August 13, 2014

Environmental Protection Agency
EPA Docket Center (EPA/DC)
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Washington, DC 20460.

Office of Management and Budget
Office of Information and Regulatory Affairs
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Triangle Park, NC 27711

Ms. Marguerite McLamb, Sector Policies and Programs
Division (D205–01), U.S. EPA, Research
Triangle Park, NC 27711

Re: ITSSD Public Comments on EPA Proposed Power Plant Rule
Docket ID No. EPA-HQ-OAR–2013-0602

Dear Ms. Vasu, McLamb et al.:

The Institute for Trade, Standards and Sustainable Development ("ITSSD)" is pleased to respond to the Environmental Protection Agency's "(EPA's") recent solicitation for public comments in regard to proposed *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units* (otherwise known as "the Clean Power Plan Proposed Rule" first proposed on June 2, 2014[1]), as detailed in the Federal Register.[2] We hereafter refer to this rule as the "proposed power plant rule". ITSSD's comments are attached hereto.

ITSSD is a globally recognized nonprofit legal research, analytics and educational organization with a mission to promote a *positive* paradigm of sustainable development, consistent with private property, free markets and the rule of law. To achieve this *positive* paradigm we emphasize the need to ensure governments' open and transparent establishment, maintenance and oversight of balanced, risk-based science, and economic cost-benefit analysis-driven national regulatory and standards schemes, and the quality and integrity of scientific & technical data/information that government entities rely upon, adopt as their own and disseminate to the public as a basis for agency actions, including rulemakings.

ITSSD's comments with respect to the proposed power plant rule are limited to two main points. EPA failed to properly validate the "major scientific assessments" underlying EPA's 2009 Greenhouse Gas Endangerment Findings ("CAA Section 202(a)(1) Findings") and the Third National Climate Assessment ("NCA3-2014"), which EPA now relies upon as primary support for this proposed power plant rule, in conformance with the Information Quality Act ("IQA") and the relevant binding Office of Management and Budget and EPA IQA-implementing guidance. EPA's failure to ensure that its process for validating these mostly third-party-developed major assessments satisfied the most rigorous and least discretionary peer review, transparency, conflict-of-interest, objectivity/bias, independence, panel balance and administrative review standards applicable to "highly influential scientific assessments" ("HISAs"), now precludes EPA, *as a matter of law*, from adopting, endorsing and using those assessments as the scientific foundation for its proposed power plant rule, *unless* EPA peer reviews them once again in conformance with such IQA standards.

ITSSD appreciates the opportunity to submit these comments to EPA for inclusion in the public record, and reserves the right to submit additional data, comments and conclusions substantiating those set forth herein in the future, on or before October 16, 2014.

Very truly yours,

Lawrence A. Kogan

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Institute for Trade, Standards and Sustainable Development (ITSSD) Comments on EPA's Proposed Power Plant Rule EPA Docket ID No. OAR–2013-0602

I. EPA Cannot Rely On The "Major" Climate Assessments and Computer Modeling Applications Supporting the EPA Administrator's Clean Air Act Section 202(a)(1) Greenhouse Gas Endangerment Findings as the Scientific Foundation For Its Proposed Power Plant Rule, Since EPA & DOC-NOAA Failed to Validate Such Science in Conformance With the Information Quality Act (44 U.S.C. 3516 note)

In all but uncertain terms, EPA establishes the Administrator's 2009 CAA Section 202(a)(1) Endangerment Findings as *the* legal *and* scientific foundation for its proposed power plant rule. Section II.A states,

> "In the Endangerment Finding, which focused on public health and public welfare impacts within the United States, the Administrator found that elevated concentrations of GHGs in the atmosphere may reasonably be anticipated to endanger public health and welfare of current and future generations."[3]

Sections II.A.1-2 of the proposed power plant rule thereafter briefly describes how the adverse effects of "[c]limate change caused by human emissions of GHGs [endanger] public health and welfare."[4]

Section II.A.3 of the proposed power plant rule entitled, "New Scientific Assessments", next identifies as its scientific foundation both: 1) the "major assessments by the U.S. Global Change Research Program (USGCRP), the Intergovernmental Panel on Climate Change (IPCC), and the National Research Council (NRC) of the National Academies" primarily relied upon as the basis for the Administrator's 2009 Endangerment Findings; *and* 2) "a number of [new] assessments…released…[s]ince the administrative record concerning the Endangerment Finding closed following the EPA's 2010 Reconsideration Denial."[5]

The proposed power plant rule refers to the comprehensiveness of these "major assessments" and describes them as having undergone "*rigorous and exacting peer review by the expert community*, as well as rigorous levels of U.S. government review" (emphasis added).[6]

The following discussion explains that EPA's representation that these "major assessments" had undergone "rigorous and exacting peer review by the expert community is not true because EPA has, thus, far, failed to substantiate how such peer review processes satisfied the most rigorous and least discretionary peer review, transparency, objectivity/bias, conflict-of-interest and administrative review standards imposed by the Information Quality Act.

1. *EPA Has Failed to Validate Such "Major Assessments" in Conformance With the Most Rigorous and Least Discretionary Peer Review, Transparency, Objectivity/Bias,*

Conflict-of-Interest and Administrative Review Standards Imposed by the Information Quality Act

In a recently recast 145-page Freedom of Information Act ("FOIA") request ("Request EPA-HQ-2014-008026") filed with EPA on June 30, 2014, ITSSD sought

> "disclosure of all "EPA climate science-related peer review files" (hereinafter referred to as "EPA Peer Review Records" and defined in Section III of this FOIA Request) created, transmitted, stored and/or archived from January 1, 2005 through December 31, 2011, substantiating the specific measures EPA had taken, consistent with the highest, most rigorous and least discretionary standards applicable to highly influential scientific assessments ("HISAs") imposed by the Information Quality Act ("IQA")[7] and the Office of Management and Budget ("OMB")[8] and EPA[9] IQA-implementing guidelines, to ensure the quality, integrity and reliability of all EPA- and third-party- developed and peer reviewed climate science-related assessments and reports upon which the Administrator primarily relied in reaching its 2009 positive Greenhouse Gas ("GHG") Endangerment and Cause or Contribute Findings under Clean Air Act ("CAA") Sec. 202(a)(1)."[10]

EPA has, thus far, failed to substantiate to the American public in a transparent and readily accessible manner that it had validated twenty-eight (28) "major assessments" supporting the Administrator's CAA Section 202(a)(1) Findings in conformance with these Information Quality Act standards. Indeed, EPA has not yet even begun to search for the reasonably described documents identified for disclosure in the detailed *recast* FOIA request ITSSD filed with EPA on June 30, 2014. This FOIA request superseded ITSSD's original IQA-focused FOIA request first filed in March 2014, and subsequently clarified twice thereafter, in April and May 2014.

The American public's ongoing skepticism regarding the sound foundation of the climate science underlying EPA's GHG Endangerment Findings and the legal validity of the Findings themselves, is justified until EPA has comprehensively and publicly demonstrated that the peer review processes it had employed to validate the "major assessments" supporting the Administrator's CAA Section 202(a)(1) Findings satisfied the letter *and* spirit of U.S. law.

As reported *inter alia* in or by the Washington Times, Washington Examiner, Wall Street Journal, Inside-EPA, Los Alamos Monitor Online, Mill Creek Beacon.com, Daily Caller, American Spectator, Canada Free Press, World Coal.com, Cattle Range.com, RedState.com, National Association of Scholars (NAS), Science & Environmental Policy Project, Global Warming Policy Foundation, Heartland Institute, the Liberty Alliance, Hispanic American Center for Economic Research, Atlas Economic Research Foundation, the Freedom of the Press Foundation, Asia Law Policy Blog, etc., ITSSD research incorporated in its FOIAs uncovered that EPA and the Department of Commerce's National Oceanic and Atmospheric Administration ("DOC-NOAA") **had failed *on multiple levels*** to validate such "major se assessments" in conformance with these most rigorous and least discretionary of IQA standards.

Section I of ITSSD FOIA Request No. EPA-HQ-2014-008026 identified four different levels of legal compliance obligations with respect to which EPA has not demonstrated its IQA compliance. Sections II.1-II.4 and III.4 of said FOIA request and the accompanying explanations and addendum further elaborate on these requirements and EPA's failure to satisfy them.

First, EPA was required to validate the IQA compliance of EPA-established federal advisory committees' and/or third parties' peer reviews of EPA-developed "highly influential scientific assessments" ("HISAs"), including applied computer models, that supported the Administrator's CAA Section 202(a)(1) Findings. *Second*, EPA was obliged to validate the IQA compliance of other federal agency or third-party peer reviews of such other federal agency, National Research Council and the Intergovernmental Panel on Climate Change (IPCC)-developed HISAs that supported the Administrator's CAA Section 202(a)(1) Findings. *Third*, EPA was required to validate the IQA compliance of an interagency panel's peer review of the EPA-developed Technical Summary Document ("EPA-TSD") which summarized and synthesized twenty-eight (28) individual HISAs designated as "core reference documents" that EPA, other federal agencies and third parties had developed and/or peer reviewed which accompanied the Administrator's GHG Endangerment Findings. *Fourth*, EPA was obliged to ensure the IQA compliance of the administrative mechanisms that EPA and third parties had employed to ensure that affected persons may seek and obtain correction or reconsideration of scientific information EPA and such third parties had disseminated in violation of the IQA and OMB and agency IQA-implementing guidelines.

a. <u>EPA Still Needs to Disclose Many Specific Records That Would Reveal Whether EPA Satisfied its Level-One IQA Obligations</u>

The Explanation following Sections II.1 and III.4 of ITSSD's new FOIA Request and Section II.3 of the accompanying Addendum discuss the administrative guidance relevant to the first level of EPA's IQA legal obligations. These discussions reveal that EPA has not disclosed, to date, many of the records identified in Section II.1 of ITSSD's new FOIA Request. The requested records seek substantiation of how EPA had validated the IQA compliance of peer reviews performed by three Agency-established *ad hoc* federal advisory committees (HICCAC, ASCERAC, and CESLAC) and an interagency panel[11] of two EPA-developed USGCRP/CCSP HISAs (containing computer models and datasets and applications thereof) the EPA-TSD designated as "core reference documents"[12] which directly supported the Administrator's CAA Section 202(a)(1) Findings.

In particular, the Explanation following Sections II.1 and III.4 of ITSSD's new FOIA Request and Section II.3 of the accompanying Addendum discuss how the Agency, thus far, has failed to disclose information about the criteria that EPA, EPA-established federal advisory committees had actually employed in screening and selecting individual peer reviewers and composing external peer review panels. EPA also has failed to disclose information about the procedures EPA, EPA-established federal advisory committees had actually employed in identifying and resolving apparent and actual conflicts-of-interest, lack of peer reviewer independence/bias, and peer review panel balance issues. Furthermore, these portions of ITSSD's new FOIA Request discuss how EPA has failed to publicly release full and summary versions of final peer review reports prepared by its three EPA-established federal advisory committees and external peer review panels. For the most part, all that is publicly

accessible are HICCAC, ASCERAC and CESLAC federal advisory committee meeting minutes and draft reports.

b. EPA Still Needs to Disclose Many Specific Records That Would Reveal Whether EPA Satisfied its Level-Two IQA Obligations

The Explanation following Sections II.2 and III.4 of ITSSD's new FOIA Request and Sections II.2-II.3 of the accompanying Addendum discuss the administrative guidance relevant to the second level of EPA's IQA legal obligations. In particular, these portions of the ITSSD's new FOIA Request describe how EPA, to date, has not disclosed many *specific* records that explain how it had validated the IQA compliance of the twenty-three (23) third party (DOC-NOAA[13], DOE,[14] DOI-USGS,[15] NASA,[16] DOT [17] USDA[18] (USGCRP)), NRC[19], IPCC,[20] ACIA[21])-developed and peer reviewed HISAs (containing computer models and datasets and applications thereof) the EPA-TSD designated as "core reference documents" that directly supported the Administrator's CAA Section 202(a) Findings, which EPA had endorsed, adopted and disseminated as its own.

For example, in its response to public comments submitted in regard to EPA's Proposed CAA Section 202(a)(1) Findings, EPA referred stakeholders to Section III.A of its Final Endangerment Findings entitled, "The Science on Which the Decisions Are Based". The Final Endangerment Findings provided a *general* explanation of EPA's "rationale on the approach to the scientific literature and [its] discussion that it was [neither] necessary nor logical for EPA to conduct an additional and separate review of the underlying climate data and research."[22] EPA set forth two general justifications for its circumvention of the key IQA scientific peer review obligations to which it was subject with respect to third party-developed and peer reviewed HISAs. First, the Agency argued that it need not separately peer review the major assessments of the USGCRP, IPCC and NRC which supported the Administrator's CAA Section 202(a)(1) Findings because the "international scientific community" which had produced those assessments had arrived at (*political*) consensus conclusions regarding their findings.[23] Second, EPA argued that it need not separately peer review the major assessments of the USGCRP, IPCC and NRC that supported the Administrator's CAA Section 202(a)(1) Findings because of the credentials of the individual members of the international scientific community and the general credibility of the institutional peer review processes employed by the third-party organizations that had conducted the evaluations of these assessments.[24] In other words, according to EPA, "[t]he use of the assessment literature capitalizes on the substantial expertise and experience that went into the development of those reports."[25]

No fewer than twenty-five (25) public stakeholders had filed comments regarding the systemic information quality process, objectivity, public comment engagement, and transparency flaws that had apparently infected the peer review processes and procedures surrounding the development of the IPCC's third and fourth assessment reports.[26] In response, the Agency referred interested stakeholders to the general rationale set forth in Section III.A of the Administrator's CAA Section 202(a)(1) Findings, as discussed above. In addition, EPA referred them to the "IPCC's *Principles Governing IPCC Work* (2006), IPCC's *Procedures for the Preparation, Review, Acceptance, Adoption, Approval, and Publication of IPCC Reports* (1999), and IPCC's *Guidance Notes for Lead Authors of the IPCC Fourth Assessment Report on Addressing Uncertainties* (2004),"[27] which the

Agency replicated and quoted in Appendix A of "EPA's Response to Comments, Volume 1: General Approach to the Science and Other Technical Issues."[28]

EPA endeavored to reassure stakeholders that it had "both evaluated and participated in the development and review of IPCC reports".[29] EPA also sought to persuade stakeholders that the U.S. government's participation via the USGCRP in such activities ensured that "the IPCC process [was] transparent and rigorous" and that the reports were scientifically credible and legitimate because they "fairly represented] the range of scientific opinions on climate change".[30] Consequently, EPA stated that it believed that "the IPCC's procedures [were] sufficient and effective for ensuring quality, transparency, and consideration of multiple and diverse perspectives".[31] The Agency reasoned that, because

> "[the]…*studies…supporting*…the [IPCC] assessment reports EPA used in developing the TSD…were conducted in accordance with sound and objective scientific practices, were peer reviewed, and adhered to standards of quality based on objectivity, utility, and integrity…we find that IPCC's information quality process is consistent with EPA's *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility and Integrity of Information Disseminated by the Environmental Protection Agency.*"[32]

The Explanation following Sections II.2 and III.4 of ITSSD's new FOIA Request and Sections II.1-II.2 of the accompanying Addendum reveal that this EPA statement, however, failed to discuss how and by whom the supporting IPCC studies had been peer reviewed, and how and why the peer review of these specific supporting studies had been IQA compliant. Furthermore, the Explanation following Section III.4 of ITSSD's new FOIA Request discusses why EPA's failure to disclose records validating how its participation in IPCC peer review processes and procedures constituted sufficient *'testing'* of those data quality control management systems to satisfy IQA HISA requirements raised serious additional questions. As Section II.2 of the accompanying Addendum reveals, an IPCC-commissioned 2010 Inter-Academy Council ("IAC") Report identified systemic flaws in various IPCC processes and procedures surrounding the validation of IPCC's Third and Fourth Assessment Reports. It also reveals that the IPCC Review Committee selection process had not adequately considered whether four (4) of twelve (12) IPCC Review Committee members had apparent, if not, actual conflicts-of-interest, and if so, how to address and disclose them.

The Explanation following Section II.2 of ITSSD's new FOIA Request and Sections II.1-II.2 of the accompanying Addendum, reveal that EPA had endorsed, adopted and used (relied upon) three IPCC Fourth Assessment Reports, including the computer models, datasets and other studies incorporated therein, as primary support for the Administrator's CAA Section 202(a)(1) Findings. Therefore, it was critical for the Agency to have produced records demonstrating that it had validated the IQA compliance of those assessments. To date, EPA has not produced any specific records validating such third party IQA compliance.

EPA also endeavored to generally reassure stakeholders that the data quality processes and procedures "used by USGCRP/CCSP in developing their assessment reports [was] robust, transparent, and objective."[33] It did so by referring interested stakeholders to the "*Guidelines for*

Producing CCSP Synthesis and Assessment Products (2004),…a CCSP memo on *Clarification of Review and Clearance Process for CCSP Synthesis and Assessment Products*, (2007), and…*Guidance to Agency Leads Regarding the Preparation of CCSP Synthesis and Assessment Products* (2006),[34] which EPA replicated and set forth in Appendix B of "EPA's Response to Comments, Volume 1: General Approach to the Science and Other Technical Issues."[35] In addition, EPA referred interested stakeholders to the USGCRP/CCSP administrative guidelines to which each 'lead' development agency' was expected to adhere, "to ensure that each assessment report complied with the Information Quality Act (IQA) and was fully responsive to all comments received from the public and expert review."[36] According to such guidelines, the transmittal memorandum should "indicate[] that *'the product was prepared in compliance with CCSP's Guidelines for Producing Synthesis and Assessment Products, the Information Quality Act (Section 515) and [LEAD AGENCY'S] corresponding IQA guidelines; and the Federal Advisory Committee Act [when applicable]'"* (brackets and emphasis in original).[37] The guidelines also provide that the transmittal memorandum should be accompanied by "authors' responses to the peer reviewer comments, as required by OMB's Information Quality Bulletin for Peer Review, as well as [by] descriptions of how the authors addressed the public comments and lead agency's review comments."[38]

The Explanation following Section II.2 of ITSSD's new FOIA Request and Sections II.1-II.2 of the accompanying Addendum discuss how EPA had endorsed, adopted and used sixteen (16) USGCRP/CCSP assessments as primary support for the Administrator's CAA Section 202(a)(1) Findings. Furthermore, the Explanation following Section III.4 of ITSSD's new FOIA Request discusses why EPA's failure to disclose records validating how its participation in USGCRP/CCSP peer review processes and procedures constituted sufficient *'testing'* of those data quality control management systems to satisfy IQA HISA requirements raised serious additional questions. However, there is evidence strongly suggesting that USGCRP/CCSP's IQA certification process was vulnerable to manipulation and that participating federal agency (e.g., DOC-NOAA[39]* and DOI-USGS, as well as, EPA) peer review processes and procedures had been compromised due to *unidentified and unresolved apparent or actual conflicts-of-interest involving certain peer reviewers who had also contributed to the development of the HISAs subject to peer review*.

If, as the administrative record strongly suggests, neither EPA nor DOC-NOAA had properly validated, in conformance with the IQA, the climate science assessments and applied computer models DOC-NOAA had developed[40] and/or reviewed (including the IPCC-AR4 assessments and models) *which DOC-NOAA knew or had reason to know* [41] [42] the EPA Administrator would rely upon as primary support for its 2009 Final GHG Endangerment Findings, and such failure is found to have been intentional, systematic and/or an abuse of administrative discretion, a court of law would likely hold EPA's CAA Section 202(a)(1) Findings legally invalid. It also would likely direct EPA to reexamine those Findings and to peer review the underlying "major" climate assessments DOC-NOAA had developed (and the IPCC-developed assessments it reviewed) anew.

Therefore, it was critical for EPA to have produced records demonstrating that it had validated the IQA compliance of the other 'lead' development agency (e.g., DOC-NOAA) and third party (e.g., IPCC) assessments. To date, EPA has not produced records validating the IQA compliance of other agencies' transmittal memoranda and peer review reports containing author responses to peer reviewer, agency and public comments. EPA points only to the brief *pro forma* certifications of IQA

compliance contained within each of the HISAs that other federal agencies, like EPA, had developed and submitted to the CCSP Committee.

c. EPA Still Needs to Disclose Many Specific Records That Would Reveal Whether EPA Satisfied its Level-Three IQA Obligations

The Explanation following Sections II.3 and III.4 of ITSSD's new FOIA Request and Section III.1 of the accompanying Addendum discuss the administrative guidance relevant to the third level of EPA's IQA legal obligations. In particular, these portions of the ITSSD's new FOIA Request describe how EPA, to date, also has not disclosed many specific records substantiating the IQA compliance of the interagency peer review of the EPA-developed TSD[43] which summarized and synthesized twenty-eight (28) HISAs (containing computer models and datasets and applications thereof) designated as "core reference documents" supporting the Administrator's CAA Section 202(a) Findings. These portions of ITSSD's new FOIA Request further discuss how EPA-TSD's summaries and syntheses of these HISAs had transformed the EPA-TSD, itself, from influential scientific information into a HISA, consistent with the reported findings of the EPA Office of Inspector General. As a result, EPA's IQA-related records disclosure requirements had substantially increased.

A number of commenters had argued that, "EPA's external peer-review process was inadequate because the federal expert reviewers [of the EPA-TSD] were involved with developing the IPCC and CCSP reports upon which the endangerment finding is based and therefore not objective."[44] Sections II.3 and III.4 of ITSSD's new FOIA Request identifies those records that EPA still must disclose to demonstrate how the interagency peer review of the HISAs summarized and synthesized in the EPA-TSD, including all computer models and datasets incorporated therein, had satisfied IQA statutory and administrative requirements. The discussion contained in the Explanation following Section II.3 of ITSSD's new FOIA Request corroborates these commenters' conflict-of-interest concerns.

Additionally, at least five (5) interested stakeholders had argued that the EPA-TSD had failed to meet EPA IQA-implementing guideline requirements because EPA had failed to demonstrate how it had validated the "baseline assumptions" it used to draw conclusions about the impacts of "climate change pressures" on physical and biological systems.[45] Others had argued that the EPA-TSD had failed to meet EPA IQA-implementing guideline requirements because EPA had failed to "explain how [it had] determined the probabilities assigned to climate science and impacts conclusions from the assessment literature."[46] Still, other commenters had claimed that the interagency peer review of the EPA-TSD summarized and synthesized HISAs did not comply with EPA IQA-implementing guidelines because EPA had failed to "identif[y] sources of uncertainty in the climate impacts and models described in the TSD."[47]

In response to all three sets of comments, EPA referred to Section 1.5[48] of "EPA's Response to Comments, Volume 1: General Approach to the Science and Other Technical Issues."[49] In response to the latter two sets of comments, EPA referred to "the same likelihood and probability terminology assigned to climate science findings by the IPCC and USGCRP/CCSP."[50] In addition, it referred stakeholders to the ranges of uncertainty in the "assumptions about future concentrations of GHGs and aerosols in the various scenarios considered by the IPCC and the differing climate sensitivities

of the various climate models used in the simulations."[51] EPA rationalized that its reference to the USGCRP/CCSP and IPCC reports upon which the Administrator's CAA Section 202(a)(1) Findings had relied had been transparent and would enable the reproducibility of such information by third parties. However, EPA has yet to disclose records revealing how it had validated the reproducibility of the assumptions, theories and extrapolations underlying the computer models and datasets supporting such HISAs.[52]

d. EPA Still Needs to Disclose Many Specific Records That Would Reveal Whether EPA Satisfied its Level-Four IQA Obligations

The Explanation following Sections II.4 and III.4 of ITSSD's new FOIA Request discusses the statutory and administrative guidance relevant to the fourth level of EPA's IQA legal obligations. In addition, the Explanation following Section II.4 of ITSSD's new FOIA Request and Section II.3 of the accompanying Addendum also discuss how EPA, to date, has not disclosed many specific records substantiating the IQA compliance of the method chosen by EPA and third parties (other federal agencies, interagency entities (USGCRP/CCSP), NRC and IPCC) for addressing public stakeholder IQA requests for correction ("RFCs")/reconsideration ("RFRs"). Such statutory and administrative guidance obliged EPA to ensure that stakeholders could secure an adequate technical review of the complex scientific and econometric modeling, datasets and underlying theories, assumptions, extrapolations, judgments, etc. contained in the twenty-eight (28) HISAs the EPA-TSD had designated as "core reference documents" supporting the Administrator's CAA Section 202(a)(1) Findings.

These portions of ITSSD's new FOIA Request reveal, however, that EPA and other 'lead' development federal agencies participating in the USGCRP/CCSP had not provided separately for such an administrative review mechanism. Instead, they had treated stakeholder RFC/RFRs as if they were public comments submitted during an APA notice and comment period. Since the interim drafts of USGCRP/CCSP HISAs to be reviewed under APA procedures had typically been "released solely for the purpose of *pre-dissemination* peer review under applicable information quality guidelines," the federal register notices never triggered application of the IQA, and consequently, no distinct technical IQA Section 515(b)(2)(B) administrative review proceeding was ever proffered. These portions of ITSSD's new FOIA Request, furthermore, indicate that EPA, to date, has failed to provide records substantiating how this chosen mechanism satisfied IQA administrative review due process requirements.

Consequently, absent EPA's comprehensive disclosure of the "EPA climate science-related peer review files" clearly identified in ITSSD's new FOIA Request, a significant portion of the American public may reasonably conclude it cannot trust that EPA's climate science-related peer review practices had been in conformance with U.S. law.

In sum, had EPA actually validated/tested whether other federal agencies, the NRC and IPCC vigorously peer reviewed the "major assessments" they or other third parties had developed in conformance with the Information Quality Act and relevant OMB and EPA IQA-implementing peer review, conflicts-of-interest, objectivity/bias, independence and panel balance standards applicable to highly influential scientific assessments ("HISAs"), rather than merely relied upon such third

parties' "reputations" and federal agency representations to the USGCRP, EPA arguably would have discovered these IQA violations. However, since EPA had failed to ensure that the "major assessments" which the agency now cites as primary scientific support for its proposed power plant rule did not engender conflicts-of-interest and other infirmities in violation of the Information Quality Act and applicable binding administrative guidance, Section 2.2.17 of EPA's Peer Review Handbook dictates that another peer review of the NCA3-2014 is required.

II. EPA Cannot Rely on the IPCC's 2013–2014 Fifth Assessment Report (AR5) or the USGCRP's 2014 "Climate Change Impacts in the United States" (Third National Climate Assessment ("NCA3-2014) as the Scientific Foundation For Its Proposed Power Plant Rule, Since EPA & DOC-NOAA Failed to Validate Such Science in Conformance With the Information Quality Act (44 U.S.C. 3516 note)

In addition to the "major assessments" underlying the Administrator's 2009 CAA Section 202(a)(1) Endangerment Findings, EPA also refers to nine (9) scientific assessments released since the finalization of such Findings as providing further scientific support for its proposed power plant rule. EPA describes these as "strengthening the case that GHGs endanger public health and welfare", highlighting the continued rise in atmospheric CO2 concentrations, and "underscor[ing] the urgency of reducing emissions now."[53] The 2014 "'Climate Change Impacts [Third National Climate]' assessment" ("NCA3-2014)" (released by the USGCRP) and the 2014 Intergovernmental Panel on Climate Change Fifth Assessment Report ("IPCC AR5") are among them.

1. *DOC-NOAA's Lead Role in Developing the NCA3-2014 and IPCC-AR5-WGI*

In its capacity as the *de facto* lead U.S. federal agency on climate science, DOC-NOAA[54] played as much a direct *and* indirect instrumental role in the development of the NCA3-2014 and IPCC-AR5-WGI as it previously did in the development of the "major assessments" (including IPCC-AR4-WG1) underlying the EPA Administrator's GHG Endangerment Findings.[55]

As set forth in Appendix 1[56] accompanying these comments, a close inspection of the thirty (30) chapters of NCA3-2014 reveals that approximately seventeen (17) of the seventy (70) (or nineteen percent (19%)) of all federal agency officials who served as "lead convening authors", "lead authors" or "contributing authors" for the NCA3-2014 were DOC-NOAA officials.[57] And, as set forth in Appendix 2[58] accompanying these comments, forty-three (43) of the one hundred (100) (or forty-three percent (43%)) of all federal agency officials who contributed to the development of the IPCC-AR5-WG1 were DOC-NOAA-employed officials.[59] Arguably, DOC-NOAA's and the broader Obama Administration's substantial direct role and influence in the development of the IPCC-AR5 *and* NCA3-2014 to "finesse" the climate "science" supporting EPA's proposed power plant rule heralds this country's subtle and nuanced adoption and facilitation of a new post-modern precautionary science paradigm that focuses more on hazard than risk[60] and requires lesser scientific evidentiary thresholds[61] as the trigger for new regulations. In other words, the modus operandi behind the Clean Air Act-implementing regulations herein proposed to control and mitigate the GHG emissions of coal-fired electric generating units extends to other recently proposed and/or revised EPA and federal agency regulations implementing other EPA and federal agency-administered statutes.[62]

Arguably, Obama Administration (the White House Office of Science and Technology Policy-led USGCRP and Committee on Environment, Natural Resources, and Sustainability (CENRS)) climate change policy influenced the development of the IPCC-AR-5, and the administration's direct and virtual authorship of the NCA3-2014 has had an indelible deleterious impact on the ability of the NRC to properly peer review, and thus, validate the science underlying these assessments. It also raises serious doubts about the ability of federal agency employee-scientists and scientists affiliated with universities participating in DOC-NOAA grant-funded climate science research-related programs/projects who made author-contributors to these reports to have actually demonstrated their intellectual "independence" and avoided subject matter bias. Consequently, the scientific and legal bases for EPA reliance upon these assessments as support for its proposed power plant rule remain tenuous, if not misguided and suspect.

As set forth in Appendices 1 and 5[63] accompanying these comments, an inspection of the thirty (30) chapters of the NCA3-2014 reveals author-contributions from eighty-seven (87) scientists affiliated with no fewer than forty-two (42) universities, nonprofit institutes and activist environmental nongovernmental organizations ("ENGOs") participating in various DOC-NOAA climate science research-related grant funded programs and/or projects. In addition, Appendix 5 reveals author-contributions to IPCC-AR5-WG1 from one hundred ten (110) scientists affiliated with no fewer than thirty-two (32) universities, nonprofit institutes and activist ENGOs participating in various DOC-NOAA climate science research-related grant-funded programs and/or projects.

Moreover, a review of (the yellow-shaded areas of) Appendix 5 reveals that twenty-four (24) of the forty-two (42) universities, nonprofit institutes and activist ENGOs participating in DOC-NOAA grant-funded climate science research-related programs/projects were affiliated with one hundred forty-one (141) scientists who collectively made author contributions to the NCA3-2014 and IPCC-AR5-WG1,[64] with five (5) of these scientists individually preparing author-contributions for *both* the NCA3-2014 *and* IPCC-AR5-WG1.[65] The top five such entities along with their affiliated scientist combined NCA3-2014 and IPCC-AR5-WGI author-contributions are as follows: 1) Columbia Univ. – seventeen (17) contributions; 2) Univ. of Hawaii – fifteen (15)[66] contributions; 3) Scripps Institution of Oceanography – twelve (12) contributions; 4) Univ. of Colorado – twelve (12) contributions; and 5) Univ. of Washington – ten (10) contributions.

The various congressionally approved DOC-NOAA climate science research-related grant-funded programs in which these universities, nonprofit institutes and activist ENGOs participate include the following: 1) numerous Cooperative Institutes Programs;[67] [68] 2) the Climate and Societal Interactions ("CSI") Program,[69] featuring numerous subprograms, including:[70] a) the Coastal and Ocean Climate Applications ("COCA") Program[71] and related funded projects;[72] b) the numerous Regional Integrated Sciences and Assessments ("RISAs") Programs[73] and related funded projects;[74] c) the International Research and Applications Project ("IRAP");[75] d) the Sectoral Applications Research Program ("SARP");[76] and e) the National Integrated Drought Information System ("NIDIS");[77] 3) the Earth System Science (ESS) Program;[78] and 4) the Sea Grant Programs featuring numerous subprograms.[79] In addition to these four major DOC-NOAA grant-funded program platforms, there is also DOC-NOAA's Modeling, Analysis, Predictions, and Projections ("MAPP") Program, for which no funding data[80] is readily publicly accessible.

Several conclusions may be drawn with respect to these findings. At the very least, these findings demonstrate that DOC-NOAA (among other federal agencies) is significantly financially and policy-"invested" in the climate science research of forty-three U.S. universities, nonprofit institutes and activist ENGOs, which have returned in-kind via their scientists' substantive contributions to IPCC AR5 and/or NCA3-2014. This serves several purposes. First, such research drives scientific, legal and political support for EPA's proposed new existing power plant GHG emissions rule which, together with the President's Climate Change Data initiative,[81] helps implement, on a domestic level, the President's Climate Change Action Plan.[82] Second, it helps to ensure the White House will be taken more seriously at international climate change negotiations.[83] Third, such research more broadly drives international political support for the President's Global Climate Change Initiative intended to persuade developing countries to undertake local actions consistent with this regulatory direction and international efforts to secure agreement on a post-Kyoto Protocol GHG multilateral emissions control treaty.[84]

As discussed below in Sections II.2-3 of these comments, the peer review process the NRC, and by extension, DOC-NOAA and EPA, employed to validate the administration "climate science underlying the NCA3-2014 was subject to the provisions of the Information Quality Act and relevant binding OMB and EPA IQA-implementing guidelines. And, as Section II.4 of these comments demonstrates, the failure of the NRC, and by extension, DOC-NOAA and EPA, to identify, disclose and properly address the numerous instances of apparent and/or real conflicts-of-interest and a lack of objectivity (i.e., bias), independence and panel balance violated the letter and spirit of the Information Quality Act and implementing guidance. These IQA violations raise serious doubts that the legal and scientific foundations of the proposed power plant rule are scientifically sound and legally valid.

2. *The DOC-NOAA-Developed Third National Climate Assessment ("NCA3-2014") Report Represents that it is Information Quality Act-Compliant*

While the U.S. Global Change Research Program ("USGCRP") was the "official" author of the NCA3-2014 submitted to the President and Congress consistent with that interagency entity's obligations under the Global Change Research Act of 1990 (15 U.S.C. 56A), the facts demonstrate that the NCA3-2014 had actually been prepared by "more than 300 experts…appointed by the Department of Commerce's National Climate Assessment and Development Advisory Committee (NCADAC)…a federal advisory committee *sponsored by the National Oceanic and Atmospheric Administration* under the requirements of the Federal Advisory Committee Act" (emphasis added).[85] [86] And, although the USGCRP website states that the NCADAC "oversaw the development of the draft climate report,"[87] the NCADAC charter, nevertheless, expressly provides that the DOC-NOAA-directed "committee's specific objective is *to produce* a National Climate Assessment…" (emphasis added).[88]

The NCA3-2014 refers to the Information Quality Act in several places.

On page iv, the report states that,

> "The assessment draws from a large body of *scientific peer-reviewed research*, technical input reports, and other publicly available sources; *all sources meet the standards of the Information Quality Act*. The report was extensively reviewed by the public and experts, including a panel of the National Academy of Sciences, the 13 Federal agencies of the U.S. Global Change Research Program, and the Federal Committee on Environment, Natural Resources, and Sustainability" (emphasis added).[89]

Next, on page 3, the report states that,

> "The report was extensively reviewed and revised based on comments from the public and experts, including a panel of the National Academy of Sciences. The report was reviewed and approved by the USGCRP agencies and the federal Committee on Environment, Natural Resources, and Sustainability (CENRS). *This report meets all federal requirements associated with the Information Quality Act (see Appendix 2: IQA), including those pertaining to public comment and transparency*" (emphasis added).[90]

Thereafter, on page 4, the NCA3-2014 states that "Appendix 2 describes the guidelines used in meeting the terms of the Federal Information Quality Act."[91]

Finally, in Appendix 2, the report provides somewhat more detail regarding the process by which DOC-NOAA and the USGCRP had informed *Author-Contributors* about how to apply Information Quality Act principles in preparing their contributions to NCA3-2014.

> "Throughout the process of drafting this National Climate Assessment, guidance was provided *to contributors, authors, federal advisory committee members, and staff* regarding the requirements of the Information Quality Act (IQA)" (emphasis added).[92]

Appendix 2 identifies three very brief documents that allegedly convey such information: 1) USGCRP, *Preliminary Guidance on Information Quality Assurance in Preparing Technical Input for the National Climate Assessment* (2011); 2) USGCRP, *General Principles Used in the Development of Guidance for Assuring Information Quality in the National Climate Assessment* (2011); and 3) USGCRP, *Guidance on Information Quality Assurance to Chapter Authors of the National Climate Assessment: Question Tools* (2012).[93] Regrettably, none of these documents are publicly accessible via the weblinks provided or via a general internet search, which raises initial questions regarding the NCA3-2014's IQA compliance.

More importantly, the NCA3-2014 fails to discuss the actual peer review processes DOC-NOAA and/or the USGCRP employed to validate the major climate-related science assessments supporting the report in conformance with the Information Quality Act. Instead, the NCA3-2014 makes only a brief indirect conclusory reference on page 3 (as noted above) to the report's having been "extensively reviewed and revised based on comments from the public and experts, *including a panel of the National Academy of Sciences*" (emphasis added).

3. *EPA's Proposed Power Plant Rule and DOC-NOAA's Validation of the Science Supporting it Was Subject to the Most Rigorous and Least Discretionary Peer Review, Conflict-of-Interest, Objectivity/Bias, Independence and Panel Balance Standards Imposed by the IQA and Relevant OMB and EPA IQA-Implementing Guidelines*

The Preamble to OMB's Peer Review Bulletin also provides that, although the Bulletin "does not directly cover information supplied to the government by third parties (e.g., studies by private consultants, companies and private, non-profit organizations, or research institutions such as universities),[94] such third party studies shall fall subject to OMB Peer Review Bulletin requirements if an agency plans to disseminate such third party information as its own and the dissemination is "influential".[95]

Furthermore, Section 5.3 of EPA's IQA Guidelines helps to explain when an agency is deemed to disseminate third party information as its own. It provides that, "[f]or purposes of these Guidelines, EPA disseminates information to the public when EPA initiates or sponsors the distribution of information to the public".[96] Pursuant to these guidelines, EPA is deemed to have initiated a distribution of information to the public if:

> "EPA distributes information prepared or submitted by an outside party *in a manner that reasonably suggests that EPA endorses or agrees with it*[;] EPA indicates in its distribution that the information supports or represents EPA's viewpoint[;] and/or EPA in its distribution proposes to use or uses the information to formulate or support a regulation, guidance, policy, or other Agency decision or position" (emphasis added).[97]

Alternatively, Section 5.8 of EPA's IQA-implementing guidelines provides that,

> "If a particular distribution of information is not covered by these Guidelines, the Guidelines may still apply to a subsequent dissemination of the information *in which EPA adopts, endorses, or uses the information to formulate or support a regulation, guidance, or other Agency decision or position*" (emphasis added).[98]

Furthermore, Section 6.5 of EPA's IQA Guidelines also holds EPA responsible for ensuring the quality of third-party information that EPA uses. It provides that, where EPA obtains information from third parties "for use in developing a policy, regulatory, or other decision,"[99] EPA must cooperate with "other governments, the scientific and technical community, and other interested information providers to develop and publish factors that EPA would use to assess the quality of this type of information."[100]

Moreover, Section 2.2.17 of EPA's Peer Review Handbook sets forth the high standard of *external* peer review with which EPA had been charged to ensure EPA and third-party IQA HISA compliance:

> "Any scientific and/or technical work product that is used in Agency decision making and is considered influential scientific information or *a highly influential scientific assessment* be a candidate for peer review regardless of whether the work product is produced by the Agency or another organization. Therefore, *all work products* important to EPA environmental decision making that are i*ndependently generated by other organizations (e.g., other Federal agencies, interagency groups*, State and Tribal bodies, environmental groups, industry, educational institutions, *international bodies*) need to be considered as candidates for peer review […] *It is hoped* that if the other organization has the work product independently peer reviewed, the peer review will meet the intent of the Agency's Peer Review Policy and EPA's proposed use of the product (i.e., the peer review is basically equivalent to what EPA would do). Agency staff from the appropriate office(s) should examine closely the particulars of the peer review to ensure independence and a conscious effort to incorporate the peer reviewers' comments into the final work product. *If there are perceived, or real, conflicts of interest, this may preclude the use of that peer review and, in those instances, another peer review would be needed*" (underlined emphasis in original; emphasis in italics added).[101]

Thus, reasonable persons may conclude, and as the OMB and EPA IQA-implementing guidelines indicate, EPA ultimately was legally responsible for validating the IQA compliance of the NCA3-2014. To recall, EPA's use of language clearly indicates that the agency has effectively adopted, endorsed and relied upon the findings of the NCA3-2014 as a partial scientific basis for its proposed power plant rule:

> "Since the administrative record concerning the Endangerment Finding closed following the EPA's 2010 Reconsideration Denial, a number of such assessments have been released. These assessments include […] the USGCRP's 2014 'Climate Change Impacts in the United States' (Climate Change Impacts)" [NCA3-2014]…"
>
> "…The EPA has reviewed these new assessments [including NCA3-2014,] and finds that the improved understanding of the climate system they present strengthens the case that GHGs endanger public health and welfare. In addition, these assessments [including NCA3-2014] highlight the urgency of the situation as the concentration of CO2 in the atmosphere continues to rise."
>
> *…The recently released USGCRP 'Climate Change Impacts' assessment [fn to NCA3-2014*] emphasizes that climate change is already happening now and it is happening in the United States. The assessment documents the increases in some extreme weather and climate events in recent decades, the damage and disruption to infrastructure and agriculture, and projects continued increases in impacts across a wide range of peoples, sectors, and ecosystems. These assessments underscore the urgency of reducing emissions now" (emphasis added).[102]

Furthermore, Section III.3.a of OMB's Peer Review Bulletin sets forth certain requirements relating to the review and selection of prospective peer reviewers and the establishment of peer review panels with respect to HISAs that must be made publicly available and accessible. For example,

> "[p]eer reviewers *shall* be selected based on expertise, experience and skills, including specialists from multiple disciplines, as necessary. The group of reviewers *shall* be sufficiently broad and diverse to fairly represent the relevant scientific and technical perspectives and fields of knowledge" (emphasis added).[103]

In addition, Section III.3.b of OMB's Peer Review Bulletin sets forth standards to ensure peer reviewer independence and to prevent conflicts-of-interest:

> "[t]he agency – or the entity selecting the peer reviewers – *shall* (i) ensure that those reviewers serving as federal employees (including special government employees) comply with applicable federal ethics requirements; (ii) in selecting peer reviewers who are not government employees, adopt or adapt the National Academy of Sciences' *policy for committee selection with respect to evaluating the potential for conflicts* (e.g., those arising from investments; agency, employer, and business affiliations; grants, contracts and consulting income). For scientific assessments relevant to specific regulations, a reviewer's financial ties *to* regulated entities (e.g., businesses), other stakeholders, *and the agency shall* be examined" (emphasis added).[104]

These standards apply not only to public disseminations of EPA-developed science, but also to third party-developed science that EPA adopts, endorses, uses and publicly disseminates as its own. Since EPA recognized the DOC-NOAA-developed NCA3-2014 as a "highly influential scientific assessment" warranting the highest level of IQA scrutiny, and adopted, endorsed and used it as primary support for its proposed power plant rule, EPA remains legally responsible for validating whether the peer review of that assessment by third parties satisfied the most rigorous and least discretionary peer review, conflict-of-interest, objectivity/bias, independence and panel balance standards imposed by the Information Quality Act.

4. *EPA Relied Upon the DOC-NOAA-Developed NCA3-2014 as Primary Support for its Proposed Power Plant Rule, But Failed to Validate that the National Research Council's Peer Review of the NCA3-2014 Satisfied the Most Rigorous and Least Discretionary Peer Review, Objectivity/Bias, Conflict-of-Interest, Independence and Panel Balance Standards Imposed by the Information Quality Act*

In an effort to fulfill the relevant data quality requirements to which it was subject under the Information Quality Act and applicable OMB and DOC-NOAA IQA-implementing guidelines, DOC-NOAA had relied upon the National Research Council ("NRC") of the National Academy of Sciences to perform an external peer review of an early draft of the NCA3-2014. The NRC peer review had been performed pursuant to a funded contract entered into between NRC/NAS and NASA on DOC-NOAA's behalf (Contract #NNH07CC79B TO #5).[105] NASA's underwriting of this activity likely fell under the auspices of one of several DOC-NOAA and NASA cooperative

agreements covering the quality, accessibility and sharing of DOC-NOAA climate science research and data.[106]

During mid-2011, The NRC convened a new committee to advise the U.S. Global Change Research Program ("USGCRP"), "and from that committee a subsidiary panel was created with the specific charge of reviewing the draft 2013 NCA report [NCA3-2014]. This panel is composed largely of members of the parent committee, but augmented in areas of key relevance to the NCA."[107] A draft version of the NCA3-2014 report "was released in January 2013 for a 90-day public comment period," during which it received "over 4,000 public comments."[108] The NRC Expert Committee's subsidiary panel (i.e., the "NRC NCA3-2014 Peer Review Panel") conducted its evaluation of the draft report "during the same 12-week period that the draft NCA report was undergoing public review."[109] Two NRC advisory boards assumed "institutional oversight" responsibility for development of the NCA3-2014 peer review report:[110] the Board of Atmospheric Sciences and Climate ("BASC")[111] and the Board on Environmental Change and Society ("BECS").[112]

Section IV of the OMB Peer Review Bulletin implementing the Information Quality Act (with which EPA and DOC-NOAA must comply) provides that, "[a]s an alternative to complying with Sections II and III of this Bulletin [relating to "influential scientific information" ("ISI") and "highly influential scientific assessments" ("HISAs")], an agency may instead…(2) commission the National Academy of Sciences to peer review an agency draft scientific information product…"[113] The OMB Peer Review Bulletin provides, furthermore, that because "[t]he procedures of the NAS are generally quite rigorous…agencies should presume that major findings, conclusions, and recommendations of NAS reports meet the performance standards of this Bulletin."[114] Clearly, EPA regards the NCA3-2014 as a "highly influential scientific assessment" ("HISA") warranting the highest and least discretionary level of IQA scrutiny.[115]

Notwithstanding the presumption of validity that NAS peer review procedures enjoy, commentators have noted how the independent experts the NAS/NRC has commissioned to prepare peer reports of federal agency studies are neither infallible nor always political accountable. For example, allegations of NAS/NRC improprieties have been reported in several cases where politicians and federal agencies had sought advice on environmental and/or natural resource-related science-policy issues that were politically controversial and divisive.[116]

In addition, NRC/NAS improprieties also have been reported in connection with NAS' prior development of studies in the field of toxicology. Based on recently uncovered historical evidence revealed in the July 2014 issue of the peer reviewed journal *Archives of Toxicology*, a renowned toxicologist has alleged that the members of the NAS Biological Effects of Atomic Radiation I (BEAR I) Genetics Panel had been previously "motivated by self-interest to exaggerate risks to promote their science and personal/professional agenda," and in "found[ing]…the linear-no-threshold (LNT) model for cancer risk assessment […] on ideological grounds."[117] This author argues that, "such activities have profound implications for public policy and may have had a significant impact on the adoption of the LNT model for cancer risk assessment"[118] during the past fifty years.

If improprieties of this magnitude can be shown to have permeated as "prestigious" an institution as the NRC/NAS, which EPA Administrator Gina McCarthy recently referred to as the "gold standard" of American science while applauding its support of IQA noncompliant EPA and DOC-NOAA climate assessments,[119] Congress must immediately take action to ensure the credibility and reliability of the peer review processes federal agencies employ recognizing, simultaneously, their inherent limitations. According to one commentator, while "[o]utside peer review should be employed when there is strong reason to doubt the scientific integrity or credibility of an agency decision with important conservation or economic consequences…it should not be considered a panacea."[120]

That the usefulness and reliability of external peer review has remained the subject of ongoing debate[121] only seems to have exacerbated the risk of future episodes of NAS/NRC improprieties or negligence. Although external peer review (of the type provided by the NRC) can and does help to ensure scientific integrity, commentators have noted that "it is an imperfect tool for that purpose. At its best, peer review bears only an indirect relationship to scientific integrity, which is an individual and unverifiable virtue"[122] *not* susceptible to regulation – an issue with which EPA officials[123] and the White House Office of Science, Technology and Policy[124] [125]continue to struggle.[126] The ability of a peer reviewer to discern whether scientists' (authors') judgments fall within acceptable norms depends on whether the peer reviewer devotes sufficient time and effort, possesses "requisite expertise and actively practice[s] the virtues of objectivity and skepticism."[127]

This is especially true where the research results to be peer reviewed involve as politically controversial and divisive[128] and financially lucrative[129] an issue such as climate change.[130] The NRC/NAS proclaims its ostensible objectivity "as a private nonprofit membership organization" serving the government as "an independent advisor on scientific matters."[131] However, recent evidence shows that EPA and DOC-NOAA, in apparent fealty to administration climate policy objectives, have suborned the NRC/NAS' independence and scientific integrity concerning the very same climate change-related science subject matters these federal agencies effectively charged the NRC/NAS to referee/review.[132] In fact, the evidence clearly shows that, during 2010-2014, DOC-NOAA had entered into three (3) financially lucrative contracts/grant awards (Contract #s: DG133R08CQ0062; RA133R-09-SE-4232; and WC133R-11-CQ-0048) with NRC/NAS for the latter to develop thirteen (13) reports[133] in alignment with the very same agency and administration climate change policies and findings discussed in the NCA3-2014, which NCA3-2014 the NRC/NAS was paid to peer review (pursuant to a fourth (4th) DOC-NOAA contract - # NNH07CC79B TO #5). It is more than a coincidence that EPA references three (3) of these reports,[134] in addition to another EPA-funded NRC/NAS report,[135] as primary scientific support for its proposed power plant rule.

The NRC/NAS' actual significant financial stake in supporting EPA, DOC-NOAA and White House climate change policies, including the promulgation of future EPA regulations governing greenhouse gas emissions of existing power plants, raises serious questions concerning the objectivity of the NRC's peer review of the NCA3-2014 and the intellectual independence of DOC-NOAA and other federal agency author-contributors to that assessment. In addition, it is very likely that the process two NRC oversight Boards (i.e., the Board on Atmospheric Sciences and Climate and the Board on Environmental Change and Society) had employed in selecting the members of the NCA3-2014 Peer

Review Panel and Report Review Committee[136] was compromised as the result the incestuous relationships existing between the NRC Board members, DOC-NOAA officials and scientists, and the universities and institutes participating in DOC-NOAA grant-funded climate change research-related programs.

These likely improprieties undermine the usefulness of the NRC conducting an external peer review of the DOC-NOAA-developed NCA3-2014 and of other scientific assessments underlying EPA's economically significant proposed power plant rule. They also militate against accepting the NRC's peer review processes as inherently valid and error-free. In other words, the government's longstanding absolute presumption in favor of NRC peer review processes referenced in the IQA-implementing OMB Peer Review Bulletin, can no longer be justified, and therefore, should be considered rebuttable.

The relevant NRC conflict-of-interest policy rule governing that organization's peer review of the NCA3-2014 states the following:

> "For any committee that will be used by the institution in the development of one or more reports to be provided by the institution to a sponsoring agency for use in a government regulatory process, *the focus of the conflict of interest inquiry is on the identification and assessment of any interests that may be directly affected by the use of such reports in the regulatory process*. For example, if the institution were conducting a study of proposed modifications in [a] government regulation […] the focus of the conflict of interest inquiry would be on the identification and assessment of any interests that would be directly affected by that regulatory process if the institution's report were to provide the basis for regulatory action or inaction" (italicized emphasis in original; underlined emphasis added).[137]

> "…Receiving current research funding from a party that would be directly affected by the regulatory process would constitute a conflict of interest (1) if the research funding could be directly affected by the outcome of the regulatory process or (2) the research is directly related to the subject matter of the regulatory process and the investigator's right to independently conduct and publish the results of the research is limited or controlled by the sponsor" (emphasis added).[138]

The rationale underlying this rule is apparently the "concern…that if an individual (or others with whom the individual has substantial common financial interests) has specific interests (primarily financial) that could be directly affected by the regulatory process, the individual's objectivity could be impaired."[139]

According to this rule, financial interests 'of concern' include research funding potentially affected by the outcome of the regulatory process or otherwise directly related to the subject matter of the regulatory process and controlled by the sponsor:

> "*Receiving current research funding from a party that would be directly affected by the regulatory process would constitute a conflict of interest* (1) if the research

> funding could be directly affected by the outcome of the regulatory process or (2) the research is directly related to the subject matter of the regulatory process and the investigator's right to independently conduct and publish the results of the research is limited or controlled by the sponsor" (emphasis added).[140]

These NRC conflict of interest rules appear broad enough to cover real and apparent individual (researcher) as well as institutional conflicts-of-interest.

A review of the literature discussing these conflict-of-interest categories identifies some of the relationships that may exist between universities, their employees (including academics/scientists) and government agencies. For example, it is not uncommon for university employees, including scientists, to work not only at the university, but also at federally-funded government labs managed by the university. Such university employees also may be assigned temporarily to federal agencies[141] for an initial period of two years which may be extended up to an additional two years.[142] Likewise, federal agency employees may be assigned temporarily to universities under the terms of various types of cooperation agreements. Furthermore, it is not uncommon for university employees, including scientists to be asked by the university or a government agency to perform a peer review of the research of other university employees or of other government agency contractors, no matter whether they work at a university campus or at a university-managed government laboratory.[143]

Moreover, a university employee, including a scientist, also may serve as a consultant to a federal agency or for a government contractor in the same technical field as his/her research project. In that instance, the university employee must avoid rendering "advice that may be of questionable objectivity because of its possible bearing on his other interests, and should fully disclose those interests "to the university and to the contractor insofar as they may appear to relate to the work at the university or for the contractor."[144] When a university "staff member engaged in government-sponsored research also serves as a consultant to a federal agency, such conduct is subject to the conflict-of-interest provisions in the Federal Criminal Code (18 U.S.C. Sec. 202 et seq.) and the conflict-of-interest regulations adopted by the National Institutes of Health, the Public Health Service, and the National Science Foundation."[145] While the NSF individual conflict-of-interest rules require disclosure of all "significant financial interests", they exclude from this definition "income from service on advisory committees or review panels for public or nonprofit entities."[146]

According to a 2011 report issued by the Department of Human Health and Services ("DHHS") Office of Inspector General ("OIG"), the National Institutes of Health grant research policy provides that "an institutional conflict of interest may arise when an institution's own financial interests (e.g., royalties, equity, stockholdings, and gifts) or those of its senior officials pose a risk of undue influence on decisions involving the institution's research."[147] The report contained the results of a survey DHHS-OIG conducted of 250 NIH grantee institutions. It found that fifty-nine (59) of the one hundred fifty-six (156) responding institutions had "defined in writing what constitutes an institutional conflict." These institutions typically defined institutional conflicts as "*financial interests that could affect the research, decisionmaking, loyalty, or objectivity of either the institution or individuals*" (emphasis added).[148] Fifteen (15) of the fifty-nine (59) institutions which also had written conflict of interest policies and processes and had identified the existence of actual financial conflicts-of-interest, found that the "most common type of institutional conflict was

institutions' holding equity in non-publicly held companies. For institutions that identified institutional conflicts, the strategy most often used to address them was disclosure."[149]

In the absence of "[f]ederal regulations requir[ing] grantee institutions to identify and report institutional conflicts to NIH", and the consequent inability of NIH to discern "the number of institutional conflicts that exist among its grantee institutions and the impact these conflicts may have on NIH-sponsored research" (i.e., biased research results),[150] the DHHS-OIG recommended that NIH: 1) should "[p]romulgate regulations that address institutional financial conflicts of interest;"[151] 2) should continue to "require grantee institutions to identify, report, and address institutional conflicts in a consistent and uniform manner to NIH";[152] and 3) "should encourage grantee institutions to develop policies and procedures regarding institutional financial interests and conflicts" until such regulations are enacted."[153]

The DHHS-OIG report findings are compelling insofar as they indicate that an institutional conflict-of-interest can be rather broad in scope and involve the direct *as well as* indirect financial interests of *the institution*. This is reflected, for example, in Northwestern University's conflicts-of-interest policy. It defines an "institutional conflict-of-interest in research" as engendering "[a] situation in which an Institutional Research Interest [e.g., ensuring the "integrity in the conduct of research"] may be affected – or could reasonably appear to be affected – by Institutional Financial Interests."[154] Institutional financial interests are defined as "[p]ayments to the University for, or resulting from the conduct of, research at or under the auspices of the University which exceed $100,000 (either per transaction or in the aggregate) [and…] *include income from sponsored research projects*" (emphasis added).[155]

These findings, furthermore, underscore the urgency for both government agencies and universities to address institutional as well as individual researcher conflicts-of-interest to maintain the credibility of the scientific peer review process, and American science more generally. As the author of a recent Wall Street Journal op-ed article lamented, the corruption of the peer review process at many prestigious scientific journals is harming scientific credibility. In particular, he discussed the growing trend of scientist-authors exploiting the peer review processes employed by many scientific publishers to ensure that their papers secured a positive review for placement in their journals.[156] Consequently, this author admonished the public concerning the genuine risk that errors in the peer review process at scientific journals "can have serious consequences if bad science leads to bad [government] policy."[157] As support for this proposition, he emphasized how such practices also have permeated and pervaded the National Academy of Science.[158]

Indeed, the peer reviews the NRC previously had performed of six DOC-NOAA-developed "major assessments" underlying the Administrator's 2009 GHG Endangerment Findings, as discussed in Section I.1.b of these comments, and more recently, of the DOC-NOAA-developed NCA3-2014 were also marked by improprieties. These improprieties, which consisted of numerous institutional conflicts-of-interest and instances of subject matter bias, lack of independence and peer review panel imbalance, constitute a prime example of how the NRC's, and by extension, DOC-NOAA's and EPA's violation of the Information Quality Act can lead to flawed government policy.

A close inspection of the composition of the Peer Review Panel formed mostly from the members of the Expert Committee to Advise the U.S. Global Change Research Program, for example, reveals the following findings. Appendix 6[159] accompanying these comments shows that nine (9) of the twenty-one (21) NRC NCA3-2014 Peer Review Panel members were affiliated with universities and nonprofit institutes participating in various DOC-NOAA granted funded programs. These persons and organizations include: 1) Charles Vorosmarty of City University of New York (participating in two programs); 2) Thomas Dietz of Michigan State University (participating in two programs); 3) Mark Abbott of Oregon State University (participating in six programs); 4) Robin Leichenko of Rutgers University (participating in three programs); 5) Susan Avery of Woods Hole Oceanographic Institute (participating in two programs); 6) Kathleen Tierney of University of Colorado (participating in two programs); 7) Kathleen Segerson of University of Connecticut (participating in one program); 8) Evan Delucia of University of Illinois-Urbana (participating in two programs); and 9) Maria Carmen Lemos of University of Michigan (participating in three programs).[160]

Such affiliations strongly suggest that these institutions' financial interests in DOC-NOAA programs/projects could be positively or negatively affected by (i.e., were intertwined with) affiliated panel member comments and the NCA3-2014 Peer Review Panel's findings overall, and by whether or not EPA's proposed power plant rule in its current form based largely on DOC-NOAA-funded climate science-related research ultimately becomes law. The failure on the part of the NRC, and by extension, DOC-NOAA and EPA, to identify, disclose and properly address these apparent, if not, real incidents of institutional conflicts-of-interest, subject matter bias and lack of intellectual independence constituted clear violations of the Information Quality Act and relevant OMB and EPA IQA-implementing guidelines.

Appendix 5[161] accompanying these comments shows that five (5) of these nine (9) universities had thirty-three (33) other affiliated scientists who collectively made author-contributions to the NCA3-2014 *and* the IPCC-AR5-WGI, three (3) of whom *individually* made contributions to *both* assessments.[162] In addition, Appendix 5 shows that five (5) scientists from three other of these nine (9) universities had made contributions to *either* the NCA3-2014 *or* the IPCC-AR5-WGI. The failure on the part of the NRC, and by extension, DOC-NOAA and EPA, to identify, disclose and properly address these apparent, if not, real incidents of institutional conflicts-of-interest, subject matter bias and lack of intellectual independence also constituted clear violations of the Information Quality Act and relevant OMB and EPA IQA-implementing guidelines.

Appendix 6, furthermore, shows at least one NRC NCA3-2014 Peer Review Panel member who had no university-affiliated colleagues that had made a contribution to either the NCA3-2014 or the IPCC-AR5-WGI (Katherine Segerson of Univ. of Connecticut). However, said panel member's comments could still have been influenced by the university's vested financial interest in its ongoing participation in DOC-NOAA grant-funded programs. The NRC, and by extension, DOC-NOAA and EPA, were responsible for adequately vetting this panel member as well. Therefore, these agencies' failure to publicly demonstrate they had done so to ensure this panel member's subject matter objectivity and intellectual independence was a clear violation of the IQA and relevant IQA-implementing guidelines.

Furthermore, Appendix 6 reveals that two (2) other of the twenty-one (21) NRC NCA3-2014 Peer Review Panel members who were affiliated with a university (Univ. of Texas) not readily known to participate in herein identified DOC-NOAA grant-funded programs, nevertheless, had one colleague that had made a contribution to the NCA3-2014 and two additional colleagues that had served as author-contributors to the IPCC-AR5-WGI. This suggests, at the very least, a possible issue of subject matter bias at the institutional and individual levels and a lack of intellectual independence that the NRC, and by extension, DOC-NOAA and EPA, should have identified, disclosed and adequately addressed. However, the lack of publicly accessible information about the process the NRC oversight boards employed to select these Peer Review Panel members leaves reasonable persons to doubt this issue had been handled properly, if at all.

Moreover, Appendix 2[163] accompanying these comments shows that two (2) other of the twenty-one (21) NRC NCA3-2014 Peer Review Panel members are federal agency-employed scientists (Warren Washington of NCAR/NSF and Doug Arent of DOE). In addition, Appendix 3[164] accompanying these comments show that these scientists had seven (7) and twelve (12) agency colleagues, respectively, that had made contributions to the NCA3-2014, and sixteen (16) and twenty-five (25) agency colleagues, respectively, that had made contributions to the IPCC-AR5-WGI. Considering the need for consistency of policy position within and among federal agencies, these affiliations raise serious questions about the subject matter objectivity and intellectual independence of these government scientists who served as members of the Peer Review Panel.

In sum, the proffered evidence strongly suggests that no fewer than thirteen (13) of the twenty-one (21) members (i.e., approximately sixty-two percent (62%)) of the NRC NCA3-2014 Peer Review Panel had suffered conflicts-of-interest and/or instances of subject matter bias and lack of independence that the NRC, and by extension, DOC-NOAA and EPA, had failed to identify, disclose and properly address. These infirmities in the peer review selection process resulted from such panel members' affiliations either with universities and/or nonprofit institutes participating in DOC-NOAA grant-funded climate science research-related programs/projects, *or* from such panelists' affiliations with university, nonprofit institute or federal agency colleagues who had made, in some cases, numerous contributions to the NCA3-2014 and/or the IPCC-AR5-WGI. The greater-than-fifty percent (50%) ratio of outstanding panel issues strongly suggests that the NRC NCA3-2014 Peer Review Panel also was not likely well-balanced with an equal number of members holding majority/popular and minority/unpopular views regarding the credibility of the climate science subject to peer review. This, too, constitutes a violation of the Information Quality Act and the relevant OMB and EPA IQA-implementing guidelines. The NRC, and by extension, DOC-NOAA and EPA, bore a primary responsibility for satisfying these standards which have yet to be fulfilled.

A close inspection of the composition of the small group of seven (7) scientists selected by the NRC's Report Review Committee[165] to evaluate the conclusions drawn by the NRC NCA3-2014 Peer Review Panel report reveals the following findings. Appendix 7[166] accompanying these comments shows that five (5) of seven (7) NRC NCA3-2014 Peer Review Panel report reviewers had been affiliated with universities participating in DOC-NOAA grant-funded climate science research-related programs. These persons and universities include: 1) Stephen Carter of the Univ. of Wisconsin (participating in three programs); 2) Elisabeth Drake of the Massachusetts Institute of

Technology (participating in one program); 3) Paul Falkowski of Rutgers University (participating in three programs); 4) Eke Weber of Columbia University (participating in four programs); and 5) David Lobell of Stanford University (participating in one program). Such affiliations strongly suggest that these institutions' financial interests could be positively or negatively affected by (i.e., were intertwined with) such reviewers' reviewers' individual and collective, and by whether or not EPA's proposed power plant rule based largely on DOC-NOAA-funded climate science-related research ultimately becomes law. These affiliations also suggest that individual NCA3-2014 reviewers were likely biased and/or not sufficiently intellectually independent to make an objective determination regarding the NCA3-2014 Peer Review Panel findings. The failure on the part of the NRC, and by extension, DOC-NOAA and EPA, to identify, disclose and properly address these apparent, if not, real incidents of institutional conflicts-of-interest, subject matter bias and lack of intellectual independence constituted clear violations of the Information Quality Act and relevant OMB and EPA IQA-implementing guidelines.

Appendices 5 and 7 accompanying these comments reveal that three (3) of these five (5) NRC NCA3-2014 Peer Review Panel report reviewers were not only affiliated with universities participating in DOC-NOAA grant-funded climate science research-related programs, but also had university colleagues that had contributed to *both* the NCA3-2014 *and* the IPCC-AR5-WGI. Eke Weber of Columbia Univ., by far, had the most university colleagues (i.e., seventeen (17)) that had contributed to both the NCA3-2014 and the IPCC-AR5-WGI. In addition, Appendices 5 and 7 show that two (2) other of these five (5) reviewers affiliated with universities participating in DOC-NOAA grant-funded climate science research-related programs/projects (i.e., Paul Falkowski of Rutgers Univ. and David Lobell of Stanford Univ.), had three (3) university-affiliated colleagues that had contributed, respectively, either to the IPCC-AR5-WG-I or the NCA3-2014. These affiliations, as well, demonstrate the existence of apparent, if not real institutional conflicts-of-interest, subject matter bias and lack of intellectual independence which the NRC, and by extension, DOC-NOAA and EPA, were required to identify, disclose and properly address. The failure on the part of the NRC, and by extension, DOC-NOAA and EPA, to identify, disclose and properly address these apparent, if not, real incidents of institutional conflicts-of-interest, subject matter bias and lack of intellectual independence constituted clear violations of the Information Quality Act and relevant OMB and EPA IQA-implementing guidelines.

Moreover, Appendices 6 and 7 reveal that two (2) NRC NCA3-2014 Peer Review Panel report reviewers affiliated with Rutgers Univ., which participates in three DOC-NOAA grant-funded climate science research-related programs, had also served on the NRC NCA3-2014 Peer Review Panel. This strongly suggests that even though Rutgers Univ. did not have a university-affiliated scientist who had made author-contributions to the NCA3-2014, the university, nevertheless, retained a significant indirect financial stake in the outcome of NRC deliberations at the peer review report development and review stages to try and affect whether EPA's proposed power plant rule becomes law. For example, it is more than possible that Rutgers Univ., through liaison with panel member Robin Leichenko and reviewer Paul Falkowski, had endeavored to ensure that peer review panel and peer reviewer determinations with respect to the NCA3-2014 did not conflict with either the DOC-NOAA-developed NCA3-2014 assessment findings, or the IPCC-AR5-WGI findings incorporating the contributions of three Rutgers-affiliated scientists, as described in Appendices 5 and 7. By helping to ensure a positive outcome at the NRC, Rutgers university could help to

maintain its ongoing ability to participate in current and future DOC-NOAA grant-funded climate science research-related programs. The placement of Rutgers Univ.-affiliated scientists at both of these NRC review levels also strongly suggests that such individuals were not intellectually independent from their university and federal agency sponsors and that, consequently, their views regarding the climate science issues and findings discussed in the NCA3-2014 which they reviewed were other than objective. The failure on the part of the NRC, and by extension, DOC-NOAA and EPA, to identify, disclose and properly address these apparent, if not, real incidents of institutional conflicts-of-interest, subject matter bias and lack of intellectual independence constituted clear violations of the Information Quality Act and relevant OMB and EPA IQA-implementing guidelines.

In sum, the proffered evidence strongly suggests that no fewer than five (5) of the seven (7) members (i.e., approximately seventy-one percent (71%)) of the small group of scientists charged with reviewing the NRC NCA3-2014 Peer Review Panel report had suffered conflicts-of-interest and/or instances of subject matter bias and lack of independence that the NRC, and by extension, DOC-NOAA and EPA, had failed to identify, disclose and properly address. Clearly, these infirmities in the NRC Report Review Committee's selection process had resulted, in part, from the selected scientists' affiliations either with universities participating in DOC-NOAA grant-funded climate science research-related programs, or from their affiliations with university colleagues who had made contributions to the IPCC-AR5-WGI. Arguably, these infirmities also resulted, in part, from the affiliations that nine (9) of the thirty-one (31) members (i.e., twenty-nine percent (29%)) of the NRC Report Review Committee themselves had with universities participating in DOC-NOAA grant-funded climate science research-related programs/projects, and with scientist colleagues from such universities who had made author-contributions to the NCA3-2014. These members, who possessed experience in diverse scientific disciplines, included: 1) Huda Ailk, Univ. of Michigan; 2) May Berenbaum, Univ. of Illinois; 3) Floyd Bloom, Scripps Institution; 4) Mark Cullen, Stanford Univ.; 5) Marcie Rieke, Univ. of Arizona; 6) Stephen Robinson, Univ. of Wisc.; 7) Michael Goodchild, UC-Santa Barbara; 8) Bonnie McCay, Rutgers Univ.; and 9) Brian Strom, Rutgers Univ. And, a tenth member of the NRC Report Review Committee was a scientist-employee of NCAR-NSF *and* a member of the NRC NCA3-2014 Peer Review Panel.[167]

The greater-than-fifty percent (50%) ratio of outstanding reviewer group issues strongly suggests that this small group, which had been charged with reviewing the NRC NCA3-2014 Peer Review Panel report, was not likely well-balanced with an equal number of members holding majority/popular and minority/unpopular views regarding the credibility of the climate science subject to peer review. This, too, constitutes a violation of the Information Quality Act and the relevant OMB and EPA IQA-implementing guidelines. The NRC, and by extension, DOC-NOAA and EPA, bore a primary responsibility for satisfying these standards which have yet to be fulfilled.

A close inspection of the composition of the two NRC Boards charged with oversight of the NRC's peer review of NCA3-2014 – the Board of Atmospheric Sciences & Climate ("BASC") and the Board of Environmental Change & Society ("BECS") – also show disturbing levels of apparent conflicts-of-interest. The close affiliations between the Boards' members, some NRC NCA3-2014 Peer Review Panel members, university colleagues that submitted author-contributions to the NCA3-2014 and DOC-NOAA likely gave rise to lax oversight standards that emboldened various

universities and/or individuals to compromise personal integrity in favor of more highly valued financial, ideological and/or reputational interests in promoting EPA and DOC-NOAA (i.e., Obama Administration) climate change policy.

Appendix 9[168] accompanying these comments clearly shows, for example, that BASC member David Robinson, an author-contributor to the IPCC-AR5-WGI, was affiliated with Rutgers Univ., a university participating in DOC-NOAA grant-funded climate science research-related programs, and with Rutgers colleague and NRC Peer Review Panel member, Robin Leichenko. Appendix 8 also illustrates how eight (8) other BASC members were affiliated with universities participating in DOC-NOAA grant-funded climate science research-related programs/projects *and* with colleagues that had made contributions to the NCA3-2014. These members include: 1) Antonio Busalacchi, Jr. of Univ. of Maryland, involving four NCAS-2014 contributors; 2) Kirstin Dow of Univ. of South Carolina, involving two NCA3-2014 contributors, *including her*; 3) Lisa Goddard of Columbia Univ., involving two NCA3-2014 contributors; 4) Anthony Janetos of DOE/Univ. of Maryland, involving four NCAS-2014 contributors (see Appendices 3 and 9); 5) John Kutzbach of Univ. of Wisconsin, involving one NCA3-2014 contributor; 6) Stephen Pacala of Princeton Univ., involving one NCA3-2014 contributor; 7) John Snow of Univ. of Oklahoma, involving one NCA3-2014 contributor; and 8) Xubin Zeng of Univ. of Arizona, involving five NCA3-2014 contributors. In all, nine (9) of twenty-two (22) (i.e., forty-one percent (41%) of) BASC members had relationships that gave rise to apparent, if not real institutional conflicts-of-interest, negligible subject matter objectivity and a likely relaxed atmosphere at the NRC NCA3-2014 Peer Review Panel and the NCA3-2014 Peer Review Panel report reviewer group.

Appendix 10[169] accompanying these comments clearly shows that two (2) BECS members, Arun Agrawal and Maria Carmen Lemos of Univ. of Michigan, a university participating in DOC-NOAA grant-funded climate science research-related programs, were affiliated with four university colleagues that had made NCA3-2014 author-contributions, and that Maria Carmen Lemos also served on the NRC NCA3-2014 Peer Review Panel. Appendix 10 also illustrates that two (2) other BECS members were affiliated with universities participating in DOC-NOAA grant-funded climate science research-related programs, had themselves made NCA3-2014 author-contributions, and were affiliated with university colleagues that had made NCA3-2014 author contributions. These members include: 1) Richard Moss of Univ. of Maryland and 2) Dennis Ojima of Colorado State Univ. Appendix 10, furthermore, shows two (2) additional BECS members who, while not affiliated with universities participating in DOC-NOAA grant-funded climate science research-related programs, nevertheless, had made NCA3-2014 author-contributions. These include: 1) Kristie Ebi of IPCC/ClimAdapt, LLC; and 2) Gary Yohe of Wesleyan Univ. Gary Yohe, moreover, was one of *the* three editors of the NCA3-2014, and one of two NCADAC Vice Chairs.[170] Finally, Appendix 10 shows three (3) additional BECS members affiliated with universities participating in DOC-NOAA grant-funded climate science research-related programs, who, while not having themselves made NCA3-2013 author-contributions, were affiliated with university colleagues that had made such contributions. These members include: 1) Ruth Defries of Columbia Univ.; 2) Stephen Polasky of Univ. of Minnesota; and 3) James Sweeney of Stanford Univ. In all, nine (9) of twelve (12) (i.e., seventy-five percent (75%) of) BECS members had relationships with each and other and third parties that gave rise to apparent, if not real institutional conflicts-of-interest, negligible subject

matter objectivity, and a likely relaxed atmosphere at the NRC NCA3-2014 Peer Review Panel and the NCA3-2014 Peer Review Panel report reviewer group.

Ultimately, there appears to be a virtuous circle of institutional conflicts-of-interest impacting the individual performances of numerous parties including scientists. DOC-NOAA continues to develop and facilitate generous grant-funded climate science research-related programs and projects that it offers and/or makes available to universities, nonprofit institutes, activist ENGOs and affiliated research scientists to help further agency and administration domestic and international climate change policy. These entities and persons are all-too-eager to participate in such programs and projects and to provide climate science research findings in exchange therefor, given the lucrative financial, reputational and travel benefits such contracts often engender. The NRC/NAS also derives financial and reputational benefits from the contracts it secures and maintains with DOC-NOAA and other federal agencies, such as to peer review the DOC-NOAA-NACDAC developed Third National Climate Assessment (NCA3-2014) and the six climate assessments DOC-NOAA and its established federal advisory committees had previously developed to satisfy U.S. Global Change Research Program ("USGCRP") statutory obligations and EPA's need to reach greenhouse gas endangerment findings pursuant to the Clean Air Act for regulatory purposes. Assuming the peer review work of the NRC/NAS meets with the approval of these federal agency clients, the NRC/NAS derives further financial benefits from entering into separate contracts with DOC-NOAA and EPA (and other federal agencies) to originate/develop climate science-related assessments which such agencies may use as the scientific foundation for their planned, proposed and/or amended regulation-related activities. To this end, the NRC/NAS's Expert Committee to Advise the USGCRP, Report Review Committee, and oversight boards (e.g., the Board on Atmospheric Sciences & Climate and the Board on Environmental Change & Society) are all incentivized to promote an outcome that is 'positive' for their federal agency clients. While these activities may not flow in the precise sequence herein described they nevertheless mutually reinforce each other at one or more levels. Simultaneously, university, nonprofit institute and activist ENGO research staff, individual scientists, NRC/NAS staff, and federal agency staff, scientists and officials derive tangible as well as intangible benefits by fostering and maintaining these institutional relationships which further incentives all the parties involved to keep this 'gravy train' operating at peak performance.

Arguably, had NRC Commissioners actually employed NAS's acclaimed screening mechanisms, they should have been able to discern whether the research and other (e.g., financial, ideological and reputational) interests of prospective NCA3-2014 peer reviewers and second-level reviewers had been indirectly aligned or otherwise coterminous with those of NCA3-2014 author-contributors, NRC oversight board members, and the financial interests of the institutions (universities and nonprofit institutes) with which such persons are/were affiliated. And this inquiry should have been undertaken prior to the selection of NRC peer review panelists and panel report reviewers *as well as* during the course of their peer review activities. However, this would have depended, in turn, on whether sufficient time, effort, expertise and objectivity had been devoted to such endeavors. Clearly, this remains and always has been an issue of *personal integrity*. And, due to an apparent lack of personal integrity at the NRC/NAS, the organization's peer review processes, once again, have proven themselves unworthy of an absolute presumption of scientific and legal validity.

Had DOC-NOAA and EPA actually validated/tested whether the NRC vigorously peer reviewed the NCA3-2014 in conformance with the Information Quality Act and relevant OMB and EPA IQA-implementing peer review, conflicts-of-interest, objectivity/bias, independence and panel balance standards applicable to highly influential scientific assessments ("HISAs"), rather than merely relied upon the NRC's "reputation" and DOC-NOAA's representations to the USGCRP, EPA arguably would have discovered these IQA violations. However, since EPA had failed to ensure that the DOC-NOAA-developed NCA3-2014 which the agency now cites as primary scientific support for its proposed power plant rule did not engender conflicts-of-interest and other infirmities in violation of the Information Quality Act and applicable binding administrative guidance, Section 2.2.17 of EPA's Peer Review Handbook dictates that another peer review of the NCA3-2014 is required.

III. Conclusion

EPA is legally precluded from relying on the "major" climate assessments and computer modeling applications supporting the EPA Administrator's Clean Air Act Section 202(a)(1) Greenhouse Gas Endangerment Findings or the Third National Climate Assessment as the scientific foundation for its Proposed Power Plant Rule, since EPA & DOC-NOAA failed to validate such science in conformance with the Information Quality Act (44 U.S.C. 3516 note) and relevant binding OMB and EPA IQA-implementing administrative guidance.

END

Appendix 1:
Author-Contributors to 2014 USGCRP Climate Change Impacts Report
(Third National Climate Assessment – NCA3-2014)

USG Scientist/Agency Scientist/Other Gov't	Scientist/University Affiliation	DOC-NOAA Grant-Funded Program	DOC NCADAC Fed'l Advisory Comm. Role(s); NRC/NAS Role	IPCC-AR5-WGI Author-Contributor
CHAPTER 2				
	John Walsh/ Univ. of Alaska-Fairbanks (Convening Lead Author)	Coop. Institutes (CICS-P), (CIFAR); RISA Program (ACCAP); Sea Grant Program		
	Donald Wuebbles/ Univ. of Illinois-Urbana (Convening Lead Author)	Coop. Institutes (CILER); Sea Grant Program	NCADAC Exec. Secretariat Member	x
	Katherine Hayhoe/Texas Tech Univ. (Lead Author)			
James Kossin/DOC-NOAA (Lead Author)				x
	Kenneth Kunkel/ North Carolina State Univ. (Lead Author)	Coop. Institutes (CICS-M); RISA Program (SECC), (CISA); Sea Grant Program		
Graeme Stephens/NASA (Lead Author)				x
	Peter Thorne/Nansan Enviro & Remote Sensing Ctr., Univ. of Bergen (Norway) (Lead Author)			
Russell Vose/DOC-NOAA (Lead Author)				
Michael Wehner/DOE (Lead Author)				x
Josh Wills/NASA (Lead Author)				
David Anderson/ DOC-NOAA (Author-Contributor)				
	Scott Doney/Woods Hole Ocean (Author-Contributor)	Coop. Institutes (CINAR); Sea Grant Program		x
Richard Feely/DOC-NOAA (Author-Contributor)				x
	Paula Hennon/ North Carolina State Univ. (Author-Contributor)	Coop. Institutes (CICS-M); RISA Program (SECC), (CISA); Sea Grant Program		
Viatcheslav Kharin/ Canada Ctr Climate Model (Author-Contributor)				
Thomas Knutson/				x

DOC-NOAA (Author-Contributor)				
Felix Landerer/NASA (Author-Contributor)				x
	Tim Lenton/Exeter Univ. (Author-Contributor)			
John Kennedy/ UK Met Office (Contributing Author)				
	Richard Somerville/ Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		
CHAPTER 3				
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Paul Fleming/ Seattle Public Utilities (Convening Lead Author)			NCADAC Member	
Michael Dettinger/ DOI/USGS (Lead Author)				
Christa Peters-Lidard/ NASA (Lead Author)				
	Terese Richmond/Van Ness Feldman, LLP (Lead Author)			
	Ken Reckhow/ Duke Univ. (Lead Author)	Coop. Institutes (CICS-M)		
Kathleen White / US Army Corps (Lead Author)				
David Yates/NCAR-NSF (Lead Author)				
CHAPTER 4				
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	Guido Franco/ Calif. Energy Comm. (Lead Author)		NCADAC Member	
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Thomas Wilbanks/DOE (Lead Author)				

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	Michael Kuby/Arizona State Univ. (Lead Author)			
	Clinton Oster/Indiana Univ. (Lead Author)			
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Edmond Russo/US Army Corps (Lead Author)				
Arthur Rypinski/DOT (Lead Author)				
CHAPTER 6				
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	Gene Takle/Iowa State Univ. (Convening Lead Author)			
	Richard Grotjahn/ UC-Davis (Lead Author)	Coop. Institutes (CIMEC)		
	Patrick Holden/Waterborne Enviro Inc. (Lead Author)			
R. Cesar Izaurralde/DOE (Lead Author)				
	Terry Mader/Univ. of Nebraska (Lead Author)			
Elizabeth Marshall/USDA (Lead Author)				
	Diana Liverman/ Univ. of Arizona (Lead Author)	RISA Program (CLIMAS); SARP		
CHAPTER 7				
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	Steven Running/ Univ. of Montana (Convening Lead Author)			
	David Breshears/ Univ. of Arizona (Lead Author)	RISA Program (CLIMAS); SARP		
Virginia Dale/DOE (Lead Author)				

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	R. Neil Sampson/Vision Forestry (Lead Author)			
	Brent Sohngen/ Ohio State Univ. (Lead Author)	Coop. Institutes (CILER); COCA Program; RISA Program (GLISA); Sea Grant Program		
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CHAPTER 8				
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	Peter Kareiva/ Nature Conservancy (Convening Lead Author)	NOAA 4-Year Agreement to Protect Coral Reefs;[171] NOAA ARRA[172] Coastal Habitat Restoration Fundi	NCADAC Member	
Shawn Carter/ DOI-USGS (Lead Author)				
	Nancy Grimm/Arizona State Univ. (Lead Author)			
	Josh Lawler/ Univ. of Washington (Lead Author)	Coop. Institutes (JISAO); RISA Program (CNAP), (CIRC); NIDIS Program; Sea Grant Program		
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	Howard Frumkin/ Univ. of Washington (Lead Author)	Coop. Institutes (JISAO); RISA Program (CNAP), (CIRC); NIDIS Program		
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	Kristie Ebi/ClimAdapt Ltd. (Author-Contributor)			
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CHAPTER 10				
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	Tom Wilson/Electric Power Research Institute (Convening Lead Author)			
	Kristen Averyt/ Univ. of Colorado (Lead Author)	Coop. Institutes (CIRES); RISA Program (WWA)		
	Robert Hariss/ Environmental Defense Fund (Lead Author)			
Robin Newmark/DOE (Lead Author)				
	Steven Rose/ Electric Power Research Ltd. (Lead Author)			
	Elena Shevliakova/ Princeton Univ. (Lead Author)	Coop. Institutes (CICS-M), (CICS-P); NIDIS Program; NJ Sea Grant Program		
Vincent Tidwell/DOE (Lead Author)				
CHAPTER 11				
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	(Convening Lead Author)	Grant Program		
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Nancy Bragado/City of San Diego (Lead Author)				
	Joann Carmin/ Mass. Institute of Technology (Lead Author)	Sea Grants Program		
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CHAPTER 12				
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	Patricia Cochran/ Alaska Native Science Comm. (Lead Author)			
	Robert Gough/ Intertribal Council (Lead Author)			
	Kathy Lynn/ Univ. of Oregon (Lead Author)	RISA Program (CIRC)		
Julie Maldnado/ NCAR-NSF (Lead Author)				
	Garrit Voggesser/ National Wildlife Federation (Lead Author)	NOAA Grant # NA10NMF4630088 [173] and unspecified NOAA grant[174]		
	Susan Wotkyns/ Northern Arizona Univ. (Lead Author)			
	Karen Cozzetto/ Univ. of Colorado (Author-Contributor)	Coop. Institutes (CIRES); RISA Program (WWA)		
CHAPTER 13				
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	Paul Bolstod/	Coop. Institutes (CILER); Sea		

	Univ. of Minnesota (Lead Author)	Grant Program		
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	David Hulse/ Univ. of Oregon (Lead Author)	RISA Program (CIRC)		
	Roger Kroh/ Mid-America Regional Coun. (Lead Author)			
Thomas Loveland/DOI (Lead Author)				
Allison Thomson/DOE (Lead Author)				
CHAPTER 14				
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	Joseph Molnar/ Auburn Univ. (Lead Author)	RISA Program (WWA); Miss.-Alabama Sea Grant Program		
	Lois Wright Morton/Iowa State Univ. (Lead Author)			
	Marcela Vasquez/ Univ. of Arizona (Lead Author)	RISA Program (CLIMAS) ; SARP Program		
Jenna Jadin/USDA (Lead Author)				
CHAPTER 15				
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	William Schlesinger/Cary Inst. (Convening Lead Author)			
	Nancy Grimm/Arizona State Univ. (Lead Author)			
	Robert Jackson/ Duke Univ. (Lead Author)	Coop. Institutes (CICS-M)		
	Beverly Law/ Oregon State Univ.	Coop Institutes (CICS-M), (CIOSS), (CIMRS); COCA		

		Program; RISA Program (CIRC); Sea Grant Program		
Peter Thorton/DOE (Lead Author)				x
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CHAPTER 16				
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	William Easterling/ Penn State Univ. (Lead Author)	Coop. Institutes (CILER); SARP Program; Sea Grant Program		
	Robert Kates/ Univ. of Maine (Lead Author)	Sea Grant Program		
	Matthias Ruth/Northeastern Univ. (Lead Author)			
	Edna Sussman/Fordham Univ. (Lead Author)			
	Adam Whelchel/ Nature Conservancy (Lead Author)	NOAA 4-Year Agreement to Protect Coral Reefs; NOAA ARRA Coastal Habitat Restoration Fundi		
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Frederick Lipschultz/NASA (Author-Contributor)				
CHAPTER 17				
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	Leonard Berry/ Florida Atlantic Univ. (Lead Author)	Coop. Institutes (CIMAS), (CIOERT)		
Virginia Burkett/DOI-USGS (Lead Author)				
James Murley/ So. Florida Regional				

Planning (Lead Author)				
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Louis Iverson/DOI-USFS (Lead Author)				
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	John Antle/ Oregon State Univ. (Lead Author)	Coop Institutes (CICS-M), (CIOSS), (CIMRS); COCA Program; RISA Program (CIRC); Sea Grant Program		
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	Renne McPherson/ Univ. of Oklahoma (Lead Author)	RISA Program (SCIPP)		
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	Kathleen Sherman/ Colorado State Univ. (Lead Author)	Coop. Institutes (CIRA), (CICS-M)		
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	Hilda Blanco/ Univ. of Southern California (Lead Author)	Sea Grant Program		
	Andrew Comrie/ Univ. of Arizona (Lead Author)	RISA Program CLIMAS); SARP Program		
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	Thomas Piechota/Univ. of Nevada (Lead Author)			
Rebecca Smyth/DOC-NOAA (Lead Author)				
	Reagan Waskom/ Colorado State Univ. (Lead Author)	Coop. Institutes (CIRA), (CICS-M)		
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	Susan Capalbo/ Oregon State Univ. (Lead Author)	Coop. Institutes (JISAO); RISA Program (CNAP), (CIRC); NIDIS Program; Sea Grant Program		
	Sanford Eigenbrode/ Univ. of Idaho (Lead Author)	RISA Program (CIRC)		
	Patty Glick/ National Wildlife Federation (Lead Author)	NOAA Grant # NA10NMF4630088 [175] and unspecified NOAA grant[176]		
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	Patricia Cochran/ Alaska Native Science Comm. (Lead Author)			
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Carl Markon/DOI-USGS (Lead Author)				
	Molly McCammon/Alaska Ocean Observ. (Lead Author)			
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	Mark Serreze/ Univ. of Colorado (Lead Author)	Coop. Institutes (CIRES); RISA Program (WWA)		
CHAPTER 23				
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	Melissa Finucane/ Univ. of Hawaii (Lead Author)	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		
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	Mark Merrifield/ Univ. of Hawaii (Lead Author)	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		
Stephen Miller/DOI-USFS (Lead Author)				
Jeffrey Blovina/DOC-NOAA (Lead Author)				
Eileen Shea/DOC-NOAA (Lead Author)				
	Maxine Burkett/ Univ. of Hawaii (Author-Contributor)	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		
	John Campbell/ Univ. of Waikata (Author-Contributor)			

Penburo Lefale/New Zealand Meteorological (Author-Contributor)				
Fredric Lipschultz/NASA (Author-Contributor)				
Lloyd Loope/DOI-USGS (Author-Contributor)				
	Deanna Spooner/Pacific Island Climate (Author-Contributor)			
	Bing Wang/ Univ. of Hawaii (Author-Contributor)	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		
CHAPTER 24				
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	C. Drew Harrell/Cornell Univ. (Lead Author)			
	Gretchen Hoffman/ UC-Santa Barbara (Lead Author)	Coop. Institutes (CIMEC)		
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	Paul Kirshen/ Univ. of New Hampshire (Lead Author	Sea Grant Program		
	Peter Mulvaney/Skidmore, Owings & Merrill, LLP (Lead Author)			
James Murley/So. Florida Regional Planning				
	James Neumann/Industrial			

	Economics (Lead Author)			
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	Denise Reed/Water Institute of the Gulf (Lead Author)			
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	Melissa Kenney/ Univ. of Maryland (Lead Author)	Coop. Institutes (CICS-M), (CINAR); COCA Program; Howard Univ. (NCAS); Sea Grant Program		
	Howard Kunreuther/Univ. of Pennsylvania (Lead Author)			
	Robert Lempert/Rand Corp. (Lead Author)			
	Jay Manning/Cascadia Law Group (Lead Author)			
	B. Ken Williams/Wildlife Society (Lead Author)			
	James Boyd/Resources for the Future (Author-Contributor)			
Emily Cloyd/NCAR-NSF (Author-Contributor)				
Laurna Kaatz/Denver Water (Author-Contributor)				
	Lindene Patton/ Zurich North America (Author-Contributor)		NCADAC Executive Secretariat Member	
CHAPTER 27				
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Richard Birdsey/ DOI-USFS (Lead Author)				
	James Buizer/ Univ. of Arizona (Lead Author)	RISA Program CLIMAS); SARP Program	NCADAC Executive Secretariat Member	
	Katherine Calvin/DOE/ Univ. of Maryland	Coop. Institutes (CICS-M), (CINAR); COCA Program;		

	(Lead Author)	Howard Univ. (NCAS); Sea Grant Program		
	Francisco de la Chesnaye/ Electric Power Research Inst. (Lead Author)			
David Schimel/NASA (Lead Author)				
	Ian Sue Wing/Boston Univ. (Lead Author)			
	Reid Detchon/UN Foundation (Author-Contributor)			
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	Lynn Russel/ Scripps Inst. of Oceanography (Author-Contributor)	Coop. Institutes (CIMEC); RISA Program (CNAP)		
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CHAPTER 28				
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	Maria Blair/Independent (Lead Author)			
	Lynne Carter/ Louisiana State Univ. (Lead Author	Coop. Institutes (NGI); RISA Program (SCIPP); Sea Grant Program	NCADAC Member	
	F. Stuart Chapin/ Univ. of Alaska-Fairbanks (Lead Author)	Coop. Institutes (CICS-P), (CIFAR); RISA Program (ACCAP); Sea Grant Program	NCADAC Member	
Paul Fleming/Seattle Public Utilities (Lead Author)			NCADAC Member	
	Susan Ruffo/ Nature Conservancy (Lead Author)	NOAA 4-Year Agreement to Protect Coral Reefs; NOAA ARRA Coastal Habitat Restoration Fundi		
	Shannon McNeeley/ Colorado State Univ. (Author-Contributor)	Coop. Institutes (CIRA), (CICS-M)		
	Missy Stults/ Univ. of Michigan (Author-Contributor)	Coop. Institutes (CILER); RISA Program (GLISA); Sea Grant Program		

	Laura Verduzco/Chevron Corp. (Author-Contributor)			
Emily Seyller/NCAR-NSF (Author-Contributor)				
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	Kirsten Dow/ Univ. of South Carolina (Lead Author)	COCA Program; RISA Program (CISA); Sea Grant Program		
	Kristie Ebi/ClimAdapt (Lead Author)		Member, NRC Board of Environmental Change & Society	
	Kenneth Kunkel/ North Carolina State Univ.	Coop. Institutes (CICS-M); RISA Program (SECC), (CISA); Sea Grant Program		
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	Jerry Mellilo/ Marine Biological (Lead Author)		NCADAC Chair; Editor, NCA3-2014	
CHAPTER 30				
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	Maria Blair/Independent (Convening Lead Author)			
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	David Gustafson/Monsanto (Lead Author)		NCADAC Executive Secretariat Member	
	Brian Holland/ICLEI Sustainability (Lead Author)			
	Susanne Moser/Moser Research & Consulting/Stanford Univ. (Lead Author)		NCADAC Executive Secretariat Member	
	Anne Waple/Second Nature (Lead Author)			

Appendix 2:
USG-Employed Scientists (By Agency)
Author-Contributors to IPCC AR5 Working Group I (IPCC-AR5-WGI)

USG Scientist	Agency Affiliation	USG Scientist	Agency Affiliation	USG Scientist	Agency Affiliation
Molly Baringer	DOC-NOAA	P. Cameron-Smith	DOE	Felix Landerer	NASA
Timothy Boyer	DOC-NOAA	William Collins	DOE	William Lau	NASA
Harold Brooks	DOC-NOAA	Paul Durack	DOE	Matthew Lebsock	NASA
Lori Bruhwiler	DOC-NOAA	Steven Ghan	DOE	Tony Lee	NASA
Josefino Comiso	DOC-NOAA	Peter Gleckler	DOE	Norman Loeb	NASA
John Daniel	DOC-NOAA	Brett Hopwood	DOE	Thorsten Markus	NASA
Sean Davis	DOC-NOAA	Elizabeth Hunke	DOE	Eric Rignot	NASA
Ed Dlugokencky	DOC-NOAA	Detelina Ivanova	DOE	Drew Shindell	NASA
David Easterling	DOC-NOAA	Stephen Klein	DOE	Graeme Stephens	NASA
Richard Feely	DOC-NOAA	Dorothy Koch	DOE	David Winkler	NASA
Graham Feingold	DOC-NOAA	Charles Koven	DOE	Harry Dowsett	DOI-USGS
Silvia Garzoli	DOC-NOAA	Ben Kravitz	DOE	Leonard Konikow	DOI-USGS
Paul Ginoux	DOC-NOAA	David Lawrence	DOE	David Muhs	DOI-USGS
Steven Griffies	DOC-NOAA	Ruby Leung	DOE	Jeffrey Reid	US Naval Res.
Isaac Held	DOC-NOAA	Sebastian Mernild	DOE		
Jasmin John	DOC-NOAA	Jeff Painter	DOE		
Gregory Johnson	DOC-NOAA	Prabhat	DOE		
Thomas Knutson	DOC-NOAA	Yun Qian	DOE		
James Kossin	DOC-NOAA	Phillip Rasch	DOE		
Ngar-Cheung Lau	DOC-NOAA	William Riley	DOE		
Eric Leuliette	DOC-NOAA	Ben Santer	DOE		
Matthew Menne	DOC-NOAA	Kenneth Sperber	DOE		
Steven Montzka	DOC-NOAA	Karl Taylor	DOE		
Calvin Mordy	DOC-NOAA	Peter Thorton*	DOE		
Rym Msadek	DOC-NOAA	Michael Wehner*	DOE		
Daniel Murphy	DOC-NOAA	Gordon Bonan	NCAR/NSF[177]		
Vaishali Naik	DOC-NOAA	Clara Deser	NCAR/NSF		
Mary Jo Nath	DOC-NOAA	John Fasullo	NCAR/NSF		
James Overland	DOC-NOAA	Shu-Peng Ho	NCAR/NSF		
Geun-Ha-Park	DOC-NOAA	Greg Holland	NCAR/NSF		
V. Ramaswamy	DOC-NOAA	Marika Holland	NCAR/NSF		
A.R. Ravishankara	DOC-NOAA	Jim Hurrell	NCAR/NSF		
Christopher Sabine	DOC-NOAA	John Kleypas	NCAR/NSF		
Dian Seidel	DOC-NOAA	JF Lamarque	NCAR/NSF		
Steven Smith	DOC-NOAA	Linda Mearns*	NCAR/NSF		
Pieter Tans	DOC-NOAA	Gerald Meehl	NCAR/NSF		
Gabriel Vecchi	DOC-NOAA	Brian O'Neill	NCAR/NSF		
Chunzai Wang	DOC-NOAA	B. Otto-Bliesner	NCAR/NSF	*These federal agency officials also made author-contributions to NCA3-2014 and had an agency colleague who served on the NRC NCA3-2014Peer Review Panel.*	
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Appendix 3:
U.S. Government-Employed Scientists (By Agency)
Author-Contributors to NCA3-2014

USG Scientist	Agency Affiliation	NCA3-2014 Contribution	Author Status
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Mary Hayden	NCAR/NSF	Chap. 9	Lead Author
Christine Wiedinmyer	NCAR/NSF	Chap. 9	Author-Contrib.
Julie Maldanado	NCAR/NSF	Chap. 12	Author-Contrib.
Emily Cloyd	NCAR/NSF	Chap. 26	Author-Contrib.
Emily Seyller	NCAR/NSF	Chap. 28	Author-Contrib.
Linda Mearns***	NCAR/NSF	Chap. 29	Lead Author
Michael Wehner	DOE	Chap. 2	Conv. Lead Auth.
Thomas Wilbanks	DOE	Chaps. 4, 11	Lead Author (x2)
R. Cesar Izzauralde	DOE	Chap. 6	Lead Author
Virginia Dale	DOE	Chap. 7	Lead Author
Kathy Hibbard	DOE	Chap. 10	Conv. Lead Auth.
Robin Newmark	DOE	Chap. 10	Lead Author
Vincent Tidwell	DOE	Chap. 10	Lead Author
Allison Thomson	DOE	Chap. 13	Lead Author
Peter Thorton***	DOE	Chap. 15	Lead Author
Richard Moss!	DOE	Chap. 26	Conv. Lead Auth.*
Anthony Janetos	DOE	Chap. 27	Conv. Lead Auth.**
Katherine Calvin!	DOE	Chap. 27	Lead Author *
Jae Edmonds!	DOE	Chap. 27	Author-Contrib. *

**These DOE employees had been on temporary assignment at Univ. of Maryland.* [178]

***This federal agency employee had previously been director of the Joint Global Change Research Institute operated by DOE at the University of Maryland until May 2013, at which time he became a full-time faculty member at Boston University's Pardee Center for the Study of the Longer-Range Future.* %[179]

**** Each of these federal agency employees made individual contributions to both NCA3-2014 and IPCC-AR5-WGI.*

Appendix 4:
Scientists, Universities/Entities Affiliated With DOC-NOAA Grant-Funded Climate Science-Research-Related Programs and Contributors to NCA3-2014 & IPCC AR5 Working Group I

Scientist	University Affiliation	DOC-NOAA Grant-Funded Programs/Projects In Which University/Entity Participates	Contribution to NCA3-2014	Contribution to IPCC AR5 WG 1
Joseph Molnar	Auburn Univ.	RISA Program (WWA); Miss.-Alabama Sea Grant Program	x	
William Solecki	City Univ. of NY	Coop. Institutes (CICS-M); RISA Program (CCRUN)	x	
David Randall	Colorado State Univ.	Coop. Institutes (CIRA), (CICS-M)		x
Dennis Ojima	Colorado State Univ.	Coop. Institutes (CIRA), (CICS-M)	x	
Shannon McNeeley	Colorado State Univ.	Coop. Institutes (CIRA), (CICS-M)	x	
Kathleen Sherman	Colorado State Univ.	Coop. Institutes (CIRA), (CICS-M)	x	
Reagan Waskom	Colorado State Univ.	Coop. Institutes (CIRA), (CICS-M)	x	
Michela Biasutti	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Mark Cane	Columbia Univ	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Olivia Clifton	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Edwark Cook	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Ruth Defries	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Arlene Fiore	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Alessandra Giannini	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Stanley Jacobs	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Alex Kaplan	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Samar Khatiwala	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x

Ychanan Kushnir	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Anastasia Romanov	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Richard Seager	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Jason Smerdon	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Trar Takahashi	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program		x
Radley Horton	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program	x	
Kim Knowlton	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program	x	
Robert Jackson	Duke Univ.	Coop. Institutes (CICS-M)	x	
Richard Newell	Duke Univ.	Coop. Institutes (CICS-M)	x	
Michael Orbach	Duke Univ.	Coop. Institutes (CICS-M)	x	
Ken Reckhow	Duke Univ.	Coop. Institutes (CICS-M)	x	
Craig Landry	East Carolina Univ.	RISA Program (CLIMAS)	x	
Leonard Berry	Florida Atlantic Univ.	Coop. Institutes (CIMAS), (CIOERT)	x	
Robert Corell	Florida Int'l Univ.	Coop. Institutes (CIMAS)	x	
Lynne Carter	Louisiana State Univ.	Coop. Institutes (NGI); RISA Program (SCIPP); Sea Grant Program	x	
Joann Carmin	Mass. Inst. of Tech.	Sea Grant Program	x	
Kerry Emanuel	Mass. Inst. of Tech.	Sea Grant Program		x
Henry Jacoby	Mass. Inst. of Tech	Sea Grant Program	x	
G. Philip Robertson	Michigan State Univ.	Coop. Institutes (CILER); RISA Program (GLISA)	x	
Patty Glick	Nat'l Wildlife Fed.	NOAA Grant # NA10NMF4630088 and unspecified NOAA grant	x	
Garrit Voggesser	Nat'l Wildlife Fed.	NOAA Grant # NA10NMF4630088 and unspecified NOAA grant	x	
Peter Kareiva	Nature Conservancy	NOAA 4-Year Agreement to Protect Coral Reefs; NOAA ARRA Coastal Habitat Restoration Funding	x	
Susan Ruffo	Nature Conservancy	NOAA 4-Year Agreement to Protect Coral Reefs; NOAA ARRA Coastal Habitat Restoration Funding	x	
P. Lynn Scarlett	Nature Conservancy	NOAA 4-Year Agreement to Protect Coral Reefs; NOAA ARRA Coastal Habitat Restoration Funding	x	
Adam Whelchel	Nature Conservancy	NOAA 4-Year Agreement to Protect Coral Reefs; NOAA ARRA Coastal Habitat Restoration Funding	x	
Paula Hennon	North Carolina State Univ.	Coop. Institutes (CICS-M); RISA Program (SECC), (CISA); Sea Grant Program	x	

Kenneth Kunkel	North Carolina State Univ.	Coop. Institutes (CICS-M); RISA Program (SECC), (CISA); Sea Grant Program	x	
David Browich	Ohio State Univ.	Coop. Institutes (CILER); COCA Program; RISA Program (GLISA); Sea Grant Program		x
J.P. Nicholas	Ohio State Univ.	Coop. Institutes (CILER); COCA Program; RISA Program (GLISA); Sea Grant Program		x
Brent Sohngen	Ohio State Univ.	Coop. Institutes (CILER); COCA Program; RISA Program (GLISA); Sea Grant Program	x	
Peter Clark	Oregon State Univ.	Coop Institutes (CICS-M), (CIOSS), (CIMRS); COCA Program; RISA Program (CIRC); Sea Grant Program		x
Philip Mote	Oregon State Univ.	Coop Institutes (CICS-M), (CIOSS), (CIMRS); COCA Program; RISA Program (CIRC); Sea Grant Program	x	x
Andreas Schmittner	Oregon State Univ.	Coop Institutes (CICS-M), (CIOSS), (CIMRS); COCA Program; ; RISA Program (CIRC); Sea Grant Program		x
John Antle	Oregon State Univ.	Coop Institutes (CICS-M), (CIOSS), (CIMRS); COCA Program; ; RISA Program (CIRC); Sea Grant Program	x	
Susan Capalbo	Oregon State Univ.	Coop Institutes (CICS-M), (CIOSS), (CIMRS); COCA Program; ; RISA Program (CIRC); Sea Grant Program	x	
Beverly Law	Oregon State Univ.	Coop Institutes (CICS-M), (CIOSS), (CIMRS); COCA Program; ; RISA Program (CIRC); Sea Grant Program	x	
William Easterling	Penn State Univ.	Coop. Institutes (CILER); SARP Program; Sea Grant Program	x	
David Pollard	Penn State Univ.	Coop. Institutes (CILER); SARP Program; Sea Grant Program		x
Robert Key	Princeton Univ.	Coop. Institutes (CICS-M), (CICS-P); NIDIS Program; NJ Sea Grant Program		x
Christopher Little	Princeton Univ.	Coop. Institutes (CICS-M), (CICS-P); NIDIS Program; NJ Sea Grant Program		x
Elena Shevliakova	Princeton Univ.	Coop. Institutes (CICS-M), (CICS-P); NIDIS Program; NJ Sea Grant Program	x	
Ben Horton	Rutgers Univ.	Coop. Institutes (CINAR); RISA Program (CCRUN); NJ Sea Grant Program		x
Robert Kopp	Rutgers Univ.	Coop. Institutes (CINAR); RISA Program (CCRUN); NJ Sea Grant Program		x
David Robinson	Rutgers Univ.	Coop. Institutes (CINAR); RISA Program (CCRUN); NJ Sea Grant Program		x
Amato Evan	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x
Ralph Keeling	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x

Geir Moholdt	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x
Joel Norris	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x
David Pierce	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x
Shang-Ping	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x
Stephen Piper	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x
Dean Roemmich	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x
Lynn Talley	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x
Ray Weiss	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)		x
Lynn Russel	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)	x	
Richard Somerville	Scripps Institution of Oceana	Coop. Institutes (CIMEC); RISA Program (CNAP)	x	
Heather Tallis	Stanford Univ.	USC Sea Grant Program Project Affiliate[180]	x	
John Weyant	Stanford Univ.	USC Sea Grant Program Project Affiliate	x	
Susan Moser	Stanford Univ.	USC Sea Grant Program Project Affiliate[181]		
Aiguo Dai	State Univ. of NY Albany	Howard Univ. (NCAS)		x
Ping Chang	Texas A&M Univ.	SARP Program		x
Alejandro Orsi	Texas A&M Univ.	SARP Program		x
Christina Patricola	Texas A&M Univ.	SARP Program		x
Samuel Brody	Texas A&M Univ.	SARP Program	x	
Anthony Arendt	Univ. of Alaska Fairbanks	Coop. Institutes (CICS-P), (CIFAR); RISA Program (ACCAP); Sea Grant Program		x
Eugene Euskirchen	Univ. of Alaska Fairbanks	Coop. Institutes (CICS-P), (CIFAR); RISA Program (ACCAP) ; Sea Grant Program		x
Regine Hock	Univ. of Alaska Fairbanks	Coop. Institutes (CICS-P), (CIFAR); RISA Program (ACCAP) ; Sea Grant Program		x
Igor Polyakov	Univ. of Alaska Fairbanks	Coop. Institutes (CICS-P), (CIFAR); RISA Program (ACCAP) ; Sea Grant Program		x
F. Stuart Chapin	Univ. of Alaska	Coop. Institutes (CICS-P), (CIFAR); RISA Program (ACCAP) ; Sea	x	

	Fairbanks	Grant Program		
Sarah Trainor	Univ. of Alaska Fairbanks	Coop. Institutes (CICS-P), (CIFAR); RISA Program (ACCAP) ; Sea Grant Program	x	
John Walsh	Univ. of Alaska Fairbanks	Coop. Institutes (CICS-P), (CIFAR); RISA Program (ACCAP) ; Sea Grant Program	x	
Jianjun	Univ. of Arizona	RISA Program (CLIMAS); SARP Program		x
David Breshears	Univ. of Arizona	RISA Program (CLIMAS); SARP Program	x	
James Buizer	Univ. of Arizona	RISA Program (CLIMAS); SARP Program	x	
Andrew Comrie	Univ. of Arizona	RISA Program (CLIMAS); SARP Program	x	
Diana Liverman	Univ. of Arizona	RISA Program (CLIMAS); SARP Program	x	
Marcela Vasquez	Univ. of Arizona	RISA Program (CLIMAS); SARP Program	x	
Donald Blake	Univ. of Ca.-Irvine	Coop. Institutes (CICS-M)		x
Christopher Holmes	Univ. of Ca.-Irvine	Coop. Institutes (CICS-M)		x
Michael Prather	Univ. of Ca.-Irvine	Coop. Institutes (CICS-M)		x
Isabella Velicogna	Univ. of Ca.-Irvine	Coop. Institutes (CICS-M)		x
Alex Hall	Univ. of Ca. -Los Angeles	Coop. Institutes (CIMEC)		x
David Neelin	Univ. of Ca. -Los Angeles	Coop. Institutes (CIMEC)		x
Katherine Davis	Univ. of Ca. -Los Angeles	Coop. Institutes (CIMEC)		x
Leila Carvalho	Univ. of Ca. –Santa Barbara	Coop. Institutes (CIMEC)		x
Gretchen Hoffman	Univ. of Ca. –Santa Barbara	Coop. Institutes (CIMEC)	x	
James Zachos	Univ. of Ca. –Santa Cruz	Coop. Institutes (CIMEC)		x
Richard Grotjahn	Univ. of Ca. -Davis	Coop. Institutes (CIMEC)	x	
David Bahr	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)		x
Owen Cooper	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)		x
Steven Nerem	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)		x
Judith Perlwitz	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)		x
Tad Pfeffer	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)		x
Andrew Slater	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)		x
Sharon Stamerjohn	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)		x
Tingjun Zhang	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)		x
Kristen Averyt	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)	x	
Karen Cozzetto	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)	x	

Mark Serreze	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)	x	
Alan Townsend	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)	x	
Kathleen Segerson	Univ. of Connecticut	Sea Grant Program	x	
James Jones	Univ. of Florida	Coop. Institutes (CIMAS); RISA Program (SECC); Sea Grant Program	x	
Michelle Mack	Univ. of Florida	Coop. Institutes (CIMAS); RISA Program (SECC); Sea Grant Program	x	
Edward Schurer	Univ. of Florida	Coop. Institutes (CIMAS); RISA Program (SECC); Sea Grant Program		x
Yoshimitsu Chikamoto	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		x
Pedro Dinezio	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		x
A. Harbarasubramanian	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		x
David Karl	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		x
Mark Merrifield	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program	x	x
Hiroyuki Murakami	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		x
Bo Qiu	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		x
Samantha Stevenson	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		x
Axel Timmermann	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		x
Bin Wang	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program	x	x
Matthew Widlansky	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program		x
Maxine Burkett	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program	x	
Melissa Finucane	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program	x	
Thomas Giabelluca	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program	x	
Jo-Ann Leong	Univ. of Hawaii	Coop. Institutes (CIPIR), (JIMAR); RISA Program (Pacific); Sea Grant Program	x	
Sanford Eigenbrode	Univ. of Idaho	RISA Program (CIRC)	x	
Atul Jain	Univ. of Illinois-	Coop. Institutes (CILER); Illinois-Indiana Sea Grant Program		x

	Urbana			
Emily Janssen	Univ. of Illinois-Urbana	Coop. Institutes (CILER); Illinois-Indiana Sea Grant Program		x
David Wuebbles	Univ. of Illinois-Urbana	Coop. Institutes (CILER); Illinois-Indiana Sea Grant Program	x	x
Robert Kates	Univ. of Maine	Sea Grant Program	x	
Robert Adler	Univ. of Maryland	Coop. Institutes (CICS-M); (CINAR); COCA Program; Howard Univ. (NCAS); Sea Grant Program		x
George Hurtt	Univ. of Maryland	Coop. Institutes (CICS-M), (CINAR); COCA Program; Howard Univ. (NCAS); Sea Grant Program		x
Ning Zeng	Univ. of Maryland	Coop. Institutes (CICS-M), (CINAR); COCA Program; Howard Univ. (NCAS); Sea Grant Program		x
Katherine Calvin	Univ. of Maryland	Coop. Institutes (CICS-M), (CINAR); COCA Program; Howard Univ. (NCAS); Sea Grant Program	x	
Jae Edmonds	Univ. of Maryland	Coop. Institutes (CICS-M), (CINAR); COCA Program; Howard Univ. (NCAS); Sea Grant Program	x	
Melissa Kenney	Univ. of Maryland	Coop. Institutes (CICS-M), (CINAR); COCA Program; Howard Univ. (NCAS); Sea Grant Program	x	
Richard Moss	Univ. of Maryland	Coop. Institutes (CICS-M), (CINAR); COCA Program; Howard Univ. (NCAS); Sea Grant Program	x	
Mathew Barlow	Univ. of Mass.	RISA Program (CCRUN)		x
David Enfield	Univ. of Miami	Coop. Institutes (CICS-M), (CIMAS); RISA Program (SECC)		x
Rana Fine	Univ. of Miami	Coop. Institutes (CICS-M), (CIMAS); RISA Program (SECC)		x
Johnna Infanti	Univ. of Miami	Coop. Institutes (CICS-M), (CIMAS); RISA Program (SECC)		x
Ben Kirtman	Univ. of Miami	Coop. Institutes (CICS-M), (CIMAS); RISA Program (SECC)		x
Brian Soden	Univ. of Miami	Coop. Institutes (CICS-M), (CIMAS); RISA Program (SECC)		x
Chidong Zhang	Univ. of Miami	Coop. Institutes (CICS-M), (CIMAS); RISA Program (SECC)		x
Rosina Bierbaum	Univ. of Michigan	Coop. Institutes (CILER); RISA Program (GLISA); Sea Grant Program	x	
Daniel Brown	Univ. of Michigan	Coop. Institutes (CILER); RISA Program (GLISA); Sea Grant Program	x	
Joyce Penner	Univ. of Michigan	Coop. Institutes (CILER); RISA Program (GLISA); Sea Grant Program		x
Donald Scavia	Univ. of Michigan	Coop. Institutes (CILER); RISA Program (GLISA); Sea Grant Program	x	
Missy Stults	Univ. of Michigan	Coop. Institutes (CILER); RISA Program (GLISA); Sea Grant Program	x	
Paul Bolstod	Univ. of Minnesota	Coop. Institutes (CILER); Sea Grant Program	x	
Lawrence Edwards	Univ. of Minnesota	Coop. Institutes (CILER); Sea Grant Program		x
Paul Kirshen	Univ. of New Hampsh	Sea Grant Program	x	
Jason West	Univ. of North Carolina	Coop. Institutes (CICS-M), (CIOERT); RISA Program (CISA); SARP Program	x	

Yiqi Luo	Univ. of Oklahoma	RISA Program (SCIPP)		x
Renne McPherson	Univ. of Oklahoma	RISA Program (SCIPP)	x	
David Bartlein	Univ. of Oregon	RISA Program (CIRC)		x
David Hulse	Univ. of Oregon	RISA Program (CIRC)	x	
Kathy Lynn	Univ. of Oregon	RISA Program (CIRC)	x	
Susan Cutter	Univ. of So. Carolina	COCA Program; RISA Program (CISA); Sea Grant Program	x	
Kirsten Dow	Univ. of So. Carolina	COCA Program; RISA Program (CISA); Sea Grant Program	x	
Hilda Blanco	Univ. of Southern Ca.	Sea Grant Program	x	
Robert Byrne	Univ. of Southern Florida	Coop. Institutes (CIMAS)		x
Don Chambers	Univ. of Southern Florida	Coop. Institutes (CIMAS)		x
Celia Bitz	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP), (CIRC); NIDIS Program; Sea Grant Program		x
Christopher Bretherton	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP), (CIRC); NIDIS Program; Sea Grant Program		x
Howard Frumkin	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP); NIDIS Program; Sea Grant Program	x	
Dennis Hartmann	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP), (CIRC); NIDIS Program; Sea Grant Program		x
Ian Joughin	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP), (CIRC); NIDIS Program; Sea Grant Program		x
Josh Lawler	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP), (CIRC); NIDIS Program; Sea Grant Program	x	
Emilio Mayorga	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP), (CIRC); NIDIS Program; Sea Grant Program		x
Sarah Purkey	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP); NIDIS Program; Sea Grant Program		x
Amy Snover	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP); NIDIS Program; Sea Grant Program	x	
Matthew Yant	Univ. of Washington	Coop. Institutes (JISAO); RISA Program (CNAP); NIDIS Program; Sea Grant Program		x
Jonathan Patz	Univ. of Wisconsin	Coop. Institutes (CIMSS), (CILER); Sea Grant Program	x	
Steve Vaurus	Univ. of Wisconsin	Coop. Institutes (CIMSS), (CILER); Sea Grant Program		x
Kevin Anchukaitis	Woods Hole Oceanographic	Coop. Institutes (CINAR); Sea Grant Program		x
Sarah Cooley	Woods Hole Oceanographic	Coop. Institutes (CINAR); Sea Grant Program		x

Scott Doney	Woods Hole Oceanographic	Coop. Institutes (CINAR); Sea Grant Program	x	x
Richard Houghton	Woods Hole Oceanographic	Coop. Institutes (CINAR); Sea Grant Program		x
Raymond Schmidt	Woods Hole Oceanographic	Coop. Institutes (CINAR); Sea Grant Program		x
Caroline Ummenhofer	Woods Hole Oceanographic	Coop. Institutes (CINAR); Sea Grant Program		x
Lisan Yu	Woods Hole Oceanographic	Coop. Institutes (CINAR); Sea Grant Program		x

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Appendix 5:
DOC-NOAA Grant Participating Universities/Entities & Scientists Contributing to NCA3-2014 & IPCC-AR5-WGI

Universities/Entities Contributing to NCA3-2014	Affiliated Scientists Contributing to NCA3-2014	Universities/Entities Contributing to IPCC-AR5-WGI	Affiliated Scientists Contributing to IPCC-AR5-WGI
Auburn Univ.	Joseph Molnar		
City Univ. of NY	William Solecki		
Colorado State Univ.	Dennis Ojima Shannon McNeeley Kathleen Sherman Reagan Waskom	Colorado State Univ.	David Randall
Columbia Univ.	Radley Horton Kim Knowlton	Columbia Univ.	Michela Biasutti Mark Cane Olivia Clifton Edwark Cook Ruth Defries Arlene Fiore Alessandra Giannini Stanley Jacobs Alex Kaplan Samar Khatiwala Ychanan Kushnir Anastasia Romanov Richard Seager Jason Smerdon Trar Takahashi
Duke Univ.	Robert Jackson Richard Newell Michael Orbach Ken Reckhow		
East Carolina Univ.	Craig Landry		
Florida Atlantic Univ.	Leonard Berry		
Florida Int'l Univ.	Robert Corell		
Louisiana State Univ.	Lynne Carter		
Mass. Inst. of Tech.	Joann Carmin Henry Jacoby	Mass. Inst. of Tech.	Kerry Emanual
Michigan State Univ.	G. Philip Robertson		
Nat'l Wildlife Fed.	Patty Glick Garrit Voggesser		
Nature Conservancy	Peter Kareiva Susan Ruffo P. Lynn Scarlett Adam Whelchel		
North Carolina State Univ.	Paula Hennon Kenneth Kunkel		
Ohio State Univ.	Brent Sohngen	Ohio State Univ.	David Browich J.P. Nicholas
Oregon State Univ.	**Philip Mote**	Oregon State Univ.	Andreas Schmittner

	John Antle Susan Capalbo Beverly Law		Peter Clark **Philip Mote**
Penn State Univ.	William Easterling	Penn State Univ.	David Pollard
Princeton Univ.	Elena Shevliakova	Princeton Univ.	Robert Key Christopher Little
		Rutgers Univ.	Ben Horton Robert Kopp David Robinson
Scripps Institution of Oceanography	Lynn Russel Richard Somerville	Scripps Institution of Oceanography	Amato Evan Ralph Keeling Geir Moholdt Joel Norris David Pierce Shang-Ping Stephen Piper Dean Roemmich Lynn Talley Ray Weiss
Stanford Univ.	Heather Tallis John Weyant Susanne Moser		
		SUNY Albany	Aiguo Dai
Texas A&M Univ.	Samuel Brody	Texas A&M Univ.	Ping Chang Alejandro Orsi Christina Patricola
Univ. of Alaska Fairbanks	F. Stuart Chapin Sarah Trainor John Walsh	Univ. of Alaska Fairbanks	Anthony Arendt Eugene Euskirchen Regine Hock Igor Polyakov
Univ. of Arizona	David Breshears James Buizer Andrew Comrie Diana Liverman Marcela Vasquez	Univ. of Arizona	Jianjun
		UC-Irvine	Donald Blake Christopher Holmes Michael Prather Isabella Velicogna
		UC-Los Angeles	Alex Hall David Neelin Katherine Davis
UC–Santa Barbara	Gretchen Hoffman	UC–Santa Barbara	Leila Carvalho
UC-Davis	Richard Grotjahn		
		UC–Santa Cruz	James Zachos
Univ. of Colorado	Kristen Averyt Karen Cozzetto Mark Serreze Alan Townsend	Univ. of Colorado	David Bahr Owen Cooper Steven Nerem Judith Perlwitz Tad Pfeffer

			Andrew Slater Sharon Stamerjohn Tingjun Zhang
Univ. of Florida	James Jones Michelle Mack	Univ. of Florida	Edward Schurer
Univ. of Hawaii	Maxine Burkett Melissa Finucane Thomas Giabelluca Jo-Ann Leong **Mark Merrifield** **Bin Wang**	Univ. of Hawaii	Yoshimitsu Chikamoto Pedro Dinezio A. Harbarasubramanian David Karl **Mark Merrifield** Hiroyuki Murakami Bo Qiu Samantha Stevenson Axel Timmermann Matthew Widlansky **Bin Wang**
Univ. of Idaho	Sanford Eigenbrode		
Univ. of Illinois-Urbana	**David Wuebbles**	Univ. of Illinois-Urbana	Atul Jain Emily Janssen **David Wuebbles**
Univ. of Maine	Robert Kates		
Univ. of Maryland	Katherine Calvin Jae Edmonds Melissa Kenney Richard Moss	Univ. of Maryland	Robert Adler George Hurtt Ning Zeng
		Univ. of Mass.	Mathew Barlow
		Univ. of Miami	David Enfield Rana Fine Johnna Infanti Ben Kirtman Brian Soden Chidong Zhang
Univ. of Michigan	Rosina Bierbaum Daniel Brown Donald Scavia Missy Stults	Univ. of Michigan	Joyce Penner
Univ. of Minnesota	Paul Bolstod	Univ. of Minnesota	Lawrence Edwards
Univ. of New Hampshire	Paul Kirshen		
Univ. of North Carolina	Jason West		
Univ. of Oklahoma	Renne McPherson	Univ. of Oklahoma	Yiqi Luo
Univ. of Oregon	David Hulse Kathy Lynn	Univ. of Oregon	David Bartlein
Univ. of So. Carolina	Susan Cutter Kirsten Dow		
Univ. of Southern Ca.	Hilda Blanco		
		Univ. of Southern Florida	Robert Byrne Don Chambers
Univ. of Washington	Howard Frumkin Josh Lawler Amy Snover	Univ. of Washington	Celia Bitz Christopher Bretherton Dennis Hartmann

			Ian Joughin Emilio Mayorga Sarah Purkey Matthew Yant
Univ. of Wisconsin	Jonathan Patz	Univ. of Wisconsin	Steve Vaurus
Woods Hole Oceanographic	**Scott Doney**	Woods Hole Oceanographic	Kevin Anchukaitis Sarah Cooley **Scott Doney** Richard Houghton Raymond Schmidt Caroline Ummenhofer Lisan Yu
42 (Total)	**87 (Total)**	**32 (Total)**	**110 (Total)**
24	**57**	**24**	**89**
8 (NCA3-2014 only)	**30 (NCA3-2014 only)**	**8 (IPCC-AR5 only)**	**21 (IPCC-AR5 only)**

Appendix 6:
National Research Council NCA3-2014 Peer Review Panel
Contract # NNH07CC79B

Member, NRC NCA3-2014 Peer Review Panel	University Affiliation Other Affiliation	*DOC-NOAA Grant-Funded Program in Which Institution Participates	***Panelists With Colleagues Who Served as Author-Contributor to NCA3-2014	** Panelists with Colleagues Who Served as Author-Contributor to IPCC AR5 WGI
Warren Washington	NCAR/NSF		x	x
Kai Lee	Packard Foundation			
Mark Abbott	Oregon State Univ.	Coop Institutes (CICS-M), (CIOSS), (CIMRS); COCA Program; RISA Program (CIRC); Sea Grant Program	**P. Mote**, J. Antle, S. Capalbo, B. Law	**P. Mote**, P. Clark, A. Schmittner
Doug Arent	DOE		x	x
Susan Avery	Woods Hole Oceanographic	Coop. Institutes (CINAR); Sea Grant Program	**S. Downey**	**S. Downey**, K. Anchkaitis, S. Cooley, R. Houghton, R. Schmidt, C. Ummenhofer, L. Yu
Robert Dickenson, Camille Parmesan	Univ. of Texas		B. Scanlon	Terrence Quinn
Thomas Dietz	Michigan State Univ.	Coop. Institutes (CILER); RISA Program (GLISA)	G. Philip Robertson	
Debra Hernandez	SE Coast'l Ocean Obs.			
Robin Leichenko	Rutgers Univ.	Coop. Institutes (CINAR); RISA Program (CCRUN); NJ Sea Grant Program		B. Horton, R. Kopp, D. Robinson
Maria Carmen Lemos	Univ. of Michigan	Coop. Institutes (CILER); RISA Program (GLISA) Sea Grant Program	R. Bierbaum, D. Brown, D. Scavia, M. Stults	J. Penner
Haroon Kheshgi	Exxon-Mobil			
Ian Roy Noble	Global Adapt. Inst.			
Kathleen Segerson	Univ. of Connecticut	Sea Grant Program		
Karen Seto, Durland Fish	Yale Univ.			P. Raymond, T. Storelvino
Kathleen Tierney	Univ. of Colorado	Coop. Institutes (CIRES); RISA Program (WWA)	K. Averyt, K. Cozzetto, M. Serreze, A. Townsend	P. Bahr, O. Cooper, S. Nerem, J. Perlwitz, T. Pfeffer, A. Slater, S. Stamerjohn, T. Zhang
Charles Vorosmarty	City Univ. of New York	Coop. Institutes (CICS-M); RISA	W. Solecki	

		Program (CCRUN)		
Glen Daigger	CH2M Hill, Inc.			
Evan Delucia	Univ. of Illinois-Urbana	Coop. Institutes (CILER); Sea Grant Program	**P. Weubbles**	**P. Weubbles**, A. Jain, E. Janssen
Connie Roser-Renouf	George Mason Univ.		x	

** Nine of the twenty-one panel members were affiliated with universities that participate in DOC-NOAA climate science-related grant funded programs.*

***Five of these universities had thirty-three other affiliated scientists who served as author-contributors to both NCA3-2014 and IPCC AR5 WG I. Three scientists made individual contributions to both reports.*

****Three other of these universities had affiliated scientists who served as author-contributors to either NCA3-2014 or IPCC AR5 WG I.*

Appendix 7:
Small Group of Scientists Selected By NRC Report Review Committee [182]
To Review NRC NCA3-2014 Peer Review Panel Report

Scientist Reviewers	University Affiliation Other Affiliation	*DOC-NOAA Grant-Funded Program in Which Institution Participates	** University Affiliated Colleague Author-Contributor to NCA3-2014	***University Affiliated Colleague Author-Contributor to IPCC AR5 WG I
Stephen Carpenter	Univ. of Wisconsin	Coop. Institutes (CIMSS), (CILER); Sea Grant Program	J. Patz, Chap. 2	S. Vaurus
Elisabeth Drake	Mass. Institute of Technology	Sea Grant Program	J. Carmin, Chap. 11 H. Jacoby, Chap. 27	K. Emanuel
Paul Falkowski	Rutgers Univ.	Coop. Institutes (CINAR); RISA Program (CCRUN); NJ Sea Grant Program		B. Horton, R. Kopp, D. Robinson
David Lobell	Stanford Univ.		J. Weyant, Chap. 3 H. Tallis, Chap. 8 S. Moser, Chaps. 25, 30	
Claudia Tebaldi	Climate Central, Inc.			
Eke Weber	Columbia Univ.	Coop. Institutes (CICS-M), (CICAR); RISA Program (CCRUN); IRAP Program	K. Knowlton, Chap. 9 R. Horton, Chap. 16	M. Biasutti, M. Cane, O. Clifton, E. Cook, R. Defries, A. Fiore, A. Giannini, S. Jacobs, A. Kaplan, S. Khatiwala, Y. Kushnir, A. Romanov, R. Seager, J. Smerdon, T. Takahashi
Richard Wright	DOC-NIST			

** Four of the seven report review committee members were affiliated with universities that had participated in DOC-NOAA climate science-related grant funded programs.*

*** Each of these universities had other affiliated scientists who served as author-contributors to IPCC AR5 WG I.*

*** Other universities had affiliated scientists who served as author contributors to NCA3-2014.*

Appendix 8:
Composition of NRC Expert Committee to Advise the U.S. Global Change Research Program (From Which NRC NCA3-2014 Peer Review Panel Formed)

Member, NRC Expert Committee to Advise the USGCRP	Member, NRC NCA3-2014 Peer Review Panel (See: Appendix 6)	University/Entity With Which Affiliated	Other Affiliation(s)
Warren Washington	Warren Washington	NCAR-NSF	**Member, NRC Report Review Committee; Member NRC NCA3-2014 Peer Review Panel**
Kai Lee	Kai Lee	Packard Foundation	
Mark Abbott	Mark Abbott	Oregon State Univ.	
Doug Arent	Doug Arent	DOE	
Susan Avery	Susan Avery	Woods Hole Institute	
Robert Dickenson, Camille Parmesan	Robert Dickenson, Camille Parmesan	Univ. of Texas	
Thomas Dietz	Thomas Dietz	Michigan State Univ.	
	Debra Hernandez	SE Coastal Ocean Observatory	
	Robin Leichenko	Rutgers Univ.	
Maria Carmen Lemos	**Maria Carmen Lemos**	Univ. of Michigan	**Member, NRC Oversight Board on Environmental Change & Society (See: Appendix 10)**
	Haroon Kheshgi	Exxon-Mobil	
Ian Roy Noble	Ian Roy Noble	World Bank	
	Kathleen Segerson	Univ. of Connecticut	
Karen Seto,	Karen Seto, Durland Fish	Yale Univ.	
Kathleen Tierney	Kathleen Tierney	Univ. of Colorado	
Charles Vorosmarty	Charles Vorosmarty	City Univ. of NY	
Henry Jacoby		Mass. Inst. of Tech.	**Author-Contributor to NCA3-2014**
John Wallace		Univ. of Washington	
Gary Yohe		Wesleyan Univ.	**Member, NRC Oversight Board on Environmental Change & Society; NCADAC Vice Chair; Editor of NCA3-2014**
	Glen Daigger	CH2M Hill, Inc.	
	Evan Delucia	Univ. of Illinois-Urbana	
	Connie Roser-Renouf	George Mason Univ.	

Appendix 9:
Composition of NRC Oversight Board on Atmospheric Sciences & Climate[183] During Work of NRC NCA3-2014 Peer Review Panel

Board Member	University/Entity Affiliation	DOC-NOAA Grant-Funded Institution (See: Appendix 4)	University/Entity Affiliated Colleague Author-Contributor to NCA3-2014
Antonio Busalacchi, Jr.	Univ. of Maryland	x	K. Calvin, J. Edmonds, M. Kenney, R. Moss
Gerald Meehl	NCAR-NSF		(See: Appendix 3)
Lance F. Bosart	SUNY Albany		(See: Appendix 5)
Richard Carbone	NCAR-NSF		(See: Appendix 3)
Shuyi Chen	Univ. of Miami	x	(See: Appendix 5)
Kirstin Dow	Univ. of So. Carolina	x	**Kirstin Dow**, Susan Cutter
Pamela Emch	Northrup Grumman		
Lisa Goddard	Columbia Univ.	x	R. Horton, K. Knowlton
Isaac Held	DOC-NOAA		(See Appendix 3)
Anthony Janetos*	DOE/Univ. of Maryland/Boston Univ.	x	K. Calvin, J. Edmonds, M. Kenney, R. Moss**
John Kutzbach	Univ. of Wisconsin	x	J. Patz
Arthur Lee	Chevron Corp.		
Robert Lempert	Rand Corp.		
Stephen Pacala	Princeton Univ.	x	E. Shevliakova
Aristides Patrinos	Synthetic Genomics		
R. Pierrehumbert	Univ. of Chicago		
Kimberly Prather	UC San Diego	x	
Rich Richels	Electric Power Res. Ins.		
David Robinson***	Rutgers Univ.	x	R. Leichenko
John Snow	Univ. of Oklahoma	x	R. McPherson
Claudia Tebaldi	Central Climate, Inc.		
Xubin Zeng	Univ. of Arizona	x	D. Breshears, J. Buizer, A. Comrie, D. Liverman, M. Vasquez

** This Board served as directors of a program jointly operated by DOE and the Univ. of Maryland during 2013 before he departed for Boston Univ. (See Appendix 7)*

***This Univ. of Maryland-affiliated NCA3-2014 author-contributor also served on the NRC Board of Environmental change & Society during the NRC's Peer Review of the NCA3-2014 (See Appendix 9).*

****This Rutgers Univ. scientist made an NCA3-2014 author-contribution.*

Appendix 10:
Composition of NRC Oversight Board on Environmental Change & Society[184]
During Work of NRC NCA3-2014 Peer Review Panel

Board Member	University/Entity Affiliation	DOC-NOAA Grant-Funded Institution (See Appendix 4)	University/Entity Affiliated Colleague Author-Contributor to NCA3-2014	Other Affiliation
Richard Moss	Univ. of Maryland	x	**R. Moss**, K. Calvin, J. Edmonds, M. Kenney	
Arun Agrawal	Univ. of Michigan	x	R. Bierbaum, D. Brown, D. Scavia, M. Stults	
Anthony Bebbington	Clark Univ.			
William Chandler	Transition Energy			
Ruth Defries	Columbia Univ.	x	R. Horton, K. Knowlton	IPCC-AR5-WGI contributor
Kristie Ebi	IPCC-AR5-WGII, Carnegie Inst.			
Maria Carmen Lemos	Univ. of Michigan	x	R. Bierbaum, D. Brown, D. Scavia, M. Stults	**NRC NCA3-2014 Peer Review Panel Member (See: Appendix 6)**
Dennis Ojima	Colorado State Univ.	x	**D. Ojima**, S. McNeeley, K. Sherman, R. Waskom	
Stephen Polasky	Univ. of Minnesota	x	Paul Bolstod	
J. T. Roberts	Brown Univ.			
James Sweeney	Stanford Univ.	x	H. Tallis, J. Weyant, S. Moser	**D. Lobell – Scientist Reviewer of NRC NCA3-2014 Peer Review Panel Report**
Gary Yohe	Wesleyan Univ.		**G. Yohe**	**NCADAC Vice Chair; Editor of NCA3-2014**

ENDNOTES

[1] *See, e.g,* Wendy Koch, *EPA Seeks 30% Cut in Power Plant Carbon Emissions by 2030*, USA Today (June 3, 2014), available at: http://www.usatoday.com/story/money/business/2014/06/02/epa-proposes-sharp-cuts-power-plant-emissions/9859913/.

[2] *See* United States Environmental Protection Agency, *Notice of Proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units and Solicitation for Public Comments*, 79 FR 34830 et seq. (June 18, 2014), available at: http://www.gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf.

[3] *Id*., at Section II.A, p. 34841 ("II. Background In this section, we discuss climate change impacts from GHG emissions, both on public health and public welfare, present information about GHG emissions from fossil fuel fired EGUs [electric generating units], and summarize the statutory and regulatory requirements relevant to this rulemaking. *A. Climate Change Impacts From GHG Emissions*" (boldfaced and italicized emphasis in original)). *Id*.

[4] *Id*., at Sections II.A.1-2, pp. 34841-42.

[5] *Id*., at Section II.3, p. 34842.

[6] *Id*.

[7] *See* Treasury and General Government Appropriations Act for Fiscal Year 2001, Pub. L. No. 106-554, 114 Stat. 2763, 2763A-153-154 (2000), §515, codified at 44 U.S.C. § 3516 note, available at: http://www.gpo.gov/fdsys/pkg/PLAW-106publ554/pdf/PLAW-106publ554.pdf; http://codes.lp.findlaw.com/uscode/44/35/I/3516/notes.

[8] *See* Office of Management and Budget, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies* ("OMB IQA Guidelines") 67 FR 8452 (Feb. 22, 2002), available at: http://www.whitehouse.gov/sites/default/files/omb/fedreg/reproducible2.pdf; *See* Office of Management and Budget, *Final Information Quality Bulletin for Peer Review* ("OMB-PRB") (Dec. 16, 2004), available at: http://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2005/m05-03.pdf.

[9] *See* United States Environmental Protection Agency, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility and Integrity of Information Disseminated by the Environmental Protection Agency*, EPA/260R-02-008 ("EPA IQA Guidelines") (Oct. 2002) at §6.2, available at: http://www.epa.gov/quality/informationguidelines/documents/EPA_InfoQualityGuidelines.pdf; United States Environmental Protection Agency, *Peer Review Handbook* (3rd ed.), EPA/100/B-06/002 (2006) ("EPA-PRH(2006)") at §2.2.4, available at: http://www.epa.gov/oamcinc1/1200015/handbook.pdf; United States Environmental Protection Agency, *Peer Review Policy and Memorandum* ("EPA-PRP&M") (Jan. 31, 2006) at p. 1, available at: http://www.epa.gov/peerreview/pdfs/peer_review_policy_and_memo.pdf. *See also* United States Environmental Protection Agency, *Peer Review Handbook (3rd ed.)*, EPA/100/B-06/002 (6/29/12) ("EPA-PRH(2012)") at Modified Figures 1 and 3, available at: http://www.epa.gov/peerreview/pdfs/peer_review_handbook_2012.pdf; http://www.epa.gov/peerreview/pdfs/Modified_Figures_1_and_3.pdf.

[10] United States Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 FR 66496 (Dec. 15, 2009), available at: http://www.gpo.gov/fdsys/pkg/FR-2009-12-15/pdf/E9-29537.pdf.

[11] Section II.3 of the Addendum to ITSSD's new FOIA Request discusses how an interagency panel also may have peer reviewed the studies supporting one of the two EPA-developed HISAs the EPA-TSD designated as a "core reference document".

[12] There are two EPA-developed USGCRP/CCSP HISAs designated as "core reference documents" that **directly** supported the Administrator's CAA Section 202(a)(1) Findings. They include: SAP4.6/CCSP(2008b) and SAP4.1/CCSP(2009b). *See* New ITSSD FOIA Request at Appendix 2: *"EPA-TSD Table 1.1 'Core Reference Documents.'"* A third EPA-developed USGCRP/CCSP HISA was not designated as a "core reference document" - SAP 4.4/CCSP(2008). It **indirectly** supported the Administrator's CAA Section 202(a) Findings as the result of being incorporated by reference into *Global Climate Change Impacts in the United States* (USGCRP/NCA2/2009), a DOC-NOAA-developed HISA designated as a "core reference document". *See* New ITSSD FOIA Request at Appendix 3: *EPA-TSD 'Core Reference Documents' and Assessments 'Incorporated By Reference' Therein"*.

[13] There are seven (7) DOC-NOAA-developed HISAs designated as "core reference documents" **directly** supporting the Administrator's CAA Section 202(a) Findings. They include: *State of the Climate in 2008*; *Global Climate Change Impacts in the United States* (USGCRP/NCA2/2009); SAP1.1/CCSP(2006); SAP1.3/CCSP(2008g); SAP2.4/CCSP(2008h); SAP3.2/CCSP(2008d); SAP 3.3/CCSP(2008i). *See* New ITSSD FOIA Request at Appendix 2: *"EPA-TSD Table 1.1 'Core Reference Documents.'"* In addition, there are three DOC-NOAA-developed HISAs not

designated as "core reference documents". These HISAs **indirectly** supported the Administrator's CAA Section 202(a) Findings as the result of being incorporated by reference into *Global Climate Change Impacts in the United States* (USGCRP/NCA2/2009), a DOC-NOAA-developed HISA designated as a "core reference document. They include: SAP2.2/CCSP(2007); SAP5.2/CCSP(2009); SAP 5.3/CCSP(2008). *See* New ITSSD FOIA Request at Appendix 3: *EPA-TSD 'Core Reference Documents' and Assessments 'Incorporated By Reference' Therein"*.

[14] There are three (3) DOE-developed HISAs designated as "core reference documents" that **directly** supported the Administrator's CAA Section 202(a) Findings. They include: SAP2.1a/CCSP(2007b); SAP3.1/CCSP(2008c); SAP4.5/CCSP(2007a). *See* New ITSSD FOIA Request at Appendix 2: *"EPA-TSD Table 1.1 'Core Reference Documents.'"*

[15] There are three (3) DOI-USGS-developed HISAs designated as "core reference documents" that **directly** supported the Administrator's CAA Section 202(a) Findings. They include: SAP1.2/CCSP(2009c); SAP3.4/CCSP(2008a); SAP4.2/CCSP(2009d). *See* New ITSSD FOIA Request at Appendix 2: *"EPA-TSD Table 1.1 'Core Reference Documents.'"*

[16] There is one (1) NASA-developed HISA designated as a "core reference document" that **directly** supported the Administrator's CAA Section 202(a) Findings: SAP 2.3/CCSP(2009a). In addition, there is one (1) NASA -developed HISA not designated as a "core reference document": SAP 5.1/CCSP(2008). This HISA **indirectly** supported the Administrator's CAA Section 202(a) Findings as the result of being incorporated by reference into *Global Climate Change Impacts in the United States* (USGCRP/NCA2/2009), a DOC-NOAA-developed HISA designated as a "core reference document.

[17] There is one (1) DOT-developed HISA designated as a "core reference document" that **directly** supported the Administrator's CAA Section 202(a) Findings: SAP4.7/CCSP(2008f).

[18] There is one (1) USDA-developed HISA designated as a "core reference document" that **directly** supported the Administrator's CAA Section 202(a) Findings: SAP4.3/CCSP(2008e).

[19] There are four (4) NRC/NAS-developed HISAs designated as "core reference documents" that **directly** supported the Administrator's CAA Section 202(a) Findings. They include: *Climate Change Science: An Analysis of Some Key Questions* (2001a); *Radiative Forcing of Climate Change: Expanding the Concept and Addressing Uncertainties* (2005); *Surface Temperature Reconstructions for the Last 2,000 Years* (2006); *The Potential Impacts of Climate Change on U.S. Transportation* (2008).

[20] There are three (3) IPCC-developed HISAs designated as "core reference documents" that **directly** supported the Administrator's CAA Section 202(a) Findings. They include: *Climate Change 2007: The Physical Science Basis*, Contribution of Working Group I to the Fourth Assessment Report (IPCC2007a); *Climate Change 2007: Impacts, Adaptation and Vulnerability*, Contribution of Working Group II to the Fourth Assessment Report (IPCC2007b); *Climate Change 2007: Mitigation of Climate Change*, Contribution of Working Group III to the Fourth Assessment Report (IPCC2007c).

[21] There is one (1) Arctic Council-developed HISA designated as a "core reference document" that **directly** supported the Administrator's CAA Section 202(a) Findings: Arctic Council Climate Impact Assessment (ACIA2004).

[22] *See* United States Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act: EPA's Response to Public Comments, Volume 1: General Approach to the Science and Other Technical Issues ("RTCs Vol. 1")* (April 17, 2009), Response (1-4), available at: http://www.epa.gov/climatechange/endangerment/comments/volume1.html. "The commenters argue that the assessment reports do not represent the best available science for a number of reasons, *including inappropriate review process, failure to meet information quality guidelines*, etc. Commenter 3567.1 states that for the Proposed Findings, EPA should have commissioned a body of independent scientists, engineers, and statisticians to evaluate the data, methods, and conclusions of the most important research.") *Id*. at Comment (1-4). *See also* Comments (1-6) and (1-7) and EPA responses thereto.

[23] "Third, these assessments are comprehensive in their coverage of the greenhouse gas and climate change problem, and address the different stages of the emissions-to-potential-harm chain necessary for the endangerment analysis. In so doing, they evaluate the findings of numerous individual peer-reviewed studies in order to draw more general and overarching conclusions about the state of science. *The USGCRP, IPCC, and NRC assessments synthesize literally thousands of individual studies and convey the consensus conclusions on what the body of scientific literature tells us*" (emphasis added). *See* United States Environmental Protection Agency, *Endangerment and Cause or Contribute*

Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 FR 66496, 66511 (Dec. 15, 2009), at Sec. III.A, available at: http://www.gpo.gov/fdsys/pkg/FR-2009-12-15/pdf/E9-29537.pdf.

[24] "*Fourth, these assessment reports undergo a rigorous and exacting standard of peer review by the expert community,* as well as rigorous levels of U.S. government review and acceptance. *Individual studies that appear in scientific journals, even if peer reviewed, do not go through as many review stages, nor are they reviewed and commented on by as many scientists. The review processes of the IPCC, USGCRP, and NRC (explained in fuller detail in the TSD and the Response to Comments document, Volume 1) provide EPA with strong assurance that this material has been well vetted by both the climate change research community and by the U.S. government*. These assessments therefore essentially represent the U.S. government's view of the state of knowledge on greenhouse gases and climate change" (emphasis added). *Id*.

[25] *See* United States Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act: EPA's Response to Public Comments, Volume 1: General Approach to the Science and Other Technical Issues ("RTCs Vol. 1")* (April 17, 2009), Response (1-5).

[26] *Id*., at Comment (1-14).

[27] *Id*.

[28] *Id*. *See also* United States Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act: EPA's Response to Public Comments, Volume 1: General Approach to the Science and Other Technical Issues* (April 2009), at Appendix A – *IPCC Principles and Procedures*, available at: http://www.epa.gov/climatechange/Downloads/endangerment/rtc_volume_1_app_a.pdf.

[29] *Id*.., at Comment (1-14).

[30] "The U.S. Government participated fully in the development, review, and ultimate acceptance and approval of IPCC (2007). As stated on the USGCRP's Web site: 'When governments accept the IPCC reports and approve their Summary for Policymakers, they acknowledge the legitimacy of their scientific content'". *Id*.

[31] *Id*.

[32] *Id*.

[33] *Id*., at Response (1-25).

[34] *Id*.

[35] *Id*., *See also* United States Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act: EPA's Response to Public Comments, Volume 1: General Approach to the Science and Other Technical Issues* (April 17, 2009), *supra* at Appendix B - *USGCRP/CCSP Procedures and Responsibilities*, available at: http://www.epa.gov/climatechange/Downloads/endangerment/rtc_volume_1_app_b.pdf.

[36] *Id*., at Response (1-25).

[37] *Id*.

[38] *Id*.

[39] *See*, Institute for Trade, Standards and Sustainable Development, *FOIA Request Clarification of Consolidated FOIA Request No. DOC-NOAA-2014-000714* (May 5, 2014), available at: http://nebula.wsimg.com/c25e625aa81981536c980ec0f3307791?AccessKeyId=39A2DC689E4CA87C906D&disposition=0&alloworigin=1. *See*, *e.g.*,: Annotated Addendum, Section B.3 (p. 20) (identifying the "major assessments" and those incorporated therein developed by DOC-NOAA), Addendum, Section B.4.b (pp. 24-28) (discussing IQA violations, including apparent conflicts-of-interest, with respect to peer reviews performed by DOC-NOAA-established federal advisory committees), Addendum Section B.5.a (pp. 28-30) (discussing how DOC-NOAA had contracted with the National Research Council ("NRC") of the National Academies of Science ("NAS") to peer review six "major assessments" DOC-NOAA had developed for the USGCRP, and relevant NAS conflict-of-interest rules), and Addendum, Section B.5.b (pp. 30-41) (discussing NRC/DOC-NOAA IQA violations, especially improperly identified, addressed and disclosed apparent and/or real conflicts of interest),. ITSSD intends to replace its previously filed DOC-NOAA FOIA Request and FOIA Request Clarification with a new forthcoming ITSSD DOC-NOAA IQA-focused FOIA Request.

[40] Clearly, DOC-NOAA had developed at least seven climate science-related assessments and reports that the EPA-TSD had designated as "core reference documents", and, at least, three additional climate science-related assessments and reports that had been incorporated-by-reference within such "core reference documents". See

[41] There is ample evidence to strongly suggest that NOAA knew or had reason to know EPA would primarily rely, in part, on NOAA-developed and/or reviewed climate assessments and modeling applications, including those of the IPCC. Indeed, EPA and NOAA have long pursued joint climate change-related research, assessment, and computer modeling activities pursuant to several memorandums of understanding. *See* Kenneth Schere, *The U.S. EPA CMAQ Modeling System – Future Development Plans*, CMAQ Model Peer Review Meeting (R.T.P., NC, Dec. 17, 2003), available at: https://www.cmascenter.org/r_and_d/first_review/pdf/future_development_plans_for_cmaq_(schere).pdf ("Links with other models [:] – ***Water quality (through deposition)*** – Ecological and human exposure – ***Global climate***, general circulation, global chemistry") (emphasis added) *Id*., at p. 6; United States Department of Commerce, National Oceanic and Atmospheric Administration Air Resources Laboratory, *ARL News - Summary of NOAA-EPA Meeting* (April 8, 2004), available at: http://www.arl.noaa.gov/scientist_042004.php ("On March 2-3, 2004, more than 100 EPA and NOAA scientists and managers met in Research Triangle Park, NC to discuss 'Air Quality Research to Guide National Policy and Programs.' This was the first in a series of meetings to be held under the EPA-NOAA Memorandum of Understanding (MOU) on Air Quality Research and the parallel Memorandum of Agreement (MOA) on Air Quality Forecasting signed by the Deputy Secretary of Commerce and EPA Administrator on May 6, 2003. Future meetings are planned on '***Linking Air Quality Models to Climate Change Models*** (September 2004 in Boulder, Colorado)' and on "Multimedia and Transboundary Exchange (February 2005 in Annapolis, Maryland)." These meetings will lead to the "Jubilee Celebration of 50 years of EPA-NOAA Partnership on Air Quality (September 2005 in Research Triangle Park, NC)." The purpose of these meetings is to ensure the two agencies work together to improve existing air quality assessment and prediction capabilities") (emphasis added) *Id*; United States Department of Commerce, National Oceanic and Atmospheric Administration Atmospheric Sciences Modeling Division and Air Resources Laboratory, *Fiscal Year 2005 Summary Report of the NOAA Atmospheric Sciences Modeling Division to the U.S. Environmental Protection Agency*, NOAA Technical Memorandum OAR-ARL-256 (June 2006), at pp. 1-4, 42-49, available at: http://www.arl.noaa.gov/documents/reports/arl-256.pdf ("The relationship between NOAA and EPA began when the Air Pollution Unit of the Public Health Service, which later became part of the EPA, requested the Weather Bureau to provide it with meteorological expertise. Thus, in 1955, a special Weather Bureau air pollution unit was formced, integrated with the Public Health Service, and located in Cincinnati, Ohio, until it moved in 1969 to Raleigh, North Carolina. The unit is now the NOAA ARL ASMD, working ***within the framework of the Memorandum of Understanding and Memorandum of Agreement between the U.S. Department of Commerce and EPA. These agreements are implemented through long-term Interagency Agreements DW13938483 and DW13948634 between EPA and NOAA***" (emphasis added). *Id*., at Preface, p. iii. "[Atmospheric Sciences Modeling] Division a research is focused on five program areas: new developments in air quality modeling; ***climate change and its impact on regional air quality***; multimedia modeling; data management and analysis; and air quality forecasting") (emphasis added) *Id*., at p. 1.

[42] *See* United States Environmental Protection Agency, EPA Science Inventory, *Air Quality and Global Climate Change (Phase 1)* (4/25/03), available at: http://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=56093 ("The objective of this work is to investigate the impact of global climate change on the regional air quality of the United States. ***Impacts of climate change on meteorological patterns and primary source emissions are investigated as primary elements influencing future air quality***") (emphasis added) *Id*; Ellen J. Cooter, Alice Gilliland, William Benjey, Robert Gilliam, Jenise Swall, *Overview of the Climate Impact on Regional Air Quality (CIRAQ) Project*, United States Environmental Protection Agency, EPA Science Inventory (2004), available at: http://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=85826 and https://www.cmascenter.org/conference/2004/abstracts/Climate%20Multiscale/Cooter_abstract.pdf; Darrell Winner, *Summary of EPA STAR Grants Related to Climate and Air Quality*, United States Environmental Protection Agency, Office of Research and Development and National Center of Environmental Research (2004), available at: http://www.ie.unc.edu/cempd/projects/ICAP/presentations/0.4_Gilliland.ppt ("Portions of the research presented here were performed under the Memorandum of Understanding between the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) and under agreement number DW13921548") *Id*., at p. 19; E. Cooter, R.C. Gilliam, A. Gilliland, W.G. Benjey, J. Swall and C. Nolte, *Examining the Impact of Climate Change and Variability of Air Quality Over the United States*, United States Environmental Protection Agency EPA Science Inventory, Presented at Climate Science in Support of Decision-Making (Arlington, VA Nov. 16, 2005), available at: http://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=143744 ("The Climate Impact on Regional Air Quality (CIRAQ) project, a collaborative research effort involving multiple

Federal Agencies and academic institutions, examines global climate change scenarios as they might affect regional and urban tropospheric air quality in North America for ozone and fine particles. Global climate simulations have been derived from the NASA Goddard Institute for Space Studies (GISS) version II'(two prime) model assuming the IPCC Special Report on Emission Scenarios (SRES) A1B 'business as usual' emission scenario. Scientists with the Department of Energy (DOE) Pacific Northwest National Laboratory have used these scenarios to provide boundary and initial conditions to a regional climate model (RCM) based on the Fifth Generation Pennsylvania State/National Center for Atmospheric Research (NCAR) Mesoscale Model (MM5). Finally, the RCM was used to generate10 years of present (~2000) and future (~2050) hourly climate scenarios for the continental U.S. over a grid of 36km by 36km cells. Results for analyses of RCM surface temperature, surface wind, precipitation and steering level transport patterns on various time scales (e.g., seasonal, annual, inter-annual) have been compared to historical point and gridded reanalysis datasets as well as to the future RCM scenario decade. These comparisons are used to identify some key model biases and uncertainties on temporal and spatial scales relevant to regional and national air quality assessment"); Robert C. Gilliam, Wyat Appel and Sharon Phillips, *The Atmospheric Model Evaluation Tool: Meteorology Module*, United States Environmental Protection Agency, EPA Science Inventory, Presented at 4th Annual CMAS Models-3 Users Conference (Chapel Hill, NC, Sept. 26-28, 2005), available at: http://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=139233 and (6/1/05), available at: and (6/1/05) https://www.cmascenter.org/conference/2005/abstracts/6_1.pdf ("The objectives of this task are to develop, improve, and evaluate EPA's Community Multiscale Air Quality (CMAQ) model, as an air quality management and NAAQS implementation tool. CMAQ is a multiscale and multi-pollutant chemistry-transport model (CTM) that includes the necessary critical science process modules for atmospheric transport, deposition, cloud mixing, emissions, gas- and aqueous-phase chemical transformation processes, and aerosol dynamics and chemistry") *Id*; J. Herwehe, *The NOAA-EPA National Air Quality Forecasting System*, United States Environmental Protection Agency EPA Science Inventory, Presented at East Tennessee Ozone Study 2006 (Oak Ridge, TN (May 17-18, 2006), available at: http://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=154624 ("Building upon decades of collaboration in air pollution meteorology research, ***in 2003 the National Oceanic and Atmospheric Administration (NOAA) and the United States Environmental Protection Agency (EPA) signed formal partnership agreements to develop and implement an operational national air quality forecasting (AQF) system***. Utilizing comprehensive state-of-the-science numerical models, the AQF system provides air quality guidance for state and local agencies to determine a local air quality index (AQI). The AQF system consists of linking the NOAA National Weather Service (NWS) operational North American Mesoscale (NAM) weather prediction model with the EPA's Community Multiscale Air Quality (CMAQ) modeling system to produce next-day hourly surface ozone (O3) forecasts on a horizontal grid spacing of 12 km") (emphasis added) *Id*.

[43] *See* United States Environmental Protection Agency, *Technical Support Document ("EPA-TSD") For Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, EPA–HQ–OAR–2009–0472–11292 (Dec. 7, 2009).

[44] *See* United States Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act: EPA's Response to Public Comments, Volume 1: General Approach to the Science and Other Technical Issues* (April 17, 2009), *supra* at Comment (1-10).

[45] *Id*., at Comment (1-46).

[46] *Id*., at Comment (1-47).

[47] *Id*., at Comment (1-48).

[48] Section 1.5 of EPA's Response to Comments Volume 1 is entitled, "1.5 Information Quality Act Requirements for Independent Assessment".

[49] *Id*., at Responses (1-46), (1-47), (1-48).

[50] *Id*., at Response (1-47).

[51] *Id*., at Response (1-48).

[52] *Id*., at Responses (1-47), (1-48).

[53] "Since the administrative record concerning the Endangerment Finding closed following the EPA's 2010 Reconsideration Denial, a number of such assessments have been released. These assessments include the IPCC's 2012 'Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation'' (SREX) and *the 2013–2014 Fifth Assessment Report (AR5), the USGCRP's 2014 'Climate Change Impacts in the United States' (Climate Change Impacts)*, and the NRC's 2010 'Ocean Acidification: A National Strategy to Meet the

Challenges of a Changing Ocean' (Ocean Acidification), 2011 'Report on Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia' (Climate Stabilization Targets), 2011 'National Security Implications for U.S. Naval Forces' (National Security Implications), 2011 'Understanding Earth's Deep Past: Lessons for Our Climate Future' (Understanding Earth's Deep Past), 2012 'Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future', 2012 'Climate and Social Stress: Implications for Security Analysis' (Climate and Social Stress), and 2013 'Abrupt Impacts of Climate Change' (Abrupt Impacts) assessments. The EPA has reviewed these new assessments and finds that the improved understanding of the climate system they present strengthens the case that GHGs endanger public health and welfare" (emphasis added). *Id.*

[54] *See* NOAA Science Advisory Board, *A Review of the NOAA Climate Services Strategic Plan Final Report to the National Oceanic and Atmospheric Administration, Final Report* (Sept. 2008), at p. 2, available at: http://www.sab.noaa.gov/Reports/2008/NOAA_SAB_CWG_NCS_Review_Sep08_FINALtoNOAA.pdf; U.S. Department of Commerce National Oceanographic Administration Science Advisory Board Climate Working Group, *Options for Developing a National Climate Service* (June 5, 2009), at p. 53, available at: http://www.sab.noaa.gov/Reports/2009/NCS_Report_FinaltoNOAA_6_5_09-1.pdf; National Oceanographic and Atmospheric Administration, *A Climate Service in NOAA: Connecting Climate Science to Decision Making*, Draft Vision and Strategic Framework (Dec. 18, 2010), at Executive Summary, p. 4, available at: http://www.noaa.gov/climateresources/resources/CS_Draft_Vision_Strategic_Framework_v9.0%202010_12_20-1.pdf; United States Department of Commerce National Oceanographic Administration, *Proposed Climate Service in NOAA* (Feb. 15, 2010), NOAA website, available at: http://www.noaa.gov/climateresources/resources/ProposedClimateServiceinNOAA_Feb15rev.pdf; Matthew Berger, *Congress Asks NOAA to Study Setting Up National Climate Service*, InsideClimate News (Dec 16, 2009), available at: http://insideclimatenews.org/print/3803.

[55] *See*, Institute for Trade, Standards and Sustainable Development, *FOIA Request Clarification of Consolidated FOIA Request No. DOC-NOAA-2014-000714* (May 5, 2014), *supra*, at Annotated Addendum, Sec. B.2, pp. 18-19.

[56] *See* "Appendix 1: Author-Contributors to 2014 USGCRP Climate Change Impacts Report (Third National Climate Assessment)," *infra*.

[57] Of the seventy (70) federal agency officials who participated in the development of NCA3-2014's thirty (30) chapters thirteen (13) were from DOC-NOAA. The statistics break down as follows: Chapter 2 – (DOC-NOAA -Kossin, Vose, Anderson, Feely, Knutson – 5), (DOE – Wehner – 1), (NASA – Stephens, Wills, Landerer – 3); Chapter 3 – (NCAR-NSF – Yates – 1), (NASA – Lidard – 1), (DOI-USGS – Dettinger – 1), (Army Corps – White – 1); Chapter 4 – (DOE – Wilbanks -1); Chapter 5 – (DOT – Rypinski – 1), (Army Corps – Russo – 1); Chapter 6 – (DOE – Izaurralde – 1), (USDA – Hatfield, Marshall – 2); Chapter 7 – (DOE – Dale – 1), (DOI-USFS – Joyce, Woodall – 2); Chapter 8 - (DOI-USGS – Carter – 1); Chapter 9 – (NCAR-NSF – Hayden, Wiedinmeyer – 2), (USDA - Ziska – 1), (NIH-CDC – Balbus, Backer, Beard, Guiterrez – 4); Chapter 10 – (DOE – Hibbard, Tidwell – 2); Chapter 11 – (DOE – Wilbanks – 1); Chapter 12 – (NASA – Maynard - 1); Chapter 13 – (DOE – Thomson – 1), (DOI-USFS – Loveland); Chapter 14 – (USDA – Hohenstein, McGranahan, Jadin – 3); Chapter 15 – (DOE- Thorton – 1), (EPA – Clark – 1); Chapter 16 – (NASA – Lipschitz – 1); Chapter 17 – (DOI-USGS – Burkett – 1), (DOI-USFS – Wear – 1), (NIH-CDC – Shramm – 1); Chapter 18 – (DOI-USFS – Iverson – 1), (Army Corps – Downer – 1); Chapter 19 – (DOC-NOAA – Kluck – 1); Chapter 20 – (DOC-NOAA – Smyth – 1); Chapter 21 – (DOI-USGS – Littell – 1); Chapter 22 – (DOI-USGS – Markon, McGuire – 2); Chapter 23 – (DOC-NOAA – Maura, Blovine, Shea – 3), (NASA – Lipschitz – 1), (DOI-USGS – Loope – 1), (DOI-USFS – Miller – 1); Chapter 24 – (DOC-NOAA – Alexander – 1); Chapter 25 – (DOC-NOAA – Davidson, Petes – 2); Chapter 26 – (DOE – Moss – 1), (NCAR-NSF – Cloyd – 1); Chapter 27 – (DOE – Janetos, Calvin – 2), (NASA – Schimel – 1), (DOI-USFS – Birdsey – 1); Chapter 28 – (NCAR-NSF – Seyller – 1); Chapter 29 – (NCAR-NSF – Mearns – 1); Chapter 30 – (Army Corps-DOD – Hall – 1).

[58] *See* "Appendix 2: U.S. Government-Employed Scientists (By Agency) Author-Contributors to IPCC AR5 Working Group I", *infra*.

[59] *See* IPCC, *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.) (Cambridge Univ. Press 2013), at "Annex V: Contributors to the IPCC WGI Fifth Assessment Report," available at: http://www.ipcc.ch/report/ar5/wg1/.

[60] *See, e.g.*, InsideEPA, *Novel EPA Ozone Standard Shows Greater Agency Focus On Ecological Risk*, Risk Policy Report Vol. 17, No. 3 (Jan. 19, 2010), available at: http://insideepa.com/pdf/Risk-Policy-Report/Risk-Policy-Report-

01/19/2010/novel-epa-ozone-standard-shows-greater-agency-focus-on-ecological-risk/menu-id-1096.pdf; Lawrence A. Kogan, *"Ecosystem-Based Management": A Stealth Vehicle To Inject Euro-Style Precaution Into U.S. Regulation*, Washington Legal Foundation Legal Backgrounder Vol. 24 No. 23 (July 10, 2009), available at: http://www.wlf.org/Upload/legalstudies/legalbackgrounder/071009Kogan_LB.pdf.

[61] *See* Lawrence A. Kogan and Richard D. Otis, *Science for the Picking*, Canada Free Press (July 26, 2014), *supra*; Lucas Bergkamp and Lawrence Kogan, *Trade, the Precautionary Principle, and Post-Modern Regulatory Process*, European Journal of Risk Regulation (Dec. 2013), available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2376753.

[62] *See* Lawrence A. Kogan, *Challenging the EPA's War on Coal with IQA*, World Coal.com (July 28, 2014), *supra*.

[63] *See* "Appendix 4: Scientists Affiliated With DOC-NOAA Climate Science-Research-Related Grant-Funded Universities/Entities & Contributors to NCA3-2014 & IPCC AR5 Working Group I", *infra*.

[64] *See* "Appendix 5: DOC-NOAA Grant Participating Universities/Entities & Scientists Contributing to NCA3-2014 & IPCC AR5", *infra*.

[65] These five scientists are Philip Mote of Oregon State Univ., Mark Merrifield and Bin Wang of Univ. of Hawaii, David Weubbles of Univ. of Illinois-Urbana and Scott Doney of Woods Hole Oceanographic Institute, and they have been subtracted from the gross total of 146 scientists to avoid double counting.

[66] These fifteen contributions reflect a netting-out of the contributions two scientists made to both the NCA3-2014 and the IPCC-AR5-WGI.

[67] *See* U.S. Department of Commerce National Oceanic Atmospheric Administration, *Cooperative Institute Program Office Fact Sheet*, NOAA website, available at: ftp://ftp.oar.noaa.gov/lci/1pgFactSheets/CIFAS.pdf. "Cooperative Institutes are non-federal organizations supported by the National Oceanic and Atmospheric Administration (NOAA). Cooperative Institutes have outstanding research programs in one or more areas relevant to the NOAA mission. NOAA's Cooperative Institutes collaborate in a large portion of NOAA's research and play a vital role in increasing NOAA's research capacity and expertise." *Id*. As of 2012, there appears to have been **eighteen (18) Cooperative Institutes managed by three NOAA lines offices**: National Environmental Satellite, Data and Information Service (NESDIS), National Marine Fisheries Services (NMFS), and Oceanic and Atmospheric Research (OAR). *See* United States Department of Commerce, National Oceanic and Atmospheric Administration, *NOAA COOPERATIVE INSTITUTE PROFILES 6/6/2012*, NOAA website, available at: ftp://ftp.oar.noaa.gov/lci/Documents/ci-profiles.pdf. As of 2012, there had been three DOC-NOAA-NESDIS-managed Cooperative Institutes with the following host and participating universities: (1)(a) Name – Cooperative Institute for Climate and Satellites **(CICS-M)**; (b) Host – Univ. of Maryland College Park; (b) Participants - North Carolina State Univ., Univ. of California-Irvine, Colorado State Univ., Howard Univ., Univ. of Miami, Duke Univ., Univ. of North Carolina-Chapel Hill, Princeton Univ., City Univ. of New York, Columbia Univ., Oregon State Univ. and Remote Sensing Systems; (2)(a) Name – Cooperative Institute for Meteorological Satellite Studies **(CIMSS)**; (2)(b) Host – Univ. of Wisconsin-Madison; (2)(c) Participants – none; (3)(a) Name - Cooperative Institute for Oceanographic Satellite Studies **(CIOSS)**; (3)(b) Host - Oregon State Univ.; (3)(c) Participants – none. *Id*. As of 2012, there appears to have been one DOC-NOAA-NMFS-managed Cooperative Institute. (1)(a) Name - Cooperative Institute for the Pacifica Island Region **(CIPIR)**; (1)(b) Host – Univ. of Hawaii; (1)(c) – Participants – none. *Id*. As of 2012, there appears to have been fifteen (15) DOC-NOAA-OAR-managed Cooperative Institutes: (1)(a) Name - Cooperative Institute for Climate Applications Research **(CICAR)**; (1)(b) Host - Columbia Univ.; (1)(c) Participants – none; (2)(a) Name - Cooperative Institute for Climate Science **(CICS-P)**; (2)(b) Host - Princeton Univ.; (2)(c) Participants – none; (3)(a) Name - Cooperative Institute for Alaska Research **(CIFAR)**; (3)(b) Host – Univ. of Alaska - Fairbanks; (3)(c) Participants – none; (4)(a) Cooperative Institute for Limnology and Ecosystem Research **(CILER)**; (4)(b) Host – Univ. of Michigan; (4)(c) Participants - Grand Valley State Univ., Michigan State Univ. Ohio State Univ., Penn State Univ., Stony Brook Univ., Univ. of Illinois at Urbana-Champaign, Univ. of Minnesota, Univ. of Toledo, and Univ. of Wisconsin; (5)(a) Name - Cooperative Institute for Marine and Atmospheric Studies **(CIMAS)**; (5)(b) Host – Univ. of Miami; (5)(c) Participants - Florida Atlantic Univ., Florida Int'l Univ., Florida State Univ., NOVA Southeastern Univ., Univ. of Puerto Rico, Univ. of Florida, Univ. of South Florida, and Univ. of the Virgin Islands; (6)(a) Name - Cooperative Institute for Marine Ecosystems and Climate **(CIMEC)**; (6)(b) Host – Univ. of Calif. San Diego; (6)(c) Participants - Scripps Institution of Oceanography, Calif. State Univ., Los Angeles, Humboldt State, Univ. of Calif., Davis, Univ. of Calif., Los Angeles, Univ. of Calif., Santa Barbara, and Univ. of Calif., Santa Cruz; (7)(a) Name -Cooperative Institute for Mesoscale Meteorological Studies **(CIMMS)**; (7)(b) Host – Univ. of Oklahoma; (7)(c) Participants – none; (8)(a) Name - Cooperative Institute for Marine Resources Studies

(CIMRS); (8)(b) Host – Oregon State Univ.; (8)(c) Participants – none; (9)(a) Name - Cooperative Institute for the North Atlantic Region **(CINAR)**; (9)(b) Host - Woods Hole Oceanographic Institution; (9)(c) – Participants – Rutgers Univ., Univ. of Maryland-Center for Environmental Science, Univ. of Maine, and Gulf of Maine Research Institute; (10(a) Name - Cooperative Institute for Ocean Exploration, Research and Technology **(CIOERT)**; (10)(b) Host – Florida Atlantic Univ.; (10)(c) – Participants – Univ. of North Carolina-Wilmington; (11)(a) Name - Cooperative Institute for Research in the Atmosphere **(CIRA)**; (11)(b) Host – Colorado State Univ.; (11)(c) Participants – none; (12)(a) Name - Cooperative Institute for Research in Environmental Sciences **(CIRES)**; (12)(b) Host – Univ. of Colorado; (12)(c) Participants – none; (13)(a) Name - Joint Institute for Marine and Atmospheric Research **(JIMAR)**; (13)(b) Host – Univ. of Hawaii; (13)(c) Participants – none; (14)(a) Name – Joint Institute for the Study of the Atmosphere and Ocean **(JISAO)**; (14)(b) Host – Univ. of Washington; (14)(c) Participants – none; (15)(a) Name - Northern Gulf Institute **(NGI)**; (15)(b) Mississippi State Univ.; (15)(c) Participants – Univ. of Southern Mississippi, Louisiana State Univ., Florida State Univ., and Dauphin Island Sea Lab.

[68] As of 2014, there are sixteen (16) Cooperative Institutes, indicating that a consolidation of the DOC-NOAA Cooperative Institutes Program had taken place: CICS-M; CIMSS; CICS-P; CIPIR-JIMAR; CIFAR; CILER; CIMAS; CIMEC; CIMMS; CIMRS; CINAR; CIOERT; CIRA; CIRES; JISAO; and NGI. *See* United States Department of Commerce National Oceanic and Atmospheric Administration, *National Oceanic and Atmospheric Administration Cooperative Institutes*, NOAA website, available at: http://ci.noaa.gov/Locations.aspx

[69] "The Climate and Societal Interactions (CSI) Program's mission is to provide leadership and support for research, assessments and climate services development activities designed to bring sound, interdisciplinary science to bear on climate sensitive resource management and adaptation challenges in key sectors and regions…CSI research and capacity building activities address several societal challenges articulated in the context of the climate adaptation and mitigation objective of the NOAA Next Generation Strategic Plan (NGSP), including: i) water resources; ii) coastal resilience; iii) marine ecosystems; and iv) weather and extreme events." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions.aspx.

[70] The CSI is comprised of the following subprograms: 1) "Coastal and Ocean Climate Applications (COCA) - *supports interdisciplinary applications research* on the impacts of climate variability and change on coastal communities and coastal and marine ecosystems to inform decision making"; 2) "Regional Integrated Sciences and Assessments (RISA) - *supports research teams* that conduct innovative, interdisciplinary, user-inspired, and regionally relevant research that informs resource management, planning, and public policy"; 3) "International Research and Applications Project (IRAP) - *supports activities to link climate research and assessments to practical risk management, development and adaptation challenges* in key regions throughout the world"; 4) "Sectoral Applications Research Program (SARP) - addresses the needs of a specific stakeholder or set of stakeholder within key socioeconomic sectors (e.g., water resources, agriculture, health, etc.) grappling with pressing climate-related issues. For 2012, SARP will focus on the water resource sector"; and 5) "National Integrated Drought Information System (NIDIS) - provides dynamic and easily accessible drought information for the Nation. NIDIS *supports drought research* focusing on risk assessment, forecasting, management, and development of decision-support resources. 'Coping with Drought,' grants competitions are administered through the RISA and SARP programs" (emphasis added). *Id.*

[71] "The Coastal and Ocean Climate Applications (COCA) program addresses the needs of specific decision makers grappling with pressing climate-related issues in coastal and marine environments. This program strengthens initiatives — initially developed under the Sectoral Applications Research Program — *to support interdisciplinary applications research* aimed at addressing climate-related challenges in coastal communities as well as coastal and marine ecosystems." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions - Coastal and Ocean Climate Applications (COCA) [Program]*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/COCAProgram.aspx.

[72] For example, the following public and private universities had received DOC-NOAA research and other funding during 2008-2009: 1) Ohio State Univ. (2008); 2) Oregon State Univ. (2008); Virginia Inst. Of Marine Science (2008); Univ. Mass. Boston , Tufts Univ. and Univ. of Maryland (2008); Univ. of Wisconsin (2009); Clemson Univ., Coastal Carolina Univ. and Univ. of South Carolina (2009); Dillard Univ. and Tulane Univ. (2009); Oregon State Univ. (2009).

[73] "NOAA's Regional Integrated Sciences & Assessments (RISA) program supports research teams that help expand and build the nation's capacity to prepare for and adapt to climate variability and change." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal*

Interactions – RISA Program, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram.aspx.

[74] "There are currently 11 active RISA projects across the country." *Id*. The Western Water Assessment ("WWA") Project is 'housed' in the University of Colorado which is an "affiliated institution". ." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams - Western Water Assessment*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/WWA.aspx. The WWA program appears to have commenced in 2009. The Southeast Climate Consortium ("SECC") began in 1998, and its "affiliated institutions" include: Auburn Univ.; Clemson Univ.; Florida State Univ.; North Carolina State Univ.; Univ. of Alabama-Huntsville; Univ. of Florida; Univ. of Georgia and Univ. of Miami. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams - Southeastern Climate Consortium*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/SECC.aspx. The Southern Climate Impacts Planning Program ("SCIPP")'s "affiliated institutions" include the Univ. of Oklahoma and Louisiana State Univ. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams - Southern Climate Impacts Planning Program*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/SCIPP.aspx. The "Pacific RISA" is 'housed' in the East-West Center of the Univ. of Hawaii, which is designated as an "affiliated institution". *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams – Pacific RISA*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/PacificRISA.aspx. The Great Lakes Integrated Sciences and Assessments Center ("GLISA"), which appears to have commenced in 2010, has the following "affiliated institutions": Univ. of Michigan, Ohio State Univ., and Michigan State Univ. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams – Great Lakes Integrated Sciences and Assessments Center*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/GLISA.aspx. The California Nevada Applications Program ("CNAP"), which appears to have commenced during 2009 (judging from its 2010 Annual Report), is comprised of the following "affiliated institutions": Univ. of Calif., San Diego; San Diego State Univ.; Univ. of Washington; Univ. of Calif., Merced; Scripps Institution of Oceanography; and Desert Research Institute. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams – California Nevada Applications Program*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/CNAP.aspx. The Climate Assessment for the Southwest ("CLIMAS"), which has been in operation since 1998, is comprised of the following "affiliated institutions": Univ. of Arizona; and New Mexico State Univ. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams – Climate Assessment for the Southwest*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/CLIMAS.aspx. Carolinas Integrated Sciences and Assessments ("CISA"), which appears to have been in operation since 2003, is comprised of the following "affiliated institutions": East Carolina Univ.; North Carolina State Univ.; Univ. of North Carolina; Univ. of South Carolina. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams – Carolinas Integrated Sciences and Assessments*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/CISA.aspx. The Climate Impacts Research Consortium ("CIRC") appears to have commenced in 2010 and its 'Principal Investigator, Philip Mote, had served as a contributor to and reviewer of the Working Group I portion of the IPCC AR4. The CIRC is comprised of the following "affiliated institutions": Oregon State Univ.; Univ. of Oregon; Univ. of Wash.; and Univ. of Idaho. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams – Climate Impacts Research*

Consortium, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/CIRC.aspx. (CIRC is a member of The PNW Climate Impacts Research Consortium which includes the Oregon Climate Change Research Institute, and the Oregon Climate Service with which the following institutions are affiliated: Oregon State Univ.; Portland State Univ.; and Southern Oregon Univ. *See* "The PNW Climate Impacts Research Consortium", available at: http://pnwclimate.org/; "Oregon Climate Change Research Institute", available at: http://occri.net/; "Oregon Climate Service", available at: http://www.ocs.orst.edu/.) The Consortium on Climate Risk in the Urban Northeast ("CCRUN"), which appears to have commenced in 2011, is comprised of the following "affiliated institutions": Columbia Univ.; Univ. Mass. Amherst; City College of New York; Rutgers Univ.; Stevens Institute of Technology; Drexel Univ. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams – Consortium on Climate Risk in the Urban Northeast*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/CCRUN.aspx. The Alaska Center for Climate Assessment and Policy ("ACCAP"), which appears to have commenced during 2011, is 'housed' in the Univ. of Alaska-Fairbanks, a designated "affiliated institution". *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – RISA Program – RISA Teams – Alaska Center for Climate Assessment and Policy*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram/RISATeams/ACCAP.aspx.

[75] "The International Research and Applications Project (IRAP) is intended to support activities that link climate research and assessments to practical risk management, development and adaptation challenges in key regions throughout the world." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – International Research and Applications Project (IRAP), About About International Research and Applications Project (IRAP)*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/IRAPProgram/AboutIRAP.aspx. Apparently, DOC-NOAA had made a "long-term institutional investment in the International Research Institute for Climate and Society (IRI)" of Columbia University. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – International Research and Applications Project (IRAP)*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/IRAPProgram/MeetingsandEvents.aspx. The IRI website confirms that, "The IRI was established as a cooperative agreement between NOAA's Climate Program Office and Columbia University. It is part of The Earth Institute, Columbia University, and is located at the Lamont Campus." *See* "International Research Institute for Climate and Society (IRI) - Columbia University", available at: http://iri.columbia.edu/portal/server.pt.

[76] "The Sectoral Applications Research Program (SARP) supports interdisciplinary research to advance understanding of how climate variability and change affect key socio-economic sectors, and promotes the application of this new knowledge in climate-related decisions." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – Sectoral Applications Research Program - About the Sectoral Applications Research Program*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/SARPProgram/AboutSARP.aspx. This program appears to have commenced during 2011. Based on the annual 2011 report submitted by NOAA grant recipients, NOAA appears to have funded the following universities: Univ. of North Carolina-Chapel Hill; Penn State Univ.; Texas A&M Univ. *See* "Annual Report to the National Oceanic and Atmospheric Administration's Climate Program Office, Sectoral Applications Research Program (SARP), Portfolio-based Approaches to Managing Climate Uncertainty in Urban Water Planning (Award No. NA11OAR4310144)", NOAA website, available at: http://cpo.noaa.gov/sites/cpo/Projects/SARP/CharacklisAnnualRpt.pdf.

[77] "The National Integrated Drought Information System (NIDIS) provides dynamic and easily accessible drought information for the Nation…NIDIS integrates basic and applied research performed by NOAA and other agencies into an adaptive decision-support environment for resource managers, farmers, and other water users." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Climate and Societal Interactions – National Integrated Drought Information System (NIDIS), About the National Integrated Drought Information System (NIDIS)*, NOAA website, available at:

http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/NIDISProgram.aspx. The NIDIS program appears to have commenced in 2006. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Office of Oceanic and Atmospheric Research, *Climate Program Office National Integrated Drought Information System Brochure* (Oct. 2012), available at: http://cpo.noaa.gov/sites/cpo/Briefing%20sheets/NIDIS_Oct24v2.pdf. It appears that, during 2010, NOAA had funded a NIDIS research project that involved the following universities: Mississippi State Univ.; Princeton Univ.; and Univ. of Washington. *See* Lifeng Luo, *Research project funded by NOAA Climate Program Office*, Hydroclimatology Research Group at MSU (May 21, 2010), available at: http://drought.geo.msu.edu/news/2010520/.

[78] "The Earth System Science (ESS) division supports research to provide a process-level understanding of the climate system through observation, modeling, analysis, and field studies." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration, *Climate Program Office – Earth Systems Science*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/EarthSystemScience.aspx. The website reveals at least one ESS-funded project that involved scientists from the following universities: Princeton Univ.; Harvard Univ.; Univ. of Calif.-Berkeley; Calif. Inst. Of Technology; Univ. of Leicester, Leicester, UK. *See* United States Department of Commerce, National Oceanic and Atmospheric Administration, Climate Program Office – Earth Systems Science – ESS Archive, *AC4 funds research that proposes revised mechanism for isoprene chemistry*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/EarthSystemScience/ESSArchive/TabId/541/ArtMID/1399/ArticleID/210/AC4-funds-research-that-proposes-revised-mechanism-for-isoprene-chemistry.aspx. *See also* Jingqiu Mao, Fabien Paulot, Daniel J. Jacob, Ronald C. Cohen, John D. Crounse, Paul O. Wennberg, Christoph A. Keller, Rynda C. Hudman, Michael P. Barkley and Larry W. Horowitz, Ozone and Organic Nitrates Over the Eastern United States: Sensitivity to Isoprene Chemistry, Journal of Geophysical Research: Atmospheres Volume 118, Issue 1(American Geophysical Union 2013), Wiley Online Library, available at: http://onlinelibrary.wiley.com/doi/10.1002/jgrd.50817/abstract.

[79] "NOAA's National Sea Grant College Program is a network of *33 Sea Grant programs located in every coastal and Great Lakes state, Puerto Rico, Lake Champlain and Guam*. These programs serve as the core of a dynamic, *national university-based network of over 300 institutions involving more than 3,000 scientists, engineers, educators, students and outreach experts*. The network engages the power of academia and a wide variety of partners to address issues such as coastal hazards, sustainable coastal development and seafood safety" (emphasis added). *See* United States Department of Commerce National Oceanographic and Atmospheric Administration, *Sea Grants Program – National Network of State Programs*, NOAA website, available at: http://seagrant.noaa.gov/WhereWeWork/SeaGrantPrograms.aspx. *See also* Mississippi-Alabama Sea Grant Consortium, *About MASGC*, available at: http://masgc.org/about; NJ Sea Grant Consortium, *About Us-Member Institutions*, available at: http://njseagrant.org/about-us/member-institutions/; South Carolina Sea Grant Consortium, *The Changing Face of Coastal South Carolina: Enhancing Understanding – Informing Decision-making, Strategic Plan 2014-2017* (Oct. 29, 2012), at p. 47, available at: http://www.scseagrant.org/pdf_files/SCSGC-Strat-Plan-2014-2017.pdf.; Illinois-Indiana Sea Grant, *About Us*, available at: http://www.iisgcp.org/aboutus.html. These 33 programs are found at and involve the following universities: 1) Guam Sea Grant Program - Univ. of Guam; 2) Hawaii Sea Grant Program - Univ. of Hawaii; 3) Alaska Sea Grant Program - Univ. of Alaska-Fairbanks; 4) Puerto Rico Sea Grant Program - Univ. of Puerto Rico; 5) Washington Sea Grant Program - Univ. of Washington; 6) Oregon Sea Grant Program - Oregon State Univ.; 7) University of Southern California Sea Grant Program - Univ. of Southern California; 8) California Sea Grant Program - UC-San Diego; 9) Louisiana Sea Grant Program - Louisiana State Univ.; 10) Mississippi-Alabama Sea Grant Consortium - (Auburn Univ., Dauphin Island Sea Lab, Jackson State Univ., Miss. State Univ., Univ. of Alabama, Univ. of Miss., Univ. of So. Miss., Univ. of So. Alabama); 11) Florida Sea Grant Program - Univ. of Florida; 12) National Sea Grant Law Center - Univ. of Mississippi; 13)
Georgia Sea Grant Program - Univ. of Georgia; 14) South Carolina Sea Grant Consortium **(**Clemson Univ., College of Charleston, Coastal Carolina Univ., Medical Univ. of South Carolina, South Carolina State Univ., The Citadel, Univ. of South Carolina, SC Dep't of Natural Resources**)**; 15) North Carolina Sea Grant Program - North Carolina State Univ.; 16) Virginia Sea Grant Program - Virginia Institute of Marine Science; 17) Maryland Sea Grant Program - Univ. of Maryland; 18) Delaware Sea Grant Program - Univ. of Delaware; 19) New Jersey Sea Grant Consortium - **(**including Rutgers Univ., Princeton Univ., and twenty other universities**)**, 20) New York Sea Grant Program - State Univ. of New York Stonybrook; 21) Connecticut Sea Grant Program - Univ. of Connecticut; 22) Rhode Island Sea Grant Program - Univ. of Rhode Island; 23) WHOI Sea Grant Program - Woods Hole Oceanographic; 24) MIT Sea Grant Program - Massachusetts Institute of Technology; 25) New Hampshire Sea Grant Program - Univ. of New Hampshire; 26) Maine

Sea Grant Program - Univ. of Maine; 27) Lake Champlain Sea Grant Program - Univ. of Vermont; 28) Pennsylvania Sea Grant Program - Penn State Univ.; 29) Ohio Sea Grant Program - Ohio State Univ.; 30) Michigan Sea Grant Program - Univ. of Michigan; 31) Illinois-Indiana Sea Grant Program - **(**Univ. of Illinois-Urbana, Purdue Univ.**)**; 32) Wisconsin Sea Grant Program - Univ. of Wisconsin; and 33) Minnesota Sea Grant Program - Univ. of Minnesota.

[80] "The Modeling, Analysis, Predictions, and Projections (MAPP) Program's mission is to enhance the Nation's capability to understand and predict natural variability and changes in Earth's climate system. The MAPP Program supports development of advanced climate modeling technologies to improve simulation of climate variability, prediction of future climate variations from weeks to decades, and projection of long-term future climate conditions. To achieve its mission, the MAPP Program supports research focused on the coupling, integration, and application of Earth system models and analyses across NOAA, among partner agencies, and with the external research community." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Climate Program Office, *Modeling, Analysis, Predictions, and Projections (MAPP)*, NOAA website, available at: http://cpo.noaa.gov/ClimatePrograms/ModelingAnalysisPredictionsandProjections.aspx. "Researchers funded by MAPP refine models' computerized representations of Earth's processes and evaluate their performance… MAPP supports reanalysis projects that are critical to improving model simulations and projections. Reanalysis combines models with historical observations to create a complete and consistent historical record." *See* United States Department of Commerce, National Oceanic and Atmospheric Administration Office of Oceanic and Atmospheric Research, *Climate Program Office Modeling, Analysis, Predictions, and Projections Brochure* (Oct. 2012), available at: http://cpo.noaa.gov/sites/cpo/Briefing%20sheets/MAPP_Oct24v2(2).pdf.

[81] *See* Associated Press, *Obama Administration Unveils Climate Change Data Initiative*, Politico (March 19, 2014), available at: http://www.foxnews.com/politics/2014/03/19/obama-administration-unveils-climate-change-data-initiative/ ("The Obama administration hopes to fight global warming with the geeky power of numbers, maps and even gaming-type simulations. The White House…announced an initiative to provide private companies and local governments better access to already public climate data. The idea is that with that localized data they can help the public understand the risks they face, especially in coastal areas where flooding is a big issue."). *Id*. *See also* Data.gov, *Climate*, available at: https://www.data.gov/climate/.

[82] *See* The White House, *The President's Climate Change Action Plan* (June 2013), available at: http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf.

[83] *See* Pete Ogden, *Beyond Copenhagen: How Washington Can Bolster a Stronger Climate Deal*, Foreign Affairs (Aug. 4, 2014), available at: http://www.foreignaffairs.com/articles/141692/pete-ogden/beyond-copenhagen; Jane Perlez, *A Reassuring American Presence Joins Talks on Climate Change With China*, New York Times (July 21, 2014), available at: http://sinosphere.blogs.nytimes.com/2014/07/21/a-reassuring-american-presence-joins-talks-on-climate-change-with-china/?_php=true&_type=blogs&_r=0.

[84] *See* White House, *President Obama's Development Policy and the Global Climate Change Initiative*, Climate Fact Sheet (), available at: http://www.whitehouse.gov/sites/default/files/Climate_Fact_Sheet.pdf; USAID, U.S. Global Climate Change Initiative, available at: http://www.usaid.gov/climate/us-global-climate-change-initiative.

[85] *Id*., at p. 3.

[86] The U.S. Department of Commerce ("DOC") established the National Climate Assessment Development & Advisory Committee ("NCADAC") in 2010, the charter of which was subsequently amended in 2011 and later renewed in 2013. The charter provides that NCADAC's "mission is to synthesize and summarize the science and information pertaining to current and future impacts of climate change upon the United States; and to provide advice and recommendations toward the development of an ongoing, sustainable national assessment of global change impacts and adaptation and mitigation strategies for the Nation. Within the scope of its mission, ***the committee's specific objective is to produce a National Climate Assessment***…" (emphasis added). *See* U.S. Department of Commerce, *Amended Charter of the National Climate Assessment Development & Advisory Committee* (8/31/11), (6/24/13) available at: http://downloads.globalchange.gov/nca/NCADAC/NCADAC_Charter_6-24-13.pdf. The NCADAC, which is comprised of sixty (60) persons who "oversaw the development of the draft climate report…is supported through the National Oceanic and Atmospheric Administration (NOAA)." *See* U.S. Global Change Research Program, *National Climate Assessment and Development Advisory Committee*, available at: http://www.globalchange.gov/ncadac.

[87] *See* U.S. Global Change Research Program, *National Climate Assessment and Development Advisory Committee*, USGCRP website, available at: http://www.globalchange.gov/ncadac.

[88] *See* U.S. Department of Commerce, *Amended Charter of the National Climate Assessment Development & Advisory Committee* (8/31/11), (6/24/13), *supra*..
[89] *See* Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe (Eds., 2014), *Climate Change Impacts in the United States: The Third National Climate Assessment*, U.S. Global Change Research Program, at p. iv, available at: http://nca2014.globalchange.gov/system/files_force/downloads/low/NCA3_Climate_Change_Impacts_in_the_United%20States_LowRes.pdf?download=1.
[90] *Id*., at p. 3.
[91] *Id*., at p. 4.
[92] *Id*., at Appendix 2, pp. 733-734.
[93] *Id*.
[94] *See* Office of Management and Budget, *Final Information Quality Bulletin for Peer Review* ("OMB Peer Review Bulletin" or OMB-PRB") (Dec. 16, 2004) *supra* at Preamble, p. 9.
[95] "[T]he Bulletin does not directly cover information supplied to the government by third parties (e.g., studies by private consultants, companies and private, non-profit organizations, or research institutions such as universities). However, if an agency plans to disseminate information supplied by a third party (e.g., using this information as the basis for an agency's factual determination that a particular behavior causes a disease), the requirements of the Bulletin apply, if the dissemination is 'influential'". *Id*.
[96] *See* U.S. Environmental Protection Agency, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by EPA* (2002), *supra* at Sec. 5.3 pp. 15-16.
[97] *Id*.
[98] *Id*., at Sec. 5.5 p. 18.
[99] *Id*., at Sec. 6.5.
[100] *Id*.
[101] *See* United States Environmental Protection Agency, *Peer Review Handbook (3rd ed.)*, EPA/100/B-06/002 (6/29/12) ("EPA-PRH(2012)"), *supra* at Sec. 2.2.17.
[102] *See* 79 FR 34830, at 34842, *supra*.
[103] *Id*., at Sec. III.3.a.
[104] *Id*., at Sec. III.3.b.
[105] *See* National Research Council, *A Review of the Draft 2013 National Climate Assessment* (National Academies Press. Wash., DC 2013), at p. iii, available at: http://www.nap.edu/catalog.php?record_id=18322 and http://nas-sites.org/americasclimatechoices/other-reports-on-climate-change/2013-2/895-2/ ("This study was supported by the National Aeronautics and Space Administration under contract #NNH07CC79B, TO #5.") *Id*.
[106] *See, e.g., Basic Agreement Between the National Aeronautics and Space Administration and the U.S. Department of Commerce Concerning Collaborative Programs* (6-17-98), available at: http://science.nasa.gov/media/medialibrary/2010/03/31/DOC-NASA-UMB-Basic_Agreement-980617.pdf ("3.1 NOAA's mission is to describe and predict changes in the Earth's environment, and conserve and manage wisely the Nation's coastal and marine resources to ensure sustainable economic opportunities. *NOAA is responsible for creating and disseminating reliable assessments and predictions of weather and climate* and, in this connection, for maintaining continuous operational satellite observations critical for warnings and forecasts) (emphasis added). *Id*. at Art. 3.1; *Memorandum of Understanding between NASA and NOAA for Earth Observations Remotely Sensed Data Processing, Distribution, Archiving, and Related Science Support* (July 27, 1989), available at: http://science1.nasa.gov/media/medialibrary/2010/03/31/NOAA-NASA-MOU-Earth_Observations_Remotely_Sensed_Data-890727.pdf ("I...Various statutes, including the Weather Service Organic Act, the Federal Aviation Act, the Land Remote Sensing Act of 1984, the Coast and Geodetic Survey Act, and the Clean Air Act as amended, direct NOAA to make environmental observations; *to monitor, understand, and predict climate conditions*, and, as part of this mandate; to acquire, maintain and distribute long- term data bases, and to process and archive space-based data. II. PURPOSE AND SCOPE OF MEMORANDUM OF UNDERSTANDING [-] The purpose of is to establish the terms and conditions under which NASA and NOAA will cooperate as partners in the Earth System (Eos)...") (emphasis added). *Id*. at Arts. I, II; *Addendum I: NASA-NOAA Cooperative Agreement – Early-EOSDIS Pathfinder Data Set Activity* (Oct. 15, 1990), available at: http://science.nasa.gov/media/medialibrary/2010/03/31/NOAA-NASA-MOU-Addendum_1-Early_EOSDIS_Data_Pathfinder-901015.pdf ("I...*It is essential that important, scientifically validated data sets of*

'research/climate quality' for Global Change research be cataloged and readily available, at minimum cost, to the research community… NASA and NOAA will cooperate to ensure that, to the maximum extent possible, the NASA EOSDIS and NOAA data and information systems achieve full interoperability in the EOS era…This addendum constitutes an implementation level agreement under the *'Memorandum of Understanding between NASA and NOAA for Earth Observations Remotely Sensed Data Processing, Distribution, Archiving, and Related Science Support'*) (emphasis added). *Id*., at Art. I; *Addendum II: NASA-NOAA Agreement Data and Information Exchange Activity* (Nov. 25, 1992), available at: http://science.nasa.gov/media/medialibrary/2010/03/31/NOAA-NASA-Addendum_2-Data_-_Information_Exchange_Activity-921125.pdf ("I. *In support of the U.S. Global Change Research Program* it is essential for government agency data information systems to be interoperable. *NASA and NOAA are both participating in the Interagency Working Group on Data Management for Global Change (IWGDMGC).* Under the aegis of the IWGDMGC, participating agencies have agreed to cooperate to build interoperability among their data and information systems so that the aggregate of agency systems can appear to the Global Change research user as one logically integrated system, the Global Change Data and Information System (GCDIS). This interoperability of the Information Management Service functions of each participating data system. In addition, NASA and NOAA programs have special requirements for mutual exchange of data that transcend the normal services available from the other agency…Therefore NASA and NOAA agree to cooperate in building interoperability between their data and information systems and to develop special arrangements as needed for data exchange to support NASA and programs. This addendum constitutes an overall implementation level agreement under the *'Memorandum of Understanding between NASA and NOAA for Earth Observations Remotely Sensed Data Processing, Distribution, Archiving, and Related Science Support.'* This agreement will, in turn, provide a framework under which specific project-level implementation agreements will be developed between NASA and NOAA elements involved in these activities" (emphasis added). *Id*., at Art. 1.

[107] *See* National Research Council, *A Review of the Draft 2013 National Climate Assessment* (National Academies Press. Wash., DC 2013), *supra* at p. 3. "A Panel of the NRC "Committee to Advise the U.S. Global Change Research Program" (USGCRP) will conduct an independent review of the U.S. Global Change Research Program's 2013 NCA report…" *Id*., at "Appendix C: Statement of Task - Review of the National Climate Assessment 2013 Report and Advice Regarding the Sustained Assessment Process", p. 117.

[108] *See* U.S. Global Change Research Program, *National Climate Assessment and Development Advisory Committee*, available at: http://www.globalchange.gov/ncadac.

[109] *See* National Research Council, *A Review of the Draft 2013 National Climate Assessment* (National Academies Press. Wash., DC 2013), *supra* at p. 4.

[110] *See* National Research Council, *A Review of the Draft 2013 National Climate Assessment* (National Academies Press. Wash., DC 2013), *supra* at pp. vi-vii.

[111] "The issues addressed by BASC are at the forefront of contemporary concerns. Climate change and impacts, global climate models and the implications of their results, air pollution, and severe weather are topics discussed not just by scientists, but in Congress and in headlines every day. Our understanding of these issues directly affects the nation's environmental policies, energy choices, manufacturing decisions, construction codes, and agricultural methods." *See* National Academy of Sciences, *Board on Atmospheric Sciences and Climate - About BASC*, available at: http://dels.nas.edu/global/basc/About-Us.

[112] "BECS advises the nation about the causes and consequences of environmental change and informs environmental decisions. In this context, the role of BECS will encompass strategic planning, program development, and oversight of NRC studies and other activities initiated under the auspices of the board […]BECS is responsible for NRC programs that[: 1) Build understanding of human interactions with the biophysical environment; [2)] Contribute to the development of a coherent field of scientific endeavor in this area; [3)] Integrate social and behavioral science research into environmental science and policy; [and 4] Advance the behavioral, social, and decision sciences…" *See* National Academy of Sciences, *Board on Environmental Change and Society - Statement of Task*, available at: http://sites.nationalacademies.org/DBASSE/BECS/DBASSE_068033.

[113] *See* OMB-PRB, *supra* at Sec. IV, p. 27.

[114] *Id*.

[115] *See* U.S. Global Change Research Program, *Comments Received on Public Draft Third National Climate Assessment, Public Comments Submitted by the Environmental Protection Agency Re: Chapter 12. Impacts of Climate Change on Tribal, Indigeno U.S. and Nature Lands and Resources*, at p. 179, available at: http://www.globalchange.gov/sites/globalchange/files/NCA3-Public-Comments.pdf ("*As general practice for a report*

that is a Highly Influential Scientific Assessment, we stress the importance of clearly demarcating grey literature from peer-reviewed scientific literature, and that citations to grey literature be used sparingly and only when they add additional key knowledge not found in the scientific literature. There are a number of instances of over-reliance on grey literature in this chapter without providing the primary source of where the information came from originally (specified in the comments below)…") (emphasis added). *Id*.

[116] *See* Ian Fein, *Reassessing the Role of the National Research Council: Peer Review, Political Tool, or Science Court?*, 99 Calif. Law Rev. 465 (2011), available at: http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=1045&context=californialawreview (discussing how politicians and federal agencies have increasingly turned to the NRC to defuse political controversies, particularly in the natural resources arena. The author discusses three such cases).

[117] *See* Edward J. Calabrese, *The Genetics Panel of the NAS BEAR I Committee (1956): epistolary evidence suggests self‐interest may have prompted an exaggeration of radiation risks that led to the adoption of the LNT cancer risk assessment model*, Archives of Toxicology (July 4, 2014), at p. 1, Abstract available at: http://www.ncbi.nlm.nih.gov/pubmed/24993953.

[118] *Id*.

[119] *See* United States Environmental Protection Agency, *Administrator Gina McCarthy, Remarks at the National Academy of Sciences, As Prepared*, EPA Newsroom Speeches (4/28/14), available at: http://yosemite.epa.gov/opa/admpress.nsf/8d49f7ad4bbcf4ef852573590040b7f6/2c0a15a30105f16185257cc8004be075!OpenDocument ("When it comes to quality *science that has **supported** the work of EPA and other federal agencies, the National Academy has been the gold standard*. Has it always been easy for us to hear what you've told us? No. But even when you've challenged us, your tough love has made us stronger. And EPA counts on your science to guide our actions and gauge our progress […]When we follow the science -- we all win. This country and the world move forward. And today: the need to follow the science -- and the risks of ignoring it -- are crystal clear. *Just look at the threat of climate change*. From more frequent and intense heat waves, droughts, floods, and storms -- to more smog and asthma -- climate change has put our health and economic risks on steroids. Using the best science we have to offer -- *our next U.S. National Climate Assessment is about to be finalized*. From coastal cities to the Great Plains, we have to use that science to prepare and to plan. Just like we use the science on mercury, acid rain, ozone pollution, particulate matter and more. To reduce the risks that threaten our health and safety, we need to listen to climate science. We cannot let those same critics of science continue to manufacture uncertainties that stop us from taking urgently needed climate action. If 97 out of 100 doctors said you were really sick -- I'd say it's pretty risky to go with the 3 that didn't. Climate evidence is clear: arctic sea ice is receding to new lows. Seas are rising to new highs. And the cost of inaction is escalating: 2012 was a historically expensive year for disasters -- with a price tag of $110 billion dollars. Climate extremes impact insurance premiums, property taxes, food prices, medical bills, and more. *The Academy was right to point out that collective climate risk amounts to an overdose of across-the-board risk -- to our health, our economy, our environment, and our security*. This is what the science tells us -- climate change is not the product of conspiracies or political agendas. And if there's one thing we know with 100 percent certainty -- it's that denial and inaction are the biggest dangers of all. That's why the president's Climate Action Plan to cut carbon pollution -- and prepare for climate impacts is so critical. And EPA will deliver our pieces of that plan -- without fail" (emphasis added). *Id*.

[120] *See* Holly Doremus, *Scientific and Political Integrity in Environmental Policy*, 86 Texas L. Rev. 1601, 1652 (2008), available at: http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=3001&context=facpubs.

[121] "Debate over regulatory peer review remains highly polarized: some consider it a panacea while others suggest that it poses a serious problem.[fn] Supporters assert that if peer review works for science, it should work for agency decisions that rely on science as well; [fn] critics stress the difference between research and regulation, and argue that peer review is inherently incapable of generating the same benefits for regulation that it produces within the scientific field." *See* Ian Fein, *Reassessing the Role of the National Research Council: Peer Review, Political Tool, or Science Court?*, 99 Calif. Law Rev. 465 (2011), *supra* at pp. 474-475, *citing* J.B. Ruhl and James Salzman, *In Defense of Regulatory Peer Review*, 84 Wash. Univ. L. Rev. 1 (2006), available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1016057&download=yes; Holly Doremus, *Scientific and Political Integrity in Environmental Policy*, 86 Texas L. Rev. 1601 (2008), *supra*.

[122] *See* Holly Doremus, *Scientific and Political Integrity in Environmental Policy*, 86 Texas L. Rev. 1601 (2008), *supra* at 1651-1652. "No peer reviewer can know how hard the scientists under review actually worked to practice objectivity

and skepticism. The best reviewers can do is to evaluate whether the judgments made fall within the broad range of professionally acceptable ideas." *Id*., at 1652.

[123] *See, e.g*., ITSSD is aware of at least one 2011 EPA-OIG Report which focused on EPA-ORD's implementation of its pro forma "extensive process for peer review that addresses both internal and external peer reviews, as well as conflicts of interest". *See* United States Environmental Protection Agency Office of Inspector General, *Office of Research and Development Should Increase Awareness of Scientific Integrity Policies*, Audit Report No.11-P-0386 (July 22, 2011), available at: http://www.epa.gov/oig/reports/2011/20110722-11-P-0386.pdf ("Although ORD has internal controls in place, it should improve the way in which it evaluates the effectiveness of its policies and procedures for scientific integrity and research misconduct. Currently, ORD does **not** test its policies and procedures because ORD asserts that few reported instances of misconduct means that it generally does not occur. However, few identified instances of research misconduct could signal that staff lacks awareness of key criteria and reporting requirements necessary to identify and report misconduct."). *Id*., at Executive Summary, p. 7. As the EPA-OIG found, EPA-ORD (between 2005-2011) "d[id] not test its policies and procedures…to address internal control standards, such as:...*Principles of Scientific Integrity* [and] *Peer Review Handbook*…[and consequently,] ORD c[ould] not assert with certainty the effectiveness of [its] controls…" (boldfaced emphasis added). *Id*., at p. 8. ("However, ORD cannot assert with certainty the effectiveness of controls because ORD does not test its controls. ORD should periodically test controls to ensure staff awareness of how to identify and report instances of research misconduct. Testing controls will help ensure ORD's research is of the highest quality." *Id*. "Periodically testing its controls would help assure that ORD utilizes the right control activities while striving to achieve scientific integrity. Further, raising awareness of key criteria and updating the e-training will help strengthen ORD's internal control environment to address instances of research misconduct. These efforts could improve the credibility of ORD's scientific research.") *Id*., at p. 11.

[124] *See* Presidential Memorandum for the Heads of Executive Departments and Agencies, *Scientific Integrity*, The White House (March 9, 2009), available at: http://www.whitehouse.gov/the-press-office/memorandum-heads-executive-departments-and-agencies-3-9-09 ("Science and the scientific process must inform and guide decisions of my Administration on a wide range of issues, including improvement of public health, protection of the environment, increased efficiency in the use of energy and other resources, mitigation of the threat of climate change, and protection of national security…Specifically, I direct the following: 1… (c) When scientific or technological information is considered in policy decisions, the information should be subject to well-established scientific processes, including peer review where appropriate, and each agency should appropriately and accurately reflect that information in complying with and applying relevant statutory standards…"). *Id.*

[125] The 2010 White House Office of Science and Technology Policy Director's guidelines implementing the principles set forth in the President's memorandum specifically referred to "peer review" as a scientific process that is indispensable to ensuring the scientific integrity of scientific or technological information that agencies such as EPA consider in policy decisions. "Scientific and technological information is often a significant contributor to the development of sound policies. Thus, it is important that policymakers involve science and technology experts and that the scientific and technological information and processes relied upon in policymaking be of the highest integrity. ***Successful application of science in public policy depends on the integrity of the scientific process*** both to ensure the validity of the information itself and to engender public *trust in Government*. For this reason, agencies should develop policies that: […] 2. Strengthen the actual and perceived credibility of Government research. Of particular importance are: a) ensuring that selection of candidates for scientific positions in the executive branch is based primarily on their scientific and technological knowledge, credentials, experience, and integrity, b) ***ensuring that data and research used to support policy decisions undergo independent peer review by qualified experts, where feasible and appropriate, and consistent with law***, c) **setting clear standards governing *conflicts of interest***, and, d) adopting appropriate whistleblower protection" (emphasis added). *See* Memorandum to the Heads of Executive Departments and Agencies, *Scientific Integrity*, Director of the Office of Science and Technology Policy (Dec. 17, 2010), at pp. 1-2, available at: http://www.whitehouse.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf.

[126] EPA eventually drafted a Scientific Integrity Policy in 2012 in response to 2010 OSTP guidelines. *See* Administrator of the United States Environmental Protection Agency, U.S. Environmental Protection Agency Scientific Integrity Policy (May 2009), at p. 1, available at: http://www.epa.gov/osa/pdfs/epa_scientific_integrity_policy_20120115.pdf. However, as EPA's Office of Inspector General subsequently discovered and reported, *it was not until August 2013* that EPA was found to have been actively pursuing full compliance with the President's scientific integrity policy. *See* United States Environmental Protection Agency, Office of Inspector General, *Quick Reaction Report: EPA Must Take*

Steps to Implement Requirements of Its Scientific Integrity Policy 13-P-0364 (August 28, 2013), available at: http://www.epa.gov/oig/reports/2013/20130828-13-P-0364.pdf ("Although an agency-wide training program is required by the agency's Scientific Integrity Policy, the EPA has not developed or implemented a program to instruct the EPA's employees on the requirements and standards of scientific integrity. In addition, the EPA has not generated and made publicly available an annual report on the status of scientific integrity within the agency as required by the policy…As a result of the committee's lack of progress in implementing these requirements, the EPA is less equipped to: Provide leadership for the agency on scientific integrity[;] Promote agency compliance with the Scientific Integrity Policy[;] Keep the agency's senior leadership informed on and involved with the agencywide status of scientific integrity[; and] Detect violations of scientific integrity.") *Id*., at Executive Summary; pp. 5-7.

[127] *Id*. "[E]ffective peer review requires the devotion of extraordinary amounts of time by experts who face many competing demands on their time,[fn] and brings little in the way of professional rewards. It must therefore be reserved for those situations in which it is most likely to provide concrete improvements, and in which the reviewers are most likely to emerge from the experience confident that their time was well spent." *Id*.

[128] *See* United States Department of Commerce, National Oceanic and Atmospheric Administration National Climatic Data Center, *Global Warming – Introduction*, NOAA website, available at: https://www.ncdc.noaa.gov/monitoring-references/faq/global-warming.php ("One of the most vigorously debated topics on Earth is the issue of climate change, and the National Environmental Satellite, Data, and Information Service (NESDIS) data centers are central to answering some of the most pressing global change questions that remain unresolved.") *Id*.

[129] *See, e.g.*, John Droz, Jr, *Top Professor Fired for Exposing Huge Wind Energy Scam*, Climate Change Dispatch (Aug. 5, 2014), available at: http://www.climatechangedispatch.com/top-professor-fired-for-exposing-huge-wind-energy-scam.html; David Rose, *The fatcat ecocrats exposed: Web of 'green' politicians, tycoons and power brokers who help each other benefit from billions raised on your bills*, MailOnline (Dec. 14, 2013), available at: http://www.dailymail.co.uk/news/article-2523726/Web-green-politicians-tycoons-power-brokers-help-benefit-billions-raised-bills.html#ixzz2nV84KSiQ; *Al Gore could become world's first carbon billionaire*, The Telegraph (Nov. 3, 2009), available at: http://www.telegraph.co.uk/earth/energy/6491195/Al-Gore-could-become-worlds-first-carbon-billionaire.html.

[130] Climate change has long been one of the most controversial and divisive political issues the world, including Washington, has ever addressed. *See* Nick Cohen, The Climate Change Deniers Have Won, The Guardian (March 22, 2014), available at: http://www.theguardian.com/commentisfree/2014/mar/22/climate-change-deniers-have-won-global-warming; Andrew J. Hoffman, *How To Fix The Broken Debate On Climate Change*, Footnote (May 1, 2013), available at: http://footnote1.com/how-to-fix-the-broken-debate-on-climate-change/; Joel Achenbach and Juliet Eilperin, *Climate-change Science Makes for Hot Politics*, The Washington Post (Aug. 19, 2011), available at: http://www.washingtonpost.com/national/health-science/climate-change-science-makes-for-hot-politics/2011/08/18/gIQA1eZJQJ_story.html?hpid=z1

[131] *See* National Academy of Science, *Organization*, available at: http://www.nasonline.org/about-nas/organization/ ("The National Academy of Sciences was established in 1863 to address the government's urgent need for an independent advisor on scientific matters. As science began to play an ever-increasing role in national priorities and public life, the National Academy of Sciences expanded to include the National Research Council in 1916, the National Academy of Engineering in 1964, and the Institute of Medicine in 1970. The National Academy of Sciences (NAS), National Academy of Engineering (NAE), and Institute of Medicine (IOM) are private, nonprofit membership organizations that elect the nation's leading scientists, engineers, and medical professionals and engage in a wide variety of activities to advance research and knowledge in science, engineering, and medicine. Most policy studies done at the request of the government are conducted by the National Research Council (NRC), operated jointly by the NAS and the NAE. The IOM also conducts studies following the procedures established for the NRC.") *Id*.

[132] *See*, The National Academy of Science, *Climate Change at the National Academies – NRC Reports*, available at: http://nas-sites.org/americasclimatechoices/.

[133] *See* National Research Council, Board on Atmospheric Sciences and Climate, *Advancing the Science of Climate Change*, National Academies Press (Wash., DC 2010), available at: http://nap.edu/catalog.php?record_id=12782 ("*This study was supported by the National Oceanic and Atmospheric Administration under contract number* ***DG133R08CQ0062***") (emphasis added). *Id*., at p. i; National Research Council, Board on Atmospheric Sciences and Climate, *Limiting the Magnitude of Future Climate Change*, National Academies Press, (Wash., DC 2010), available at: http://www.nap.edu/catalog.php?record_id=12785 ("*This study was supported by the National Oceanic and Atmospheric*

*Administration under contract number **DG133R08CQ0062**, TO# 4*) (emphasis added). *Id*., at p. i; National Research Council, Board on Atmospheric Sciences and Climate, *Adapting to the Impacts of Climate Change*, National Academies Press (Wash., DC 2010), available at: http://www.nap.edu/catalog.php?record_id=12783 ("*This study was supported by the National Oceanic and Atmospheric Administration under contract number **DG133R08CQ0062***") (emphasis added). *Id*., at p. i; National Research Council, Board on Atmospheric Sciences and Climate, *Informing an Effective Response to Climate Change*, National Academies Press (Wash., DC 2010), available at: http://www.nap.edu/catalog.php?record_id=12784 ("*This study was supported by the National Oceanic and Atmospheric Administration under contract number **DG133R08CQ0062***") (emphasis added). *Id*., at p. i; National Research Council, Ocean Studies Board, *Ocean Acidification: A National Strategy to Meet the Challenges of a Changing Ocean*, National Academies Press (Wash., DC 2010), available at: http://www.nap.edu/catalog.php?record_id=12904 ("*This study was supported by **Contract/Grant No. DG133R-08-CQ-0062,** OCE 0946330, NNX09AU42G, and G09AP00160 between the National Academy of Sciences and the **National Oceanic and Atmospheric Administration**, National Science Foundation, National Aeronautics and Space Administration, and U.S. Geological Survey*") (emphasis added). *Id*., at p. i; National Research Council, Board on Atmospheric Sciences and Climate, *Assessment of Intraseasonal to Interannual Climate Prediction and Predictability*, National Academies Press (Wash., DC 2010), available at: http://www.nap.edu/catalog.php?record_id=12878 ("*This study was supported by the National Oceanic and Atmospheric Administration under contract number **DG133R-08-CQ-0062**, TO# 2*") (emphasis added. *Id*., at p. i; National Research Council, Board on Atmospheric Sciences and Climate, *America's Climate Choices*, National Academies Press (Wash., DC 2011), available at: http://www.nap.edu/catalog.php?record_id=12781 ("*This study was supported by the National Oceanic and Atmospheric Administration under contract number **DG133R08CQ0062**, Task Order # 4*) (emphasis added). *Id*., at p. i; National Research Council, Water Science and Technology Board, *Global Change and Extreme Hydrology: Testing Conventional Wisdom*, National Academies Press (Wash., DC 2011), available at: http://www.nap.edu/catalog.php?record_id=13211 ("*Support for this project was provided by the U.S. Nuclear Regulatory Commission Grant No. NRC-04-09-153, **National Oceanic and Atmospheric Administration Grant No. RA133R-09-SE-4232**, and National Aeronautics and Space Administration Grant No. NNX10AK53G*") (emphasis added). *Id*., at p. i; National Research Council, Board on Atmospheric Sciences and Climate and Board on Environmental Change and Society, *A Review of the U.S. Global Change Research Program's Strategic Plan*, National Academies Press (Wash., DC 2011), available at: http://www.nap.edu/catalog.php?record_id=13330 ("*This study was supported by the National Oceanic and Atmospheric Administration under contract number **DG133R08CQ0062**, Task Order #8*") (emphasis added), Id., at p. i; National Research Council, Board on Atmospheric Studies and Climate, *A National Strategy for Advancing Climate Modeling*, National Academies Press (Wash., DC 2012), available at: http://www.nap.edu/catalog.php?record_id=13430 ("*This study was supported by the **National Oceanic and Atmospheric Administration under contract DG133R-08-CO-0062 Task Order #12**, the National Aeronautics and Space Administration under contract NNX08AB07G, the National Science Foundation under Grant No. ATM-0809051, the Department of Energy under contract DE-SC0005113, and the U.S. intelligence community*") (emphasis added). *Id*., at p. i; National Research Council, Board on Earth Sciences and Resources and Ocean Studies Board, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, National Academies Press (Wash., DC 2012) available at: http://www.nap.edu/catalog.php?record_id=13389. ("*This study was supported by the California Department of Water Resources, Contract No. 4600008602; **the National Oceanic and Atmospheric Administration, Contract No. DG133R08CQ0062**; the U.S. Army Corps of Engineers, Contract No. W912HQ-09-P-0155; and the United States Geological Survey, Grant/Cooperative Agreement No. G09AP00152*") (emphasis added). *Id*., at p. i; National Research Council, Board on Atmospheric Sciences and Climate, *Abrupt Impacts of Climate Change: Anticipating Surprises*, National Academies Press (Wash., DC 2013), available at: http://www.nap.edu/catalog.php?record_id=18373 ("*This study was supported by **the National Oceanic and Atmospheric Administration under contract number WC133R-11-CQ-0048, TO#3**, the National Science Foundation under grant number EAR-1305802, the United States intelligence community, and the National Academies*" (emphasis added). *Id*., at p. i; National Research Council, Polar Research Board, *The Arctic in the Anthropocene: Emerging Research Questions*, National Academies Press (Wash., DC 2014), available at: http://www.nap.edu/catalog.php?record_id=18726 ("*This study was supported by the U.S. Arctic Research Commission, the Department of Energy under award number DE-SC0008724; the National Aeronautics and Space Administration under award number NNX13A014G; **the National Oceanic and Atmospheric Administration under award number***

***WC133R-11-CQ-0048**, TO#4; the National Science Foundation under award number ARC-1243485; and the Smithsonian Institution under award number 12-PO-590-0000254005*" (emphasis added). *Id*., at p. i.

[134] "Since the administrative record concerning the Endangerment Finding closed following the EPA's 2010 Reconsideration Denial, a number of such assessments have been released. These assessments include […] and the NRC's 2010 *'Ocean Acidification: A National Strategy to Meet the Challenges of a Changing Ocean'* (Ocean Acidification), […] 2012 *'Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future'*, […] and 2013 *'Abrupt Impacts of Climate Change'* (Abrupt Impacts) assessments" (emphasis added). *See* 79 FR 34830 at 34842, *supra*.

[135] "Since the administrative record concerning the Endangerment Finding closed following the EPA's 2010 Reconsideration Denial, a number of such assessments have been released. These assessments include […] and the NRC's […] ("2011 *'Report on Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia'* (Climate Stabilization Targets) […] (emphasis added). *Id*. See National Research Council, Board on Atmospheric Sciences and Climate, *Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia*, National Academies Press (Wash., DC 2011), available at: http://www.nap.edu/catalog.php?record_id=12877 ("*This study was supported by the The Energy Foundation under contract number G-0812-10616 and* ***The Environmental Protection Agency under contract number EP10H001368***") (emphasis added), *Id*., at p. i.

[136] These Boards had been charged, respectively, with selecting the individual peer reviewers to comprise a panel that would review the NCA3-2014 report, and with selecting the individual reviewers to comprise a committee that would review the peer review panel's findings.

[137] *See* National Academy of Sciences, National Academy of Engineering , Institute of Medicine and National Research Council, *POLICY ON COMMITTEE COMPOSITION AND BALANCE AND CONFLICTS OF INTEREST FOR COMMITTEES USED IN THE DEVELOPMENT OF REPORTSCOMMITTEES USED IN THE DEVELOPMENT OF REPORTS* (May 12, 2003), at "APPENDIX A - Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports", National Academies website, at pp. 9-10, available at: http://www.nationalacademies.org/coi/bi-coi_form-0.pdf.

[138] *Id*., at p. 10.

[139] *Id*.

[140] *Id*.

[141] For example, "The Intergovernmental Personnel Act Mobility Program provides for the temporary assignment of personnel between the Federal Government and state and local governments, colleges and universities, Indian tribal governments, *federally funded research and development centers*, and other eligible organizations" (emphasis added). *See* United States Office of Personnel Management, *Hiring Authorities - INTERGOVERNMENT PERSONNEL ACT - Overview*, available at: http://www.opm.gov/policy-data-oversight/hiring-authorities/intergovernment-personnel-act/. "Assignments to or from state and local governments, institutions of higher education, Indian tribal governments and other eligible organizations are intended to facilitate cooperation between the Federal Government and the non-Federal entity through the temporary assignment of skilled personnel. These assignments allow civilian employees of Federal agencies to serve with eligible non-Federal organizations for a limited period without loss of employee rights and benefits. […]The legal authority for assignments under the Intergovernmental Personnel Act is 5 USC [S]ections 3371 through 3375. The regulations can be found in Code of Federal Regulations (CFR), part 5, chapter 334." *See* United States Office of Personnel Management, *Hiring Authorities - INTERGOVERNMENT PERSONNEL ACT – Provisions*, available at: http://www.opm.gov/policy-data-oversight/hiring-authorities/intergovernment-personnel-act/#url=Provisions. *See also* 5 CFR PART 334 – *Temporary Assignments Under the Intergovernmental Personnel Act (IPA)*, available at: http://www.law.cornell.edu/cfr/text/5/part-334.

[142] "Non-Federal employees on detail to Federal agencies remain employees of their permanent organizations for most purposes. […]If the assignee is detailed to a set of unclassified duties, the assignee continues to be paid directly by the non-Federal organization at a rate of pay based on the assignee's non-Federal job. The Federal agency may agree to reimburse the non-Federal organization for all, some, or none of the costs of the assignment. […] By statute, a non-Federal employee may be given an excepted appointment for two years without regard to the provisions governing appointment in the competitive service. This appointment may be extended for not more than an additional two years." *See* United States Office of Personnel Management, *Hiring Authorities - INTERGOVERNMENT PERSONNEL ACT –*

Assignment, available at: http://www.opm.gov/policy-data-oversight/hiring-authorities/intergovernment-personnel-act/#url=Assignment.

[143] *See, e.g.*, Lawrence Livermore National Security, LLC, *Organizational Conflicts of Interest Disclosure* (July 2007), available at: http://www.ucop.edu/raohome/cgmemos/07-07S1a.pdf.

[144] *See* University of Alabama, *Faculty Handbook, Appendix E – On Preventing Conflicts of Interest in Government-Sponsored Research at Universities: A Joint Statement of The Council of the American Association of University Professors and The American Council on Education* (December, 1964), available at: http://teaching.ua.edu/policies/handbook/appendixpdfs/e.pdf.

[145] *See* American Association of University Professors, *On Preventing Conflicts of Interest in Government-Sponsored Research at Universities*, available at: http://www.aaup.org/report/preventing-conflicts-interest-government-sponsored-research-universities; and http://www.aaup.org/file/government-sponsored-research.pdf.

[146] *See* National Science Foundation, *Grant Policy Manual*, at Chap. V, Sec. "510 – Conflicts of Interest (July 2005)," p. v-2, available at: http://www.nsf.gov/pubs/manuals/gpm05_131/gpm05_131.pdf.

[147] *See* Daniel R. Levinson, *Institutional Conflicts of Interest at NIH Grantees* (OEI-03-09-00480), Department of Health and Human Services Office of Inspector General (Jan. 2011), Executive Summary at p. i, available at: http://oig.hhs.gov/oei/reports/oei-03-09-00480.pdf. Aside from "conflicting financial interest of a researcher[, c]onflicts can also exist for the institutions themselves. An institution's financial interests (e.g., royalties, equity, stockholdings, and gifts) or those of its senior officials can become institutional conflicts when the financial interests pose a risk of undue influence on decisions involving the institution's research." *Id*., at p. 1 (citing Institute of Medicine of the National Academies, *Conflict of Interest in Medical Research, Education, and Practice*, ch. 8 (April 21, 2009)).

[148] *Id*., at p. ii. For example, Duke University's Institutional Conflict of Interest in Research Policy has described an institutional conflict of interest as involving "a situation in which the financial interests of an institution or an institutional official, acting within his or her authority on behalf of the institution, may affect or appear to affect the research, education, clinical care, business transactions, or other activities of the institution." Such policy indicates that an institutional conflict of interest in research "may occur whenever the financial interests of the institution, or of an institutional official who has authority to act on behalf of the institution, might affect-or reasonably appear to affect-institutional processes for the design, conduct, reporting, review, or oversight of research." *See* Duke University Ethics and Compliance Office, *Institutional Conflict of Interest Policy*, available at: http://duke.edu/services/ethicscompliance/coi/icoi_policy.php. On the other hand, Columbia University's conflict of interest policy does not seem to cover more than individual researcher conflicts of interest. *See* Columbia University Office of Compliance Research and Training, *Conflict of Interest and Research*, available at: http://www.columbia.edu/cu/compliance/docs/conflict_interest/; Columbia University *Policy on Financial Conflicts of Interest and Research* (July 1, 2009, effective Aug. 24, 2012), available at: http://evpr.columbia.edu/files/evpr/imce_shared/FCOI_Research_Policy.pdf.

[149] *See* Daniel R. Levinson, *Institutional Conflicts of Interest at NIH Grantees* (OEI-03-09-00480), Department of Health and Human Services Office of Inspector General (Jan. 2011), *supra* at Executive Summary, pp. ii-iii.

[150] "It is important that NIH know of the existence of institutional conflicts so it can ensure that the related research is free from any intended or unintended bias." *Id*., at p. iii.

[151] *Id*., at p. 18.

[152] *Id*.

[153] *Id*.

[154] *See* Northwestern University, *Institutional Conflict of Interest in Research* (Jan. 13, 2014), at p. 2, available at: http://www.northwestern.edu/coi/policy/institutional_policy.pdf.

[155] *Id*.

[156] *See* Hank Campbell, *The Corruption of Peer Review Is Harming Scientific Credibility*, The Wall Street Journal (July 13, 2014) (and accompanying comments), available at: http://online.wsj.com/articles/hank-campbell-the-corruption-of-peer-review-is-harming-scientific-credibility-1405290747.

[157] *Id*.

[158] "Absent rigorous peer review, we get the paper published in June in the *Proceedings of the National Academy of Sciences*. Titled 'Female hurricanes are deadlier than male hurricanes,' it concluded that hurricanes with female names cause more deaths than male-named hurricanes—ostensibly because implicit sexism makes people take the storms with a woman's name less seriously. The work was debunked once its methods were examined, but not before it got attention

nationwide. Such a dubious paper made its way into national media outlets because of the imprimatur of the *prestigious National Academy of Sciences*. Yet a look at the organization's own submission guidelines makes clear that if you are a *National Academy* member today, you can edit a research paper that you wrote yourself and only have to answer a few questions before an editorial board; you can even arrange to be the official reviewer for people you know. The result of such laxity isn't just the publication of a dubious finding like the hurricane gender-bias claim. Some errors can have serious consequences if bad science leads to bad policy. In 2002 and 2010, papers published in the *Proceedings of the National Academy of Sciences* claimed that a pesticide called atrazine was causing sex changes in frogs. As a result the Environmental Protection Agency set up special panels to re-examine the product's safety. Both papers had the same editor, David Wake of the University of California, Berkeley, who is a colleague of the papers' lead author, Tyrone Hayes, also of Berkeley. In keeping with *National Academy of Sciences policy*, Prof. Hayes preselected Prof. Wake as his editor. Both studies were published without a review of the data used to reach the finding. No one has been able to reproduce the results of either paper, including the EPA, which did expensive, time-consuming reviews of the pesticide brought about by the published claims. As the agency investigated, it couldn't even use those papers about atrazine's alleged effects because the research they were based on didn't meet the criteria for legitimate scientific work. The authors refused to hand over data that led them to their claimed results—which meant no one could run the same computer program and match their results" (emphasis added). *Id*.

[159] *See* "Appendix 6: National Research Council Peer Review Panel for NCA3-2014 Contract # NNH07CC79B," *infra*.

[160] *Id*. *See also* "Appendix 4: Scientists, Universities/Entities Affiliated With DOC-NOAA Grant-Funded Climate Science-Research-Related Programs and Contributors to NCA3-2014 & IPCC AR5 Working Group I", *infra*.

[161] *See* "Appendix 5: DOC-NOAA Grant Participating Universities/Entities & Scientists Contributing to NCA3-2014 & IPCC AR5", *infra*.

[162] *See* "Appendix 4: Scientists, Universities/Entities Affiliated With DOC-NOAA Grant-Funded Climate Science-Research-Related Programs and Contributors to NCA3-2014 & IPCC-AR5 Working Group I", *infra*.

[163] *See* "Appendix 2: USG-Employed Scientists (By Agency) - Author-Contributors to IPCC AR5 Working Group I (IPCC-AR5-WGI)", *infra*.

[164] *See* "Appendix 3: U.S. Government-Employed Scientists (By Agency) - Author-Contributors to NCA3-2014," *infra*.

[165] "[T]he Report Review Committee (RRC) [is] composed of National Academy of Sciences (NAS), National Academy of Engineering (NAE), and the Institute of Medicine (IOM) members. The RRC Committee oversees the institutional report review process." *See* National Academy of Science, *National Research Council Report Review Committee*, available at: http://www.nationalacademies.org/nrc/na_067075.html.

[166] *See* "Appendix 7: Small Group of Scientists Selected By NRC Report Review Committee To Review NRC NCA3-2014 Peer Review Panel Report", *infra*.

[167] *See* National Academy of Science, *RRC Membership Roster* (Updated on 2/28/2014), available at: http://www.nationalacademies.org/xpedio/groups/nasite/documents/webpage/na_067080.pdf.

[168] *See* "Appendix 9: Composition of NRC Board on Atmospheric Sciences & Climate During Work of NRC Peer Review Panel for NCA3-2014", *infra*.

[169] *See* Appendix 10: Composition of NRC Oversight Board on Environmental Change & Society During Work of NRC NCA3-2014 Peer Review Panel", *infra*.

[170] *See* Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe (Eds., 2014), *Climate Change Impacts in the United States: The Third National Climate Assessment*, U.S. Global Change Research Program, *supra* at p. ii. *See also* National Oceanic and Atmospheric Administration Satellite and Information Service, *NCA and Development and Advisory Committee – People*, available at: http://www.nesdis.noaa.gov/NCADAC/People.html.

[171] "NOAA and The Nature Conservancy have entered into an agreement to protect the health of the nation's valuable but increasingly vulnerable coral reef ecosystems in the Caribbean, Florida, Hawaii and the Pacific Islands. The four-year agreement will dedicate $3.6 million in NOAA funding and $3.6 million in matching funds from The Nature Conservancy to address the top three threats facing coral reef ecosystems: climate change, overfishing and land-based sources of pollution." *See* United States Department of Commerce National Oceanic and Atmospheric Administration, *NOAA, The Nature Conservancy Address Coral Reef Threats*, Press Release (Oct. 30, 2009), available at: http://www.noaanews.noaa.gov/stories2009/20091030_corals.html;

[172] "The American Recovery and Reinvestment Act (Recovery Act), passed by Congress in 2009, provided NOAA with funding to administer towards coastal habitat restoration. The Nature Conservancy (TNC) was awarded eight projects representing 24.5 million dollars in public investment in coastal habitat restoration." *See The Nature Conservancy's TNC*

American Recovery and Reinvestment Act Central Support Team Final Report Grant # NA09NMF4630332 Final Report: July 1, 2009 – June 30, 2012 (July 24, 2012), available at: https://www.conservationgateway.org/Documents/3_Draft_TNC%20CST%20Report_JG_clean.pdf.

[173] *See* National Wildlife Federation, *Restoring the Great Lakes' Coastal Future Technical Guidance for the Design and Implementation of Climate-Smart Restoration Projects* (2011), available at: http://www.habitat.noaa.gov/pdf/final_restoring_the_great_lakes_coastal_future_2011.pdf; National Wildlife Federation, *Managing Coastal Watersheds to Address Climate Change: Vulnerability Assessment and Adaptation Options for the Middle Patuxent Subwatershed of the Chesapeake Bay* (Aug. 2013), available at: http://www.nwf.org/pdf/Climate-Smart-Conservation/Middle%20Patuxent%20Subwatershed%20Vulnerability%20Assessment%20and%20Adaptation%20Report%20August%202013.pdf.

[174] *See* National Wildlife Federation, Climate-Smart Conservation Putting Adaptation Principles into Practice (2014), available at: http://www.nwf.org/pdf/Climate-Smart-Conservation/NWF-Climate-Smart-Conservation_5-08-14.pdf ("*Financial support for this publication was provided by the* National Park Service, U.S. Geological Survey, *National Oceanic and Atmospheric Administration*, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. Forest Service, Doris Duke Charitable Foundation, Wildlife Conservation Society Climate Adaptation Fund, Kresge Foundation, and Faucett Catalyst Fund."). *Id*., at p. i.

[175] *See* National Wildlife Federation, *Restoring the Great Lakes' Coastal Future Technical Guidance for the Design and Implementation of Climate-Smart Restoration Projects* (2011), available at: http://www.habitat.noaa.gov/pdf/final_restoring_the_great_lakes_coastal_future_2011.pdf; National Wildlife Federation, *Managing Coastal Watersheds to Address Climate Change: Vulnerability Assessment and Adaptation Options for the Middle Patuxent Subwatershed of the Chesapeake Bay* (Aug. 2013), available at: http://www.nwf.org/pdf/Climate-Smart-Conservation/Middle%20Patuxent%20Subwatershed%20Vulnerability%20Assessment%20and%20Adaptation%20Report%20August%202013.pdf.

[176] *See* National Wildlife Federation, Climate-Smart Conservation Putting Adaptation Principles into Practice (2014), available at: http://www.nwf.org/pdf/Climate-Smart-Conservation/NWF-Climate-Smart-Conservation_5-08-14.pdf ("*Financial support for this publication was provided by the* National Park Service, U.S. Geological Survey, *National Oceanic and Atmospheric Administration*, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. Forest Service, Doris Duke Charitable Foundation, Wildlife Conservation Society Climate Adaptation Fund, Kresge Foundation, and Faucett Catalyst Fund."). *Id*., at p. i.

[177] "The National Center for Atmospheric Research (NCAR), which is funded by NSF [National Science Foundation], is a focal point for research in the field of atmospheric sciences. NCAR is located in Boulder, Colorado, and has about 750 scientists and support personnel. NCAR is managed under a cooperative agreement between the Foundation and the University Corporation for Atmospheric Research (UCAR), a nonprofit consortium of 68 North American universities with graduate programs in atmospheric sciences." *See* National Science Foundation Division of Atmospheric and Geospace Sciences, *National Center for Atmospheric Research (NCAR)*, NSF website, available at: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12809.

[178] !!! *See* Joint Global Change Research Institute, *Staff - Richard H. Moss*, available at: http://www.globalchange.umd.edu/staff/rmoss/; Joint Global Change Research Institute, *Staff – Katherine V. Calvin*, available at: http://www.globalchange.umd.edu/staff/kcalvin/; Joint Global Change Research Institute, *Staff – James A. Edmonds*, available at: http://www.globalchange.umd.edu/staff/jedmonds/.

[179] % *See* Joint Global Change Research Institute, *Staff – Anthony C. Janetos*, available at: http://www.globalchange.umd.edu/staff/ajanetos/; Boston University Frederick S. Pardee Center for the Study of the Longer-Range Future, *Community – Staff, Anthony Janetos*, available at: http://www.bu.edu/pardee/community/staff/janetos/.

[180] *See* Finzi Hart, J. A., P. M. Grifman, S. C. Moser, A. Abeles, M. R. Myers, S. C. Schlosser, J. A. Ekstrom (2012) *Rising to the Challenge: Results of the 2011 Coastal California Adaptation Needs Assessment* (USCSG-TR-01-2012), available at: http://www.usc.edu/org/seagrant/research/climateadaptsurvey/SurveyReport_FINAL_OnlinePDF.pdf ("Author Affiliations[:] J. A. Finzi Hart and P. M. Grifman - University of Southern California Sea Grant[;] S. C. Moser - *Susanne Moser Research & Consulting | Stanford University*[;] *A. Abeles - Center for Ocean Solutions, Stanford University*[;] M.R. Myers and S. C. Schlosser - California Sea Grant College[;] J. A. Ekstrom - University of California,

Berkeley[.] […]The Center for Ocean Solutions (COS) is a collaboration among Stanford's Woods Institute for the Environment and Hopkins Marine Station, the Monterey Bay Aquarium and the Monterey Bay Aquarium Research Institute […] Partial support for this publication was provided by the National Sea Grant College Program, *National Oceanic and Atmospheric Administration, U.S. Department of Commerce, under grant number NA10OAR4170058 (USC Sea Grant)*, NA10OAR4310217 (CA Sea Grant), and by the California Natural Resources Agency. The views expressed herein do not necessarily reflect the views of NOAA or any of its sub-agencies. The U.S. Government is authorized to reproduce and distribute copies for governmental purposes. Additional support was provided by the Center for Ocean Solutions at Stanford University") (emphasis added). *Id*., at inside cover materials.

[181] *See* Center for Ocean Solutions, *People-Affiliated Researchers, Susan Moser*, available at: http://www.centerforoceansolutions.org/people/affiliated-researchers/susanne-moser.

[182] "The review of this report was overseen by Lynn R. Goldman, George Washington University, and George M. Hornberger, Vanderbilt University, appointed by the NRC Report Review Committee, who were responsible for *making certain that an independent examination of this report was carried out in accordance with institutional procedures* and that all review comments were carefully considered." *See* National Research Council, *A Review of the Draft 2013 National Climate Assessment* (National Academies Press. Wash., DC 2013), *supra* at p. viii.

[183] *See* National Research Council, *A Review of the Draft 2013 National Climate Assessment* (National Academies Press. Wash., DC 2013), *supra* at p. vi.

[184] *Id*., at p. vii.