

Summary Minutes
US Environmental Protection Agency Science Advisory Board
Meeting

Public Teleconference Meeting
December 9, 2008
1:00 pm – 3:00 pm (Eastern Time)
Meeting Location: Via Telephone Only

Purpose of the Meeting: The Meeting was held to allow the Chartered SAB to conduct a quality review of the draft SAB CVPESS report and to receive a briefing from EPA on its Renewable Fuels Standards Program. The meeting agenda is in Attachment A. The list of SAB and other participants follows.

Meeting Participants:

Members Participating in the Meeting:

Dr. Deborah L. Swackhamer, Chair	Dr. Tim Buckley
Dr. James Bus	Dr. Deborah Cory-Slechta
Dr. Terry Daniel	Dr. Otto Doering
Dr. David Dzombak	Dr. Taylor Eighmy
Dr. Baruch Fischhoff	Dr. James Galloway
Dr. Rogene Henderson	Dr. Steve Heeringa (Liaison FIFRA SAP)
Dr. James Johnson	Dr. Bernd Kahn
Dr. Cathy Kling	Dr. Jill Lipoti
Dr. L.D. McMullen	Dr. Judith Meyer
Dr. Christine Moe	Dr. Granger Morgan
Dr. Duncan Patten	Dr. Jon Samet
Dr. Kathy Segerson	Dr. Thomas Theis
Dr. Buzz Thompson	Dr. Robert Twiss
Dr. Thomas Wallsten	

EPA and Public Participants

Dr. Paul Argyropoulos, EPA/OTAQ	Ms. Julie Hewitt
Mr. Tom van Arsdall, Pollinator Partnership	Karen Holt

MEETING SUMMARY

Tuesday, December 9, 2008

This meeting was announced in the *Federal Register* (see 73 FR p 70344 of November 20, 2008 - Attachment B). The SAB Roster is in Attachment C.

1. Convene the Meeting: The DFO convened the meeting noting that it was a federal advisory committee meeting and that the Board's deliberations are held as "public meetings" pursuant to the Federal Advisory Committee Act (FACA), its regulations, and the policies of the US EPA for advisory

activities. Mr. Miller noted that one member of the public had requested time to speak and had provided written input for the Board's consideration in regards to pollinators (see synopsis later in these minutes).

Mr. Miller noted that SAB members must comply with Federal ethics and conflict-of-interest laws and that SAB ethics officials review relevant information to ensure that SAB panels reflect appropriate balance and that COI and bias issues are addressed and that the SAB members participating in this meeting had submitted information on whether they knew of any potential appearance of impartiality issues that could link them with the topics on the agenda. As a result of this process SAB Ethics Officials determined that Members participating in the meeting did not have any such issues within the meaning of the relevant ethics and conflict of interest requirements that apply to this advisory activity.

Mr. Miller then turned the meeting over to the SAB Chair, Dr. Deborah L. Swackhamer, to carry out the agenda. Dr. Swackhamer welcomed those participating in the review and discussed the purpose of the meeting.

1, **Briefing on EPA's Renewable Fuels Standards Program, Mr. Paul N. Argyropoulos, Senior Policy Advisor, US EPA OAR Office of Transportation and Air Quality:**

Dr. Swackhamer introduced Mr. Paul Argyropoulos, EPA OAR OTAQ who conducted the subject briefing. Mr. Argyropoulos gave an overview of the agency's work on the renewable fuels standard provisions in the Energy Independence & Security Act (EISA) 2007, discussed the past program under pre-existing legislation (EP Act of 2005), the changes to that program mandated by EISA, and EPA's current activity on a renewable fuels standard under the new legislation (see Attachment D).

RFS 2 will build on the existing standard and will be developed with significant interaction with stakeholders and in cooperation with the Departments of Energy, Agriculture, and other Federal Agencies. EISA changed the volume requirements for renewable fuels (from 5.4 to 9.0 billion gallons per year), establishes new renewable fuel categories and eligibility requirements (including greenhouse gas reduction thresholds), provides new waivers and paper credit provisions, includes new obligation for fuels, and includes new studies and reports. Within this there are new obligations and definitions for key issues.

A critical element of EISA is the full fuel lifecycle assessment required. In this regard, the definition of Lifecycle GHG Emissions refers to "...the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), as determined by the Administrator, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gasses are adjusted to account for their relative global warming potential." Considerations within the lifecycle analysis were discussed and Mr. Argyropoulos discussed an illustration of a fuel lifecycle.

EPA has used the best models, tools and resources now available in developing its Lifecycle Analysis Methodology EPA's approach has been to and within that to use sensitivity analysis and examining many approaches to address key areas of uncertainty.

EPA's analyses in support of the rulemaking include:

- renewable fuel production and use projections, technology and cost assessments;
- GHG Lifecycle modeling, inventory, and benefits;
- Other pollutant inventory, air quality and benefits;
- Agricultural sector impacts;
- Water and soil impacts;
- Macroeconomic impacts; and
- Energy security

The Notice of Proposed Rulemaking (NPRM) will provide an opportunity for EPA to present its work and to ask for comment on its proposed approaches and for suggestions of alternative approaches. EPA will hold workshops on this after release of the NPRM. EPA will also engage experts in order to obtain peer-reviews of key components of its approach between the rule's proposal and development of a final rule. As part of this effort, EPA intends to seek advice from EPA's Science Advisory Board. Such advice will be used to further improve the proposed methodology. EPA envisions a 3 to 5-year cycle for updating its LCA.

The schedule for the completion of the RFS rulemaking is as follows:

- Interagency review (now ongoing),
- Complete the proposed rule,
- Administrator signs the rule,
- Publication in the *Federal Register*,
- Receive public comments,
- Publish the final rule (Summer 2009),
- Rule Implementation (2010)

Mr. Argyropoulos also noted two additional EISA provisions of interest. One is the Section 204 study by EPA to assess and report to the Congress on the impacts to date and likely future impacts of Section 211(b) of the Clean Air Act (environmental and resource impacts) which is to be done within three years and then revised every three years thereafter. Another is the Section 209 study on whether renewable fuel volumes adversely affect air quality as a result of changes in vehicle emissions. This includes the study of different blend levels and will require promulgation of fuel regulations to mitigate to the greatest extent any possible adverse impacts (referred to as the "anti-backsliding" study). This is to be completed within 18 months and any needed regulations as a result of the study are to be promulgated within three years.

SAB Members made a number of remarks and asked questions of Mr. Argyropoulos following his presentation. Members noted the following issues:

- What is known about the efficiency of vehicles using biofuels and about the composition of exhaust from vehicles using these fuels. Mr. Argyropoulos noted that additional study is required and that some work is going on now.
- The relationship between miles per gallon of cars using biofuels;
- NOx levels from vehicles using biofuels;
- The appearance that the rule will set up large new roles for OTAQ and whether this would lead to organizational changes (the changes for now seem to be intended to be handled by

using additional workgroups for specific issues and not instituting new organizations within EPA);

- The development and use of metrics for emission changes as a result of biofuels use (e.g., emissions per miles traveled);

The Chair thanked Mr. Argyropoulos for his presentation and stated that the SAB would be willing to assist EPA with the issue as it moves forward.

2. Public Comment: Mr. Thomas Van Arsdall, Director of Public Affairs for the Pollinator

Partnership: Mr. Van Arsdall supported the recommendations to increase collaboration and research on this issue. His written comments for the organization are included on the SAB Website at:

[http://yosemite.epa.gov/sab/sabproduct.nsf/BEEC14D405116B2B8525751D005A2D48/\\$File/Public+Letter+to+Ecosystem+Services+SAB+Teleconference+12-9-08.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/BEEC14D405116B2B8525751D005A2D48/$File/Public+Letter+to+Ecosystem+Services+SAB+Teleconference+12-9-08.pdf). He pointed out that USDA is doing work on measures of pollinator services and that this is an area for possible EPA collaboration.

3. Quality Review of the Draft Report Valuing the Protection of Ecological Systems and Services:

The Board conducted its quality review of the draft SAB advisory on *Valuing the Protection of Ecological Systems and Services* (see Attachment E in the physical FACA file and on the web at: [http://yosemite.epa.gov/sab/sabproduct.nsf/ea5d9a9b55cc319285256cbd005a472e/eb49bcfd4dc0a63685257506006e069e/\\$FILE/SAB%20C-VPES%20Draft%2011-18-08.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/ea5d9a9b55cc319285256cbd005a472e/eb49bcfd4dc0a63685257506006e069e/$FILE/SAB%20C-VPES%20Draft%2011-18-08.pdf)). Dr. Swackhamer reminded the members that an SAB quality review was primarily focused on determining the clarity, completeness, and soundness of the report's evaluations, conclusions, and recommendations and not to conduct a re-review of the issue.

At the Chair's request, Dr. Thompson, Chair, and Dr. Segerson, Vice Chair, of the CVPESS introduced the topic. The introduction covered the history of this substantial effort, the focus of the report chapters, the two-stage external expert review to which the document was submitted during development of the current draft report, and the substantial consensus-building efforts of all involved in getting to the draft that is now undergoing quality review.

Dr. Swackhamer noted that SAB Member comments, as well as the Chairs' responses, are contained in a "Note from the Chair and Vice Chair of the SAB Committee on Valuing the Protection of Ecological Systems and Services" dated December 8, 2008 (see Attachment F). Dr. Swackhamer asked if Lead Reviewers were satisfied with the responses from the Chairs as stated in their note and if they cared to emphasize or further discuss any of their comments.

- a) Dr. Fischhoff stated that he was impressed by the report and satisfied with the Chairs' responses. He applauded the broad perspectives reflected in the report. He suggested that the literature cited could be expanded to reflect the greater base that exists on the issues.
- b) Dr. Kling applauded the tremendous amount of work that went into the report and that she too was happy with the Chairs' responses. She emphasized that the concept of value being used should be appropriate to the analysis needed. Mixing different concepts of value in benefit-cost-analysis can lead to bad outcomes. The report should make it clear that concepts of value link to the underlying questions associated with the issue being addressed.
- c) Dr. Meyer echoed the compliments from the other Lead Reviewers and stated that most of her

comments had been addressed. She emphasized her concern that the information in the section entitled “Web-accessible materials on ecological valuation developed by or for the C-VPESS” (page 106) was essentially an appendix and that it needs to be referenced at least in Chapter 4 – perhaps even included as a box there. The Chairs agreed to label this as an appendix and to reference it in Chapter 4. In addition Dr. Meyer noted that the emphasis on public values held by stakeholders was often mentioned in the report and that making it clear that an “informed public” through assumed by the C-VPESS was not clearly stated as frequently in the report as it should be to ensure that this very important condition is not overlooked. The Chairs’ agreed to make this point clear where it might be ambiguous in the report. Dr. Meyer also thought that more relevant pictures could be chosen throughout the report. Staff will seek more-relevant pictures to use in the final report.

Dr. Swackhamer asked other members if they had comments needing emphasis or discussion at this time. One member suggested that the title of the report was misleading in that it emphasizes “protection” of ecosystems. He thought it would be more appropriate to use a title that made it clear that the report focused on valuing EPA “decisions.” After some discussion, most members agreed that because the report was intended to be broader than EPA actions and that the current title was appropriate.

One member believed that the report, though adequately addressing the state of science within EPA’s valuation practice was accomplished, did clearly assess the state of the science involved in all aspects of valuation. She thought that the report would be stronger if a broader treatment could be done that would then lead to the types of additional knowledge needed to improve the field. The Chairs believed that the committee evaluated what it felt was relevant and within its members’ expertise and upon which they could provide unique advice. There was a difference of opinion within the committee on the state of the science thus the committee tried to reflect the shared opinion that there is much to be done to improve knowledge in these areas. There is also no universal notion of validity across all disciplines and thus agreement is not to be expected across all disciplines. These issues could be clarified in the report. The Chairs agreed to look for additional areas where a broader state of the science might have been evaluated and to see if these might be pulled together into a summary in the final report. They will also follow up on the validity issue and offer more clarity on that. They will also address the near-term versus longer-term nature of the needs.

With that, a motion was made, and seconded, to approve the report conditioned upon the Panel Chairs’ edits as indicated in their response document and the discussions today. There is no need to return to the Board or to use vetters in completing the final report. The Chair called for a vote on the motion and the vote was to approve the report. There were no dissenting votes on the motion.

With the business concluded for the meeting, the Designated Federal Officer adjourned the meeting.

Respectfully Submitted:

/ Signed /

Mr. Thomas O. Miller
Designated Federal Officer, Acting
US EPA Science Advisory Board

Certified as True:

/ Signed /

Dr. Deborah L. Swackhamer
Chair, EPA Science Advisory Board

Attachment A

**U.S. Environmental Protection Agency
Science Advisory Board
Teleconference
Agenda
December 9, 2008**

(For call-in information, please call the Staff Office at 202-343-9999)

Purpose of the Meeting: The Board will meet to conduct one quality review of a draft SAB report and to receive a briefing on biofuels from EPA.

Tuesday December 9, 2008

1:00 p.m.	Convene the Meeting	Mr. Thomas O. Miller <i>Designated Federal Officer, EPA Science Advisory Board</i>
1:10 p.m.	Purpose and Approach of the Meeting	Dr. Deborah L. Swackhamer <i>Chair Science Advisory Board</i>
1:15 p.m.	Briefing on EPA's Biofuels Rule Development	Mr. Paul N. Argyropoulos <i>Senior Policy Advisor EPA OAR, Office of Transportation and Air Quality</i>
1:45 p.m.	Public Comment	<i>TBD</i>
1:50 P.M.	Quality Review of the Draft SAB Report on <i>Valuing the Protection of Ecological Systems and Services (SAB/CVPESS)</i>	Dr. Deborah L. Swackhamer Dr. Barton H. Thompson, <i>Chair and</i> Dr. Kathleen Segerson, <i>Vice Chair, Committee on the Valuation of Ecological Systems and Services</i>
3:00 p.m.	Adjourn the Meeting	The DFO

For assistance, contact FERC Online Support.

For Further Information Contact:
Blake Condo at (202) 502-8914 or
blake.condo@ferc.gov.

Kimberly D. Bose,
Secretary.

[FR Doc. E8-27565 Filed 11-19-08; 8:45 am]

BILLING CODE 6717-01-P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Project No. 2677-019]

City of Kaukauna, WI; Notice of Staff Participation in Meeting

November 14, 2008.

On December 1, 2008, Office of Energy Projects staff will participate by teleconference in a work group meeting to discuss information needs for an assessment of recreational boating flows in the bypassed reach of the Badger Development for the relicensing of the Badger-Rapide Croche Hydroelectric Project (FERC No. 2677-019). The meeting will begin at 1 p.m. CST.

For parties wishing to participate in the teleconference, the call-in number is 608-443-0390 (PIN# 7608). For further information please contact Arie DeWaal, Project Manager, Mead & Hunt, Inc., at (608) 273-6380, or e-mail at arie.dewaal@meadhunt.com, or John Smith, FERC, at (202) 502-8972, or e-mail at john.smith@ferc.gov.

Kimberly D. Bose,
Secretary.

[FR Doc. E8-27567 Filed 11-19-08; 8:45 am]

BILLING CODE 6717-01-P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket Nos. OA08-62-000; ER08-1113-000]

California Independent System Operator Corporation; Notice of FERC Staff Attendance

November 14, 2008.

The Federal Energy Regulatory Commission (Commission) hereby gives notice that on the following dates members of its staff will attend stakeholder meetings of the California Independent System Operator (CAISO). Unless otherwise noted, these meetings will be held at the CAISO, 151 Blue Ravine Road, Folsom, CA or by teleconference. The agenda and other

documents for the meetings are available on the CAISO's Web site, <http://www.aiso.com>.

November 19, 2008: Integrated Balancing Authority Area compliance filing.

November 20, 2008: CAISO 2009 Transmission Plan.

Sponsored by the CAISO, these meetings are open to all market participants, and staff's attendance is part of the Commission's ongoing outreach efforts. The meetings may discuss matters at issue in the above captioned dockets.

For further information, contact Saeed Farrokhpay at

saeed.farrokhpay@ferc.gov; (916) 294-0233 or Maury Kruth at maury.kruth@ferc.gov; (916) 294-0275.

Kimberly D. Bose,
Secretary.

[FR Doc. E8-27564 Filed 11-19-08; 8:45 am]

BILLING CODE 6717-01-P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. AD08-12-000]

State of the Natural Gas Infrastructure Conference; Supplemental Notice of Commission Conference

November 14, 2008.

On October 7, 2008, the Federal Energy Regulatory Commission (Commission) issued a notice announcing a conference in this proceeding, to be held on November 21, 2008. As mentioned in that notice, the focus of the conference is on natural gas demand and supply issues as they relate to the development of the domestic natural gas industry and the effect upon infrastructure. The Commission has invited industry representatives to provide perspectives and comments. The agenda for the conference is attached.

As noted in the October 7 Notice, the conference will be held at the Federal Energy Regulatory Commission, 888 First Street, NE., Washington, DC 20426 in the Commission Meeting Room (2-C) from 9:30 a.m. until 12:30 p.m. (Eastern Standard Time). All interested parties are invited, and there is no registration required.

This conference will be transcribed. Transcripts of the conference will be immediately available from Ace Reporting Company (202-347-3700 or 1-800-336-6646) for a fee. A free Webcast of this event is available through <http://www.ferc.gov>. Anyone

with Internet access who desires to view this event can do so by navigating to the Calendar of Events at <http://www.ferc.gov> and locating this event in the Calendar. The event will contain a link to its Webcast. The Capitol Connection provides technical support for the free Webcasts. It also offers access to this event via television in the Washington, DC area and via phone-bridge for a fee. If you have any questions, visit <http://www.CapitolConnection.org> and click on "FERC" or call (703) 993-3100.

Commission conferences are accessible under section 508 of the Rehabilitation Act of 1973. For accessibility accommodations please send an e-mail to accessibility@ferc.gov or call toll free 866-208-3372 (voice) or 202-208-1659 (TTY), or send a FAX to 202-208-2106 with the required accommodations.

Questions about the conference should be directed to Raymond James by phone at 202-502-8588 or by e-mail at raymond.james@ferc.gov.

Kimberly D. Bose,
Secretary.

[FR Doc. E8-27570 Filed 11-19-08; 8:45 am]

BILLING CODE 6717-01-P

ENVIRONMENTAL PROTECTION AGENCY

[FRL-8742-4]

EPA Science Advisory Board Staff Office; Notification of a Public Teleconference Meeting of the Chartered Science Advisory Board

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: The EPA Science Advisory Board (SAB) Staff Office announces two public teleconference meetings of the chartered SAB to: (1) Conduct its quality review of several draft SAB reports, and (2) to receive a briefing from EPA on biofuels.

DATES: The meeting dates are Tuesday, December 9, 2008, from 1 p.m. to 3 p.m. (Eastern Time) and Tuesday, December 16, 2008, from 11 a.m. to 12 p.m. (Eastern Time).

Location: The meeting will be conducted by telephone only.

FOR FURTHER INFORMATION CONTACT: Any member of the public wishing to obtain general information concerning this public teleconference meeting should contact Mr. Thomas Miller, Designated Federal Officer (DFO), EPA Science Advisory Board (1400F), 1200

Pennsylvania Avenue, NW., Washington, DC 20460; via telephone/voice mail (202) 343-9982; fax (202) 233-0643; or e-mail at miller.tom@epa.gov. General information concerning the EPA Science Advisory Board can be found on the SAB Web site at <http://www.epa.gov/sab>.

SUPPLEMENTARY INFORMATION: The SAB was established by 42 U.S.C. 4365 to provide independent scientific and technical advice to the Administrator on the technical basis for Agency positions and regulations. The SAB is a Federal advisory committee chartered under the Federal Advisory Committee Act (FACA), as amended, 5 U.S.C., App. The SAB will comply with the provisions of FACA and all appropriate SAB Staff Office procedural policies. Pursuant to the Federal Advisory Committee Act, Public Law 92-463, notice is hereby given that the EPA SAB will hold a public teleconference meeting to conduct several quality reviews and to receive a briefing on biofuels by EPA representatives.

Background: SAB Telephone Conference, Tuesday, December 9, 2008:

(a) SAB Quality Review of the Draft Report from the SAB Committee for the Valuation of Ecological Systems and Services (C-VPESS). The Chartered Science Advisory Board will conduct a quality review of the draft final SAB report from its Committee for Valuing the Protection of Ecological Systems and Services. The report is an original SAB study, initiated in 2003. The committee's charge was to assess EPA valuation needs; assess the state of the art and science of valuing protection of ecological systems and services; and identify key areas for improving knowledge, methodologies, practice, and research. The report takes a multi-disciplinary approach to ecological valuation issues. Additional information on this topic is available on the SAB Web site at http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activities/Ecological%20Valuation?OpenDocument.

(b) *EPA Biofuels Briefing:* On October 27, 2008, the Science Advisory Board conducted a seminar entitled "Looking to the Future" as part of an ongoing effort to consider EPA's long-range strategic research vision. A part of that meeting focused on the environmental implications of biofuels. During the SAB's December 9, 2008 telephone conference, the Board will receive a briefing from representatives of the EPA OAR Office of Transportation and Air Quality on the status of the agency's renewable fuels program rule

development process. This information will provide additional background information to the SAB as it considers how it might further advise the EPA Administrator on the Agency's research program.

Background: SAB Telephone Conference, Tuesday, December 16, 2008:

(a) SAB Quality Review of the Draft SAB Panel Report on the EPA Particulate Matter (PM) Research Centers Program. The chartered Science Advisory Board will conduct a quality review of the draft SAB report from its Particulate Matter Research Centers Program Review Advisory Panel. In 1998, the Congress directed EPA to establish as many as five university-based PM research centers as part of the Agency's PM research program. The first PM Research Centers were funded from 1999 to 2005 with a total program budget of \$8 million annually. EPA's PM Research Centers program was initially shaped by recommendations from the National Research Council. In 2002, EPA requested that the Science Advisory Board conduct an interim review of EPA's PM Research Centers program. This review was instrumental in providing additional guidance for the second phase of the program (2005-2010). Five current centers are funded for 2005-2010 with the total program budget at \$40 million. EPA's National Center for Environmental Research (NCER), within the Office of Research and Development (ORD), requested that the SAB comment on the Agency's current PM Research Centers program and to advise EPA concerning the possible structures and strategic direction for the program from 2010 to 2015. The SAB formed the PM Research Centers Program Advisory Panel to conduct this review. The Panel met to review and discuss the program on October 1-2, 2008 and has now completed a draft report providing the results of its deliberations. Additional information on this review is available on the SAB Web site at http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activities/2008%20PM%20Centers%20Program%20Review?OpenDocument.

(b) SAB Quality Review of the Draft SAB Contaminant Candidate List 3 Advisory. The Chartered Science Advisory Board will conduct a second quality review of the draft SAB Drinking Water Committee (DWC) report on EPA's Drinking Water Contaminant Candidate List 3. This report was the subject of a quality review at the SAB's October 28, 2008 meeting. At that meeting, the Chartered SAB asked for some revisions relative to the comments

made by SAB members during that meeting (see these comments on the SAB Web site at the following URL [http://yosemite.epa.gov/sab/sabproduct.nsf/A3B59D3624B2B1DA852574EB006DD0C9/\\$File/;SAB+Comments+on+CCL+3+Oct+28+08+Meeting.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/A3B59D3624B2B1DA852574EB006DD0C9/$File/;SAB+Comments+on+CCL+3+Oct+28+08+Meeting.pdf)) and that the report be returned to the SAB for completion of the quality review. The DWC review was conducted at the request of the EPA Office of Water. The 1996 Safe Drinking Water Act Amendments (SDWA) require EPA to (1) publish every five years a list of currently unregulated contaminants in drinking water that may pose risks and (2) make determinations on whether or not to regulate at least five contaminants from that list on a staggered five year cycle. The list must be published after consultation with the scientific community, including the SAB, after notice and opportunity for public comment, and after consideration of the occurrence database established under section 1445(g) of the SDWA. The unregulated contaminants considered for the list must include, but are not limited to, substances referred to in section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and substances registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Additional information on this review can be obtained on the EPA SAB Web site at http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activities/CCL3.

Availability of Meeting Materials: The agenda and other materials in support of this meeting will be placed on the SAB Web site at <http://www.epa.gov/sab> in advance of this meeting.

Procedures for Providing Public Input: Interested members of the public may submit relevant written or oral information for the SAB to consider during this teleconference.

Oral Statements: In general, individuals or groups requesting time to make an oral presentation at a public SAB teleconference will be limited to three minutes, with no more than one-half hour for all speakers. At face-to-face meetings, presentations will be limited to five minutes, with no more than a total of one hour for all speakers. To be placed on the public speaker list, parties interested in the December 9, 2008 meeting should contact Mr. Thomas Miller, DFO, in writing (preferably by e-mail), by December 2, 2008 at the contact information provided above. Parties interested in the December 16, 2008 meeting should contact Mr. Thomas Miller, DFO, in writing (preferably by e-mail), by December 9,

2008 at the contact information provided above.

Written Statements: Written statements relevant to the December 9, 2008 meeting should be received in the SAB Staff Office by December 2, 2008, and written statements relevant to the December 16 meeting should be received in the SAB Staff Office by December 9, 2008 so that the information may be made available to the SAB for their consideration prior to these teleconference meetings. Written statements should be supplied to the DFO via e-mail to miller.tom@epa.gov (acceptable file format: Adobe Acrobat PDF, WordPerfect, MS Word, MS PowerPoint, or Rich Text files in IBM-PC/Windows 98/2000/XP format).

Accessibility: For information on access or services for individuals with disabilities, please contact Mr. Thomas Miller at (202) 343-9982, or miller.tom@epa.gov. To request accommodation of a disability, please contact Mr. Miller, preferably at least 10 days prior to the meeting, to give EPA as much time as possible to process your request.

Dated: November 14, 2008.

Vanessa T. Vu,

Director, EPA Science Advisory Board Staff Office.

[FR Doc. E8-27612 Filed 11-19-08; 8:45 am]

BILLING CODE 6560-50-P

FEDERAL COMMUNICATIONS COMMISSION

Notice of Public Information Collection(s) Being Submitted for Review to the Office of Management and Budget

November 13, 2008.

SUMMARY: The Federal Communications Commission, as part of its continuing effort to reduce paperwork burden invites the general public and other Federal agencies to take this opportunity to comment on the following information collection(s), as required by the Paperwork Reduction Act (PRA) of 1995, 44 U.S.C. 3501-3520. An agency may not conduct or sponsor a collection of information unless it displays a currently valid control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the Paperwork Reduction Act (PRA) that does not display a valid control number. Comments are requested concerning (a) whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the

information shall have practical utility; (b) the accuracy of the Commission's burden estimate; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

DATES: Written Paperwork Reduction Act (PRA) comments should be submitted on or before January 20, 2009. If you anticipate that you will be submitting PRA comments, but find it difficult to do so within the period of time allowed by this notice, you should advise the FCC contact listed below as soon as possible.

ADDRESSES: Direct all PRA comments to Nicholas A. Fraser, Office of Management and Budget, (202) 395-5887, or via fax at 202-395-5167 or via Internet at

Nicholas.A.Fraser@omb.eop.gov and to Judith-B.Herman@fcc.gov, Federal Communications Commission, or an e-mail to PRA@fcc.gov. To view a copy of this information collection request (ICR) submitted to OMB: (1) Go to the Web page <http://www.reginfo.gov/public/do/PRAMain>, (2) look for the section of the Web page called "Currently Under Review", (3) click on the downward-pointing arrow in the "Select Agency" box below the "Currently Under Review" heading, (4) select "Federal Communications Commission" from the list of agencies presented in the "Select Agency" box, (5) click the "Submit" button to the right of the "Select Agency" box, and (6) when the list of FCC ICRs currently under review appears, look for the title of this ICR (or its OMB Control Number, if there is one) and then click on the ICR Reference Number to view detailed information about this ICR.

FOR FURTHER INFORMATION CONTACT: For additional information, contact Judith B. Herman at 202-418-0214 or via the Internet at Judith-B.Herman@fcc.gov.

SUPPLEMENTARY INFORMATION:

OMB Control Number: 3060-0645.

Title: Section 17.4, Antenna Structure Registration.

Form No.: N/A.

Type of Review: Extension of a currently approved collection.

Respondents: Business or other for-profit; not-for-profit institutions, and state, local or tribal government.

Number of Respondents: 25,600

respondents; 25,600 responses.

Estimated Time Per Response: .2-1.2 hours.

Frequency of Response: On occasion reporting requirement, recordkeeping

requirement and third party disclosure requirement.

Obligation to Respond: Required to obtain or retain benefits. Statutory authority for these information collections are contained in Sections 4 and 303; 47 U.S.C. 301 and 309.

Total Annual Burden: 40,329 hours.

Total Annual Cost: \$3,200,000.

Privacy Act Impact Assessment: N/A.

Nature and Extent of Confidentiality: This collection of information does not address information of a confidential nature. Respondents may request confidential treatment for information they believe should be withheld from public inspection under 47 CFR 0.459 of the Commission's rules.

Needs and Uses: The Commission will submit this information collection (IC) to the Office of Management and Budget (OMB) after this 60 day comment period in order to obtain the full three year clearance from them. The Commission is requesting an extension (no change in the reporting, recordkeeping and/or third party disclosure requirements). The estimated hourly and/or annual cost burdens have not changed since this IC was last submitted to the OMB in 2006).

Section 17.4, Antenna Structure Registration, which became effective July 1, 1996, requires the owner of any proposed or existing that requires notice of proposed construction to the Federal Aviation Administration (FAA) must register the structure with the Commission. This includes those structures used as part of stations licensed by the Commission for the transmission of radio energy, or to be used as part of a cable television head end system. If a Federal Government antenna structure is to be used by a Commission licensee, the structure must be registered with the Commission. Section 17.4 also contains other reporting, recordkeeping and third party notification requirements subject to the Paperwork Reduction Act (PRA) and OMB approval. The information is used by the Commission during investigations related to air safety or radio frequency interference. A registration number is issued to identify antenna structure owners in order to enforce the Congressionally-mandated provisions related to the owners.

Federal Communications Commission.

Marlene H. Dortch,

Secretary.

[FR Doc. E8-27662 Filed 11-19-08; 8:45 am]

BILLING CODE 6712-01-P

Attachment C

U.S. Environmental Protection Agency Science Advisory Board Teleconference Meeting December 9, 2008

CHAIR

Dr. Deborah L. Swackhamer, University of Minnesota, St. Paul, MN

SAB MEMBERS

Dr. Timothy Buckley, The Ohio State University, Columbus, OH
Dr. James Bus, The Dow Chemical Company, Midland, MI
Dr. Deborah Cory-Slechta, University of Rochester, Rochester, NY
Dr. Terry Daniel, University of Arizona, Tucson, AZ
Dr. Otto C. Doering III, Purdue University, W. Lafayette, IN
Dr. David A. Dzombak, Carnegie Mellon University, Pittsburgh, PA
Dr. T. Taylor Eighmy, University of New Hampshire, Durham, NH
Dr. Baruch Fischhoff, Carnegie Mellon University, Pittsburgh, PA
Dr. James Galloway, University of Virginia, Charlottesville, VA
Dr. Rogene Henderson, Lovelace Respiratory Research Institute, Albuquerque, NM
Dr. James H. Johnson, Howard University, Washington, DC
Dr. Bernd Kahn, Georgia Institute of Technology, Atlanta, GA
Dr. Catherine Kling, Iowa State University, Ames, IA
Dr. Jill Lipoti, New Jersey Department of Environmental Protection, Trenton, NJ
Dr. Lee D. McMullen, Snyder & Associates, Inc., Ankeny, IA
Dr. Judith L. Meyer, University of Georgia, Lopez Island, WA
Dr. Christine Moe, Emory University, Atlanta, GA
Dr. M. Granger Morgan, Carnegie Mellon University, Pittsburgh, PA
Dr. Duncan Patten, Montana State University, Bozeman, MT
Dr. Jonathan M. Samet, University of Southern California, Los Angeles, CA
Dr. Kathleen Segerson, University of Connecticut, Storrs, CT
Dr. Thomas L. Theis, University of Illinois at Chicago, Chicago, IL
Dr. Barton H. (Buzz) Thompson, Jr., Stanford University, Stanford, CA
Dr. Robert Twiss, University of California-Berkeley, Ross, CA
Dr. Thomas S. Wallsten, University of Maryland, College Park, MD

SCIENCE ADVISORY BOARD STAFF

Mr. Thomas Miller, Washington, DC

ATTACHMENT D



EISA 2007: Renewable Fuels Standard Program

Paul Argyropoulos

**Office of Transportation and Air Quality
US Environmental Protection Agency**

December 2008

Presentation Overview

- **Overview of Renewable Fuels Standard Provisions In EISA 2007**
- **Reflection on Current Renewable Fuel Standard (RFS Program) as Established under EPA Act 2005**
- **Highlights - Energy Independence and Security Act of 2007**
 - **The New RFS (RFS2) – What's New and Important**
 - **Overview of other Key Related Studies, Reports and Processes**
- **What's Next**

Energy Independence & Security Act - RFS 2

A General Timeline and Process

- **EISA signed by the President December 19, 2007**
- **EISA - Final RFS 2 Rule required by December 19, 2008**
- **EISA increases volume under RFS1 for 2008**
 - Volume changed from 5.4 to 9.0 bill gal
 - Implemented administratively thru new Federal Register Notice (Feb 2008)
 - No rule changes for 2008 – Use RFS 1
- **Major modifications to the current RFS program beginning in 2009**
- **RFS 2 – Plan to build off of the foundation of RFS1**
 - Rule development process similar to RFS 1
 - Engage early / often with stakeholders throughout the process
 - Continue w/close consultation – DOE, USDA, Other federal partners

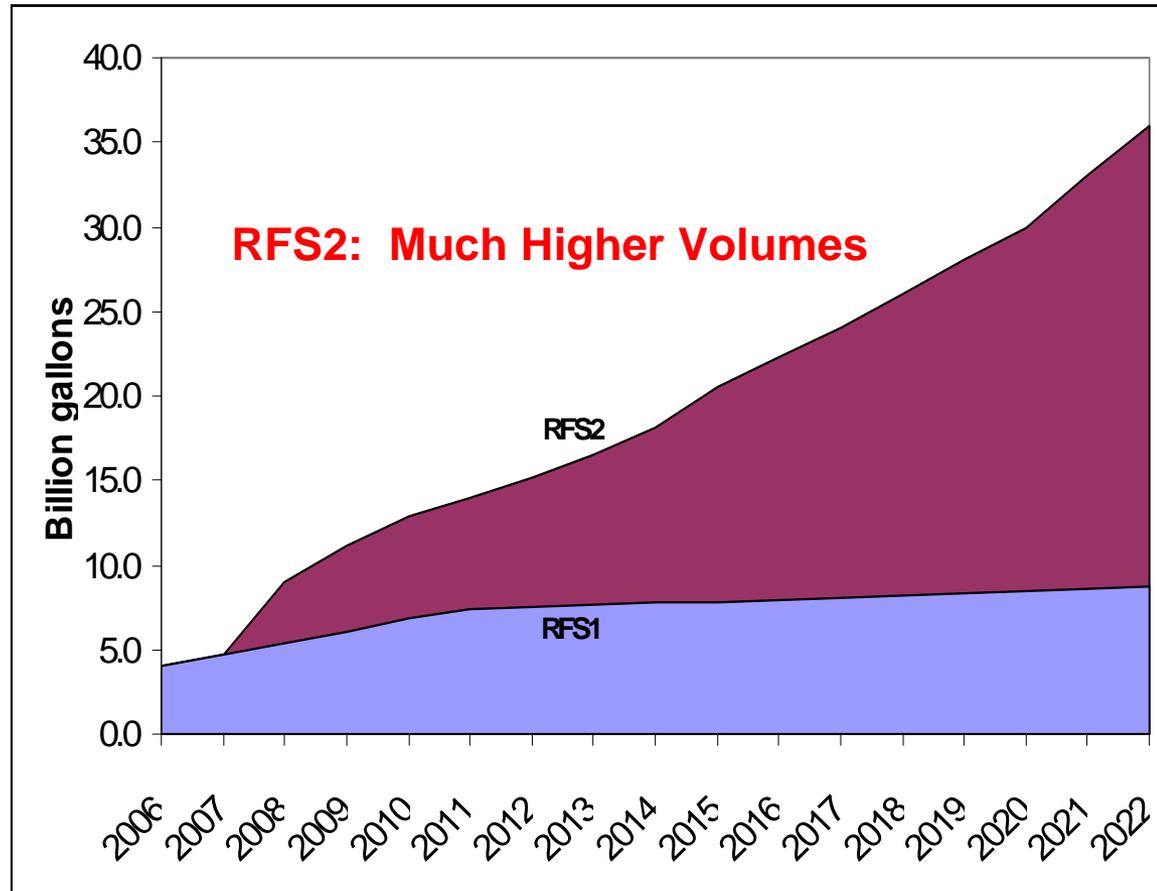
Renewable Fuels: Reflection on EPA Act 2005 RFS Program

- **Default Rule Applied for 2006**
- **Final Renewable Fuel Standard (RFS)**
 - Final Rule Published May 2nd 2007
 - Official Program Start - Sept 1, 2007
- **EPA converts RFS into percent of gasoline production**
 - Obligation Applies to refiners, importers, gasoline blenders
 - 4.0 billion gallons/yr in 2006 -- growing to 7.5 bgy in 2012
- **Major Compliance Element - Trading and Banking Provisions**
 - Flexible Program - Based on a RIN – Renewable Identification Number (i.e. credits)
 - Allows for compliance when, where, and how it makes the most sense
- **Renewable values based on volumetric energy content compared to corn ethanol**
 - Corn-ethanol: 1.0
 - Biodiesel (alkyl esters): 1.5
 - **Cellulosic biomass ethanol: 2.5**
(As specified in EPA Act)



EISA of 2007: New Challenges and Direction

- Volumes increase to 9 Bgal/yr in 2008 – escalating to 36 Bgal/year by 2022
- Establishes new renewable fuel categories and eligibility requirements, including GHG reduction thresholds!
- Provides new waivers and paper credit provisions
- Includes new obligation for fuels
- Includes new studies and reports



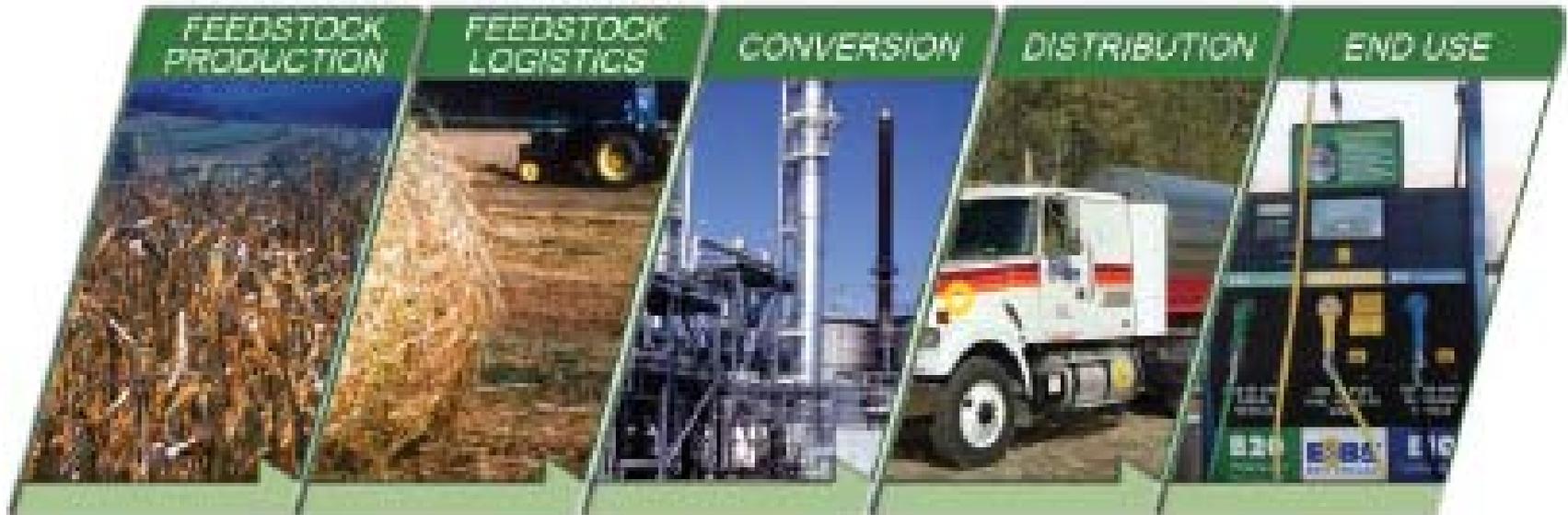
RFS2: 4 Nested Standards (bill gal)

Year	Conventional Biofuels (Grandfathered or 20% Reduction)	Advanced Biofuel				Total Renewable Fuel
		Biomass-Based Diesel (50% Reduction)	Non Cellulosic Advanced (50% Reduction)	Cellulosic Biofuel (60% Reduction)	Total Advanced Biofuel	
2006	4.00					4.0
2007	7.70					4.7
2008	9.00					9.0
2009	10.50	0.5	0.1		0.6	11.1
2010	12.00	0.65	0.2	0.1	0.95	12.95
2011	12.60	0.80	0.3	0.25	1.35	13.95
2012	13.20	1.0	0.5	0.5	2.0	15.2
2013	13.80	1.0	0.75	1.0	2.75	16.55
2014	14.50	1.0	1.00	1.75	3.75	18.15
2015	15.00	1.0	1.50	3.0	5.5	20.5
2016	15.00	1.0	2.00	4.25	7.25	22.25
2017	15.00	1.0	2.50	5.5	9.0	24.0
2018	15.00	1.0	3.00	7.0	11.0	26.0
2019	15.00	1.0	3.50	8.5	13.0	28.0
2020	15.00	1.0	3.50	10.5	15.0	30.0
2021	15.00	1.0	3.50	13.5	18.0	33.0
2022	15.00	1.0	4.00	16.0	21.0	36.0

Key New Obligations and Definitions

- Standard extended from Gasoline to Gasoline and Diesel - Nonroad fuel in addition to highway
- Jet fuel and heating oil aren't covered, but renewable fuel sold into these markets can generate RINs
- Definitions significantly changed from RFS1 and / or now include new elements
 - Lifecycle Defined and Thresholds Established
 - Facility Grandfathering Provisions
 - New Renewable Biomass Definition / Land Restrictions
- Creates new categories of renewable fuel with green house gas thresholds

RFS 2 – Expanded Program Considerations Throughout the Supply Chain



A Critical Element of EISA: Lifecycle Assessment

- **Each fuel category required to meet mandated GHG performance thresholds (reduction compared to 2005 baseline petroleum fuel replaced)**
 - **Conventional Biofuel** (ethanol derived from corn starch)
 - Must meet 20% lifecycle GHG threshold
 - Only applies to fuel produced in new facilities
 - **Advanced Biofuel**
 - Essentially anything but corn starch ethanol
 - Includes cellulosic biofuels and biomass-based diesel
 - Must meet a 50% lifecycle GHG threshold
 - **Biomass-Based Diesel**
 - E.g., Biodiesel, “renewable diesel” if fats and oils not co-processed with petroleum
 - Must meet a 50% lifecycle GHG threshold
 - **Cellulosic Biofuel**
 - Renewable fuel produced from cellulose, hemicellulose, or lignin
 - E.g., cellulosic ethanol, BTL diesel, green gasoline
 - Must meet a 60% lifecycle GHG threshold
- **EISA language permits EPA to adjust the lifecycle GHG thresholds by as much as 10%**

Definition of Lifecycle GHG Emissions

“(H) LIFECYCLE GREENHOUSE GAS EMISSIONS.—The term ‘lifecycle greenhouse gas emissions’ means the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), as determined by the Administrator, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.

Lifecycle Analysis – What's Considered?

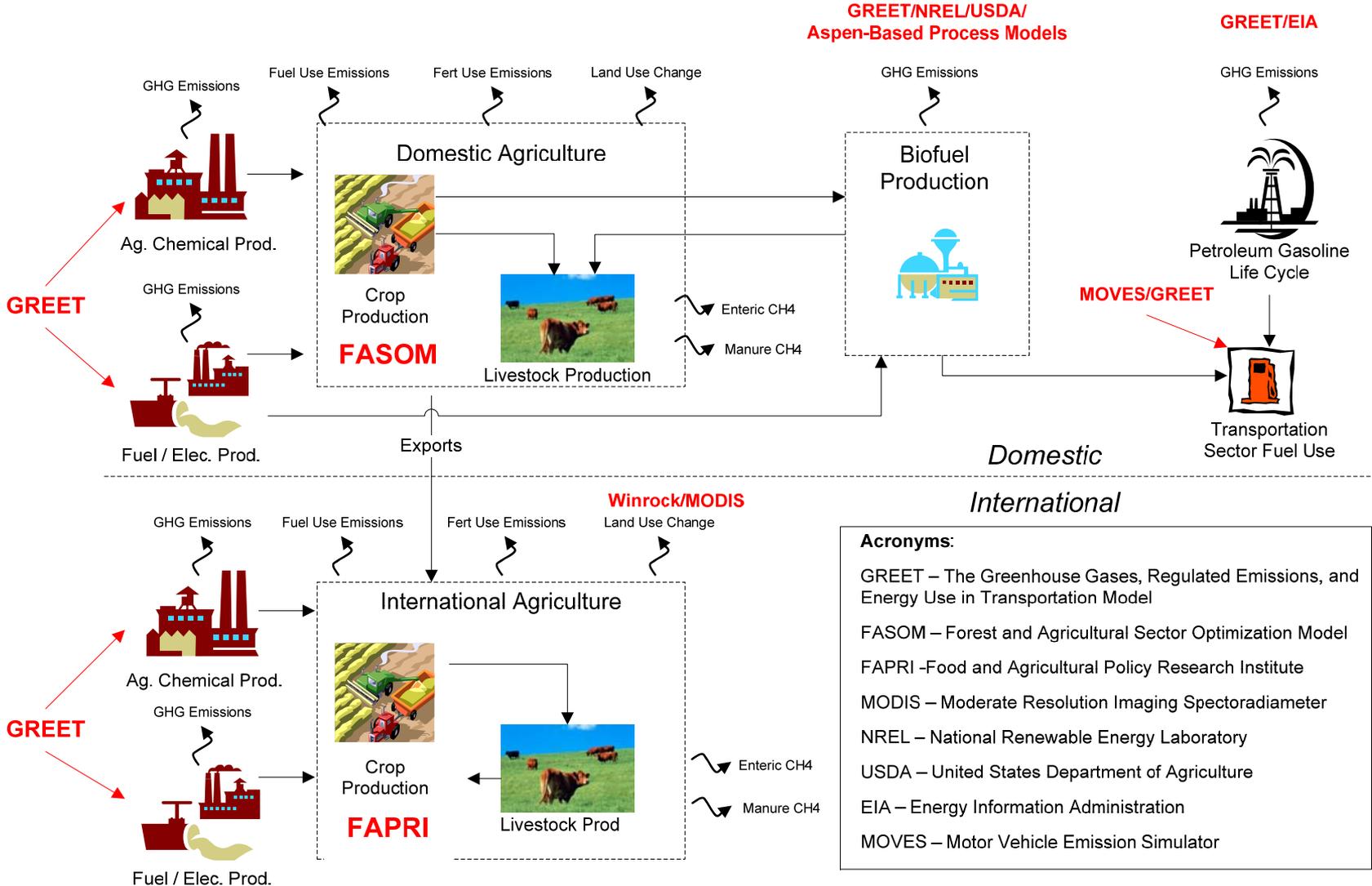
- **Domestic and International agricultural sector**
 - **Direct GHG emissions from producing feedstock, indirect impacts on other crops (e.g., less rice production), animals (fewer cattle), land use change**
- **Fuel production**
 - **Energy use and GHG emissions at production facility**
- **Fuel / feedstock distribution**
 - **Transporting feedstock to plant**
 - **Transporting fuel to end use**
- **Tailpipe emissions**
 - **Vehicle GHG emissions**
- **Baseline petroleum fuel**
 - **GHG emissions associated with producing gasoline and diesel fuel**



Biomass Production

Fuel Production

Fuel Use



LCA – Summary and Next Steps

- **In developing the lifecycle methodology, our approach has been to use the best models, tools and resources available**
 - **Using sensitivity analysis and examining multiple approaches to address key areas of uncertainty**

- **The notice of proposed rule-making (NPRM) provides an important opportunity for EPA to present our work and to seek comment on proposed approaches and alternative approaches**
 - **Planning to hold workshops on lifecycle analysis following release of the NPRM**

- **Engage experts between proposal and final to ensure expert-level feedback**
 - **Seeking advice from EPA’s Science Advisory Board (SAB)**
 - **Plan to conduct formal external peer-reviews of key components**

- **This input along with the additional analysis we will be conducting between now and the final rule will further improve our methodology**

- **Anticipate 3-5 year cycles for updating the analysis**

Analyses for Rulemaking

- **Renewable fuel production and use projections, technology and cost assessments**
- **GHG Lifecycle Modeling, Inventory, and Benefits**
- **Other Pollutant Inventory, Air Quality and Benefits**
- **Agricultural Sector Impacts**
- **Water and Soil Impacts**
- **Macroeconomic Impacts**
- **Energy Security**

Status of Proposed Rulemaking

- Package is undergoing inter agency review
- Next steps
 - Revise per comments from interagency process
 - Signature by EPA Administrator
 - Package to be Published in Federal Register
 - Public Comment Process
- Final Intended for Summer 2009
- Implementation Planned for 2010

Two Key Air / Environmental Impact Studies/Reports in EISA

Authority / Section	Action (Reg, Research or Report)	Title	Overview of Requirement	Lead / Timing
Sec. 204 (Primary)	Study/ Report	Env. and Resource Conservation Impacts	EPA shall assess and report to Congress on the impacts to date and likely future impacts of Section 211(o) of CAA.	EPA - Within 3 years and every 3 years after.
Sec. 209 (Primary)	Study/ Report/ Potential for Regulatory Action	Anti-backsliding	Study whether renewable fuel volumes adversely affect air quality as result of changes in vehicle emissions. Includes study of different blend levels. Requires promulgation of fuel regs to mitigate to greatest extent possible any adverse impacts.	EPA - Study within 18 months. Promulgate regulations within 3 years.

Questions



Thank you

ATTACHMENT E

Placeholder for the report which can be located in the official physical FACA file for the December 9, 2008 SAB teleconference and on the web at:

[http://yosemite.epa.gov/sab/sabproduct.nsf/ea5d9a9b55cc319285256cbd005a472e/eb49bcfd4dc0a63685257506006e069e/\\$FILE/SAB%20C-VPRESS%20Draft%2011-18-08.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/ea5d9a9b55cc319285256cbd005a472e/eb49bcfd4dc0a63685257506006e069e/$FILE/SAB%20C-VPRESS%20Draft%2011-18-08.pdf)

Note from the Chair and Vice Chair of the SAB Committee on Valuing the Protection of Ecological Systems And Services (C-VPESS)

SUBJECT: SAB Quality Review of the C-VPESS Draft Report

Dear Colleagues:

Thank you very much for the comments that we have received over the last week on the C-VPESS draft report. We have found them very valuable, and they will help us to refine and improve the final version of the report. We look forward to your additional thoughts and comments during the teleconference discussion on Tuesday.

Attached are the written comments that we have received to date from members of the chartered SAB, along with our initial responses to the comments that we received before the end of the day on Friday. We hope that these responses will help in making the telephone conference on Tuesday as efficient as possible. Note that these are only our initial thoughts in response to the comments, and we hope that you will let us know where we may have misinterpreted a point or not fully responded.

For purposes of our telephone conference call and considering our responses to your comments, some background on the C-VPESS and the draft report may be helpful.

- As you know, the C-VPESS was both large and diverse. The final committee consisted of 22 members with expertise in decision science, ecology, economics, philosophy, psychology, law, and public policy. Much of the initial work of the committee was devoted to learning the diverse language and perspectives of the various scientific disciplines represented and applying those perspectives to the issues at hand. An important goal of the committee was to develop consensus recommendations.
- The language of the final report was carefully chosen in order to ensure a consensus report. It's fair to say that the final report is not the report that any individual member of the C-VPESS would have written if expressing only his or her own views and disciplinary perspective. The last year of the committee deliberations was devoted to discussions of each section of the report, the language to be used, the points to be highlighted, and the qualifications to be added, all with the goal of ensuring that all committee members would feel comfortable signing onto the report. One of the greatest strengths of the final report is that it reflects the views of all committee members, not an easy feat given the diversity of scientific disciplines and perspectives.
- The C-VPESS recognized that a number of important reports have been written in recent years on ecological valuation. The committee therefore focused its work on providing an assessment and recommendations that speak specifically to EPA, draw on the interdisciplinary expertise of the committee, and represent the consensus of the committee. The report is not meant to be exhaustive.

Buzz Thompson
Kathy Segerson

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LEAD REVIEWERS

Comments from Dr. Baruch Fischhoff

Report Quality Review of “Valuing the Protection of Ecological Systems and Services,” draft of November 2008

I was very favorably impressed by this report. It has a very distinguished and diverse group of authors, who must have labored mightily to produce a synthesis document that they could all sign. While the reports carefully focuses on EPA’s mission, I think that it represents an intellectual product that will have echoes beyond the Agency. In fact, I suspect that the commitment to the Agency’s mission is what enabled committee members to make the compromises needed to get on one page – whereas, in theory, proponents of different methods and disciplines tend to stand their ground.

Were the Agency to follow the report’s recommendations, it could set the pattern for an innovative organizational model, which would make the best use of its limited resources. Notably, it requires the Agency’s work to be done by interdisciplinary teams, which work together throughout management processes and begin with a jointly formulated “conceptual model.” That model would reflect both the natural science of the ecological systems under consideration and the potentially complex human “values” that it could affect. It would provide a brake on research activities that specialize in producing detailed analyses of fragments of problems. It would afford the Agency a leadership role in ecological stewardship.

Fundamental to the report is its characterization of the different kinds of tasks that the Agency faces. At one extreme, there are regulatory proceedings, in which formal evaluations are meant to replace judgment. Or, more specifically, issues of judgment are resolved in the course of preparing a formal analysis. At the other extreme, are consultative proceedings, in which evaluations are intended to inform judgment, allowing stakeholders (inside and outside the Agency) to reach common understandings, improve the design of ecological solutions, stimulate create dialog and research, and so on. Although I suspect that the committee had some tense moments, in reaching its own shared understandings, the resulting text is noteworthy in showing the complementarity (rather than rivalry) of the different methods that it endorses.

Another noteworthy feature of the report is the attention paid to achieving economics of scope, in the sense of conducting analyses with an eye to creating an inventory of methods and results that could be reused in subsequent applications. Its innovative development of the concept of value transfers should help the Agency work in a more efficient way, while making its actions more predictable to those who depend on it.

I applaud the reports heavy reliance on peer-reviewed research for its primary sources. In so doing, it makes a stand against the trend toward relying on methods that exist solely in the gray literature of contractor reports. Although basic research (and researchers) can be frustrating in their concern for fundamental issues, the fussiness of peer review is

essential to creating sound methods, with well-characterized strengths and limits. I would like to think that the thoughtfulness of the report will help to draw more basic researchers to the fundamental issues associated with ecological valuation.

In that light, let me suggest two publications of my own that would provide access to valuation research that is not covered by the existing references. In particular, each traces valuation methods to their disciplinary roots and assumptions, which can be hard for outsiders to find. I would be happy to send pdfs.

Fischhoff, B. (1991). Value elicitation: Is there anything in there? *American Psychologist*, 46, 835-847.

Fischhoff, B. (2005). Cognitive processes in stated preference methods. In K-G. Mäler & J. Vincent (Eds.), *Handbook of Environmental Economics* (pp. 937-968). Amsterdam: Elsevier.

Suggested Response (BF-1): We will add the citations in the appropriate text. If you could send the pdfs, that would be quite helpful.

The report is, I believe, wise to characterize its interest as in the values expressed by well-informed individuals. That requirement should help to deflect charges that, by consulting with the public, the Agency will become slave to irrational public opinion. Such low views of the public are often exaggerated (sometimes strategically). However, this requirement creates an obligation to assess public understanding and fill the critical gaps, a task addressed in Chapter 5. The attendant need for two-way communication in all valuations will enhance the Agency's standing and credibility, even with valuation processes that are not essentially consultative.

A more recent reference that the committee might consider (pdf also available):

Fischhoff, B. (in press). Risk perception and communication. In R. Detels, R. Beaglehole, M.A. Lansang, and M. Gulliford (eds), *Oxford Textbook of Public Health, Fifth Edition* (Chapter 8.9). Oxford: Oxford University Press.

Suggested Response (BF-2): We will add the citation in the appropriate text. If you could send the pdf, that again would be helpful.

The report is candid about the strengths and limits to the methods that it recommends, from which it identifies research needs that the Agency could address, when it decides to re-establish capabilities in the social and behavioral sciences other than economics (which could also be bolstered).

I am, however, not as optimistic as the authors about the adequacy of following guidelines, like those in the Agency's *Risk Characterization Handbook*. Not all those guidelines are grounded in the research literature. (Actually, the *Handbook* says very little about communication. However, EPA has issued publications that have said more, but which are spotty in their scientific foundations.) Even where guidelines are grounded in the science, it is unrealistic to expect individuals without appropriate training to be able to read, then apply them appropriately. Indeed, even individuals with that training cannot be expected to get it right the first time, when they create communications (or

valuation procedures) on new topics, for new audiences. As a result, without direct empirical testing, the communication mission cannot be fulfilled.

I realize that the recommendation to follow guidelines is sandwiched between recommendations regarding evaluation (on p. 65). However, it is very easy to imagine people skipping the evaluations because they have unwarranted trust in their own intuitions and won't find the modest resources needed to ensure that they have secured the understanding upon which the entire enterprise is predicated.

[On this topic, in another important EPA activity area, see:

[http://yosemite.epa.gov/sab/sabproduct.nsf/B1BC9941890A5A5C852574F9007627DA/\\$File/EPA-SAB-09-003-unsigned.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/B1BC9941890A5A5C852574F9007627DA/$File/EPA-SAB-09-003-unsigned.pdf)]

Given the Agency's extremely limited social and behavioral science resources, both in absolute terms and relative to its ecological missions, I suggest that the report recommend that the Agency create a core (in the NIH sense) capable of developing and evaluating valuations and communications for all of its activities. That would be more feasible and cost-effective than asking each program to create, then staff, a position (or fraction thereof). Having core staff with regular liaison staff to different programs would ensure an understanding of their needs, while having a central repository of expertise and inventory of materials that can be used across applications – providing economies of scope here as well. Such an institutional structure seems essential to fulfilling the commitments of chapters 6 and 7, to the scientific standards enunciated in the earlier chapters.

Suggested Response (BF-3): The committee did not discuss creating such a core group.

Baruch Fischhoff
Carnegie Mellon University
Member, Scientific Advisory Board

Suggested Response (BF-1): Enhance references and brief discussion of communications, based on comments received.

Comments from Dr. Catherine Kling

Review: Valuing the Protection of Ecological Systems and Services

Cathy Kling

This document represents an enormous amount of work and the authors are to be commended for taking on this challenging task. Many very useful ideas and suggestions are contained in the report that will no doubt help guide both the research community and policy analysts for many years. Chapters 3-6 are excellent. Likewise, a real strength of this report is the discussion and examples it raises with respect to methods for informing decision making when ecosystem services are poorly understood by the general public and/or when significant uncertainty between a policy or a project and the resulting change in ecosystem services exists. These are the central features of ecosystem services that make their valuation even more challenging than any other environmental good.

A few suggestions/concerns follow.

1. The third major recommendation of the report is that the Agency should “Allow for the use of a wider range of possible valuation methods, either to provide information about multiple types of value or to better capture the full range of contributions stemming from ecosystem protection” (executive summary page 4 and elsewhere).

a. The terminology is unclear as it suggests with the terminology “allow for” that such valuation methods are somehow now explicitly disallowed. While it is true that alternative CONCEPTS of value would not “be allowed” in a benefit-cost analysis, it would be inappropriate for them to be allowed. On the other hand, alternative methods/concepts can often be useful as precursors in eliciting economic concepts of value and are already often used in that way by researchers (e.g., focus groups, survey methods, preference probes via Likert scales, and even some deliberative processes are often used in stated preference approaches). And, as this document does a great job of arguing, alternative concepts and methods can be very informative even when benefit-cost analysis is the purpose, but monetization is not possible. Are these approaches really disallowed currently? (In the letter to the administrator, the language used is that the “SAB advises EPA to consider the use of a broader suite of valuation methods than it has historically employed ...” is that better language?)

Suggested Response (CK-1): We will revise the language to parallel the language used in the administrator letter by substituting "consider" for "allow for."

Along the same lines, this document makes a strong case for including deliberative processes, decision science approaches, constructed values, in helping EPA learn about ecosystem services, but the mixing of “concepts” with “methods” throughout the document makes me concerned that this recommendation might be misinterpreted to indicate that EPA should allow alternative concepts of value in benefit-cost analysis.

Suggested Response (CK-2): The committee believed that explaining different concepts of value was important because "value" was a term understood differently by different experts in different disciplines and in different ways by the public. The committee also wished to distinguish "concepts" from "methods" and

discuss how they were related. We will include language in section 2.1.4 of the report that clearly distinguishes between concepts and methods. We also will look back through the report to minimize any possible misinterpretation.

b. Recommendations are made that EPA invest in alternative methods (e.g., on page 5, the report suggests that EPA should “Develop criteria to determine the suitability of alternative methods for use in specific decision contexts”). Given the tight budgetary times, I am concerned about the prioritization of EPA research funds that this statement and related statements in the text might generate. Perhaps it is obvious, but some of the concepts described in the document will rarely be of value for decisionmaking and therefore little budget should be expended to sharpen their definition or develop methods to support the concepts. EPA has limited resources and should spend its resources in places that will yield high returns: some of the methods described in this report would fit this category, but some methods and concepts will not. I would hate to see a large research budget expended on exploring the full range of concepts described here.

Suggested Response (CK-3): Because of the multi-disciplinary nature of the committee and the different perspectives members brought, the committee did not reach consensus on prioritizing the specific methods to be developed. Instead, the report calls for the development and application of criteria to assess the methods. The report also emphasizes that, because it does not attempt to rank or prioritize research, EPA should develop a research strategy that prioritizes studies likely to have the largest payoff. We will include new language in the discussion of criteria for determining the suitability of alternative methods clarifying that the purpose of the criteria should be both to determine when methods are suitable for use and to determine where EPA should put its research dollars.

c. All of these concerns relate to the seemingly interchangeable use made of “methods” and “concepts,” in the document. Perhaps this is a source of confusion to others as well?

Suggested Response (CK-4): We will go back over the report and clarify the distinction. See the suggested response to CK-2.

2. A final concern r.e. recommendation #3. Multiple valuation methods are intended to provide information about multiple “types of value.” The report discusses difference “concepts of value,” but only with reference to spiritual and moral values do they refer to “types of value. Which of these do they mean?”

Suggested Response (CK-5): Table 1 refers to different “concepts” of value, which in this report are broad ways of thinking about or defining values. In contrast, “types” or “sources” of value are more specific “things” that might give rise to value (akin to reasons why people might value something). We will clarify this in Section 2.1.3 and ensure that the terms are then used consistently throughout the report.

If it is the latter, I don't believe the report provides an adequate basis for making this recommendation (see my comment on spiritual values below). There is also a section where "sources of value" (page 23) are mentioned, but no details provided. Are "sources" and "types" synonyms?

Suggested Response (CK-6): "Sources" and "types" of value are synonyms in the report. (See the suggested response to CK-5). To eliminate any confusion, we will revise the report to change the few uses of "sources of value" to "types of value."

3. Generally, the introduction to methods in chapter 4 is excellent. However, there is a premise (stated at the top of page 44) throughout this chapter that there is largely a 1-to-1 correspondence between the concept of value being sought and the method for its measurement.

Suggested Response (CK-7): The table shows mapping of methods to multiple types of values. Page 42 discusses that methods are "generally associated" with specific concepts of value". We will further clarify this and make it clear that a given method can be used for different concepts of value.

I think this is false and detracts from the usefulness of this presentation. Some of the methods listed in Table 2 and described briefly in the text can be used to yield much improved economic valuations or to provide useful information when the concept of economic value is the desired endpoint, but inadequate information is available to generate economic value numbers. Further, I suspect that nonmarket valuation methods (such as stated preference surveys) could be used to elicit community-based values. For example reliable economic values generated by stated preference approaches need to be based on survey instruments that have been developed with substantial input via focus groups, individual narratives etc. It is common to use attitude scales (Likert scales), importance rankings, and other methods described in Table 2 to introduce respondents to a valuation scenario in stated preference approaches. These are extremely complimentary and, speaking as an economist who has tried some of these methods, we need to learn to do them better from decision scientists, psychologists, sociologists, etc.. This would be a great place to make this point to urge increased inter-disciplinarity amongst social scientists.

Suggested Response (CK-8): We agree that methods can complement each other to shed light on a particular concept of value as well as illuminate different concepts of value. We will clarify the report to make sure that this point is clear. On page 5 of the Executive Summary ("Implementing Recommendation #3"), we will expand the brief discussion to include the two roles described for a broader suite of methods, as described on pages 22-23. We will also refer to this dual role again at the start of section 4.2.

4. A statement that reappears throughout the document is that EPA is constrained by regulatory requirements to use "economic values" in its national rule making and RIAs. It

is not until the excellent discussion in chapter 6 describing valuation for national rule making that the point is made that this requirement is not arbitrary, but rather the concept of economic value is central to determining whether the total well-being of a society is higher or not after a policy change or project. While not explicit, I am concerned that the repeated statements of the sort in the first sentence strongly imply that if such requirements were not in place, it would be appropriate for EPA to use a different concept of value for use in benefit-cost analysis or informing national policy. This is generally not true. I think it is critical to make this clear early on in the document.

Suggested Response (CK-9): Borrowing on the language in chapter 6, we will introduced some language explaining the rationale for benefit-cost analyses in RIAs in the Executive Summary, page 4, and in Chapter 2, page 19.

5. Several times throughout, the document states that “moral and/or spiritual” convictions are not captured in economic values. I am not aware of a literature that definitively answers this question; if so, references should be added. While a couple of citations are provided quite late in the document (Sen.’s 1970’s book and a reference in a law review), this statement is very strong and personal introspective suggests to me it is wrong: my spiritual and moral values are central to decisions I make about most things I purchase (or don’t purchase), my behavior, and certainly when I consider tradeoffs between ecosystem protection and other uses of funds.

Suggested Response (CK-10): The committee came to the agreement, described in section 2.1.3, that certain kinds of values, including moral values, might not be fully captured by tradeoffs, a key element of economic valuation. We will replace the language suggesting economic values do not “reflect” moral/spiritual values with language stating that economic values may not “fully capture” moral/spiritual values. For example, an individual might attach a very “strong” moral or spiritual value to something but have a low WTP simply because of low income.

Smaller issues:

1. On the first page of the executive summary, 6th paragraph under “General findings...,” two quite different ideas are contained in the paragraph that begins “To date, EPA has primarily sought to measure economic benefits, as required in many settings by statute or executive order.” In addition, the Agency’s value assessments have often focused on those ecosystem services ...” The third sentence indicates that this focus can diminish the relevance of a value assessment. This statement refers (I assume to the second sentence). Later in the paragraph, other concepts of value are discussed which would seem to refer back to the first sentence.

I suggest moving the three sentences that begin with “In addition, the Agency’s...” to their own paragraph, this would leave the first sentence and the remainder of the current paragraph as their own paragraph and avoid confusion about what is being referred to.

Suggested Response (CK-11): We will make the suggested change.

2. On page 7, there are two bullets that seem to say essentially the same thing (right hand column, second and third from bottom).

Suggested Response (CK-12): The first of these bullets specifically addresses databases of valuation studies that could be used in value transfers, while the second bullet addresses databases of information that could be used in the development of new valuation studies. Because of the confusion, however, we will look at combining the two bullets and further clarifying the different purposes that databases could serve. We will state more clearly that databases are needed for valuation studies, as well as databases for distribution of ecosystem and human characteristics that support valuation.

3. On page 13, delete “and narrower” in parenthetical, second paragraph from bottom.

Suggested Response (CK-13): We will delete the parenthetical.

4. Second line on page 18, By “demonstrating” implies that the ecosystem services have value. Use “considering” or “including”

Suggested Response (CK-14): We will change the verb to “considering.”

5. Why aren’t “spiritual and moral appreciation” listed under ecological services in figure 3?

Suggested Response (CK-15): The list was not meant to be exhaustive, only illustrative. We will include “spiritual value” on the list.

6. Footnote 20 is the same as the text following the footnote.

Suggested Response (CK-16): We will delete the endnote and adjust the endnotes numbering that follows.

Comments from Dr. Judith Meyer

**Quality Review: Valuing the Protection of Ecological Systems and Services
Judy Meyer**

This report is written well and effectively discusses a very important topic.

A) Are the original charge questions to the SAB Panel adequately addressed in the draft report?

In general, yes. EPA's needs are identified, the state of the art and science are assessed, and key areas for research are identified. I do have some specific comments:

1. I am concerned that there is so little mention of ORD's proposed research program on ecosystem services, which is directly relevant to what is being identified as research needs in this report (I realize that it is recognized on p. 38). Recognition of this new research direction seems appropriate in the Executive Summary and perhaps also in the letter to the Administrator, since it is a specific program that the Administrator would know about and bears directly on what is called for in the last paragraph on p. i. Some mention of that research program would make the committee's recommendations seem less vague and general. The Executive Summary recommends that EPA coordinate its research programs on ecosystem services, yet there is no clarification of what those programs are. Furthermore, there is a need to incorporate the results of that research into the Program offices, which the report does not acknowledge.

Suggested Response (JM-1): We will add text noting the linkage between the C-VPESS recommendations and ORD's research in both the administrator letter and the Executive Summary. See the next several suggested responses.

On p. 7, the third bullet identifies research on ecological production functions as an important research topic, and specifically notes STAR research. I think the contributions of ORD research on those topics should also be included in that recommendation. It is not appropriate to mention STAR without also recognizing the work that is being done in those areas by ORD scientists. I suggest modifying the bullet to read: "Carefully plan and actively pursue research to develop and generate ecological production functions for valuation, include ORD and STAR research on ecological services and support for modeling and methods development. The committee believes that this is a research area of high priority."

Suggested Response (JM-2): We will change the language as suggested.

- p. 9, right, first paragraph: another place where the ORD ecosystem services research program deserves recognition.

Suggested Response (JM-3): We will add a reference to the ORD ecosystem services research program as suggested.

- p. 35, right, first full paragraph: Another place where ORD ecosystem services research should be mentioned. It is not clear why a single grants program is identified here.

Suggested Response (JM-4): We will add mention of the ORD research program here.

- p. 77, right, first sentence and p. 78, right last paragraph: why are only extramural programs emphasized?

Suggested Response (JM-5): Intramural programs are also important here. We will add language about current intramural efforts.

2. Reading the conclusions for Chapter 2, I was surprised that there is no mention of the need for research.

Suggested Response (JM-6): Chapter 2 was designed to be an introductory chapter, with the research recommendations in the remaining chapters that deal with specific valuation issues or applications. To make the importance of research clear, however, we will add language to the conclusions and recommendations in Chapter 2 referring to the research conclusions appearing in chapters 3 through 6.

B) Is the draft report clear and logical?

In general, yes; but there are places where it could be improved.

1. It is very useful to describe the context of valuation at EPA (Section 2.2). A brief summary of what is required in OMB Circular A4 would help the reader unfamiliar with that (since that is really the purpose of this whole section).

Suggested Response (JM-7): We will enhance the discussion of OMB Circular A4 in section 2.2.

2. The report is written with EPA staff and contractors as the target audience, which is appropriate. Has the committee considered sending the report to OMB? It seems to me that the decision-makers at OMB need to be aware of these other approaches to valuation. This would be most valuable if it were accompanied by a cover letter that pointed out OMB-relevant sections of the report.

Suggested Response (JM-8): This is an important point. Members of the committee have met with representatives of OMB at various stages, and

OMB attended the 2005 SAB workshop. We will add language to Administrator's letter regarding the importance of the conclusions and recommendations for OMB as well as EPA. We will also follow-up on previous comments from OMB to the committee by sending the report and a cover note to OMB as part of the rollout of the report.

3. p. 24: Where is the conceptual model in this figure and in Figure 5? The report emphasizes the importance of developing a conceptual model, yet it is not clear where that step is in this figure or in Figure 5.

Suggested Response (JM-9): Figure 1 illustrates the general steps that should be involved in ecological valuation, rather than the specific tools. To make it clear where the conceptual model fits in Figure 1, however, we will add language, in the vicinity of page 24, noting that the conceptual model relates to steps 2 and 3. We will reiterate this point on page 28, section 3.1.

4. On p. 25, the report discusses the parallels between risk assessment and valuation. Yet later (p. 88) the report argues that there are fundamental differences between risk assessment and what the committee is proposing. These two statements seem contradictory. On p. 88, the committee appears to be calling for a change in the risk assessment paradigm. If so, this is extremely important and needs greater emphasis (inclusion in Executive Summary and letter).

Suggested Response (JM-10): Both sections of the report make the same point: although risk assessment and the committee's recommended approach have many similarities, risk assessment does "not provide information about the societal importance or significance of ...effects." Reading the two sections, however, we can see how the two sections might seem contradictory. We will clarify the language. We will also add this point to the Administrator's letter and the Executive Summary.

5. p. 106: Is this section essentially an appendix (since it comes after Conclusions)? It needs some sort of a label. At the very least it needs to be referenced in Chapter 4. I think it is so relevant to the material in Chapter 4, that it would be much better as a box in that chapter. The various web materials are cited in that chapter, and I think it is important that the disclaimer that these were not approved by the entire committee or reviewed by the SAB belong closer to where they are originally referenced. As I was reading chapter 4, I wondered what sort of review process those web documents had undergone. I did not get an answer to that question until p. 106. It also seems as though the disclaimer paragraph in the left column ("The description of these methods...") refers to the other web documents cited in this appendix (i.e. survey issues discussion and workshop summary) and not just the methods descriptions as implied by its placement in that section.

Suggested Response (JM-11): The material at p. 106 is lengthy enough that it works better as an appendix than a box. The general observation,

however, is correct that the report could do a better job of linking the material to Chapter 4. We will label the section as an Appendix. We will also reference it more visibly in Chapter 4 and consider whether some of the text should be incorporated into or repeated in Chapter 4.

6. There is no reference to the box on p. 56. In fact this is a general problem with ALL of the boxes in the report. Please give boxes numbers (or some other identifier) and then refer to them by that identifier in the text. That would greatly help the reader figure out in what context boxes are supposed to be read. In Chapter 6, it is particularly confusing because the sites are supposedly “described below” when in fact they are described in boxes.

Suggested Response (JM-12): We will add Box numbering and then use those numbers to reference the boxes in the appropriate portions of the text. We will also review the text to make sure that all boxes are referenced and that they are referenced in all appropriate portions of the main text.

7. Who are the “stakeholders” who are so often mentioned in this report? I do not think this question is adequately addressed in the report, yet it is crucial given that so much emphasis is placed on stakeholder values (rather than expert opinion). Of all the recommendations in this report, I have the greatest problem with this one, primarily because the committee clearly assumes an INFORMED public, yet that is not always stated. I worry that statements about public values could be taken out of context and the fact that the report is talking about values of an informed public will be ignored. I also think there can be problems with local vs. national stakeholders that I did not see addressed. For example, a local community in the West may value the revenue generated by logging whereas a city dweller in the East values the forest as a vacation spot. Both are clearly stakeholders, but I did not see that issue discussed in the report.

Suggested Response (JM13): The focus of the report is on an informed public. EPA can and should use different strategies for getting input from the public, depending on the issue. EPA can draw on the existing literature (2001 SAB report, 2008 NAS report on public participation) for specific methods, but that broader issue is outside the scope of this report. We had tried to eliminate references to stakeholders rather than an informed public, but may not have succeeded everywhere. We will look back over the text to make the references clearer.

8. Fig 4: What is Captured Energy Fertilizer? There is no indication of the effects of these losses on water, air, or soil ecosystems. This is not an overview. No ecosystem services are even mentioned.

Suggested Response (JM-14): “Captured energy” and “fertilizer” are two separate impacts. We will modify the box to make it clear that it is not a single term. We also will make it even clearer on page 72 that Figure 4 was meant only to provide a general overview of the ecological effects of CAFO at

multiple scales, and not to show the effects on ecosystem services, and that a conceptual model for purposes of valuation must also map EPA actions or decisions to potential ecological responses and ecosystem services.

9. pp. 79 – 85: This description of the Chicago Wilderness example seems overly long and exuberant, given the amount that has been accomplished. This is particularly striking when compared with the Portland example, which seems to be a more complete example of the process the committee has been discussing. I would have liked to see much less about the Chicago wilderness (and less enthusiasm about it) and much more about the results of the Portland analysis – what were the conclusions from the study? How did the city use the analyses?

Suggested Response (JM-15): To determine how EPA might implement the committee’s recommendations, the committee conducted three major case studies. In the regional context, the case study focused on Chicago Wilderness, which is why the report focuses on that case study. The members of the committee who studied Chicago Wilderness concluded that, while specific accomplishments have been limited, several aspects of the Chicago Wilderness case study help illustrate aspects of the committee’s recommendations. Where the committee was aware of additional examples of potential value to EPA (such as the Portland study), the committee included a reference to the study in its report. Because the committee did not conduct an exhaustive study of these other examples, however, the ability of the committee to discuss these examples in the same level of detail was limited. We will look back at earlier materials prepared by the committee, however, to see what else might be added to the discussion of the Portland study. We will also review the language used in the discussion of Chicago Wilderness to “tame” any “exuberance.”

10. What are the pictures at the top of some of the pages supposed to convey? As far as I could tell, they bear little relevance to what is being discussed on the page where they appear.

Suggested Response (JM-16): See the suggested response to MK-2. The pictures are meant to help break up and enliven what is a lengthy text. As noted earlier, we could remove the pictures entirely if the SAB prefers (although a number of reviewers have reacted positively to the pictures). Alternatively, we could look for more relevant pictures, but will need the help of EPA in finding useful photos. Under this latter approach, we would look for pictures that are more clearly tied to each section of the report, with a descriptive list on the back cover with a key to pictures (which is the approach taken by EPA *Ecological Benefits Strategic Plan*).

- C) Are the conclusions drawn, and/or recommendations made, supported by information in the body of the report?**

In general, yes; although I think some of the conclusions and recommendations should be more clearly presented in the letter and Executive Summary.

1. In the letter to the Administrator, point out the specific contexts (national rulemaking, regional partnerships, and local site-specific decisions) considered in the report.

Suggested Response (JM-17): We will add language pointing out the specific contexts considered in the report.

2. Having read the Letter and the Executive Summary, I still have no idea what the committee means by “other valuation methods.” The Executive Summary and letter end up sounding extremely vague on this point because those alternative approaches are not identified in any way. In fact, they are not identified until p. 42 of the report. Some clarification of what is meant is needed much earlier! This could be done even in a parenthetical expression that cites Table 2 and lists the main headings from that table (i.e. all methods would not need to be listed). A similar clarification is also needed in Chapter 7, since a reader might only look at the conclusions and have no idea what is meant by alternative methods.

Suggested Response (JM-18): We will add the suggested parenthetical language in both the Executive Summary and Chapter 7.

3. p. 19: The report’s endorsement of the oversight committee and ecological valuation forum belongs in the conclusions from this chapter and in the Executive Summary.

Suggested Response (JM-19): We will add this endorsement to the conclusions for Chapter 2.

4. p. 53: benefits transfer seems most problematic, even in an economic analysis. I’m not sure the need for research in this area is adequately emphasized in the Executive Summary.

Suggested Response (JM-20): The report addresses the need for research in this area on Page 7, second column, first bullet. We will explicitly note that this is an important area for research.

5. p. 99: I was surprised that there was no reference to Net Environmental Benefits Analysis in the conclusions (6.3.4). It seems that some is warranted.

Suggested Response (JM-21): The committee discussed the appropriate level of discussion of NEBA. Although it felt that NEBA deserved a box discussion, it did not reach agreement on any specific recommendations regarding agency use of NEBA.

Additional specific comments:

1. p.8, on right: I do not think EPA has an obligation to evaluate effects of actions on individual organisms.

Suggested Response (JM-22): Organism-level protection is mandated by the Endangered Species Act, Marine Mammal Protection Act, Bald Eagle Protection Act, and Migratory Bird Treaty Act.

2. In terms of other uses (p. 18), the committee talks about state level water quality regulations, where states do not run their own programs. But EPA writes the guidance documents that states use to derive their regulations, and it would seem that valuation would be useful there. Mitigation (e.g., for wetlands loss) would seem to be another use for this type of analysis.

Suggested Response (JM-23): The list is not meant to be all-inclusive (and we will clarify the text to make that point clear). We also will follow up with Agency to determine if and how to add these specific suggestions.

3. p. 29: what is missing from Figure 2 is any consideration of other factors (e.g., sediments, habitat availability) that would alter these relationships from one site to the next.

Suggested Response (JM-23): Figure 2 is an illustration taken directly from Covich et al. (2004) that is used solely to illustrate the different stage of ecological processes that has traditionally been the focus of ecologists and valuation experts. Given the report's use of the study, a discussion of missing factors would not seem germane.

4. p. 33, first paragraph on right: This paragraph seems out of place, redundant with what is in a later paragraph, and inappropriately identifies one approach reflecting the views of one committee member. The third paragraph in that column provides a much more complete description of how one might select models that is more relevant to EPA's needs. I recommend eliminating the first paragraph.

Suggested Response (JM-24): The committee believes that it is important to recognize that many ecological models exist and can be used for valuation purposes. However, we should be able to integrate this point and the citation to the Roughgarden primer, which many members of the committee found to be quite valuable in the committee's analysis, with the remainder of the text in this section.

5. p. 36: cite the more recent Heinz report. I can provide if needed.

Suggested Response (JM-26): We would be happy to add a citation to the more recent Heinz report if you could furnish us with it.

6. p. 37: use a more recent Karr citation. I can provide if needed.

Suggested Response (JM-27): We would be happy to add a citation to a more recent Karr article if you could furnish us with it.

7. p. 37: It would seem that a reference to CADDIS, which is an EPA effort, is relevant in this discussion of using weight of evidence.

Suggested Response (JM-28): We would be happy to add a reference to CADDIS if you could furnish us with additional information regarding its relevance.

8. p. 37: In addition to LTER, NSF's more recent NEON (National Ecological Observatory Network) and USGS's NAWQA program seem particularly relevant to this discussion.

Suggested Response (JM-28): The committee decided that the NEON program is not sufficiently relevant. We would very much appreciate additional information regarding the relevancy of NAWQA.

9. p. 37 (and 39 and Chapter 7, p. 105): NSF is a federal agency, not a scientific organization!

Suggested Response (JM-29): We will remove the phrase "and with," so that the sentence talks generally about agencies and scientific organizations.

10. p. 47: Couldn't referenda results be biased as a consequence of extensive and unequal advertising for one side or another during the campaign?

Suggested Response (JM-30): The web material discusses in more detail the advantages and disadvantages of each of the various methods, including referenda. One of the questions that the committee faced was the degree to which it should discuss these advantages and disadvantages. To the degree that the report discusses the potential problems with one method, it is important that the report discusses the potential problems with all of the various methods. We will look at the introductory materials to make sure that it is clear that the report simply provides an overview of each method and that anyone interested in any particular method should look at the "further readings," as well as the web-based discussions prepared by C-VPES. We also will look to see whether we can add a discussion of the advertising aspects of a referendum approach without biasing the discussion compared to that for the various other methods.

11. p. 54 on right: Is the comparison supposed to be MN (with many lakes) vs. TX (with few lakes)? If so, those parenthetical phrases would make this comparison clearer.

Suggested Response (JM-31): We will add parentheticals to make this comparison clearer.

12. p. 61, right column: It is not clear to me how the fact that SAB is reviewing a white paper on expert elicitation relates to the rest of the paragraph. Perhaps a sentence clarifying the nature of the review or the conclusions of the white paper would help.

Suggested Response (JM-31): You are correct that this paragraph makes several different points and that including them all in one paragraph may be confusing. We will add language clarifying the first sentence, including that the expert elicitation white paper pertains to many different kinds of EPA analyses, including potentially ecological valuation.

13. p. 70, right column: when the Carson and Mitchell study was described earlier (p. 54), it stated that it only considered fishing, but here it says fishing, boating and swimming. That is not consistent with the earlier statement.

Suggested Response (JM-33): We will look back at the Carson and Mitchell study and clarify the descriptions of the study found in Chapters 2, 4, and 7 so the descriptions are consistent and accurate.

14. On pp. 74 (right, line 6) and 78 (third bullet), it is not clear why category 5 is excluded from those lists. Surely those Category 5 benefits also require explanation and clarification.

Suggested Response (JM-34): The report does not state that these benefits would not benefit from explanation or clarification, but only that they do not need to be identified in compliance with OMB Circulate A-4 because they do not fit within a formal economic benefit-cost analysis. As the report makes clear, analyses related to category 5 can supplement benefit-cost analysis and be provided as part of regulatory impact analyses as input to decision-makers. We will look at the language of the report to see if this point can be further clarified.

15. p. 75: what is ceteris paribus? Is that term really needed?

Suggested Response (JM-35): The term means "other factors held constant." Rather than using the Latin, we will substitute the English translation.

16. p. 87, first bullet on left: also encourage regions to collaborate with ORD researchers.

Suggested Response (JM36): We will add language not only encouraging the regions to collaborate with ORD researchers but also encouraging the ORD researchers to collaborate with the regions.

17. p. 87, first sentence on right: seek to understand what an INFORMED public views as valuable

Suggested Response (JM-36): Change the language to refer to an “informed public” rather than “various communities.”

18. p. 104, right, bullet 3: For what it is worth, the SAB review of Ecological Research Program MYP said the same thing.

Suggested Response (JM-37): We will reference the EPEC report in Chapter 3.

19. It is unclear why Dr. McCarty did not sign letter to the Administrator since it appears that he was also a Chair of the committee. There were two chairs and a vice-chair?

Suggested Response (JM-38). Dr. Thompson is the only chair. He holds two positions at Stanford – the Paradise Professorship and also the McCarty Directorship. As worded, the list of C-VPES members makes it sound like McCarty is a separate person, rather than the title of one of Dr. Thompson’s positions. We will clarify the language by adding “the” before Parry and by deleting the comma after McCarty.

OTHER SAB MEMBER COMMENTS

Comments from Dr. Otto Doering

Coming into this report late in its development, I have provided a limited number of comments.

The draft does respond to the three specific charges in the report

The draft is, at the same time, dense, deep and broad. It is not a compelling document.

While conclusions are based on the evidence in the report, there are moments when multiple discussions in the report may weaken conclusions, and there are conclusions that repeat, overlap or intersect. While this may be an accurate reflection of the landscape covered, the conclusions then seem less strong.

Given the length and dense complexity of the document it is especially important the executive summary be clear, direct, and highlight the most critical points from the report.

I believe that the summary could be improved by:

- Being more explicit about the critical nature of the link between the biophysical response and valuation. If we do not have a good knowledge of the biophysical response, the valuation of an unsure response is not very valuable. If biophysical response is not well known, do we want to provide this information to survey respondents who are to provide input for valuation? If the uncertainty about the biophysical response is large and the uncertainty about the valuation method is small, the result will not necessarily be useful. Both uncertainties need to be known.

Suggested Response (OD-1): We will clarify/emphasize throughout that there are two parts to any valuation: predicting the ecological responses and then estimating the value of those responses. We will also clarify that it is important to gain better understandings of both. We will add language to Key Recommendation #2, at page 4 of the Executive Summary, emphasizing that prediction of ecological responses is a key to all valuation efforts.

- Trying to eliminate even the appearance of repetition where closely related items are given separate attention. I.e. merge what can be merged.

Suggested Response (OD-2): We will look for places where repetition can be eliminated, recognizing that some level of repetition was often necessary in order to ensure that key points were highlighted or qualified in a manner with which all C-VPESS members felt comfortable.

For the three key recommendations:

- Number 1., again, if we are to identify the ecological responses that are of greatest importance to people, we have to start with validated ecological responses. I am also not

sure whether this process would expand or in fact narrow the range of ecological responses that EPA characterizes or quantifies for which it estimates values.

Suggested Response (OD-3): We will clarify that Rec #1 focuses on conceptual identification of ecosystem services or responses that should be considered in the assessment and that Rec #2 involves prediction or measurement of the responses in those services. It's important that we not start with what can be currently be measured/estimated, but rather with the types of services or ecosystem characteristics that are likely to be affected in ways or degrees that are potentially important to people. Based on the C-VPES study, the committee believes that this is likely to expand the range of ecological responses that EPA characterizes/quantifies/values.

- Number 2., following on number 1, are we predicting ecological responses in terms that are relevant to valuation or relevant to peoples' concerns? This recommendation seems contradictory at times.

Suggested Response (OD-4): The C-VPES report defines valuation as being relevant to peoples' concerns (see page 15-16). Focusing on those ecological responses that are of direct concern to people therefore helps ensure that the responses can be valued. It would be helpful to know the specific instances where the second recommendation is contradictory, so that we can address.

- Number 3., I feel it would be important here when discussing a wider range of possible 'valuations' to mention indicators (which are discussed in several places later in the report – ex. 3.4.1) and also such things as tipping points and irreversibility which may have more meaning to the public than some other metrics.

Suggested Response (OD-5): On purpose and by necessity, we've kept the discussion in the executive summary general, rather than identifying and discussing specific alternative methods. The discussion of alternative methods is complex and too lengthy to include in the Executive summary beyond the discussion provided. Different contexts require different methods; the methods must be discussed with appropriate caveats.

In the discussion of implementation:

- 2nd bullet under implementing #2 gets to the ability to predict ecological response as being a most important part of the process (and then there is a statement in the report that ecological models can only reflect history, not look forward).

Suggested Response (OD-6): See our suggested response to OD-1. We will re-emphasize the importance of measurement/prediction.

- 5th bullet under Implementing #3 discusses uncertainty with respect to valuation efforts. I would suggest that uncertainty analysis with respect to the biophysical projections is equally important.

Suggested Response (OD-7): As defined in the report, valuation includes both the prediction of biophysical changes and estimating the value of those changes. We will clarify in the Executive Summary that uncertainty analysis is important to both parts of valuation (see suggested response to OD-1). Section 5.2.2, "Sources of uncertainty in ecological valuations," already addresses uncertainty in ecological prediction/measurement and puts that issue into context. We will revise the report to reference that discussion in section 3.3.1, "Understanding and modeling the underlying ecology," and point the reader to general recommendations regarding uncertainty. In the Executive Summary, we will clarify that the uncertainty discussion under the 5th bullet of Implementing recommendation #3 applies to biophysical projections (either by adding language to that bullet or adding a new bullet under Implementing recommendation #2).

· The last paragraph under implementing # 3 is extremely important and should be stated more strongly.

Suggested Response (OD-8): We agree that this paragraph is extremely important and believe that the existing language is already strong. To further emphasize the point, however, we will introduce parallel language at the end of the third-to-last paragraph in the Letter to the Administrator.

Overall, I believe that the whole notion of validation gets short shrift. This should be an issue raised in the executive summary, not just in the text. The validity issue does get some treatment on page 41. However, one part of the discussion starts with the phrase “Ideally, a method should measure only what it is supposed to measure.” I would state this more strongly than “ideally”. There is little in the report discussing how our biophysical response information and our valuation results might be better validated. The validation issue should be front and center in 2.3.2, for example, in the transfer issue. There is a mention of validity on page 23 that refers to section 4.1. where again questions are asked, but only modest guidance is given.

Suggested Response (OD-9): Validation is an important but difficult issue. Values, by their very nature, are not directly observable. The sentence that begins “Ideally” is perhaps either confusing or obvious. So we will delete this sentence. The Executive Summary refers to validity criteria at page 4 (based on Section 4.1.1’s discussion of the need for criteria for validity). With regard to the validity of ecological responses, Section 3.3.1 addresses "Understanding and modeling the underlying ecology" and puts the issue of ecological model and measurement uncertainty in the larger contexts of valuation uncertainty. The report could be revised to address the need for validating models in section 3.6 and explicitly include that as a recommendation in the next-to-last bullet, page 39, and make a corresponding change in the Executive Summary.

Finally, I find this report myopically focused on EPA doing everything by itself. I do not believe that the resources are available or forthcoming for this to occur. The major issues of this report are being struggled with by other agencies who are attempting to

accomplish similar or related goals in many cases. While regulatory standards may have to be “invented” by EPA, there is certainly room to learn from what others are doing in biophysical modeling and valuation. I would suggest as examples the Conservation Effects Assessment Program at USDA, the long term work of the forest service on valuation, and some of the ecological studies and modeling of the Fish and Wildlife Service. Even if these do not fit EPA’s needs or are not of sufficient quality for EPA’s responsibilities, they may prevent EPA for expending resources in others blind alleys. It would have been helpful if more information were given about what others are doing. Mentioning the need for partnering with other agencies and state and local governments is less compelling than a brief review of what might be available at other agencies working in this area. Using Portland and Chicago case studies make the case for reaching out at all levels even more compelling.

Suggested Response (OD-10): As noted, the fourth from the last bullet, page 7 currently addresses this point in general terms. We will enhance the language to mention that EPA should enhance coordination with other governmental organizations with expertise in biophysical modeling and valuation. We will also look to see where there may be appropriate places in the text to add specific examples of current programs with which EPA may wish to work (such as those suggested), recognizing that any examples would be far from fully inclusive.

Comments from Dr. James Galloway

I have reviewed the draft report in the context of the three items below. For all three, I find the committee has done an excellent job.

As I mentioned earlier, I am not able to be on the phone call, as I will be either preparing for or participating in an SAB-INC phone call.

Comments from Dr. James Hammitt

I've read much of this report and think it is excellent. I have no issues to raise.

Comments from Dr. Steven Heeringa

Just a note to say that I read the draft report, "Valuing the Protection of Ecological Systems and Services" with interest (although minimal expertise). The report is well-written and to my reading very informative. In today's federal research funding environment it will be difficult to support the research requirements for the in-depth, integrated and often iterative valuation approach that the report advocates. Nevertheless, those constraints should not unduly shackle the recommendations for a scientific approach that is optimal for addressing the complex ecological, health, political and social components that factor into a true valuation of ecological systems.

Comments from Dr. Rogene Henderson

November 21, 2008
Rogene F. Henderson

Comments on the draft SAB report, "Valuing the Protection of Ecological Systems and Services."

I reviewed the submittal letter, the charge and the executive summary of this report.

1. Are the original charge questions to the SAB Panel adequately addressed in the draft report?

This report is a little different from most SAB reports I have reviewed, in that the charge questions are from the SAB, not the Agency. The charge questions are rather broad and not as specific as Agency charge questions usually are. But based on the executive summary, I would say they were well addressed.

2. Is the draft report clear and logical?

The part I read was well-organized. There were parts of the executive summary that I misunderstood (see next question).

3. Are the conclusions drawn, and/or recommendations made, supported by information in the body of the report?

The first line of the first key recommendation reads, "Identify early in the valuation process the ecological response that are likely to be of greatest importance to people,....." This type of phrase is repeated throughout the executive summary, even stated in one place as the need to consider the "spiritual and moral values" of the people. So when I came to the implementation section for Recommendation #!, I expected to see a recommendation to use some type of stakeholder input in the valuation process. Instead, it was recommended to use involvement from EPA staff as well as outside experts in the bio-physical and social sciences. This contradiction exists through out the executive report with cautions to include components that the public values, but little indication that the public will be asked what they value.

The only place public input seems to be mentioned is at the top of page 6 left column, when it is stated that "EPA can identify public concerns through a variety of methods, drawing on either existing knowledge or interactive processes designed to elicit public input." Otherwise the advice seems to be unidirectional from the EPA to the public. See sentence at top of page 6, right column, "Regional-scale analyses hold great potential to inform decision makers and the public about the value of protecting ecosystems and services..."

I looked at Chapter 4 of the report, "Methods for assessing values," and community input is described. Perhaps a bit more of that approach could be mentioned in the executive summary.

Suggested Response (RH-1): We will address the concern in two ways. First, we will take the sentence at the top of the left column on page 5 ("EPA should also seek information about relevant public interests and concerns") and make this a separate bullet. Second, we will expand this bullet by moving the related language from the top of page 6. This should help clarify and emphasize the importance of using various methods to obtain input on public concerns.

Comments from Dr. Bernd Kahn

The draft report is well done. Addition of a table of acronyms and abbreviations would be helpful to the reader.

Suggested Response (BK-1): We will add a table of acronyms and abbreviations.

Comments from Dr. Agnes Kane

Thank you for sending the draft report on valuing the Protection of Ecological Systems and Services. This is an excellent document that should serve as a model for clarity and presentation of complex information. The inclusion of case studies is very helpful; this could be improved by actual maps or photographs. This approach would also be very useful for Superfund sites and Brownfield's.

Suggested Response (AK-1): We agree that maps and photographs are valuable elements of the case studies. Given the sheer length of the report, we have chosen to limit the number of graphics in the report itself. Instead, we have included links to websites where material of that nature can be found.

Comments from Dr. Meryl Karol

The report is excellent, clear and logical. Its conclusions and recommendations are supported by information in the body of the report.

The following are suggested revisions:

1. A list of acronyms would be helpful. For example, RIA is used throughout, and appears to have been defined only once (in the Executive Summary). Also, please consider adding a glossary.

Suggested Response (MK-1): We will add a table of acronyms and abbreviations (see suggested response to BK-1).

2. The figures and tables are excellent, but are the photos necessary? I found the latter neither helpful (i.e., illustrative) nor interesting.

Suggested Response (MK-2): The pictures were included to add visual interest to a document that will be read by a variety of audiences, technical and non-technical. They are intended to add visual variety to a dense report. They can be removed if the chartered SAB decides that is appropriate, but reactions to the pictures to date has been favorable.

3. The first of the 3 key recommendations (p. 4) is somewhat confusing. I had to read it several times to gain understanding. Can it be stated more simply?

Suggested Response (MK-3): We will be revising this recommendation in response to several of the comments by Dr. Doering (see above). In doing so, we will also work to clarify the recommendation.

4. There appears to be excessive use of the word "also" in lead paragraphs (i.e., p. 102, para 7.5.3, line 1; p. 104 para 7.7, line 1; p.103, para 7.6).

Suggested Response (MK-4): We will look through the report and remove some of the extra "also's."

Comments from Dr. L.D. McMullen

I have read the report and have found it very interesting. While I agree with the concepts that were contained in the report, it seems like a big hill for EPA to climb. I know how hard it is for the agency to develop regulations just on economic issues and not get sued for their decisions. That is not to say that they should not try additional approaches which is just what the report proposes. As to the charge questions:

Assess EPA's needs for valuation to support decision making. I feel that the report identifies areas that EPA should consider other than just economic. The discussion of value determination was good and provided a broader look at rule making. I liked the CAFO example, which I have personal knowledge of in Iowa. I think they covered this charge question.

Assess the state of the art and science of valuing the protection of ecological systems and services. This section of the report was very valuable. The discussion of the different methods and the addition reading for each was excellent. What it really shows is how many different ways there are to look at a particular problem. This was the real meat of the report. I really like chapter 6 when the ideas were applied to real decision making at EPA. It really pulled the material together.

Identify key areas for improving knowledge, methodologies, practice, and research at the Agency. This was covered through out the report. It was clear to me that the ideas contained in the report are sound; however, the application of the ideas is new and needs some additional research. I feel that spreading the needs for research through out the report was the most appropriate approach.

In conclusion I feel that the report addresses the charge questions and was very well written.

Comments from Dr. Granger Morgan

I have quickly looked over the report “Valuing the Protection of Ecological Systems and Services”. While it is well written and Ch 4 describes a reasonable set of strategies, I am troubled that it does not include a strategy that I outlined on several occasions to folks involved in this effort.

While sometimes it is possible to value an ecological system or service, I have argued that there will likely be many cases in which this is not straight forward. In such cases one would be well advised to turn things around, work backwards from the decision at hand, and ask, how large must the valuation be before the decision changes. If that quantity strikes the decision maker (and/or the public(s)) as very modest, then clearly additional thought, assessment, and consideration about the decision is in order. If, on the other hand, that quantity must be indefensibly large before the decision changes, then probably the proposed decision is defensible.

Suggested Response (GM-1): Pages 21-22 have a discussion of whether it is necessary to do a “full” valuation, stating that sometimes the valuation of a subset of services is sufficient. If benefits based on a subset of services exceed costs, then benefits based on a full valuation would as well. We will add language to state that when information about benefits is not available, but information about costs is, the analysis can be reframed to provide information about the magnitude of benefits that would be necessary to justify those costs.

I am also a bit troubled by the discussion of uncertainty. It would be nice to see a much sharper distinction drawn between uncertainty about the value of coefficients and the functional form of models of ecosystem impact (and similar models) VERSUS uncertainty about the value to be placed of a well specified ecological change. It makes sense to put PDFs on the former and do stochastic simulation (as the report suggests). In my view it does NOT make sense to do that with value parameters themselves. If you don’t know what your values are, then they should be treated parametrically so that you can see the consequence of the choice (see Section 4.3.4 in Morgan and Henrion, Uncertainty, Cambridge, 1990).

Suggested Response (GM-2): In section 5.2.1, we will insert language to distinguish between the uncertainty surrounding the ecology vs. the uncertainty surrounding the values. We will also address the issue that some believe that one cannot put pdf’s on the value parameters. This belief relates to the question of whether there are true values but we just don’t know them (generally the view taken by economists) vs. the view that people don’t have well-defined values (e.g., they need to be constructed) and so there is no true value. We will make the point that valuations should distinguish between the two types of uncertainty and characterize them appropriately according to the decision context (i.e., economic benefit analysis for rulemaking may require PDFs and stochastic simulation, but other kinds of valuation undertaken for different decision contexts may not).

I note on pg vi that I am not listed as a member of the Board.

Suggested Response (GM-3): We will add Granger to the list as SAB immediate past chair.

Comments from Dr. Duncan Patton

Comments on November 2008 Draft Report on “Valuing the Protection of Ecological Systems and Services” by Duncan Patten.

This is a much improved draft from the 2007 draft. Several issues are bothersome. Some I mentioned in my review of the 2007 draft and one that I did not catch the first time around.

Title: This is not a report just on valuing “protection” of ecological systems, it is one of valuing potential actions of EPA on ecological systems, protection being one. I’m not certain what a better title might be, but perhaps one that recognizes the purpose of the report, that is, to value decision making and actions of EPA.

Suggested Response (DP-1): This is a question on which we need SAB’s advice. The current title builds on the name and purpose of the Committee. An alternative that is broader would be “Valuing the Effect of EPA Decisions and Other Actions on Ecological Systems and Services.”

Another point I made in my review which was mostly accepted but still needs some modification of the text is the use of the word “change” when discussing the result of EPA actions on ecosystems. The report mostly implies that EPA decisions or actions create changes (e.g., improvements) in ecosystems and that these can be valued. If the word in the title “protection” is what is really meant, ecosystem responses to decisions may be one of “no change” and the lack of change, or protection, can be valued. The authors changed the word “change” to “response”, as in Ecosystem Response, in many cases in the text, but many places still need to be considered for changing “change” to “response”. Examples of need to change the word “change” to “response” can be found on pages 45 and 56.

Suggested Response (DP-2): We tried to modify the text to eliminate the use of the word “change.” In some cases, the word “change” is still the most appropriate term, particularly where the report emphasizes that economic valuation focuses on changes . We will review the text, however, to make sure that we are as inclusive as possible and that the text refers to the “effect” or “response” on ecological systems and services where the term “change” is too narrow.

Relative to the three topics to be considered for this report.

1. The original charge to the committee has been more than adequately addressed. Perhaps the most useful parts of the report are the “conclusions” and perhaps the Executive Summary. There is a lot of supportive material for this in the text but the conclusions do a good job of summing up the main points that address the charge.

2. The draft report is complex in some portions and more understandable to those who do ecosystem valuation, or other non-market types of valuation, but overall, it is well written, well organized and clear and logical.

3. As pointed in #1 above, the conclusions are well presented and follow the extensively developed text in the body of the report. The conclusions are actually a brief set of recommendations which will be useful to EPA and those who do ecosystem valuation.

Comments from Dr. Valerie Thomas

The report is beautifully put together and the examples and discussions are detailed and well crafted. As discussed below, the scientific status of valuing the protection of ecological systems and services does not come through clearly enough; the report would be stronger if the science, with its strengths and its weaknesses, were more prominently characterized and evaluated.

The charge questions, as summarized in the Executive Summary, are (1) to assess EPA's needs for valuation; (2) to assess the state of the art and science of valuing the protection of ecological systems and services, and (3) the identify key areas for improving knowledge.

Charge question 2, the state of the art and science, is not clearly or explicitly assessed. The state of the art is addressed in terms of EPA's practice, but the state of the art in the scientific community in general is not specifically clarified. The report is written as advice for improving the practice of valuation at EPA. What's missing is a clear discussion, including in the letter to the administrator and in the Executive Summary, about what is and is not established, known, or feasible in valuing the protection of ecological systems and services. In the charge, EPA asked about the science, and art, of valuation, and how knowledge could be improved. The draft report is about what EPA can do to improve its valuations, which is not quite the same.

A clear review and assessment of the state of the science of valuation could significantly strengthen the report and could be important to justify further research in this area. One of the reasons, I think, that EPA's valuation efforts have been limited is uncertainty about the validity of valuation methods. EPA has asked about the science: what can and cannot currently be done, or what is and is not currently known about valuation. Throughout the text there are a number of sentences or passages that address the capabilities and limitations of the science. Bringing together a complete statement of the state of the science would strengthen the report. This would include about half a page in the Executive Summary plus a long section in one of the chapters. Alternatively, each of the "conclusions and recommendations" sections could be revised to address the state of the science and how to improve knowledge. Currently these sections are phrased recommendations for what EPA should do in its valuations, rather than as statements about the state of the science.

Suggested Response (VT-1): The report does not try to assess the state of all of the science in the valuation field, but includes an assessment of everything that the committee believed was relevant and on which the committee could provide unique advice, had relevant expertise, and could agree. We will try to highlight the portions of the report that constitute assessments of the current state of the science, including looking to see if it would be possible and useful to pull together the existing assessments of science in the report into a more general summary section or sections.

Specific examples of “state of the science” points are listed below:

On p. 35, section 3.4 is the statement “development of a broad suite of ecological production functions faces numerous challenges...”, yet the Executive Summary, page 5, Implementing Recommendation #2, says “where possible, use ecological production functions to estimate....” SAB seems to be recommending, then, a process to EPA that will not be feasible in many cases; that should be made explicit.

Suggested Response (VT-2): We will clarify on page 5 that the development of a broad suite of ecological production functions current faces numerous challenges. This will provide a useful transition to the next bullet that notes that EPA should do where complete ecological production functions do not exist. It also will help to highlight the importance of the third bullet under “Recommendations for research and data sharing” on page 7 (research to develop and generate ecological production functions).

For the indicator approach, the statement on p. 36 is “There is currently no agreement on a common set of indicators.” This is an important statement about the state of the science and should be one of the points brought out in a state-of-the-science discussion.

Suggested Response (VT-3): We will look at the possibility of combining this with other assessments of the current state of the science, as noted in our suggested response to VT-1.

The discussion of the meta-analysis approach, p. 37, is quite short, and the question of “state-of-the-science” is not directly addressed.

Suggested Response (VT-4): We will check with those members of the C-VPESS committee most involved in the drafting of this section to see if any additional discussion (including the question of the “state-of-the-science”) would be possible, relevant, and useful to EPA.

On page 39, the recommendations to EPA have too many “EPA should” statements. The same thing can be said, a little more gently, without repeating “EPA should” eight times.

Suggested Response (VT-5): We will revise the text to vary and soften the language.

On page 55-57, value transfer is discussed. Here again, a state of the science statement could be made, along the lines of “value transfer methods need to be developed.” [Also, to improve clarity, a different term than “value transfer” should be used in the table of contents listing and heading of this section, so that a quick reader (e.g. the Administrator) can more easily grasp the meaning. Something like “The challenge of using valuation results from one setting in a different setting.” (When I first read the heading in the table of contents, I thought it meant how financial benefits are transferred from one party to another!)]

Suggested Response (VT-6): We will look at the text to see if a statement regarding the state of the science can valuably be made in this section. We also will change the heading so that a quick reader can better grasp the subject matter of the section.

On page 74, expansion of valuation beyond monetized benefits is discussed. The discussion indicates that the science is not yet developed to identify scientifically based indicators, and that EPA would be developing the science by pursuing this approach. This exploratory nature of the recommendations should be highlighted explicitly as part of the State of the Science discussion. Also, re-writing this section to discuss how the science and art of valuation can be improved would make it more effective than the “EPA should” formulation of the current draft.

Suggested Response (VT-7): Page 74 of the report notes that "even when benefits cannot be monetized using available ecological models and reliable information about economic values, the associated ecological models may still be quantifiable." This recommendation is supported by current science and data and is not exploratory. The report advises EPA on page 5 to "pilot and evaluate the use of alternative methods where legally permissible and scientifically justifiable." Similar language appears on page 26.

The conclusions, p. 100, include “information based on some of the other concepts of value may also be a useful input into decisions affecting ecosystems, although members of the committee hold different views regarding the extent...” Here again the text is indicating that some of the approaches suggested in the document may turn out not be useful, and are controversial and uncertain. This should be made explicit in a discussion of the state of the science.

Suggested Response (VT-8): We will examine the current text and make sure that it highlights the point that the methods are at different stages of development and validation and are of different possible use in different policy contexts. This will tie in nicely with the report’s recommendation that EPA develop and apply criteria for choosing methods.

The conclusions, p. 101, also include the statement “EPA’s ability to do this today is limited, presenting a barrier to effective valuation of ecological systems and services.” This conclusion should be brought up to the Executive Summary and Letter to the Administrator, and also would be better phrased not just in terms of what EPA can do, but more generally as part of the state of the science.

Suggested Response (VT-9): We will emphasize this point in the Administrator's letter, page (i) and the Executive Summary (p.5). We also will make it clear that the limitation is not unique to EPA but is a limit of the current science.

Comments from Dr. Thomas Wallsten

Note: We received these comments after preparing our suggested responses. We will discuss them with Dr. Wallsten in follow-up to the conference call on Tuesday.

Comments on the Draft *Valuing the Protection of Ecological Systems and Services*

Prepared by Thomas S. Wallsten
December 5, 2008

This draft report is overall an excellent document. It is thoughtful, informative, forward-looking, well organized, and reads well. My comments are divided into two parts, one mentioning features of the report I particularly want to commend and the other mentioning items, aspects, or points with which I take some issue.

There is much to praise in this document. Notable points include:

- The recommendation to use a broader suite of methods than only economic valuation. The authors recommend that EPA also use quantitative, non-economic methods where appropriate and allowable, as well as other more qualitative methods of assessing and expressing valuations. This point is expressed throughout the document and summarized well in Section 7.1, “An expanded, integrated valuation approach.” I do have a concern here, however, which I outline below in the section on criticisms.
- The recommendation to develop conceptual models to guide ecological valuations at the beginning of the valuation process. This point is developed most thoroughly in Section 3.1.
- The related recommendation to work across levels to map ecological responses to ecological services that can be valued, as illustrated in Figure 2 on page 29.
- The recommendation to use regional analyses as testing grounds for new valuation techniques and approaches, as methodology here is less constrained by Federal legislation, rules, and regulations than in the case of national rule making.
- The related recommendation that EPA develop research strategies for improving valuation methods.
- Distinguishing “informed” from “uninformed” valuations with strong recommendations to rely on the former. The authors also include some recommendations for how to inform participants about the complexities of an issue prior to carrying out valuation exercises. This point is particularly important as the process of informing can subtly change to one of influencing opinion. Research could usefully be done here to establish guidelines for this process.
- Distinguishing revealed from constructed values. While I praise the authors for including this distinction, I do not think that they treat it entirely appropriately and will comment further on it below when I take up criticisms.
- The excellent Section 4.3 on value transfer.

- The excellent Chapter 5 on uncertainty and communication. Section 5.2 particularly stands out.
- The recommendation that uncertainty estimates not be hidden in appendices, but be included in the bodies of reports, even given their own chapters.
- The excellent summary of the entire document in Chapter 7.

Points that I take issue with in the report, sometimes in a minor way and sometimes to a larger degree, are as follows:

- As indicated above, I commend the authors for recommending that a suite of valuation techniques be employed. However, assuming that the full array of results is provided to decision makers, as I believe the authors intend, they may need some guidance on how to consider and balance the different types of valuations. The report does not address this point.
- Relatedly, when full discussions of uncertainty are included in the body of valuation reports, the resulting text could be overwhelming and the decision makers at whom the reports are aimed may suffer from information overload, causing them to disregard or misinterpret important portions of the material. The report does not address this point. The authors might consider recommending research on ways to address the problem.
- The discussion of issues of the validity of valuations (e.g., pp. 41-42) can be improved. *Validity* refers to the degree to which a scale properly represents the underlying construct of interest; and it is often very difficult to quantify. *Construct validity*, which is what the authors are concerned with here, is bound up with models of how the latent construct of interest manifests itself in observable behavior. None of that comes through in the current discussion.

The issue is complicated and the authors are not to be faulted for not having solved it here. However, they should give a better flavor of the problem. For example, everyone would agree that the indices listed on pages 41 and 42 are *necessary* for validity, but they certainly are not *sufficient*.

- On page 37 and elsewhere, the authors discuss meta-analysis and data aggregation almost synonymously. (E.g., the second sentence in Section 3.4.2 begins “Meta-analysis, or data aggregation, involves collecting data from multiple sources ...”). This is misleading, as the term *data aggregation* can refer to any method for combining data within or across studies, while *meta-analysis* refers to a very specific (and growing) set of statistical techniques for combining comparable data from multiple studies into unified models that assess overall significance as well as statistical effects due to various factors that may differ across the studies. The authors make this point themselves on pages 53 and 54, but do not maintain it consistently throughout the report.
- The authors refer to *constructed values* (as opposed to *revealed values*) in Table 2 on page 43, but then in Section 4.2.4 (first sentence) state “Decision science valuation methods presume that individuals’ *preferences* need to be *constructed* (emphases added) through a deliberative process that helps individuals understand and assess tradeoffs among multiple attributes.”

Three important points are being somewhat confused here, in my opinion: revealed preferences, constructed preferences, and constructed values. Behavioral decision scientists do distinguish between *revealed* and *constructed preferences*, but not in the way implied in the report. The term *constructed preference* refers to the fact that people often unconsciously construct their preferences as a function of how the preference is elicited rather than simply reveal pre-existing preferences via the pattern of their choices. (Thus, e.g., it is easy to create situations in which someone will choose A over B, but offer to pay more for B than for A.) The *constructed values* that the authors mention often are elicited in aided decision analyses and they often are very useful, but they do not imply constructed preferences.

- The behavioral decision scientists' distinction between revealed and constructed preferences is especially important when considering *willingness to pay*, *willingness to accept*, and other *contingent valuation techniques* (CVT). The authors refer uncritically to these techniques at various places throughout the report, yet the techniques often are criticized and a useful literature that can guide valuations has developed on this topic. The criticisms have precisely to do with the distinction between revealed and constructed preferences. If preferences simply were *revealed* through CVT, they would be consistent across techniques, but they tend not to be, suggesting that they are *constructed*. The report should make mention of this issues.
- The authors correctly recommend use of Monte Carlo methods for characterizing uncertainty. On page 61, they mention that failure to include covariance among model parameters can lead to unreliable results. This statement should be stronger, as such a failure can lead not to unreliable but to misleading results.

These comments notwithstanding, this is an excellent, thoughtful, and very useful report.