissions are "caused by" a Federal action if the emissions "would not otherwise occur in the absence of the Federal action." Overall, commenters asserted the need for the final guidance to clarify what CEQ means by "direct" and "indirect" emissions versus "direct" and "indirect" effects.

In addition to providing clarity on the concept of indirect emissions, some commenters noted that on page 5 of the 2010 draft guidance CEQ addressed the treatment of "the energy requirements of a proposed action and the conservation potential of its alternatives." CEQ went on to state that agencies should evaluate GHG emissions associated with energy use and mitigation opportunities. An important additional consideration, according to these commenters, would be an evaluation of the direct and indirect effects of the alternatives themselves on potential GHG emissions

A few commenters thought CEQ's proposal for indirect GHG emissions analysis should be removed in its entirety. Indirect GHG emissions analysis would encompass sources that are upstream and downstream of the action, with no discernable limit or boundary. Other commenters felt that if indirect emissions are not included, the Federal goals of energy conservation and reduced energy use could not be fully realized. Estimating many types of indirect emissions, they assert, is entirely possible and it is in the project design phase where energy efficiency measures and access choices can most effectively be incorporated. Thus, according to these commenters, even a brief qualitative analysis of both the direct and indirect GHG emissions of a proposal may reveal cost-effective reduction measures. A well-done qualitative analysis may also

provide a rough quantitative estimate that can help the lead agency determine whether or not the analysis is adequate.

Finally, there were some transportation issues raised, concerning the concept of indirect emissions. The introduction to the 2010 draft guidance advises agencies to consider in the scoping process whether the direct and indirect GHG emissions of a proposed action may provide meaningful information to decisionmakers and the public. It is not clear, according to some commenters, what would be considered direct emissions as opposed to indirect emissions for transportation projects. The distinction is critical in determining how to interpret the suggested indicator value. The determination of how to define direct and indirect impacts for transportation projects, and the decision of how to apply the indicator value, is best left to the discretion of Federal transportation agencies, according to these commenters. Similarly, for transportation infrastructure projects, direct and indirect GHG emissions should not be defined to include the emissions associated with the production (drilling, refining, etc.) or distribution of fuel to the vehicles that use the transportation infrastructure. This would place an unreasonable burden on transportation agencies, according to commenters, and would require an analysis that is not completed for any other resource evaluated under NEPA. Under this approach, the project impact should be the increase (or decrease) of emissions from the increase (or decrease) in vehicles using the transportation infrastructure due to the project.

Response to Comments:

Statutes, Executive Orders, and agency policies, establish the Federal government commitment to eliminating or reducing GHG emissions. Information on GHG emissions

(qualitative or quantitative) that is useful and relevant to the decision should be used when deciding among alternatives. The revised draft guidance reminds agencies that, as with all impacts, agencies are required to consider reasonably foreseeable direct and indirect effects, and the cumulative nature of those effects when analyzing proposed Federal actions. The revised draft guidance explains that agencies should consider the affected environment by looking for effects of past, present, and reasonably foreseeable future actions that will increase or change in combination with the direct and indirect effects of the proposal. Agencies should apply the rule of reason which states that agencies determine whether and to what extent to prepare their NEPA reviews based on the usefulness of potential information to the decision-making process, and to focus their analyses on issues that deserve study.

CEQ is rejecting a hard and fast rule requiring or prohibiting consideration of indirect emissions. The focus should be and remains on the foreseeability of identifying potential effects and the extent of those effects.

5. Life-cycle Greenhouse Gas Emissions

Many commenters claim CEQ should direct Federal agencies to employ life-cycle GHG assessments (including consideration of avoided GHG emissions) to determine the full GHG impacts of proposed agency actions and associated private-sector activities and processes. The environmental impact of the life cycle of the proposed action – and not just of the project – must be assessed, according to commenters. Agencies should be scoping ways not only to minimize or mitigate potential adverse impacts but to restore and improve the environment and atmosphere at the same time. There is no reasoned justification, according to these commenters, for focusing on a project's annual, rather

than lifetime, emissions as the indicator level of significance. Nothing in NEPA, they assert, restricts the agencies' impacts analysis to a rate or a one-year time scale. If CEQ does not delete the discussion of an indicator level from the final guidance, according to these commenters, it should at least buttress its indicator level with a life-cycle or life-of-the-project "volume" indicator. That level should be set low enough to capture actions that may not emit the full threshold rate in any given year, but would still contribute to the larger overall volume of GHG emissions over the life of the project. Thus, the commenters suggested that if CEQ wishes to indicate a level of significant emissions, it must ensure that its indicator accounts both for the rate and volume of the emissions over the life of the project.

One of the commenters recommended that CEQ should affirmatively direct agencies to assess GHG impacts of agency actions in accordance with the following guidelines: (1) GHG impacts should be assessed on a life-cycle basis, as appropriate, taking account of direct, indirect, and avoided GHG emissions; (2) direction should be provided to use peer reviewed and agency life-cycle assessment tools and models; (3) GHG impacts should not be limited to source emissions as reported under EPA's GHG Reporting Rule and other EPA GHG inventory tools; (4) the Global Warming Potential ("GWP") of each GHG should be based on the latest consensus scientific data, which, as of this date, should reflect the GWP values set forth in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report; (5) consistent with international and EPA precedent, the primary focus should be on anthropogenic sources of GHGs, including fossil CO_2 and methane; and (6) uncertainties in data, models, methods, and resulting calculations should be analyzed in assessing direct and indirect life-cycle GHG

emissions, but the existence of such uncertainty should not preclude use of life-cycle assessment of GHG emission impacts. Another commenter contends that if a full life-cycle analysis is required, rather than using the length of time of all the phases and elements of the proposed action over its expected life, the guidance should also require the calculation to include the life of the pollutant or the traceable lifetime of the effect of the action on the climate, such as the sequestration lost through a large clear-cutting of forest when selective harvesting might have retained more carbon in the standing trees and soil. Moreover, the commenter stated that guidance should be provided to Federal agencies to retain existing carbon stores in carbon dense systems such as mature and old-growth forests.

CEQ received comments that requested further clarification in the guidance that a full life-cycle analysis is not required (for example, the GHG analysis for a highway project should not include the emissions associated with the manufacturing of the vehicles using the transportation facility), at least until this type of information becomes available. These commenters indicated that full life-cycle analyses are not readily available at this time and should not be used anyway as they will result in double counting of emissions among various parties. On a related note, commenters pointed to several provisions of the 2010 draft guidance which they thought suggested use of an alternative NEPA reference point based on a project's "lifetime" cumulative GHG emissions rather than annual emissions. The comments highlighted the following passage from pages 1 and 2 of the 2010 draft guidance as an illustration of this approach: "For long-term actions that have annual direct emissions of less than 25,000 metric tons of CO_2-equivalent, CEQ encourages Federal agencies to consider whether the action's

long-term emissions should receive similar analysis." Commenters stress that the 2010 draft guidance offers no specific reference point based on cumulative, lifetime emissions, probably because this metric is not used in the EPA's Greenhouse Gas Reporting Rule, EPA's Tailoring Rule, the various proposals for climate change legislation, or any other commonly regarded policy. A lifetime emissions standard, particularly one with no reference point, according to commenters, threatens to expand NEPA analysis to a vast new array of Federal actions. The recognized metric for GHG policy analysis and regulatory standard setting, as reflected in EPA's Greenhouse Gas Reporting Rule, EPA's Tailoring Rule, and elsewhere, is annual emissions. CEQ, according to the commenters, has no empirical or legal basis for suggesting a NEPA analysis reference point based on lifetime, cumulative GHG emissions, and this aspect of the proposed guidance should be withdrawn in its entirety.

Response to Comments:

The revised draft guidance states that analysis of GHG emissions sources should follow the same basic NEPA principles and account for all phases and elements of an action, including both short- and long-term effects and benefits, over the expected life of the project and the duration of the generation of emissions. It is important to recognize that agency-proposed land and resource management actions can result in both carbon emissions and carbon sequestration, and agency analyses should reflect a comparison of net GHG emissions and carbon stock changes that are relevant in light of the proposed actions and the timeframes under consideration. Agencies have substantial experience estimating GHG emissions and sequestration, and numerous tools and methods are available to efficiently make such estimates. The revised draft guidance encourages

agencies to use tools for quantification when a quantitative analysis would be useful for informing decisionmakers and the public. When a quantitative analysis would not be useful, a qualitative analysis should be completed, and an agency should explain its basis for doing so.

6. Preserving the Procedural Mandate of NEPA

Some commenters noted that certain statements in the 2010 draft guidance could be misinterpreted by other Federal agencies and the public as creating new, binding substantive or procedural obligations. The commenters suggested that CEQ should clarify that the guidance is not intended to do so. These commenters point to the statutory language and court decisions, which detail that NEPA is an action-informing statute, and not an action-forcing document. Additionally, some comments cited *Robertson v. Methow Valley Citizens*, 49 U.S. 332, 333 (1989), where the Court held that "it is well settled that NEPA itself does not impose substantive duties mandating particular results, but simply prescribes the necessary process for preventing uninformed-rather than unwise-agency action." Statements such as, "CEQ proposes to advise Federal agencies that they should consider opportunities to reduce GHG emissions caused by proposed Federal actions and adapt their actions to climate change impacts throughout the NEPA process and to address these issues in their agency NEPA procedures[,]" concern certain commenters. These commenters also point to statements that, when a proposed action meets an applicable threshold for quantification and reporting of GHG emissions, "CEQ proposes that the agency should also consider mitigation measures and reasonable alternatives to reduce action-related GHG emissions." This direction, according to the commenters, appears to go beyond the scope

of NEPA. It goes, they contend, beyond describing how and when to analyze environmental impacts and what environmental impacts are to be considered, thereby transforming the NEPA process into an action-forcing process by advising agencies that they need to consider or even require agencies to include mitigation and adaptation measures as part of their decisions. It also appears, these commenters contend, to elevate considerations of GHG emissions and impacts of climate change above other environmental impacts for purposes of assessing alternatives. Environmental assessments or environmental impact statements are likely to evaluate a number of different environmental factors in addition to GHG emissions and impacts of climate change which may have greater impacts on the environment than those produced by GHG emissions or climate change, according to commenters. Similarly, commenters said that a direction to consider mitigation and adaptation measures may inhibit or restrict agency decision-making with respect to other alternatives. Other commenters point to the same introduction to the 2010 draft guidance and indicate that the statement on the reduction of GHG emissions would include projects requiring Federal permit decisions. They are concerned that the guidance will be used as a backdoor to impose mandatory Federal GHG emission reductions, for example through mitigation required as a *quid pro quo* in order to obtain a finding of no significant impact. The goal of reducing GHG emissions through mandatory emission limits should be accomplished through comprehensive national climate legislation, rather than through NEPA guidance documents, according to these comments.

Other commenters stressed that NEPA can be used to have an influence on agencies' substantive policies. These commenters said that NEPA provides that "the

policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act."[26] The commenters highlight that some agencies have taken a step forward, at least at the broad policy level. For example, they cite the Department of the Interior ("Department") which, through a secretarial order, has acknowledged that "climate change is impacting natural resources that the [Department] has the responsibility to manage and protect."[27] The secretarial order "ensures that climate change impacts are taken into account in connection with Department planning and decision-making."[28] The secretarial order does this by requiring the Department to "consider and analyze potential climate change impacts" when it: undertakes "long-range planning exercises"; "set[s] priorities for scientific research and investigations"; "develop[s] multi-year management plans"; "and/or" "mak[es] major decisions regarding the potential utilization of resources under the Department's purview."[29] The commenter state's that while the Department's secretarial order can certainly be strengthened, in particular in terms of its implementation, all Federal agencies should be encouraged to take similar policy action and to ensure that those policies are implemented through actual management decisions. Indeed, the commenters believe that CEQ guidance could help raise Federal agencies' comfort level in using their substantive and procedural authorities to address GHG emissions and climate change. These commenters welcomed this result.

Response to Comments:

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[26] *See* 42 U.S.C. 4332(1).
[27] U.S. Dept. of the Interior, Sec. Or. 3226, Section 1 (Jan. 19, 2001).
[28] *Id.*
[29] *Id. at* Section 3.

The revised draft guidance points out that NEPA is intended to promote disclosure and consideration of potential environmental effects, and to provide the opportunity to mitigate them. NEPA recognizes that Federal activities affect the environment and mandates that Federal agencies consider the environmental impacts of their proposed actions, and any reasonable alternatives and mitigations, before deciding to take action. The revised draft guidance does not create any new or additional regulatory requirements for project proponents. It simply instructs agencies on how to consider and address the GHG emissions from and the effects of climate change on their proposed actions within the existing NEPA regulatory framework.

Climate change impacts will have important consequences for the resilience of Federal actions, including more frequent heat waves and high-intensity precipitation events, rising sea levels, and more prolonged droughts. The revised guidance emphasizes that agencies should consider mitigation measures and reasonable alternatives to reduce action-related GHG emissions in the same fashion as they consider them for any other environmental effects.

7. Incomplete or Unavailable Scientific Information

The CEQ guidance on the analysis of GHG emissions under NEPA should, according to some commenters, make clear that NEPA regulatory provisions regarding incomplete or unavailable information should be appropriately used in addressing any analysis of GHG emissions. Some commenters have serious concerns over the validity of the modeling and assessment tools currently available for climate change. They contend that the CO_2 emissions estimates from these models are only useful for a comparison between alternatives. These commenters say that the numbers are not necessarily an

accurate reflection of what true CO_2 emissions will be because CO_2 emissions are dependent on other factors which are not part of the models that are currently available. Further, in terms of assessment, the comments point to uncertainty over assessing an individual project's effect on climate change and they place an emphasis on the need for better tools to assess the climate change effects on a project's environment. Along the same lines, other commenters pointed to what they perceive as conflicting parts of the 2010 draft guidance when it mentions that " ... environmental documents reflect this global context and be realistic in focusing on ensuring that useful information is provided to decisionmakers for those actions that the agency finds are a significant source of greenhouse gases," but then the guidance goes on to refer to " ... the scoping process to set reasonable spatial and temporal boundaries for this assessment and focus on aspects of climate change that may lead to changes in the impacts, sustainability, vulnerability, and design of the proposed action and alternative courses of action." These comments indicate that agencies will be left with the daunting task of developing assessment protocols and standards to evaluate the impact of local actions in a global context in the absence of air quality standards or models. Given the lack of generally accepted protocols for modeling climate change, an agency's NEPA procedures, these commenters contend, should be limited to: (1) quantifying the project's reasonably anticipated GHG emissions; (2) noting that the project's incremental contribution to global GHGs is extremely small; and (3) observing that there is no standard methodology to determine how incremental GHG contributions of this magnitude translate into effects on global climate.

Some commenters called for CEQ to provide more guidance to agencies as to how to address uncertainties and to recognize that there are very large levels of uncertainty associated with the relationship between agency actions and climate change effects. The range of outputs of climate models is huge, varying even more in their predictions about any particular region. They differ in predictions of both temperature and precipitation, as well as in seasonal trends of each. Therefore, the commenters concluded that these limitations make scenario uncertainty enormous. As a result, they encourage CEQ to recommend an approach that agencies should follow for handling uncertainties under NEPA. That approach should include explicit acknowledgment of the uncertainties and estimates of how they affect emission possibilities as well as climate change projections, if any. The commenters point to the documents that CEQ recommends as the "best scientific information available on the reasonably foreseeable climate change impacts" to show that climate change science cannot yet establish an agreed-upon baseline of environmental conditions to track the effects of climate change, and likely never will.[30] These commenters contend that the 2010 draft guidance directs Federal agencies to the "Synthesis and Assessment Products of the U.S. Global Change Research Program" ("USGCRP") as a source of the "best scientific information available on the reasonably foreseeable climate change impacts" to identify a baseline. However, the commenters point out that this latest 2009 Assessment includes an entire chapter, "An Agenda for Climate Impacts Science," focusing on what the USGCRP does not know about "climate change impacts and those aspects of climate change responsible for those impacts."[31] Most notably, the 2009 Assessment indicates that "agreed-upon baseline

[30] *See* Draft 2010 Guidance at p. 8.
[31] *See* "Synthesis and Assessment Products of the U.S. Global Change Research Program" at p. 153.

indicators and measures of environmental conditions that can be used to track the effects of changes in climate" do not yet exist.[32] The commenters contend that without an agreed-upon baseline, it is difficult to understand how a NEPA analysis (or any scientific analysis for that matter) can proceed with any accuracy. Ultimately, according to the commenters, the 2009 Assessment highlights significant, and arguably insurmountable, shortcomings in climate change science that will inhibit an agency's ability to conduct the informed and realistic analysis required by NEPA. Assuming that climate change analysis can be conducted consistent with NEPA, the scientific uncertainties must be clearly disclosed, according to commenters. The comments cite the NEPA implementing procedures for when an agency is faced with "incomplete or unavailable information, the agency shall always make clear that such information is lacking."[33] Therefore, commenters said that because the USGCRP documents show that a baseline from which to predict the rate, scope, and effects of climate change simply does not yet exist, any NEPA analysis of climate change and/or GHGs must clearly disclose the existence of these uncertainties and avoid speculative conclusions. CEQ guidance should, according to these commenters, include a clear statement of the uncertainties and provide guidance that the statement should be included in every NEPA document that analyzes climate change.

Other commenters urge CEQ to wait to issue its final guidance because a variety of companies, trade organizations, small businesses, and individuals have recently challenged the EPA's Endangerment Finding in Federal court, in addition to several other legal challenges to aspects of EPA's regulation of GHGs. These challenges come from

[32] *Id.* at 155.
[33] *See* 40 CFR 1502.22.

fifteen states, the Southeastern Legal Foundation, including sixteen Members of Congress, the National Association of Manufacturers, and many other groups. Some commenters believe strongly that CEQ should delay the issuance of its guidance.

Response to Comments:

The revised draft guidance is clear that agencies should use current scientific information and methodologies for assessing GHGs and climate effects. Agencies are reminded of Section 1502.22 of the CEQ Regulations stating that when evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement, if information essential to a reasoned choice among alternatives is incomplete and the overall costs of obtaining that information are not exorbitant, then an agency shall obtain and include that information.[34] If the information does not exist or would be too costly to obtain, agencies must determine whether the adverse effects are reasonably foreseeable and significant, consistent with section 1508.27 of the CEQ Regulations. Agencies will also need to set forth the relevant, existing, and credible scientific evidence. There is a growing body of scientific evidence on GHG emissions and impacts of climate change that agencies may already be able to rely on, provided they set forth clear reasoning for using that science.

8. Concerns With Using EPA Methodologies

Many of the comments on the 2010 draft guidance were directed at the 25,000 metric ton disclosure threshold. Commenters opposing the 25,000 metric ton threshold do not believe that this threshold has a sound legal or factual basis for the purposes to which CEQ proposes to apply it. EPA chose the threshold for use in the regulation of air

[34] 40 CFR 1502.22(a).

pollutant emissions from large stationary sources that is required under the Clean Air Act; this is a program of limited scope, applicable to a well-defined and small universe of sources. EPA chose this number based on administrative necessity, judging that it was 1) low enough to pull in the majority of large stationary sources of greenhouse gas emissions, but also 2) high enough to limit the number of sources covered that state and local air pollution permitting agencies could feasibly handle. Administrative necessity underlies the EPA thresholds, and EPA made a factual case for the need for this threshold, based on actual staffing, resources needed for permit processing, and financial data from state and local permitting agencies. CEQ, according to the commenters, has not presented any comparable data in its proposal that would necessitate the artificial, non-science-based 25,000 metric tons per year threshold it proposes for its NEPA guidance. Without such data or other comparable justification, the proposal does not reflect a scientific judgment about whether a particular quantity of emissions will "meaningfully" affect the global climate. Similarly, several commenters note that the Clean Air Act rules and NEPA serve different ends and are considerably different in purpose and scope. NEPA requires consideration and disclosure of impacts to inform decision-making and the public, with the goal of implementing the nation's environmental policies; the Clean Air Act focuses on quantitative standards with specific regulatory consequences. Therefore, these commenters believe that, because NEPA is focused on providing information needed to make better decisions, NEPA necessarily sweeps in more than just those impacts that would violate substantive mandates in other laws, and therefore, inappropriately uses Clean Air Act standards.

Response to Comments:

The revised draft guidance gives agencies the discretion to select the appropriate method of analysis for assessing the effects of GHG emissions and climate change, so long as the agency sets forth a reasoned explanation based on accepted science and whether that information is helpful to inform the decisionmaker and the public. The revised draft guidance sets forth a reference point of 25,000 metric tons CO_2-equivalent emissions on an annual basis below which a quantitative analysis of GHG emissions is not recommended unless quantification is easily accomplished, taking into account the availability of quantification tools and appropriate input data. CEQ strongly encourages agencies to use their experience and expertise to determine when a more detailed analysis of GHG emissions will assist with analyzing the environmental impacts or comparing among alternatives and mitigations. When an agency determines that a quantitative analysis is not appropriate, an agency should complete a qualitative analysis and explain its rationale for doing so.

9. NEPA Inefficiencies

Many commenters assert that CEQ's 2010 draft guidance attempted to expand NEPA analyses to include the effects of greenhouse gas emissions. These commenters claim that expanding the scope of NEPA will only serve to exacerbate the delays and inefficiencies they currently perceive in the environmental review and approval process. Until these procedural inefficiencies of NEPA are addressed, these commenters would caution against expanding the reach of the statute. Specifically, some commenters thought that if a quantitative threshold were to be implemented, it would be duplicative of those that other agencies already use in evaluating greenhouse gas emissions under their statutory authorities and that many of the protocols identified in the 2010 draft guidance

are unreasonably expensive and difficult to implement. Other commenters argue that the guidance would increase the time and expense of NEPA reviews while also increasing the potential for litigation because the guidance fails to create bright lines and safe harbors for the scope of NEPA reviews. The guidance, in their view, proposes uncertain and unclear standards for both the situations in which NEPA reviews should be conducted on the basis of climate impacts and the scope of climate impacts to be assessed in the NEPA reviews. For instance, they point to the statement in the 2010 draft guidance that the Federal agency's analysis should "qualitatively discuss the link between [the project's] greenhouse gas emissions and climate change." The guidance, according to commenters, however, provides no examples of what this qualitative analysis should involve, even as the CEQ acknowledges the difficulty in understanding the link between an individual facility's emissions and specific climatological changes. Similarly, other commenters said that despite its legislative history and judicial precedent, NEPA has been increasingly abused forcing Federal agencies to spend time and scarce resources defending lawsuits. They claim the NEPA guidance issued by CEQ will only exacerbate this situation, as agencies are ill equipped to address GHG and climate change issues. According to these commenters, real data on climate change is questionable. Moreover, the elements that contribute to greenhouse gas emissions are so integrated into our markets that consideration of all of them as part of the NEPA review could have devastating consequences for every aspect of our economy. The result will, according to commenters, be longer permitting lines, higher project costs, and more litigation. At a time when jobs are scarce and the economy vulnerable, these commenters are concerned that the government is creating new barriers to economic development. These

commenters urge CEQ to reconsider this guidance and work with stakeholders in making necessary reforms to NEPA. Reforms such as eliminating delays in the permitting process, allowing for greater public participation and stronger involvement by stakeholders, eliminating excessive litigation, and facilitating better Federal coordination they claim will go a long way to reestablishing the appropriate balance between economic development and environmental preservation.

Other commenters want CEQ to adopt an effective date for the guidance. The commenters noted that the 2010 draft guidance states: "CEQ does not intend this guidance to become effective until its issuance in final form." However, they argue that the 2010 draft guidance does not address how the guidance in final form is to be applied and whether CEQ intends to adopt an effective date. Although they understand that CEQ believes that this guidance merely clarifies what NEPA documents should already include, they say that the guidance explains, for the first time, how agencies are to conduct the analysis for effects of greenhouse gas emissions and climate change. Without a clear effective date, draft documents will be subject to uncertainty, litigation, and delay, even if they include an analysis of climate change impacts. Because the guidance has the potential to cause unnecessary uncertainty, delay, and costs to projects that are well underway, commenters believe that it is critical that CEQ adopt an effective date and clarify that the final guidance only applies to draft NEPA documents issued after the effective date.

Response to Comments:

The revised draft guidance will be effective immediately once finalized for newly proposed actions and is designed to help Federal agencies develop their analyses of GHG

emissions and climate change to ensure they are useful. By providing a clearer explanation of what should be disclosed and considered regarding GHG emissions and climate change, this guidance should lessen litigation driven by uncertainty. Finally, this revised draft guidance does not suggest that agencies retrospectively prepare an analysis for decisions already made or projects that are underway.

10. Mitigation, Alternatives, and Miscellaneous Comments

a. Mitigation

i. Types of mitigation

Several commenters were concerned that the 2010 draft guidance only briefly addresses the need for agencies to consider mitigation measures and reasonable alternatives to reduce action-related greenhouse gas emissions. CEQ was encouraged to significantly strengthen this section. The guidance should concentrate more on ensuring that useful information is provided to decisionmakers regarding alternatives and mitigation measures for actions with significant greenhouse gases, according to these commenters. Many commenters also expressed that the guidance should focus more attention on mitigation than on assessment. Commenters would also like more discussion of the need to analyze mitigation measures. CEQ should accordingly provide Federal agencies with resources on measures to mitigate greenhouse gases. Multiple commenters suggested that if CEQ were to provide and update a list of mitigation measures, the process would be easier for individual agencies to implement. CEQ was encouraged to assist in developing categories of measures that would allow agencies to consider alternatives. Some mitigation measures, commenters noted, particularly offsite mitigation, can be implemented for projects regardless of project type (California,

Massachusetts, and New York already do this for their State NEPA-like programs). The commenters urged CEQ to therefore provide a list of both onsite and offsite mitigation measures in categories such as building design and construction and mobile source emissions. One commenter stated that explicit guidance will be needed regarding which greenhouse gas emissions associated with energy use (referenced on the second paragraph on page 5) should be included in the analysis and as potential mitigation. Alternatively, CEQ should consider directing other Federal agencies to take a more direct role in providing technical expertise and guidance for the development of mitigation alternatives, another commenter suggested. Finally, one commenter proposed that NEPA lead agencies should consider not only their own authority or control, but also consequences of actions under the authority of other governmental units that are or could be influenced by information from the Federal agency. In this regard, identification of mitigation that could be considered by other regulatory authorities would also be useful.

Other commenters assert that CEQ should remind agencies of key points in the NEPA process that specifically relate to the identification of alternatives and mitigation measures that reduce greenhouse gas emissions and related effects. One example given was that agencies should perhaps identify greenhouse gas mitigation opportunities during scoping or as a part of the comparison of energy use between alternatives under 40 CFR 1502.16(e).

ii. Discretionary vs. mandatory mitigation

Although the 2010 draft guidance proposes that mitigation and reasonable alternatives be considered to reduce action-related greenhouse gas emissions, some commenters believe that CEQ should explicitly acknowledge that adoption of mitigation

measures considered under NEPA are not *per se* required, and should not be required under the NEPA statute. Some of these commenters argue that it may not even be possible to mitigate GHGs for projects. One commenter interpreted the language in the guidance to mean that agencies should consider, but are not required to implement, mitigation measures. This commenter suggests that it may be appropriate for CEQ to encourage the implementation of measures to mitigate greenhouse gas impacts resulting from a project when cost-effective and fitting to the nature of the project.

Conversely, other commenters advocate mandatory consideration of mitigation, reasoning that a NEPA process requirement that enforces a mandatory consideration of greenhouse gas emissions would establish an enforceable obligation on agencies to properly evaluate methods to mitigate greenhouse gas emissions. One commenter requests that CEQ clarify that agencies *should* or *must* consider the direct effects of greenhouse gas emissions by "(1) quantify[ing] cumulative emissions ... (2) discuss[ing] measures to reduce greenhouse gas emissions ... and (3) qualitatively discuss[ing] the link between such greenhouse gas emissions and climate change (rather than stating that "it would be appropriate" to engage in such analysis)." Overall, there was confusion among the many commenters on discretionary versus mandatory mitigation, and commenters urged CEQ to clarify this subject in the final guidance.

iii. Carbon offsets

Commenters interpreted the 2010 draft guidance to infer, but not explicitly identify, carbon offsets as a potential option available to Federal agencies to mitigate GHG emissions. Purchasing and subsequently retiring carbon offsets from third-party verified projects is an established method for mitigating GHG emissions, commenters

reason. They envision that carbon offset programs could be integrated into mitigation plans developed through the NEPA process to compensate for GHG emissions associated with Federal agency actions. Including specific reference to carbon offsets in the language of the memorandum, according to these commenters, would help to provide clarification to agencies evaluating possible mitigation alternatives as part of their NEPA analysis requirements.

Other commenters took a more cautious approach to mitigation through carbon offsets. If carbon offsets are allowed for GHG emissions mitigation under NEPA, commenters state that CEQ should provide additional guidance on the criteria they must meet in order to uphold standards for quality. Strict monitoring and public reporting requirements required by carbon offset projects would ensure that Federal greenhouse gas mitigation activities are readily quantifiable and transparent to the public. Although the comments express the possibility that offsets could be external to a Federal agency project, the location of the offset would be important. One comment suggests that the NEPA process require that carbon offsets be achieved only in local markets. For offsets on tribal lands, the offset project should support new or established tribal programs. Another comment recommends against using offsets in place of reductions at the source as a major component of public policy. Similarly, regarding offsite mitigation generally, another commenter requested CEQ to encourage agencies to prioritize onsite mitigation measures that avoid or minimize emissions, while allowing agencies to use offsite measures where onsite mitigation is not available.

iv. Other

Commenters directed CEQ to review the approaches taken by proactive states and nations on mitigation and alternatives before completing the final guidance. Another commenter expressed concerns for funding availability for mitigation, stating that beyond operational and maintenance improvements, current and foreseeable funding levels may curtail greenhouse gas mitigation options, as well as the ability to meaningfully reduce greenhouse gas emissions to target levels. Some commenters believe the guidance should recognize that the effectiveness of many mitigation measures is still difficult to quantify, and that a qualitative discussion would be appropriate where analytical tools are not yet sufficient to estimate reliably greenhouse gas reductions from mitigation measures.

Response to Comments:

The revised draft guidance advises agencies to consider mitigation measures and reasonable alternatives that reduce GHG emissions. By statutes, Executive Orders, and agency policies, the Federal Government is committed to the goals of energy conservation, reducing energy use, eliminating or reducing GHG emissions, and promoting the deployment of renewable energy technologies that are cleaner and more efficient. Agencies whose actions implicate these goals should consider useful and relevant GHG emissions information when deciding among alternatives. Reasonable alternatives that may be considered for their ability to reduce or mitigate GHG emissions include enhanced energy efficiency, lower GHG-emitting technology, increasing the use of renewable energy, planning for carbon capture and carbon sequestration, sustainable land management practices, and capturing or beneficially using fugitive methane emissions. In cases where mitigation measures are designed to address the effect of

climate change, the agency's final decision should identify those mitigation measures and the agency should consider adopting an appropriate mitigation monitoring program.

b. Alternatives

Many commenters stated that CEQ should provide better guidance on how Federal agencies must, relative to climate change, "[r]igorously explore and objectively evaluate all reasonable alternatives" and specifically "[i]nclude the alternative of no action."[35] This duty is critical, according to commenters; operating in concert with NEPA's mandate to address environmental impacts, an agency's fidelity to alternatives analysis allows agencies to "sharply define the issues and provide a clear basis for choice among options by the decisionmaker and the public."[36] The commenters stated that CEQ should remind Federal agencies that they are obligated under NEPA to identify, disclose, and analyze the effects of alternatives on climate change, and identify alternatives/mitigation that would lessen or eliminate those effects.

Some commenters also request that CEQ clarify that the alternatives identified are merely suggestions for alternatives to GHG-emitting actions that may be considered if they are reasonable in light of the purpose of the action and other technical and economic factors. Furthermore, CEQ should acknowledge that Federal agencies may evaluate these suggested alternatives as part of a "no action" alternative. CEQ should also clarify, according to these commenters, that the reasonably foreseeable future condition of the affected environment (discussed on the third paragraph of page 7) should be discussed in the no action alternative. One commenter opined that the language in the third paragraph of page 9 ("all possible approaches to a particular project which would alter the

[35] *See* 40 CFR 1502.14(a), (d).
[36] *Id.*

environmental impact and the cost-benefit balance") is too strong, and that the alternatives considered do not have to be exhaustive. The commenter wrote that NEPA requires only the consideration of reasonable alternatives, not all alternatives. A commenter raised the concern that if an action creates beneficial effects such that a quantifiable benefit toward reducing GHGs is produced, this could conceivably make the no action alternative (continuing not to offset carbon-based generation) have a significant negative comparative effect.

Since NEPA should help Federal agencies understand options that no one officer or official is likely to know offhand, some commenters recommended that a list or category of alternative measures, mitigation measures, or even legal duties and other reasons for choosing the no action alternative should be developed under CEQ's convening authority for this guidance and its agency-specific progeny. Commenters urge that with every decision, Federal agencies should address: (1) whether direct GHG emissions can be reduced; (2) whether indirect or cumulative greenhouse gas emissions can be reduced via, e.g., improved efficiency of operations; (3) whether an agency can take action which protects and restores the resiliency of the environment to provide a means of best withstanding climate change impacts; and (4) whether the reality of climate change warrants a very different management focus for the agency, or, at the least, warrants a decision not to take a particular action. Before recommending an alternative, the Federal action agency should, according to these commenters, clearly identify the likely effects its decision will have on net production of GHG emissions. Another commenter encourages CEQ to require agencies explain the reasons for rejecting alternatives that would produce fewer GHG emissions. One commenter recommended

that CEQ should enumerate the indicators an agency should use when the agency determines it will quantify GHG emissions. Specifically, if the agency identifies alternatives with significantly lower GHG emission potential, including the "no action" alternative, then all alternatives should be an indicator that the agency and the public may benefit from a quantification of GHG emissions. Some argue that CEQ should avoid any policy that would allow qualitative consideration of GHG emissions where there are more than *de minimis* differences in GHG emissions between alternatives.

Other commenters propose that agencies should be directed to look at the relative percentage of improvements an alternative could produce compared to the baseline carbon performance. To accurately identify alternatives that will best mitigate climate change effects, agencies should set an accurate baseline that will allow for a fact-based comparison of alternatives' effects and the value of mitigation. CEQ guidance should then, according to these commenters, specifically require that the "no action" alternative analysis project and evaluate climate change impacts on resources over time and evaluate the effects of the proposed action, as well as the efficacy of mitigation measures, against that changing baseline. A commenter notes that the relative percentage of greenhouse gas emissions reductions an alternative could produce could be compared to the baseline carbon performance regardless of absolute magnitude of emissions.

Response to Comments:

Consideration of a range of reasonable alternatives is fundamental to the NEPA process, and is meant to ensure that agencies have the opportunity to make the best informed, and potentially most beneficial, decision. NEPA currently provides agencies with the ability to consider appropriate project alternatives and their impacts, including

the consideration of GHG emissions and climate change impacts. The revised draft guidance preserves agency discretion in scoping, analyzing, and considering alternatives in NEPA review and the tradeoff considerations involved, including changes in emissions, based on the differing effects of those alternatives. If a comparison of alternatives based on GHG emissions, and any potential mitigation measures to reduce emissions, would be useful to advance a reasoned choice among alternatives and mitigations, then an agency should compare the levels of GHG emissions caused by each alternative – including the no-action alternative – and mitigations to provide information to the public and decisionmaker.

c. Miscellaneous Comments

i. The definition of a greenhouse gas

Commenters requested that the definition of GHGs be altered. Multiple commenters requested that an all-encompassing definition of climate forcing agents or precursor emissions be added to the guidance, including but not limited to black carbon, not just the six GHGs defined in Executive Order 13514. Some commenters recommended that the GHG definition should be expanded such that Federal agencies evaluate all GHGs and precursor emissions associated with the wide range of activities undertaken or authorized by the Federal government, including but not limited to construction, electricity use, fossil fuel use, downstream combustion of fossil fuels extracted or refined by the project, water consumption, water pollution, waste disposal, transportation, the manufacture of building materials, land conversion, agriculture, logging and other forestry practices, and livestock grazing. Another commenter stated that the CEQ guidance should make clear that at least the six GHGs are covered by

NEPA, but to leave open the possibility that additional GHGs may need to be addressed in the future, depending on the action and current state of scientific knowledge. One commenter advised that the CEQ guidance should be revised to recognize that the six GHGs vary in importance depending on the project type and agency activity and to clarify that not all six of the GHGs need to be analyzed for all projects.

Response to Comments:

This revised draft guidance includes a definition of GHGs in accordance with Section 19(i) of Executive Order 13514 (i.e., carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). The guidance does not preclude consideration of additional gases or particulates, or the reduction of particular emissions such as methane, if that information would be useful to the decisionmaker and the public in considering and advancing a reasoned choice among alternatives and mitigations.

ii. Environmental Justice/Vulnerable Communities & Ecosystems

Some commenters emphasized that specific environmental justice guidance in the context of climate change is warranted. These commenters believe that the agency consideration of climate change impacts on vulnerable communities should be required, rather than advisory. Other commenters assert that Federal agencies responsible for making resource decisions on or near tribal lands should have explicit guidance regarding how to weigh the impacts of their decisions on indigenous cultural and spiritual "resources" in the context of an environment changing due to climate change. Another commenter reminded CEQ of its responsibilities to consult with Native American tribes, and responsibilities under Executive Order 12898, which established "the Environmental

Justice Doctrine." One commenter claims that "vulnerability" is a vaguely defined term and explanations of the statutory authorities that justify regulations remain unexplained; thereby making consideration of impacts on so-called vulnerable species and ecosystems suspect.

Response to Comments:

The revised draft guidance advises agencies to consider the particular impacts of climate change on vulnerable communities where this may affect the design of the action or the selection among alternatives and mitigations. Tribal and Alaska Native communities that maintain their close relationship with the cycles of nature have observed the changes that are already underway, including the melting of permafrost in Alaska, disappearance of important species of trees, shifting migration patterns of elk and fish, and the drying of lakes and rivers. These climate impacts affect the survival of these groups and their members in terms of both their livelihood and their culture. Consequently, agencies should be cognizant of the evolving policies and information relevant to such changes when those changes are important to the alternatives and mitigation determinations at hand.

iii. Transportation concerns

Transportation agency commenters expressed the possible difficulties that might occur in the application of the guidance. Quantifying cumulative emissions over the life of alternatives for highway projects may prove difficult for projects that are based on a 20-year traffic analysis, according to commenters. Some commenters stated that because the majority of transportation projects do not increase vehicle miles traveled, they do not generate increased GHG emissions. Conversely, other commenters strongly contend that

projects with major sources of indirect emissions – most notably electricity consumption and vehicle miles traveled – should be included in the guidance. Analyzing most individual transportation projects will thus result in the expenditure of scarce transportation funds with no benefit realized, according to commenters. Additionally, a commenter added that it is likely that the bulk of text in a NEPA document would actually be explaining the assumptions and uncertainties involved in the analysis, rather than the analysis itself. Therefore, the commenter questioned whether results would provide meaningful information that is reliable enough to inform a decision between alternatives for a specific project. Another comment stated that because of large categorically excluded actions, simply having to determine whether the projects exceed the threshold in the guidance may significantly delay project delivery while offering little program benefit, and would be inconsistent with the approach to categorical exclusions.

One transportation commenter reported that many transportation agencies currently estimate CO_2, methane (CH_4), and nitrous oxide (N_2O), and that forcing these agencies to estimate the additional three GHGs would pose a burden with little additional value. Transportation project analysts, according to these comments, will be required to adapt or develop methods to apply the guidance. This commenter also noted that none of the methods of assessing GHG emissions described in the 2010 draft guidance appear to be applicable to transportation projects. Multiple transportation commenters recommend that, as an alternative, CEQ provide additional guidance for transportation sources in the final guidance. One comment also requested additional instruction and collaboration with Federal agencies on particular projects and on agency implementation procedures.

Response to Comments:

The revised draft guidance states that agencies must consider direct, indirect, and cumulative effects when analyzing major Federal actions, regardless of the sector – such as transportation – proposing the action under consideration. Agencies addressing transportation-related actions should, in accordance with the proposed guidance, develop the scope of a particular NEPA analysis using NEPA's "rule of reason" which allows the analysis to be tailored to the specific proposal to take into account any particular characteristics of the sector involved, and ensures that the level of effort expended in analyzing GHG emissions or climate change effects is reasonably proportionate to the importance of climate change related considerations to the agency action under evaluation. Agencies also have the ability to draw from their experience and expertise to determine which planning level – the broad programmatic level or the project- or site-specific level – is better suited for addressing GHG emissions and climate change impacts. Furthermore, agencies have the discretion to perform quantitative or qualitative analyses, whichever is more appropriate, as long as they document the rationale behind choosing one form of analysis over the other.

iv. Carbon sinks

Some commenters indicated that guidance for comprehensive consideration of climate change impacts under NEPA should include an analysis of both GHG emissions and any changes to the environmental capacity to mitigate additional emissions (e.g., estimated inventory of losses and gains to local carbon sequestration capacity), as this would likely inform the analysis of the cumulative impacts of a proposed action and its alternatives. Commenters suggested that CEQ direct agencies to analyze and disclose any emissions, degradation, or reduction of sequestration or carbon sinks regardless of

the level of emissions or loss of sequestration. Commenters stated that agencies must document the steps they plan to take to avoid, minimize or mitigate greenhouse gas emissions or damage to carbon sinks. Where the 2010 draft guidance discusses Federal policies relevant to determining when to evaluate greenhouse gas emissions (pages 3-4), and the factors that agencies should consider as part of their greenhouse gas evaluation (pages 4-6), these commenters propose that the project agency should also be expected to consider local, regional, and statewide plans to control greenhouse gas emissions and related planning documents that describe or evaluate sources and carbon sinks that could contribute to the cumulative effect of the project (consistent with CEQ's existing regulations for evaluating the environmental consequences of an agency's action in light of existing land use plans, policies, and controls, in accordance with 40 CFR 1502.16(c)).

Response to Comments:

The revised draft guidance reiterates that agencies should consider the direct, indirect, and cumulative effects of GHG emissions potentially resulting from their proposed actions, as is required for any other environmental stressor under NEPA. It also states that agencies should take into account the expected effects of GHG emissions resulting from all phases and components over the life of a project, including short- and long-term adverse and beneficial effects. The guidance specifically recognizes that land and resource management actions are unique since they can produce carbon emissions and contribute to carbon sequestration. Agencies should thus analyze the net GHG emissions and climate change effects in light of the quantity of emissions and carbon sequestration potential, and any other factors particular to a proposed land and resource management action that would inform the decision-making process and aid in

distinguishing between reasonable alternatives and potential mitigation measures. Agencies have the discretion to determine the type (quantitative or qualitative) and level (broad programmatic or project- or site-specific) of analysis that is more appropriate, and the analysis should be proportional to the amount of GHG emissions projected. In addition, agencies are encouraged to frame their analyses of the effects of GHG emissions and climate change within the context of agency, state, and local emissions reduction goals if it provides useful information to the decisionmaker and the public. Lastly, agencies should incorporate by reference any management plans, inventories, assessments, and research related to potential changes in carbon stocks.

v. Energy

A commenter requests that CEQ clarify which kinds of Federal projects "implicate" the goals of energy conservation, reducing energy use, eliminating or reducing greenhouse gas emissions, and promoting renewable energy technology. CEQ should provide, according to a commenter, guidance regarding analysis of the efficiency and propriety of the different types of energy projects by conducting evaluations of Energy Return on Energy Invested ("EROEI"). Another commenter offered that while in many cases the adoption of low emissions technologies can augment the power consumption needs and partially reduce the greenhouse gas emissions component, the need for constant reliable large base load energy supply may make total reliance on low emitting technologies infeasible at the present time. Additionally, another commenter suggested that while an agency may spend time determining the emissions from a gas or oil development project on Federal lands, and may even decide against continued authorization of the project if the projected impact on climate change is deemed too great,

in the absence of that domestic development the energy will simply be replaced by energy from another part of the country or overseas, resulting in the same net effect. Ultimately, the net effect of restricting domestic oil and gas extraction and production may actually be increased global greenhouse gases.

Comments suggest that Federal agencies should engage their long-range energy and resource management programs with four goals in mind, consistent with NEPA's purpose and goals: (1) reducing if not eliminating greenhouse gas emissions, taking advantage of opportunities to reduce greenhouse gas emissions sources and use greenhouse gas emissions sinks; (2) assisting our transition from dirty fossil fuels to the responsible and efficient use of renewable energy; (3) addressing the efficiency and full life-cycle impacts of energy-related projects by, for example, evaluating and improving upon EROEI; and (4) protecting and restoring the resiliency of our communities and environment to best withstand climate change impacts.

Several commenters requested that CEQ should establish exemptions or "pre-clear" certain actions from any disclosure threshold, in an effort to advance energy goals. Major Federal actions that stem from exceptional Federal assistance (e.g., stimulus funding) and major Federal actions that sequester greenhouse gas emissions and/or improve energy efficiency and/or meet Federal or state performance criteria were proposed for exemption. A commenter asks CEQ to distinguish between fossil-fuel based and other anthropogenic emissions of CO_2 versus renewable or biogenic emissions of CO_2. Another commenter requests CEQ to advise lead agencies that biogenic CO_2 emissions exert no net adverse impact on the environment. Several commenters urge

CEQ to discuss hydropower as a positive force in offsetting carbon emissions and a major component of carbon avoidance in producing electricity.

Response to Comments:

The revised draft guidance notes that NEPA requires Federal agencies to recognize the global character of environmental problems and lend support to initiatives, resolutions, and programs designed to address those problems. In addition, by statutes, Executive Orders, and agency policies, the Federal government is committed to the goals of energy conservation, reducing energy use, eliminating or reducing GHG emissions, and promoting the deployment of renewable energy technologies that are cleaner and more efficient. Where a proposal for Federal agency action implicates such goals, information on GHG emissions (qualitative or quantitative) that is useful and relevant to the decision should be used when deciding among alternatives and mitigations. The agency's "responsibility is not simply to sit back, like an umpire, and resolve adversary contentions . . . Rather, it must itself take the initiative of considering environmental values at every distinctive and comprehensive stage of the process beyond the staff's evaluation and recommendation."[37] Regarding the establishment of a *de minimis* threshold, the revised draft guidance sets forth a reference point of 25,000 metric tons CO_2-equivalent emissions on an annual basis below which a quantitative analysis of GHG emissions is not warranted unless quantification below that reference point is easily accomplished taking into account the availability of quantification tools and appropriate input data. CEQ strongly encourages agencies to use their experience and expertise to determine when a more detailed analysis of GHG emissions will assist with analyzing the

[37] *Calvert Cliffs Coordinating Comm., Inc. v. US Atomic Energy Comm'n*, 449 F.2d 1109, 1119 (D.C. Cir. 1971).

environmental impacts or comparing among alternatives and mitigations. When an agency determines that a quantitative analysis is not appropriate, an agency should complete a qualitative analysis and explain its basis for doing so. Finally, the revised draft guidance specifically provides special considerations for biogenic sources of GHG emissions from land management actions and instructs agencies on how to account for GHG emissions, carbon sequestration potential, and the change in carbon stocks that are relevant to decision-making in light of the actions proposed and the timeframes under consideration. It also recognizes that such analyses may be more appropriately conducted on a broad programmatic or landscape-scale level that could be tiered to when performing project-specific analyses.

The Revised Draft Guidance

CEQ issues the following Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews. The guidance is provided here and is available on the CEQ website at *www.whitehouse.gov/administration/eop/ceq/initiatives/nepa.*

(Authority: 42 U.S.C. 4332, 4342, 4344 and 40 CFR parts 1500, 1501, 1502, 1503, 1505, 1506, 1507, and 1508)

Dated: December 18, 2014.

Brenda Mallory,
General Counsel, Council on Environmental Quality.

3225-F5

THE GUIDANCE

I. INTRODUCTION

The Council on Environmental Quality (CEQ) issues this guidance to provide Federal agencies direction on when and how to consider the effects of greenhouse gas (GHG) emissions[1] and climate change in their evaluation of all proposed Federal actions[2] in accordance with the National Environmental Policy Act (NEPA) and the CEQ Regulations Implementing the Procedural Provisions of NEPA (CEQ Regulations).[3] The guidance will facilitate compliance with existing legal requirements under NEPA, thereby improving the efficiency and consistency of reviews of proposed Federal actions for agencies, decisionmakers, project proponents, and the interested public.[4] This guidance is designed to encourage consistency in the approach Federal agencies employ when assessing their proposed actions, while also recognizing and accommodating a particular agency's unique circumstances.

Overall, this guidance is designed to provide for better and more informed Federal decisions regarding GHG emissions and effects of climate change consistent with

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[1] For purposes of this guidance, CEQ defines GHGs in accordance with Section 19(i) of Executive Order 13514 (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). Also for purposes of this guidance, "emissions" includes release of stored GHGs as a result of destruction of natural GHG sinks such as forests and coastal wetlands, as well as future sequestration capability. The common unit of measurement for GHGs is metric tons of CO_2 equivalent (mt CO_2-e). "Tons" in this guidance generally refers to mt CO_2-e.

[2] The CEQ 2010 draft guidance had carved out the question of how land and resource management actions should be considered in NEPA reviews. That distinction is no longer retained.

[3] 42 U.S.C. 4321 et seq.; 40 CFR Parts 1500–1508.

[4] This guidance is not a rule or regulation, and the recommendations it contains may not apply to a particular situation based upon the individual facts and circumstances. This guidance does not change or substitute for any law, regulation, or other legally binding requirement, and is not legally enforceable. The use of non-mandatory language such as "guidance," "recommend," "may," "should," and "can," is intended to describe CEQ policies and recommendations. The use of mandatory terminology such as "must" and "required" is intended to describe controlling requirements under the terms of NEPA and the CEQ regulations, but this document does not establish legally binding requirements in and of itself.

existing NEPA principles. Climate change is a particularly complex challenge given its global nature and inherent interrelationships among its sources, causation, mechanisms of action, and impacts; however, analyzing the proposed action's climate impacts and the effects of climate change relevant to the proposed action's environmental outcomes can provide useful information to decisionmakers and the public and should be very similar to considering the impacts of other environmental stressors under NEPA. Climate change is a fundamental environmental issue, and the relation of Federal actions to it falls squarely within NEPA's focus.[5] Focused and effective consideration of climate change in NEPA reviews[6] will allow agencies to improve the quality of their decisions. Environmental outcomes will be improved by identifying important interactions between a changing climate and the environmental impacts from a proposed action, and can contribute to safeguarding Federal infrastructure against the effects of extreme weather events and other climate related impacts.

Agencies meet their NEPA responsibilities using a Categorical Exclusion (CE), Environmental Assessment (EA), or Environmental Impact Statement (EIS). This guidance will help Federal agencies ensure their analyses of GHG emissions and climate change in an EA or an EIS are useful by focusing on assessing those proposed actions that involve emissions, or that have a long lifespan such that a changing climate may alter the environmental consequences associated with the proposed action. CEQ expects that agencies will continue to consider potential GHG emissions and climate impacts when

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[5] NEPA recognizes "the profound impact of man's activity on the interrelations of all components of the natural environment." (42 U.S.C. 4331). It was enacted to, *inter alia,* "promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man." (42 U.S.C. 4321).

[6] The term "NEPA review" is used to include analysis, process, and documentation. While this document focuses on NEPA reviews, agencies are encouraged to analyze greenhouse gas emissions early in the planning and development of proposed projects.

applying an existing CE or when establishing a new CE.[7] The analysis in an EA or EIS should be proportionate to the effects of the proposed action. More consistent and appropriately proportioned NEPA reviews can help agencies minimize controversy, thereby avoiding potential project delays. This guidance should also reduce the risk of litigation driven by uncertainty in the assessment process as it will provide a clearer expectation of what agencies should consider and disclose.

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; and

(2) the implications of climate change for the environmental effects of a proposed action.

Agencies continue to have substantial discretion in how they tailor their NEPA processes to accommodate the concerns raised in this guidance, consistent with the CEQ Regulations and their respective implementing regulations and policies, so long as they provide the public and decisionmakers with explanations of the bases for their determinations. This approach is on par with the consideration of any other environmental effects and this guidance is designed to be implemented without requiring agencies to develop new NEPA implementing procedures. CEQ recommends that when agencies conduct their usual review of their NEPA implementing policies and procedures, they then make any updates they deem necessary or appropriate to facilitate their consideration of GHG emissions and climate change.

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[7] CEQ Memorandum to Heads of Federal Agencies, *Establishing, Applying, and Revising Categorical Exclusions under the National Environmental Policy Act,* November 23, 2010, *available at* https://ceq.doe.gov/ceq_regulations/NEPA_CE_Guidance_Nov232010.pdf.

This guidance also reviews the application of other routine and fundamental NEPA principles and practices to the analysis of GHG emissions and climate change. This guidance:

- Discusses direct, indirect, and cumulative impacts analysis of a proposed action's reasonably foreseeable emissions and effects;
- Highlights the consideration of reasonable alternatives and points to the need to consider the short-term and long-term effects and benefits in the alternatives analysis and mitigation to lower emissions;
- Recommends that agencies use a reference point to determine when GHG emissions warrant a quantitative analysis taking into account available GHG quantification tools and data that are appropriate for proposed agency actions;
- Recommends that an agency select the appropriate level of action for NEPA review at which to assess the effects of GHG emissions and climate change, either at a broad programmatic or landscape-scale level or at a project- or site-specific level, and that the agency set forth a reasoned explanation for its approach;
- Counsels agencies to use the information developed during the NEPA review to consider alternatives that are more resilient to the effects of a changing climate; and
- Advises agencies to use existing information and tools when assessing future proposed actions, and provides examples of some existing sources of scientific information.

Agencies should apply this guidance to the NEPA review of new proposed agency actions moving forward and, to the extent practicable, to build its concepts into on-going reviews.

II. ***BACKGROUND***

A. NEPA Fundamentals

NEPA is designed to promote disclosure and consideration of potential environmental effects on the human environment[8] 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.[9]

Inherent in NEPA and the CEQ Regulations is a rule of reason which ensures that agencies are afforded the discretion, based on their expertise and experience, to determine whether and to what extent to prepare an analysis based on the availability of information, the usefulness of that information to the decision-making process and the public, and the extent of the anticipated environmental consequences.[10] It is essential,

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[8] 40 CFR 1508.14 ("Human environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment).
[9] 40 CFR 1500.1(c).
[10] *See e.g.*, *Idaho Conservation League v. Mumma*, 956 F.2d 1508, 1519 (9th Cir. 1992).

however, that Federal agencies not rely on boilerplate text to avoid meaningful analysis, including consideration of alternatives or mitigation.[11]

B. Climate Change

The science of climate change is evolving, and is briefly summarized here to illustrate the sources of scientific information that are presently available for consideration. CEQ's first Annual Report in 1970 discussed climate change, concluding that "[m]an may be changing his weather."[12] At that time, the mean level of atmospheric carbon dioxide had been elevated to 325 parts per million (ppm). Since 1970, the concentration of atmospheric carbon dioxide has increased at a rate of about 1.6 ppm per year (1970–2012) to approximately 395 ppm in 2014 (current globally averaged value).[13]

It is now well established that rising global atmospheric GHG emission concentrations are significantly affecting the Earth's climate. These conclusions are built upon a scientific record that has been created with substantial contributions from the United States Global Change Research Program (USGCRP), formerly the Climate Change Science Program, which informs our response to climate and global change through coordinated Federal programs of research, education, communication, and decision support.[14] Studies have projected the effects of increasing GHGs on water

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[11] 40 CFR 1500.2, 1502.2. For example, providing a paragraph that simply asserts, without qualitative or quantitative assessment, that the emissions from a particular proposed action represent only a small fraction of local, national, or international emissions or are otherwise immaterial is not helpful to the decisionmaker or public.

[12] Environmental Quality: The First Annual Report at 93.

[13] *See* U.S. Department of Commerce, National Oceanic and Atmospheric Administration Earth Systems Research Laboratory, *available at* http://www.esrl.noaa.gov/gmd/ccgg/trends/global.html.

[14] Public Law 101–606. For additional information on the Global Change Research Program, go to http://www.globalchange.gov. USGCRP coordinates and integrates the activities of 13 Federal agencies that conduct research on changes in the global environment and their implications for society. USGCRP began as a Presidential initiative in 1989 and was codified in the Global Change Research Act of 1990 (Public Law No. 101-606). USGCRP-participating agencies are the Departments of Agriculture, Commerce, Defense, Energy, Interior, Health and Human Services, State, and Transportation; the U.S.

availability, ocean acidity, sea-level rise, ecosystems, energy production, agriculture and food security, and human health.[15]

Based primarily on the scientific assessments of the USGCRP and the National Research Council, the Environmental Protection Agency (EPA) has issued a finding that the changes in our climate caused by increased concentrations of atmospheric GHG emissions endanger public health and welfare.[16] Adverse health effects and other impacts caused by elevated atmospheric concentrations of GHGs occur via climate change.[17] 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.[18]

III. CONSIDERING THE EFFECTS OF GHG EMISSIONS AND CLIMATE CHANGE

This guidance is applicable to all Federal proposed actions, including individual Federal site-specific actions, Federal grants for or funding of small-scale or broad-scale

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Agency for International Development, the Environmental Protection Agency, the National Aeronautics and Space Administration, the National Science Foundation, and the Smithsonian Institution.

[15] U.S. Global Change Research Program, Climate Change Impacts in the United States: The Third National Climate Assessment (Jerry M. Melillo, Terese (T.C.) Richmond, and Gary W. Yohe eds.) (2014) [hereinafter Third National Climate Assessment], *available at* http://nca2014.globalchange.gov; Fifth Assessment Report, Intergovernmental Panel on Climate Change, 2014, *available at* http://www.ipcc.ch/report/ar5/index.shtml; see also www.globalchange.gov.

[16] Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 FR 66496 (Dec. 15, 2009). *See also* Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units, 79 FR 1429–1519 (Jan. 8, 2014).

[17] 74 FR 66497–98 (For example, "[t]he evidence concerning how human-induced climate change may alter extreme weather events also clearly supports a finding of endangerment, given the serious adverse impacts that can result from such events and the increase in risk, even if small, of the occurrence and intensity of events such as hurricanes and floods. Additionally, public health is expected to be adversely affected by an increase in the severity of coastal storm events due to rising sea levels.").

[18] *See* www.globalchange.gov/climate-change/impacts-society.

activities, Federal rulemaking actions, and Federal land and resource management decisions.[19] 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.

A. Considering the Impacts of the Proposed Action

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.[20] 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.[21]

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

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[19] 40 CFR 1508.18 (Federal actions that require a NEPA evaluation include policies, plans, programs, and specific projects. They do not include bringing judicial or administrative civil or criminal enforcement actions. They also do not include actions over which the agency has no discretion or control such as ministerial actions carrying out the direction of Congress or funding assistance solely in the form of general revenue sharing with no Federal agency control over the subsequent use of the funds.).

[20] 40 CFR 1502.16, 1508.9 (providing that environmental impact statements and environmental assessments must succinctly describe the environmental impacts on the area(s) to be affected or created by the alternatives under consideration). This guidance only addresses analyzing the impacts of GHG emissions and climate change under NEPA.

[21] 40 CFR 1500.1, 1502.24 (requiring agencies to use high quality information and ensure the professional and scientific integrity of the discussions and analyses in environmental impact statements).

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.[22] 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.

In addressing GHG emissions, agencies should be guided by the principle that the extent of the analysis should be commensurate with the quantity of projected GHG emissions. This concept of proportionality is grounded in the fundamental purpose of NEPA to concentrate on matters that are truly important to making a decision on the proposed action.[23] When an agency determines that evaluating the effects of GHG emissions from a proposed Federal action would not be useful to the decision-making process and the public to distinguish between the no-action and proposed alternatives and mitigations, the agency should document the rationale for that determination.

Agencies are required to consider direct, indirect, and cumulative effects when analyzing any proposed Federal actions and projecting their environmental

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[22] *See Massachusetts v. EPA*, 549 U.S. 497, 523–25, (2007) ("Agencies, like legislatures, do not generally resolve massive problems in one fell regulatory swoop. They instead whittle away at them over time, refining their preferred approach as circumstances change and as they develop a more nuanced understanding of how best to proceed.").

[23] 40 CFR 1500.1(b).

consequences.[24] When assessing the potential significance of the climate change impacts of their proposed actions, agencies should consider both context and intensity, as they do for all other impacts.[25]

When assessing direct and indirect climate change effects, agencies should take account of the proposed action – including "connected" actions[26] – subject to reasonable limits based on feasibility and practicality. In addition, emissions from activities that have a reasonably close causal relationship to the Federal action, such as those that may occur as a predicate for the agency action (often referred to as upstream emissions) and as a consequence of the agency action (often referred to as downstream emissions) should be accounted for in the NEPA analysis.[27]

After identifying and considering the direct and indirect effects, an agency must consider the cumulative impacts of its proposed action and reasonable alternatives.[28] CEQ does not expect that an EIS would be required based on cumulative impacts of GHG emissions alone. In the context of GHG emissions, there may remain a concern that an EIS would be required for any emissions because of the global significance of

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[24] 40 CFR 1508.7 and 8 (stating that: (1) NEPA analyses shall consider direct and indirect effects and cumulative impacts; (2) indirect effects include reasonably foreseeable future actions such as induced growth and its effects on air and water and other natural systems; and (3) cumulative impacts consider the incremental addition to other past, present, and reasonably foreseeable future actions. This NEPA requirement applies to all proposed actions and calls for the disclosure of the full range of effects that flow from the action, regardless of the ability to control or regulate those effects.). See also, 52 FR 22517 (Jun. 12, 1987) ("The scope of analysis issue addresses the extent to which the proposed action is identified as a federal action for purposes of compliance with NEPA. ... Once the scope of analysis is determined, the agency must then assess the direct, indirect and cumulative effects of the proposed federal action.").

[25] 40 CFR 1508.27(a), 1508.27(b) (context is the situation in which something happens, and which gives it meaning; intensity is the severity of impact).

[26] 40 CFR 1508.25 (actions are connected if they: automatically trigger other actions which may require environmental impact statements; cannot or will not proceed unless other actions are taken previously or simultaneously; or are interdependent parts of a larger action and depend on the larger action for their justification).

[27] 40 CFR 1508.8.

[28] CEQ Memorandum to Heads of Federal Agencies, *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis*, June 24, 2005, *available at* https://ceq.doe.gov/nepa/regs/Guidance_on_CE.pdf.

aggregated GHG emissions. "Cumulative impact" is defined in the CEQ Regulations as the "impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions."[29] Consequently, agencies need to consider whether the reasonably foreseeable incremental addition of emissions from the proposed action, when added to the emissions of other relevant actions, is significant when determining whether GHG emissions are a basis for requiring preparation of an EIS.

Agencies can rely on basic NEPA principles to determine and explain reasonable temporal and spatial parameters of their analyses to disclose the reasonably foreseeable effects that may result from their proposed actions.[30] For example, a particular NEPA analysis for a proposed open pit mine could include the reasonably foreseeable effects of various components of the mining process, such as clearing land for the extraction, building access roads, transporting the extracted resource, refining or processing the resource, and using the resource. Depending on the relationship between any of the discrete elements in the process, as well as the authority under which such elements may be carried out, the analytical scope that best informs decision-making may be to treat these elements as the direct and indirect effects of phases of a single proposed action.

Furthermore, 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. For example, development of a coal resource on

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[29] 40 CFR 1508.7.

[30] *See* 40 CFR 1502.16, 1508.9(b); *see also* Considering Cumulative Effects Under the National Environmental Policy Act, CEQ, January 1997, *available at* https://ceq.doe.gov/publications/cumulative_effects.html.

Tribal trust lands (requiring the approval of a lease by the Bureau of Indian Affairs), or approval of solar energy development zones may offer important short-term socioeconomic benefits to a particular community or region at the same time that the development produces GHG emissions with potential long-term climate change impacts. Similarly, a prescribed burn of forest or grasslands conducted to limit ecosystem destruction through wildfires or insect infestations may result in short-term GHG emissions and loss of stored carbon at the same time that a restored, healthy ecosystem provides long-term carbon sequestration.

It is important to recognize that land management practices such as prescribed burning, timber stand improvements, fuel load reductions, scheduled harvesting, and grazing land management can result in both carbon emissions and carbon sequestration. Biogenic sources of carbon emissions from land management activities such as vegetation management in the form of prescribed burning, timber stand improvements and fuel load reductions present some unique considerations that are not included in fossil fuel source analyses and an agency's evaluation should reflect these unique considerations.

For such vegetation management practices, NEPA analyses should include a comparison of net GHG emissions and carbon stock changes that would occur with and without implementation of the anticipated vegetation management practice. The analysis should take into account the GHG emissions (biogenic and fossil), carbon sequestration potential, and the net change in carbon stocks that are relevant in light of the proposed actions and time-frames under consideration. In some cases, analysis of climate impacts and GHG emissions have been considered during larger scale analysis supporting policy

or programmatic decisions. In such cases, calculating GHG emissions and carbon stocks when implementing specific projects (e.g., a proposed vegetation management activity) may provide information of limited utility for decision makers and the public to distinguish between alternatives and mitigations. Rather, as appropriate, these NEPA analyses can incorporate by reference earlier programmatic studies or information such as management plans, inventories, assessments, and research that consider potential changes in carbon stocks, as well as any relevant programmatic NEPA reviews (see discussion in section III.C below).

Finally, when discussing GHG emissions, as for all environmental impacts, it can be helpful to provide the decisionmaker and the public with a frame of reference. To provide a frame of reference, agencies can incorporate by reference applicable agency emissions targets such as applicable Federal, state, tribal, or local goals for GHG emission reductions to provide a frame of reference and make it clear whether the emissions being discussed are consistent with such goals.[31] For example, Bureau of Land Management projects in California, especially joint projects with the State, look at how the agency action will help or hurt California in reaching its emission reduction goals under the State's Assembly Bill 32 (Global Warming Solutions Act), which helps frame the context for the BLM NEPA analysis.

B. Emissions Analyses

Agencies should be guided by a "rule of reason" in ensuring that the level of effort expended in analyzing GHG emissions or climate change effects is reasonably

[31] *See* 40 CFR 1502.16(c), 1506.2(d). For example, see Executive Order 13514, October 5, 2009, 74 FR 52117, *available at* www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf. The Executive Order defines scope 1, 2, and 3 emissions which are typically separate and distinct from analyses and information used in an EA or EIS.

proportionate to the importance of climate change related considerations to the agency action being evaluated. This concept of proportionality is grounded in the fundamental purpose of NEPA to concentrate on matters that are truly significant to the proposed action.[32] An agency must present the environmental impacts of the proposed action in clear terms and with sufficient information to ensure the professional and scientific integrity of the discussion and analysis.[33]

An agency's determination regarding the type of analysis – quantitative or qualitative – to be prepared for any proposed action should also be informed by the tools and information available to conduct the analysis. GHG estimation tools have become widely available, and are already in broad use not only in the Federal sector, but also in the private sector, by State and local governments, and globally. If tools or methodologies are available to provide the public and the decision-making process with information that is useful to distinguishing between the no-action and proposed alternatives and mitigations, then agencies should conduct and disclose quantitative estimates of GHG emissions and sequestration. For example, tools exist that can provide estimates of GHG emissions and sequestration for many of the sources and sinks potentially affected by proposed land and resource management actions.[34] Tools have been developed to assist institutions, organizations, agencies, and companies with different levels of technical sophistication, data availability, and GHG source profiles. These widely available tools address GHG emissions, including emissions from fossil

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[32] 40 CFR 1500.4(b), 1500.4(g) and 1501.7.

[33] 40 CFR 1502.24 (requiring agencies to ensure the professional and scientific integrity of the discussions and analyses in environmental impact statements).

[34] For example, USDA's COMET-Farm tool can be used to assess the carbon sequestration of existing activities along with the reduction in carbon sequestration (emissions) of project-level activities, *available at* www.comet-farm.com.

fuel combustion and other activities. They also typically provide a choice of methods so that agencies can, for example, devote more time and effort to large sources while achieving efficient coverage for smaller sources. When considering tool options, it is important to consider the size of the project, spatial and temporal scale, and the availability of input data. It is also important to consider the investment of time and resources required by each tool, and agencies should determine which tool(s) to use by ensuring that the level of effort is reasonably proportional to the importance of climate change related considerations. When an agency determines that a quantitative analysis is not appropriate, an agency should complete a qualitative analysis and explain its basis for doing so.

Monetizing costs and benefits is appropriate in some, but not all, cases and is not a new requirement.[35] A monetary cost-benefit analysis need not and should not be used in weighing the merits and drawbacks of the alternatives when important qualitative considerations are being considered. If a cost-benefit analysis is relevant to the choice among different alternatives being considered, it must be incorporated by reference[36] or appended to the statement as an aid in evaluating the environmental consequences. When an agency determines it appropriate to monetize costs and benefits, then, although developed specifically for regulatory impact analyses, the Federal social cost of carbon, which multiple Federal agencies have developed and used to assess the costs and benefits of alternatives in rulemakings, offers a harmonized, interagency metric that can provide decisionmakers and the public with some context for meaningful NEPA review. When using the Federal social cost of carbon, the agency should disclose the fact that these

[35] 40 CFR 1502.23.
[36] 40 CFR 1502.21 (material may be cited if it is reasonably available for inspection by potentially interested persons within the time allowed for public review and comment).

estimates vary over time, are associated with different discount rates and risks, and are intended to be updated as scientific and economic understanding improves.[37]

C. Special Considerations for Biogenic Sources of GHG Emissions from Land Management Actions.

With regard to biogenic GHG emissions from land management actions such as prescribed burning, timber stand improvements, fuel load reductions, scheduled harvesting, and livestock grazing,[38] it is important to recognize that these actions contribute both carbon emissions and carbon sequestration to the global carbon cycle. For example, using prescribed fire to maintain natural ecosystem resilience is a human-caused influence on a natural system that both emits GHGs and results in enhanced regrowth and biological sequestration. Notably, the net effect of these agency actions resulting in biogenic emissions may lead to reductions of GHG concentrations through increases in carbon stocks or reduced risks of future emissions. In the forest management context, for example, whether a forest practice is a net carbon sink or source will depend on the climate region (i.e., growth), the rotation length (e.g., southern pine versus old growth), and the human activity (e.g., salvage logging, wood products, bioenergy, etc.).

Federal land management agencies are developing agency-specific principles and guidance for considering biological carbon in management and planning decisions.[39] This guidance acknowledges the importance of: sustaining long-term ecosystem function and resilience even when this goal may lead to short-term impacts from carbon dioxide

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[37] *See* 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-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf.

[38] These land management actions differ from biomass production for energy production.

[39] *See* Priority Agenda Enhancing the Climate Resilience of America's Natural Resources, Council on Climate Change Preparedness and Resilience, at 52 (Oct. 2014), *available at* http://www.whitehouse.gov/sites/default/files/docs/enhancing_climate_resilience_of_americas_natural_resources.pdf.

emissions; considering carbon within the context of other management objectives and ecosystem service goals; and integrating carbon considerations as part of a balanced and comprehensive program of sustainable management and climate change adaptation.

In addressing biogenic GHG emissions, land management agencies should include a comparison of net GHG emissions and carbon stock changes that would occur with and without implementation of the proposed land management actions. This analysis should take into account the GHG emissions(biogenic and fossil), carbon sequestration potential, and the change in carbon stocks that are relevant to decision-making that are relevant in light of the proposed actions and timeframes under consideration. CEQ recognizes that land management agencies have considered climate impacts and GHG emissions to be most important in analyses at a forest or landscape scale, including programmatic NEPA reviews supporting policy or programmatic decisions. In such cases, land management agencies may be able to reasonably conclude that calculating GHG emissions and carbon stocks for site-specific projects (e.g., a proposed forest restoration) would provide information that is not useful to the public and the decision-making process. Rather, as appropriate, site-specific NEPA analyses can incorporate by reference landscape-scale or other programmatic studies or analyses, or tier to NEPA reviews that considered potential changes in carbon stocks (see section V.D., Programmatic – Broad Based – NEPA Reviews, below).

D. GHG Emissions That Warrant Quantitative Disclosure

Providing a detailed quantitative analysis of emissions regardless of the quantity of emissions is not in keeping with the rule of reason or the concept of proportionality. In considering when to disclose projected quantitative GHG emissions, CEQ is providing a reference point of 25,000 metric tons of $CO_{2\text{-}e}$ emissions on an annual basis below which

a GHG emissions quantitative analysis is not warranted unless quantification below that reference point is easily accomplished. This is an appropriate reference point that would allow agencies to focus their attention on proposed projects with potentially large GHG emissions.

When using this reference point, agencies should keep in mind that the reference point is for purposes of disclosure and not a substitute for an agency's determination of significance under NEPA. The ultimate determination of significance remains subject to agency practice for the consideration of context and intensity, as set forth in the CEQ Regulations.[40]

E. Alternatives

Fundamental to the NEPA process is the consideration of alternatives when preparing an EIS or an EA.[41] The requirement to consider alternatives is meant to ensure that agencies consider approaches with no, or less, adverse environmental effects as compared to the proposed action or preferred alternative. This requirement seeks to ensure that each agency decisionmaker has the information needed to take into account possible approaches to a particular project (including the no-action alternative) that would alter the environmental impact or the balance of other factors considered in making the decision. Consideration of alternatives provides an opportunity to make the best informed, and potentially most beneficial, decision. Such decisions are aided when there are comparisons among preferred and other reasonable alternatives in GHG emissions and carbon sequestration potential, in trade-offs with other environmental

[40] 40 CFR 1508.27.
[41] 42 U.S.C. 4332(2)(C) and (E); 40 CFR 1502.14 and 1508.9(b).

values, and in the risk from and the resilience to climate change inherent in a proposed design.

Agencies are required to consider a range of reasonable alternatives consistent with the purpose and need for the proposed action, as well as reasonable mitigation alternatives if not already included in the proposed action (see mitigation discussion below).[42] Accordingly, if a comparison of these alternatives based on GHG emissions, and any potential mitigation to reduce emissions, would be useful to advance a reasoned choice among alternatives and mitigations, then an agency should compare the levels of GHG emissions caused by each alternative – including the no-action alternative – and mitigations to provide information to the public and enable the decisionmaker to make an informed choice.

F. Mitigation

Mitigation is an important component of an agency's considerations under NEPA, and this is no less true as it pertains to climate change. Mitigation, by definition, includes considering the avoidance of the impacts, minimizing them by limiting them, rectifying the impact, reducing or eliminating the impacts over time, or compensating for them.[43] Consequently, agencies should consider reasonable mitigation measures and alternatives as provided for under the existing regulations to lower the level of the potential GHG emissions.

As Federal agencies evaluate proposed mitigation of GHG emissions or of interactions involving the affected environment, the quality of that mitigation – including

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[42] *See* 42 U.S.C. 4332(2)(C), 4332(2)(E), and 40 CFR 1502.14(f), 1508.9(b).

[43] 40 CFR 1508.20, 1508.25 (Mitigation includes avoiding the impact, limiting the degree or magnitude of the action, reducing or eliminating the impact over time. Alternatives include mitigation measures not included in the proposed action).

its permanence, verifiability, enforceability, and additionality[44] – should be carefully evaluated. Among the alternatives that may be considered for their ability to reduce or mitigate GHG emissions and climate effects are enhanced energy efficiency, lower GHG-emitting technology (e.g., using renewable energy), carbon capture, carbon sequestration (e.g., forest and coastal habitat restoration), sustainable land management practices, and capturing or beneficially using fugitive GHG emissions such as methane.

Finally, the CEQ Regulations recognize the value of monitoring to ensure that mitigation is carried out as provided in a Finding of No Significant Impact or Record of Decision. In cases where mitigation measures are designed to address the effects of climate change, the agency's final decision should identify those mitigation measures and the agency should consider adopting an appropriate monitoring program.[45]

IV. CONSIDERING THE EFFECTS OF CLIMATE CHANGE ON THE ENVIRONMENTAL CONSEQUENCES OF A PROPOSED ACTION

An agency should identify the affected environment so as to provide a basis for comparing the current and the future state of the environment should the proposed action or any of its reasonable alternatives proceed.[46] The current and expected future state of the environment without the proposed action represents the reasonably foreseeable affected environment that should be described based on available climate change information, including observations, interpretive assessments, predictive modeling,

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[44] Regulatory additionality requirements are designed to ensure that a GHG reduction credit is limited to an entity with emission reductions that are above regulatory requirements. *See* http://www.eia.doe.gov/oiaf/1605/FAQ_GenInfoA.htm#Additionality.

[45] 40 CFR 1505.3; CEQ Memorandum to Heads of Federal Agencies, *Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact,* January 14, 2011, *available at* https://ceq.doe.gov/current_developments/docs/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf.

[46] 40 CFR 1502.16 and 1508.9 (providing that environmental impact statements and environmental assessments must succinctly describe the environmental impacts on the area(s) to be affected or created by the alternatives under consideration).

scenarios, and other empirical evidence.[47] The temporal bounds for the future state of the environment are determined by the expected lifespan of the proposed project.[48] Agencies should remain aware of the evolving body of scientific information and its clarification of climate impacts at a more localized level.[49]

The analysis of impacts on the affected environment should focus on those aspects of the human environment that are impacted by both the proposed action and climate change. Climate change can affect the environment of a proposed action in a variety of ways. Climate change can increase the vulnerability of a resource, ecosystem, human community, or structure, which would then be more susceptible to climate change and other effects and result in a proposed action's effects being more environmentally damaging. For example, a proposed action may require water from a stream that has diminishing quantities of available water because of decreased snow pack in the mountains, or add heat to a water body that is exposed to increasing atmospheric temperatures. Such considerations are squarely within the realm of NEPA, informing decisions on whether to proceed with and how to design the proposed action so as to minimize impacts on the environment, as well as informing possible adaptation measures to address these impacts, ultimately enabling the selection of smarter, more resilient actions.

According to the National Research Council,[50] USGCRP, and others, GHGs already in the atmosphere will continue altering the climate system into the future, even

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[47] *See Considering Cumulative Effects* (CEQ 1997), *available* on www.nepa.gov *at* https://ceq.doe.gov/current_developments/docs/Improving_NEPA_Efficiencies_06Mar2012.pdf.
[48] *Id*. Agencies should consider their work under Executive Order 13653 that considers how capital investments will be effected by a changing climate over time.
[49] *See, e.g.,* http://nca2014.globalchange.gov/report/regions/coasts.
[50] The National Research Council is the operating arm of the National Academy of Sciences and National Academy of Engineering. Through its independent, expert reports, workshops, and other scientific

with current or future emissions control efforts.[51] Therefore, climate change adaptation[52] and resilience[53] — defined as adjustments to natural or human systems in response to actual or expected climate changes — are important considerations for agencies contemplating and planning actions with effects that will occur both at the time of implementation and into the future.

As called for under NEPA, the CEQ Regulations, and CEQ guidance, the NEPA review process should be integrated with planning at the earliest possible time.[54] Decades of NEPA practice have shown that a NEPA process that is integrated with the planning process provides useful information that program and project planners can consider in the design of the proposed action and the alternatives. Climate change effects should be considered in the analysis of projects that are located in areas that are considered vulnerable to specific effects of climate change, such as increasing sea level

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activities, NRC's mission is to improve government decision-making and public policy, increase public understanding, and promote the acquisition and dissemination of knowledge in matters involving science, engineering, technology, and health. For more information about NRC, see http://www.nationalacademies.org/nrc/index.html.

[51] *See* Second National Climate Change Assessment, USGCRP, 2009, *available at* http://www.globalchange.gov/what-we-do.

[52] Action that can be implemented as a response to changes in the climate to harness and leverage its beneficial opportunities (e.g., expand polar shipping routes) or ameliorate its negative effects (e.g., protect installations from sea level rise). National Research Council, *Adapting to the Impacts of Climate Change* (2010), *available at* http://nas-sites.org/americasclimatechoices/sample-page/panel-reports/panel-on-adapting-to-the-impacts-of-climate-change.

[53] Capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment. *Id.* Ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, capacity for self-organization, and capacity to adapt to stress and change. M.L. Parry et al., *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), *available at* http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg2_report_impacts_adaptation_and_vulnerability.htm.

[54] 42 U.S.C. 4332 (agencies of the Federal Government shall … utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making); 40 CFR 1501.2 (Agencies shall integrate the NEPA process with other planning at the earliest possible time); CEQ Memorandum to Heads of Federal Agencies, *Improving the Process for Preparing Efficient and Timely Environmental Reviews under the National Environmental Policy Act*, March 6, 2012, *available at* https://ceq.doe.gov/nepa/regs/scope/scoping.htm.

or other ecological change, within the project's anticipated useful life. In such cases, a NEPA review will provide relevant information that agencies can use to consider alternatives with preferable overall environmental outcomes. For example, an agency considering a proposed action involving long-term development of transportation infrastructure on a coastal barrier island will want to take into account climate change to avoid the environmental and, as applicable, economic consequences of rebuilding should potential climate change impacts such as sea level rise and more intense storms shorten the projected life of the project.[55] Given the length of time involved in present sea level projections, such considerations typically will not be relevant to short-term actions. Individual agency adaptation plans and interagency adaptation strategies, such as the National Fish, Wildlife and Plants Climate Adaptation Strategy, and the National Action Plan for managing freshwater resources in a changing climate, provide good examples of relevant and useful information that can be considered.[56]

In addition, the particular impacts of climate change on vulnerable communities may be considered in the design of the action or the selection among alternatives so that the proposed action will be more resilient and sustainable and thereby have lesser impacts on those communities.[57] For example, chemical facilities located near the coastline could have increased risk of spills or leakages due to sea level rise or increased storm surges, putting local communities and environmental resources at greater risk. Finally,

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[55] *See Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: Gulf Coast Study,* (www.globalchange.gov/browse/reports/sap-47-impacts-of-climate-change-and-variability-on-transportation-systems-and), and *Abrupt Climate Change* (http://library.globalchange.gov/sap-3-4-abrupt-climate-change (discussing the likelihood of an abrupt change in sea level).

[56] *See* http://sustainability.performance.gov for agency sustainability plans, which contain agency adaptation plans. *See also* http://www.wildlifeadaptationstrategy.gov and http://www.whitehouse.gov/sites/default/files/microsites/ceq/2011_national_action_plan.pdf.

[57] *See* https://www.blm.gov/epl-front-office/projects/nepa/5251/42462/45213/NPR-A_FINAL_ROD_2-21-13.pdf.

considering climate change effects can help ensure that agencies do not generate additional GHGs – or expend additional time and funds – if the project has to be replaced, repaired, or modified.

V. ***TRADITIONAL NEPA TOOLS***

A. Scoping and Framing the NEPA review

To effectuate integrated decision-making, avoid duplication, and focus the NEPA review, the CEQ Regulations provide for scoping.[58] In scoping, the agency determines the issues that the EA or EIS will address and identifies the impacts related to the proposed action that will be considered in the analyses.[59] An agency can use the scoping process to help it determine whether analysis is relevant and, if so, the extent of analysis appropriate for a proposed action, consistent with the purpose and need.[60] When scoping for the issues associated with the proposed agency action that may be related to climate change, the nature, location, timeframe, and type of the proposed action will help determine the degree to which consideration of climate projections is warranted. Scoping a proposed action can help an agency determine whether climate change considerations warrant emphasis and detailed analysis and disclosure, and provide a basis for an agency determination that a detailed consideration of emissions is or is not appropriate for a proposed action.

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[58] *See* 40 CFR 1501.7 ("There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process shall be termed scoping."); *See also Memorandum for Heads of Federal Departments and Agencies: Improving the Process for Preparing Efficient and Timely Environmental Reviews under the National Environmental Policy Act* (CEQ 2012), *available* on www.nepa.gov *at* https://ceq.doe.gov/current_developments/docs/Improving_NEPA_Efficiencies_06Mar2012.pdf (the CEQ Regulations explicitly address scoping for preparing an EIS, agencies can also take advantage of scoping whenever preparing an EA).

[59] 40 CFR 1500.4(b), 1500.4(g) and 1501.7.

[60] *See* 40 CFR 1501.7 (stating that the agency preparing the NEPA analysis use the scoping process to, among other things, determine the scope and identify the significant issues to be analyzed in depth) and CEQ, *Memorandum for General Counsels, NEPA Liaisons, and Participants in Scoping* (1981), *available at* https://ceq.doe.gov/publications/cumulative_effects.html.

Consistent with this guidance, agencies can develop practices and guidance for framing the NEPA review by determining whether an environmental aspect of the proposed action merits detailed analysis and disclosure. Grounded on the principles of proportionality and the rule of reason, such aids can help an agency determine the extent to which an analysis of GHG emissions and climate change impacts are useful to the public and the decision-making process for distinguishing between the no-action and proposed alternatives and mitigations.[61] The agency should explain such a framing process and its application to the proposed action to the decisionmakers and the public during the NEPA review and in the EA or EIS document.

B. Incorporation by Reference

In accordance with NEPA's rule of reason and standards for obtaining information regarding reasonably foreseeable effects on the human environment, action agencies need not undertake exhaustive research or analysis of potential climate change impacts in the project area or on the project itself, but may instead summarize and incorporate by reference the relevant scientific literature.[62] Incorporation by reference is of value in considering GHG emissions where an agency is considering the implications of climate change for the environmental effects of the proposed action. For example, agencies may summarize and incorporate by reference the major peer-reviewed

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[61] *See* for example: Matthew P. Thompson, Bruce G. Marcot, Frank R. Thompson, III, Steven McNulty, Larry A. Fisher, Michael C. Runge, David Cleaves, and Monica Tomosy, The Science of Decisionmaking: Applications for Sustainable Forest and Grassland Management in the National Forest System, *available at* http://www.fs.fed.us/rm/pubs_other/rmrs_2013_thompson_m004.pdf; General Technical Report WO–88, July 2013; US Forest Service Comparative Risk Assessment Framework And Tools, *available at* http://www.fs.fed.us/psw/topics/fire_science/craft/craft; and Julien Martin, Michael C. Runge, James D. Nichols, Bruce C. Lubow, and William L. Kendall 2009. Structured decision making as a conceptual framework to identify thresholds for conservation and management. Ecological Applications 19:1079–1090, *available at* http://dx.doi.org/10.1890/08-0255.1.

[62] 40 CFR 1502.21 (material may be incorporated by reference if it is reasonably available for inspection by potentially interested persons during public review and comment).

assessments from the USGCRP and underlying technical reports such as their Synthesis and Assessment Products.[63] Particularly relevant are the reports on climate change impacts on water resources, ecosystems, agriculture and forestry, health, coastlines, and arctic regions in the United States.[64]

When using scenarios or climate modeling information (including seasonal, interannual, long-term, and regional-scale predictions), agencies should consider their inherent limitations and uncertainties and disclose these limitations in explaining the extent to which they rely on particular studies or projections.[65] Agencies should take into account that the outputs of coarse-resolution global climate models, commonly used to predict or project climate change contingent on a particular emission scenario at a continental or national scale, may have limitations on how they can be used in regional or local impact studies.[66]

C. Using Available Information

Agencies are expected to make decisions using current scientific information and methodologies. Agencies are not required to conduct original research in NEPA analyses to fill scientific gaps. Consequently, agencies are not expected to await the development of new tools or scientific information to conclude their NEPA analyses and documentation.[67] Agencies should exercise their discretion to select and utilize the tools, methodologies, and scientific and research information that are of high quality and most appropriate for the level of analysis and the decisions being made.

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[63] http://www.globalchange.gov/browse/reports.
[64] *See* Third National Climate Assessment.
[65] 40 CFR 1502.21, 1502.22.
[66] *See Climate Models: An Assessment of Strengths and Limitations*, *available at* http://data.globalchange.gov/assets/91/7e/0df45f584b652ea95e947ef813d0/sap3-1-final-all.pdf.
[67] 40 CFR 1502.24 (requiring agencies to ensure the professional and scientific integrity of the discussions and analyses in environmental impact statements).

Agencies should be aware of the ongoing efforts to address the impacts of climate change on human health and vulnerable communities. Certain groups, including children, the elderly, and the poor, are most vulnerable to climate-related health effects and frequently lack the capacity to engage on issues that disproportionately affect them. We recommend that agencies periodically engage their environmental justice experts, and potentially the Federal Interagency Working Group on Environmental Justice, [68] to identify interagency approaches to impacts that may have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.[69]

D. Programmatic – Broad Based – NEPA Reviews

Agency decisions can address different geographic scales that can range from the programmatic or landscape level, to the site- or project-specific level. Agencies sometimes conduct analyses or studies at the national level or on other broad scales (e.g., landscape, regional, or watershed) to assess the status of one or more resources or to determine trends in changing environmental conditions.[70] In the context of long-range energy, transportation, and resource management actions, for example, an agency may decide that it would be useful and efficient to provide an aggregate analysis of GHG emissions or climate change effects in a programmatic analysis and then incorporate by reference that analysis into future NEPA reviews.

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[68] For more information on the Federal Interagency Working Group on Environmental Justice co-chaired by EPA and CEQ, see http://www.epa.gov/environmentaljustice/interagency/index.html.

[69] President's Memorandum for the Heads of All Departments and Agencies, Executive Order on Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, February 11, 1994, *available at* https://ceq.doe.gov/nepa/regs/eos/ii-5.pdf; Environmental Justice Guidance Under the National Environmental Policy Act, CEQ, December 1997, *available at* https://ceq.doe.gov/nepa/regs/ej/justice.pdf.

[70] Such a programmatic study is distinct from a programmatic NEPA review which is appropriate when the action being considered is subject to NEPA requirements and is establishing formal plans, establishing agency programs, and approving a suite of similar projects.

A tiered, analytical decision-making approach using a programmatic NEPA review is used for many types of Federal actions[71] and can be particularly relevant to addressing proposed land, oceanic, and resource management plans. Under such an approach, a broad-scale programmatic NEPA analysis is conducted for actions such as USDA Forest Service land and resource management plans, Bureau of Land Management resource management plans, or Natural Resources Conservation Service conservation programs. Subsequent NEPA analyses for site-specific decisions – such as projects that implement land, oceanic, and resource management plans – are tiered from the broader programmatic analysis, drawing upon its basic framework analysis to avoid repeating analytical efforts for each tiered decision. Examples of project- or site-specific actions that can benefit from a programmatic NEPA review include: constructing transmission towers; conducting prescribed burns; approving grazing leases; granting a right-of-way; authorizing leases for oil and gas drilling; authorizing construction of wind turbines; and approving hard rock mineral extraction.

A programmatic NEPA review may also serve as an efficient mechanism to describe Federal agency efforts to adopt sustainable practices for energy efficiency, GHG emissions avoidance or reduction, petroleum product use reduction, and renewable energy use, as well as other sustainability practices.[72] While broad department- or agency-wide goals may be of a far larger scale than a particular program or proposed action, an analysis that informs how an action affects that broader goal can be of value.

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[71] 40 CFR 1502.20, 1508.28. A programmatic NEPA review is appropriate when a decision is being made that is subject to NEPA, such as establishing formal plans, establishing agency programs, and approving a suite of similar projects.

[72] *See* Executive Order 13514 – Federal Leadership in Environmental, Energy, and Economic Performance, 74 FR 52117–52127 (Oct. 5, 2009); Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, 72 FR 3919 (Jan. 26, 2007), *available at* www.gpo.gov/fdsys/pkg/FR-2007-01-26/pdf/07-374.pdf.

VI. CONCLUSION AND EFFECTIVE DATE

This guidance document informs Federal agencies on how to apply fundamental NEPA principles to the analysis of climate change through assessing GHG emissions and the effects of climate change for Federal actions subject to NEPA. It identifies opportunities for using information developed during the NEPA review process to take into account appropriate adaptation opportunities. Applying this guidance will promote an appropriate and measured consideration of GHG emissions and the effects of climate change in the NEPA process through a clearer set of expectations and a more transparent process, thereby informing decisionmakers and the public and resulting in better decisions. This guidance also addresses questions raised by other interested parties.[73]

Agencies are encouraged to apply this guidance to all new agency actions moving forward and, to the extent practicable, to build its concepts into currently on-going reviews.

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[73] Recommendations of the State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience, November 2014, at page 20 (recommendation 2.7), *available at* www.whitehouse.gov/sites/default/files/docs/task_force_report_0.pdf; GAO report: Future Federal Adaptation Efforts Could Better Support Local Infrastructure Decision Makers, April 12, 2012, *available at* http://www.gao.gov/products/GAO-13-242; *see also* the International Center for Technology Assessment, Natural Resources Defense Council, and Sierra Club Petition Requesting that the Council on Environmental Quality Amend its Regulations to Clarify that Climate Change Analyses be Included in Environmental Review Documents, February 28, 2008.

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