

**Summary Minutes**  
**US Environmental Protection Agency Science Advisory Board**  
**Meeting**

**Public Teleconference Meeting**

**August 6, 2009**

**2:00 pm – 3:30 pm (Eastern Time)**

**Meeting Location: Via Telephone Only**

**Purpose of the Meeting:** The Meeting was held to allow the Chartered Science Advisory Board (SAB) to conduct a quality review of the draft SAB Environmental Economics Advisory Committee (EEAC) draft *Advisory on EPA's Guidelines for Preparing Economic Analyses (2008)*. The meeting was announced in the *Federal Register* (see 74 FR 34348 of July 15, 2009 - Attachment A). The meeting agenda is in Attachment B. The SAB roster indicating those participating in the teleconference is in Attachment C.

**MEETING SUMMARY**

**Thursday, August 6, 2009**

**1. Convene the Meeting:**

Mr. Thomas Miller, Designated Federal Officer of the EPA Science Advisory Board convened the meeting. He noted that the meeting was an official Federal Advisory Committee Act (FACA) meeting of the EPA Science Advisory Board and that its purpose was to allow the Board to conduct a Quality Review of a Draft SAB EEAC Report: *SAB Advisory on EPA's Guidelines for Preparing Economic Analyses (2008)*. Mr. Miller also stated that the meeting was being conducted according to the requirements of the Federal Advisory Committee Act which among other things provides an opportunity for public participation and that one person had requested time to make a brief public statement on the topic for the meeting. That person also provided a written comment on the topic. Mr. Miller then turned the meeting over to the SAB Chair, Dr. Deborah Swackhamer to carry out the agenda.

Dr. Swackhamer welcomed those participating in the review, noted the purpose of the meeting, and explained the nature of an SAB quality review.

**2. Quality Review of the Draft SAB Advisory on EPA's Guidelines for Preparing Economic Analyses**

Dr. Catherine Kling, Chair SAB EEAC, introduced the Quality Review by summarizing the nature of the economic analysis guidelines, the review activities of the EEAC, and some of the major committee comments on the EPA draft document.

SAB Lead Reviewers then summarized their comments. Written comments submitted by SAB members are in Attachment D and Dr. Kling's response to comments is in Attachment E to these minutes.

- a) **Dr. Katherine Segerson** referenced her written comments and highlighted her comment on the need to distinguish between consumption discounting and utility discounting for complex issues such as climate change.
- b) **Dr. Otto Doering** referenced his written comments and highlighted his comments on cost-effectiveness analysis; shadow price of capital; transparency relative to data quality and validity; and the importance on the many assumptions embedded in computable general equilibrium (CGE) modeling to the outcome and usefulness of the models.

Other SAB members also highlighted comments from their written submissions.

- a) **Dr. Kerry Smith**, commenting on the quality review charge question regarding whether the draft report's conclusions were supported by discussions in the report, remarked that the draft did not make it clear that their general support for EPA's CGE discussion did not note that the Agency documentation of the literature is out of date. He also provided an example of where he believed the draft advisory was inconsistent across sections (especially in its treatment of CGE). He also suggested that if the Guidelines are to be a "living-document" that EPA should indicate what criteria will be used to determine what parts of the Guidelines will be changed and when.
- b) **Dr. Judy Meyer** suggested that the document include a brief reference to acknowledge ORD's investments in ecosystems research which will be the basis for valuing ecosystem services. She also noted that the intent of the EEAC member comments included in the draft advisory's appendix was not clear in terms of what the expectations are of the agency for those comments.
- c) **Several members** noted sections that were not clear in both the executive summary and the body of the report (charge questions 3b, 3d, and 5).

Dr. Kling responded to the members' comments and noted that she would work with the EEAC DFO and the commenting members to revise the draft report according to the comments received. All edits are able to be accommodated in a revision.

Dr. Swackhamer noted that the letter did not mimic the Executive Summary. Many past SAB reports are written with a letter that is a shortened version of the Executive Summary. She supported this different way of drafting the two "sections" of the report. Members agreed. She also noted that the letter, though excellent and informative, was quite long and asked if it could be shortened without removing substantive information.

With that, a motion was made and seconded to approve the draft advisory contingent upon the draft report being changed to reflect the substance of the edits, and revisions thereto, discussed in this teleconference. The report does not have to be returned to the Board or approved by Board vettors prior to being forwarded to the Administrator. The EEAC Chair and DFO should work with commenting members to ensure that their concerns are understood and appropriately considered. The Chair asked for a vote of the participating members. "Ayes" were voiced by members. No "nos" were stated and there were no "abstentions." The report was thus approved subject to the stated conditions. NOTE: Post meeting suggestions from Dr. Doering are in Attachment F to these minutes.

The Guidelines reviewed by the EEAC are in the physical FACA file for this meeting only as Attachment G to these minutes.

3. **September Meeting:** Dr. Swackhamer mentioned the future SAB meetings which have been calendared for the following dates: August 28, 2009 and September 23-24, 2009.
  - a) The next meeting of the Board will be a teleconference on **August 28, 2009** to conduct a quality review of the draft SAB report on *EPA's Expert Elicitation Task Force White Paper*. Background information will be sent to members via email on Monday, August 10, 2009. There will also be a briefing during the teleconference on the SAB Integrated Nitrogen Committee's draft report which will be undergoing Board review during the September 2009 meeting.
  - b) A SAB face-to-face meeting had been scheduled for September 23-24, 2009. Because of logistical difficulties relative to finding an adequate location for the anticipated broad ranging meeting to discuss revisions to EPA's strategic research vision the SAB Chair and the SAB Office Director have concluded that we must revise our planned meeting for September. This is further supported by the slower than anticipated pace in getting in place EPA's senior leadership for its science organizations. Thus, the September 23-24 meeting has been changed as follows:
    - i) **September 23, 2009 (1:00 p.m. – 4:00 p.m.) Teleconference:** This will be to conduct an SAB Quality Review of the Draft Integrated Nitrogen Committee Report. We anticipate a significant interest by the public in the topic and this will likely mean that we will have a longer than usual public comment session involved in the meeting.
    - ii) **September 24, 2009 (1:00 p.m. 4:00 p.m.) Teleconference:** This will be to conduct an SAB Quality Review of the Draft SAB Radiation Advisory Committee advisory on EPA's guidance for cancer risk estimation from exposure to ionizing radiation. We anticipate significant public interest in this topic as well. The Board will also engage in other business at this meeting as needed.
    - iii) **November 2009 Face-to-Face Meeting:** We will survey members for their availability **in November 2009** for a two-day meeting on EPA ORD's strategic research vision updates. The meeting will be held in Research Triangle Park, NC to take advantage of the high concentration of EPA researchers at that location.

With the business concluded, the Designated Federal Officer adjourned the meeting at 4:00 p.m.

Respectfully Submitted:

Certified as True:

*/Signed/*

*/Signed/*

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

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

Attachments:

- A Federal Register Notice
- B Agenda
- C SAB Roster
- D Compilation of SAB Comments on the Draft Advisory
- E Dr. Kling's Response to Comments
- F Post-teleconference suggestions from Lead Reviewer, Dr. Doering
- G Draft EPA Guidelines for Economic Analysis

## Attachment A

34348 Federal Register / Vol. 74, No. 134 / Wednesday, July 15, 2009 / Notices

### ENVIRONMENTAL PROTECTION AGENCY

[FRL-8931-4]

#### EPA Science Advisory Board Staff Office; Notification of Two Public Teleconferences 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 teleconferences of the chartered SAB to conduct quality reviews of two draft SAB reports.

**DATES:** The teleconference dates will be Thursday, August 6, 2009 from 2 to 3:30 p.m. (Eastern Standard Time), and Friday, August 28, 2009, from 2 p.m. to 3:30 p.m. (Eastern Standard Time).

**ADDRESSES:** The meetings will be conducted by telephone only. **FOR FURTHER**

**INFORMATION CONTACT:** Any member of the public wishing to obtain general information concerning these public teleconferences 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](mailto: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:** Pursuant to the Federal Advisory Committee Act, 5 U.S.C., App. 2 (FACA), notice is hereby given that the EPA Science Advisory Board (SAB) will hold public teleconferences to conduct two quality reviews of draft SAB committee reports. The SAB was established pursuant to 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 under FACA. The SAB will comply with the provisions of FACA and all appropriate SAB Staff Office procedural policies.

#### Background

(a) *SAB Quality Review of the Draft SAB Report on EPA's Economic Analysis Guidelines Update.* The Chartered SAB will conduct a quality review of the SAB Environmental Economics Advisory Committee (EEAC) draft report on EPA's Economic Analysis Guidelines Update from 2 p.m. to 3:30 p.m. on Thursday, August 6, 2009. EPA's National Center for Environmental Economics (NCEE) has requested SAB review of EPA's revised Guidelines for Preparing Economic Analyses. EPA last issued Guidelines for Preparing Economic Analyses in September 2000 to represent Agency policy on the preparation of economic analysis required by legislation and administrative orders. EPA received advice from the SAB in developing those Guidelines. Since 2000, there has been considerable new economic research and EPA has received new guidance from the Office of Management and Budget pertaining to the Agency's conduct of regulatory analysis. In response, NCEE has revised and updated the Guidelines and has requested SAB review. More information on this topic can be found on the SAB Web site at [http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr\\_activites/Guidelines%20Review?OpenDocument](http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/Guidelines%20Review?OpenDocument).

(b) *SAB Quality Review of the Draft SAB Panel Report on the EPA Expert Elicitation White Paper.* The Chartered SAB will conduct a quality review of the draft report from its Expert Elicitation Advisory Panel from 2 p.m. to 3:30 p.m. on Friday, August 28, 2009. EPA's Office of the Science Advisor (OSA) has requested SAB review of an "Expert Elicitation (EE) Task Force White Paper." The White Paper discusses the potential utility of using expert elicitation to support EPA regulatory and non-regulatory analyses and decision-making, provides recommendations for expert elicitation "good practices," and describes steps for a broader application across EPA. OSA has asked the SAB to provide advice regarding the potential usefulness of expert elicitation, how to strengthen the scientific basis for its use, and the implications for possible implementation at EPA. More information on this topic can be found on the SAB Web site at [http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr\\_activites/Expert%20Elicitation%20White%20Paper?OpenDocument](http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/Expert%20Elicitation%20White%20Paper?OpenDocument).

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

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

*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. To be placed on the public speakers list for the August 6, 2009 teleconference interested individuals should contact Mr. Thomas Miller, DFO, in writing (preferably by e-mail), by July 31 at the contact information provided above. Those interested in being placed on the public speakers list for the August 28, 2009 teleconference should contact Mr. Miller in the manner noted above by August 22, 2009.

*Written Statements:* Written statements relevant to the August 6, 2009 teleconference should be received in the SAB Staff Office by July 31, 2009 so that the information may be made available to the SAB for their consideration prior to the teleconferences. Written statements relevant to the August 28, 2009 teleconference should be received in the SAB Staff Office by August 20, 2009. Written statements should be supplied to the DFO via e-mail to [miller.tom@epa.gov](mailto: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). Submitters are asked to provide versions of each document submitted with and without signatures, because the SAB Staff Office does not publish documents with signatures on its Web sites.

*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](mailto: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: July 9, 2009.

**Vanessa T. Vu,**

*Director, EPA Science Advisory Board Staff Office.*

[FR Doc. E9-16842 Filed 7-14-09; 8:45 am]

**BILLING CODE 6560-50-P**

**Attachment B**

**U.S. Environmental Protection Agency  
Science Advisory Board  
Teleconference  
Agenda  
August 6, 2009**

(Call-in Information, 866-299-3188; Conference Code: 2023439982#)

*Purpose of the Meeting: The Board will meet to conduct a quality review of the SAB EEAC Draft 'Advisory on EPA's Guidelines for Preparing Economic Analyses (2008)'.*

**Thursday August 6, 2009**

2:00 p.m.	<b>Convene the Meeting</b>	<b>Thomas O. Miller</b> <i>Designated Federal Officer EPA SAB</i>
2:05 p.m.	<b>Purpose and Approach of the Meeting</b>	<b>Dr. Deborah L. Swackhamer</b> <i>Chair EPA Science Advisory Board</i>
2:10 p.m.	<b>Public Comments</b>	<b>To Be Announced</b>
2:20 p.m.	<b>Quality Review of the Draft SAB EEAC Advisory on EPA's Guidelines for Economic Analyses, 2008</b>	<b>Dr. Catherine Kling</b> <i>Chair SAB Environmental Economics Advisory Committee</i>
		<b>Lead Reviewers:</b> <b>-Dr. Kathleen Segerson</b> <b>-Dr. Otto Doering</b>
		<b>SAB Members</b>
3:15 p.m.	<b>Summary and Next Steps</b>	<b>Dr. Deborah L. Swackhamer</b>
3:30 p.m.	<b>Adjourn the Meeting</b>	<b>The DFO</b>

## Attachment C

### U.S. Environmental Protection Agency Science Advisory Board August 6, 2009\*

#### CHAIR

**\*Dr. Deborah Swackhamer**, Professor of Environmental Health Sciences and Co-Director Water Resources Center, Water Resources Center, University of Minnesota, St. Paul, MN

#### SAB MEMBERS

**\*Dr. David T. Allen**, Professor, Department of Chemical Engineering, University of Texas, Austin, TX

**\*Dr. John Balbus**, Chief Health Scientist, Environmental Health Program, Environmental Defense Fund, Washington, DC

**Dr. Gregory Biddinger**, Coordinator, Natural Land Management Programs, Toxicology and Environmental Sciences, ExxonMobil Biomedical Sciences, Inc., Houston, TX

**\*Dr. Timothy Buckley**, Associate Professor and Chair, Division of Environmental Health Sciences, School of Public Health, The Ohio State University, Columbus, OH

**Dr. Thomas Burke**, Professor, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD

**Dr. James Bus**, Director of External Technology, Toxicology and Environmental Research and Consulting, The Dow Chemical Company, Midland, MI

**\*Dr. Deborah Cory-Slechta**, Professor, Department of Environmental Medicine, School of Medicine and Dentistry, University of Rochester, Rochester, NY

**\*Dr. Terry Daniel**, Professor of Psychology and Natural Resources, Department of Psychology, Environmental Perception Laboratory, University of Arizona, Tucson, AZ

**\*Dr. Otto C. Doering III**, Professor, Department of Agricultural Economics, Purdue University, W. Lafayette, IN

**\*Dr. David A. Dzombak**, Walter J. Blenko Sr. Professor of Environmental Engineering, Department of Civil and Environmental Engineering, College of Engineering, Carnegie Mellon University, Pittsburgh, PA

**Dr. T. Taylor Eighmy**, Assistant Vice President for Research and Director of Strategic Initiatives, Office of the Vice President for Research, University of New Hampshire, Durham, NH

**Dr. Baruch Fischhoff**, Howard Heinz University Professor, Department of Social and Decision Sciences, Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA

**\*Dr. James Galloway**, Professor, Department of Environmental Sciences, University of Virginia, Charlottesville, VA

**Dr. John P. Giesy**, Professor, Department of Zoology, Michigan State University, East Lansing, MI

**Dr. James K. Hammitt**, Professor, Center for Risk Analysis, Harvard University, Boston, MA

**\*Dr. Rogene Henderson**, Senior Scientist Emeritus, Lovelace Respiratory Research Institute, Albuquerque, NM

**Dr. James H. Johnson**, Professor and Dean, College of Engineering, Architecture & Computer Sciences, Howard University, Washington, DC

**\*Dr. Bernd Kahn**, Professor Emeritus and Director, Environmental Radiation Center, Nuclear and Radiological Engineering Program, Georgia Institute of Technology, Atlanta, GA

**Dr. Agnes Kane**, Professor and Chair, Department of Pathology and Laboratory Medicine, Brown University, Providence, RI

**Dr. Meryl Karol**, Professor Emerita, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA

**\*Dr. Catherine Kling**, Professor, Department of Economics, Iowa State University, Ames, IA

**\*Dr. George Lambert**, Associate Professor of Pediatrics, Director, Center for Childhood Neurotoxicology, Robert Wood Johnson Medical School-UMDNJ, Belle Mead, NJ

**\*Dr. Jill Lipoti**, Director, Division of Environmental Safety and Health, New Jersey Department of Environmental Protection, Trenton, NJ

**\*Dr. Lee D. McMullen**, Water Resources Practice Leader, Snyder & Associates, Inc., Ankeny, IA

**\*Dr. Judith L. Meyer**, Distinguished Research Professor Emeritus, Odum School of Ecology, University of Georgia, Athens, GA

**Dr. Jana Milford**, Professor, Department of Mechanical Engineering, University of Colorado, Boulder, CO

**Dr. Christine Moe**, Eugene J. Gangarosa Professor, Hubert Department of Global Health, Rollins School of Public Health, Emory University, Atlanta, GA

**Dr. M. Granger Morgan**, Lord Chair Professor in Engineering, Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA.

**\*Dr. Duncan Patten**, Research Professor, Department of Land Resources and Environmental Sciences, Montana State University, Bozeman, MT, USA

**Mr. David Rejeski**, Director, Foresight and Governance Project, Woodrow Wilson International Center for Scholars, Washington, DC

**\*Dr. Stephen M. Roberts**, Professor, Department of Physiological Sciences, Director, Center for Environmental and Human Toxicology, University of Florida, Gainesville, FL

**\*Dr. Joan B. Rose**, Professor and Homer Nowlin Chair for Water Research, Department of Fisheries and Wildlife, Michigan State University, East Lansing, MI

**Dr. Jonathan M. Samet**, Professor and Chair , Department of Epidemiology, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD  
Also Member: CASAC

**\*Dr. James Sanders**, Director and Professor, Skidaway Institute of Oceanography, Savannah, GA

**Dr. Jerald Schnoor**, Allen S. Henry Chair Professor, Department of Civil and Environmental Engineering, Co-Director, Center for Global and Regional Environmental Research, University of Iowa, Iowa City, IA

**\*Dr. Kathleen Segerson**, Professor, Department of Economics, University of Connecticut, Storrs, CT

**\*Dr. Kristin Shrader-Frechette**, O'Neil Professor of Philosophy, Department of Biological Sciences and Philosophy Department, University of Notre Dame, Notre Dame, IN

**\*Dr. V. Kerry Smith**, W.P. Carey Professor of Economics , Department of Economics , W.P Carey School of Business , Arizona State University, Tempe, AZ

**\*Dr. Thomas L. Theis**, Director, Institute for Environmental Science and Policy, University of Illinois at Chicago, Chicago, IL

**\*Dr. Valerie Thomas**, Anderson Interface Associate Professor, School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, GA

**Dr. Barton H. (Buzz) Thompson, Jr.**, Robert E. Paradise Professor of Natural Resources Law at the Stanford Law School and Perry L. McCarty Director, Woods Institute for the Environment Director, Stanford University, Stanford, CA

**Dr. Robert Twiss**, Professor Emeritus, University of California-Berkeley, Ross, CA

**Dr. Thomas S. Wallsten**, Professor, Department of Psychology , University of Maryland, College Park, MD

**Dr. Lauren Zeise**, Chief, Reproductive and Cancer Hazard Assessment Branch, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, Oakland, CA

## **LIAISON MEMBERS**

### **BOSC:**

**Dr. Gary Saylor**, (Chair, BOSC), Beaman Distinguished Professor, Joint Institute for Biological Sciences, Oak Ridge National Laboratory, University of Tennessee, Knoxville, TN

### **CHPAC:**

**Dr. Melanie Marty**, (Chair, CHPAC), Chief, Air Toxicology and Epidemiology Branch, Office of Environmental Health Hazard Assessment, California EPA, Oakland, CA

**Dr. Henry Anderson**, (CHPAC Alternate), Chief Medical Officer, Division of Public Health, Wisconsin Division of Public Health, Madison, WI

**FIFRA SAP:**

**Dr. Steven Heeringa**, (Chair, FIFRA SAP), Research Scientist and Director, Statistical Design Group, Institute for Social Research (ISR), University of Michigan, Ann Arbor, MI

**NACEPT:**

**\*Dr. Daniel J. Watts**, Executive Director, Otto H. York Center for Environmental Engineering and Science and the Panasonic Professor of Sustainability at New Jersey Institute of Technology, Monmouth Jct., NJ

**SCIENCE ADVISORY BOARD STAFF**

**\*Mr. Thomas Miller**, Designated Federal Officer, 1200 Pennsylvania Avenue, NW  
1400F, Washington, DC, Phone: 202-343-9982, Fax: 202-233-0643, (miller.tom@epa.gov)

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**\*Notes members who participated in the August 6, 2009 Teleconference of the SAB.**

## Attachment D

### Compilation of Member Comments on the EEAC Draft Advisory On EPA's Economic Analysis Guidelines SAB Teleconference of August 6, 2009

#### 1. Dr. Kathleen Segerson:

##### Comments on EEAC Advisory on *Guidelines for Preparing Economic Analyses*

##### **Were the original charge questions to the SAB Panel adequately**

**addressed in the draft report?** The advisory report is very responsive to the charge questions. Each of the charge questions is addressed and answered in detail. In addition, the EEAC provided general comments (of a “cross-cutting” nature) on the *Guidelines*. These comments were all very thoughtful and the review was very thorough. I have a few specific comments (see below), but overall the report is excellent.

**Is the draft report clear and logical?** The report is very clear and logical. Issues and concerns, as well as recommendations for improvement, are discussed in a clear and logical way.

**Are the conclusions drawn, and/or recommendations made, supported by information in the body of the draft SAB report?** Yes. The report contains many recommendations for improvement, and for each, it provides detailed justification for the recommendation as well as specific advice on how it can be implemented (e.g., specific topics that require inclusion or further elaboration, along with key references to use for this purpose).

##### **Some Specific Comments:**

1. p. 3: I don't know what “ensemble modeling” is. This should be explained.
2. p. 3: The fact that nonpoint pollution is characterized by unobservable and stochastic emissions means that policy instruments such as an emissions tax cannot be used, but, contrary to what is stated here, it does *not* mean that second-best policies are required. There are first-best policies (based, for example, on ambient water quality) that can, at least in theory, be used to address non-point pollution, and experimental literature suggests that under certain conditions these instruments can lead to first-best outcomes even in the lab. So, this statement needs to be corrected.
3. p. 3: The discussion of the allocation of resources in undertaking economic analysis suggests that the decision regarding how much to invest in collecting new data depends on the size of the project, and that one might want to collect new information “even if they lead to only small changes in the final regulation or policy decision.” However, the decision regarding whether a certain expenditure on data collection is “worth it” or not should be based on a “value of information” argument, i.e., whether the net benefit of having the information exceeds the cost of collecting it. It is well-known from the VOI literature that, if the information will not change the regulatory decision, then the benefit of collecting the information is zero, and therefore, if collecting the information is costly, it should not be collected. The language in this paragraph should be changed so that it does not imply that information should be collected even when it will not change decisions much.

4. p. 11: I would like to see here a clearer distinction between consumption discounting and utility discounting, with a discussion of the possible implications of this distinction in a specific context like climate change. Something like the debate among economists over the Stern Report could be used to illustrate/motivate the discussion. To say that the discount rate is “best understood as being determined by a price” both suggests that there is only one discount rate and does not draw a clear distinction between these two types of “discount rates” (as the term is used in policy debates). Furthermore, the report should be clearer about the fact that, unlike the consumption discount rate, the utility discount rate can be viewed as a parameter of the social welfare function, and different people will have different views about what that parameter “should” be (e.g., whether it is ethical to have positive utility discounting, whereby the utility (not consumption) of future generations is given less weight in the social welfare function than the utility of the current generation). The controversy and debate over this issue needs to be acknowledged. It is not simply a question of “estimating” the discount rate, as suggested in the *Guidelines*.

5. p. 11: I don’t understand the sentence that states “Economic evaluation is normative in that it is conducted in order to compare alternative policies, yet it is positive in that it attempts to identify the policy that maximizes the perceived welfare of the affected population.” First, comparing the *impact* of alternative policies on, for example, behavior is a form of positive analysis, not normative analysis. And any analysis that is based on social welfare maximization is normative, not positive. So it seems that the report is not using the terms “positive” and “normative” in the way that they are typically understood.

6. p. 15: For some reason some of the references here are cited by the title of the publication rather than by the author(s), which is inconsistent with the format in the rest of the report and makes it hard to look them up in the reference list. This should be changed.

7. p. 17: I believe the publication/copyright date on the NRC Report is 2005, not 2004.

8. p. 17: In the “strong” recommendation to provide “quantitative measure of ecological impacts and a qualitative characterization of ecological effects”, it is not clear whether the intent is to have EPA do this *when benefits cannot be monetized*, or even when they can be. Of course, some type of quantification of effects is a necessary input into monetization, but it should be clarified how this information relates to other information that would be provided about monetized benefits.

p. 21: The report states that “newer stated preference studies...should be referenced” but does not suggest any references. I think it would be helpful to provide at least one or two examples of the newer studies the SAB is suggesting be referenced here.

## 2. **Dr. Otto Doering:**

Were the original charge questions adequately addressed? Yes

Is the report clear and logical? Yes

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

the report? Yes

Specific Comments;

Executive summary:

page 1, point 1; The discussion of the nature of "cost effective" and distinguishing it from other concepts like least cost and cost benefit is extremely important. Once the public determines what it wants (example; Clean Air Act Amendments of 1990) then policy has to be directed to meeting the public will in the most cost effective way - which may not be the most efficient or least cost way when all options are considered.

page 2, point 3, b: The shadow price of capital adjustments is a really difficult area and depends on fiscal and monetary policy and exchange rates, etc.. Having lived through negative nominal and real rates of interest and 13% returns on government long term obligations I find it difficult to hang policy on it.

page 3. point 3, d; The comment here that multiple alternatives should be considered is very important and valuable.

page 3, point 3, e; The comment that this is a judgment call is extremely important. There cannot be a "rule" here that does the job.

page 5. point 11; The comment that many more explanatory examples are needed should be acted on.

Report text;

page 2, 1st full paragraph; Comment is correct - OMB requires B/C analysis for program rules, etc. not just regulations.

More general comment stemming from the discussion of uncertainty at the bottom of page 2, and transparency on the bottom of page 1; There has to be more attention to quality and validity of data. Any action requiring economic analysis for regulatory or other uses to guide actions has to have protocols for validation, verification of data and consideration of uncertainty of data. This carries over to deciding where the biophysical or other relationships essential to the analysis are good enough for the purpose at hand.

page. 5; The comment that EPA needs to clarify and discuss the Agency's specific role in policy design and implementation is critical important and needs to be followed.

page 5; The comment that performance standards need to be better defined and clarified is important. Performance standards are becoming more important as part of "market based" solutions that are being proposed and they need to be well understood.

page 7, 3rd paragraph; The key to this is not only second best (and third and fourth) solutions, but making sure that there is full understanding of the trade-offs involved.

page 8, Understanding of the effectiveness (or lack of it) of voluntary approaches is becoming increasingly essential.

page 9, 3rd paragraph; full compliance with regulations is not realistic!

page 14, the time horizon can be as critically important as the discount rate. Exercising good judgment is critically important. A set of rules will not solve this.

page 17; The question here is not only do we know the biophysical relationships that allow us to characterize ecosystem dynamics but more and more we are being asked to identify tipping points that will have very different characteristics for economic analysis.

page 18; I further emphasize the comments on validity and the line at the top of page 19 that judgment is essential to good analysis. Are we willing to be transparent enough to say that there are critical areas that depend on good judgment in economics - just as do some areas in biophysical or other scientific analysis?

page 24 and 26; The cautions on CGE models and the importance of understanding their limitations and assumptions is critically important now that they have become a major tool for regulation. Many of the things mentioned here, like perfect competition, mobility of resources, importance of accurate elasticities are not explained sufficiently to users. In periods of economic transitions (like our current times) the assumptions that CGE models make in these critical areas are almost certain to be off course - which is why tying elasticities to historical record has problems as well. The CGE models may be most useful for sensitivity analysis assessing the impact of changes of these important variables. However, they are being used for point projections.

page 26, bottom of the page; there should be some discussion of the consideration of math programming and simulation modeling. These can be extremely powerful tools complementing the traditional econometric and more recent CGE models. They are not as fashionable as the econometric and CGE models, and for many purposes they appear to be more useful.

Again, the comment for more case studies and examples is very important.

3. **Dr. James Sanders**: Overall, this is a well-crafted report that carefully considers the charge questions, and provides useful advice to the Agency.

A) the original charge questions to the SAB Panel were adequately addressed in the draft report: Yes, the the EEAC have addressed the charge questions. Their responses are clear, and contain numerous examples of both major and minor improvements that could be considered.

B) the draft report is clear and logical: Yes. The language is clear, even for a “non-economist”. The brief comments in the executive summary generally follow the more detailed comments in the body and the letter to the administrator is well crafted.

C) the conclusions drawn, and/or recommendations made, are supported by information in the

body of the draft SAB report: Yes.

I do have a few minor suggestions, or caught typos to offer. None are significant.

P. 1. Executive Summary. I suggest that the EEAC insert a paragraph here that states that the committee in general found that the draft Guidelines have been updated well. Specifically, I suggest that the second paragraph of the letter to the administrator, with only minor modifications, could be used. I would make this the second paragraph of the Executive Summary, just before the first charge question and answer. This insertion would “soften” the summary, and help those readers who will only read the summary to better understand the committee’s overall satisfaction with the draft Guidelines.

P. 3. Answer to CQ 4, second line. However is followed by a period. It should be a comma.

P. 4. Answer to CQ 7, first line. I suggest We or We would instead of We’d.

P. 1. Background (incidentally, should the pages above be in roman numerals?). First and second paragraph. In the first paragraph, I recommend striking “and is currently updating these Guidelines to reflect the latest developments in environmental economics.” This is repeated almost verbatim in the first sentence of the second paragraph and appears more appropriate there. Further, I would join these two paragraphs into a single one.

P. 3. First full paragraph, line 8. I believe nation’s is correct, not nations’.

P. 3. First full paragraph, line 9. Insert “in” between emphasized and the?

P. 3. Second full paragraph, line 9. Why is there a dash after project?

4. **Dr. LD McMullen:** I have reviewed the letter and report. I think the committee did an excellent job in answering the charge questions and organizing the report by charge question, making it very easy to follow. I have no technical input to be added/changed to the letter or report.
5. **Dr. Timothy Buckley:** I have taken a look at the letter and report and it is my assessment that the report is responsive to the charge questions, is clear and logical, and the conclusions and/or recommendations are supported. I do have a couple of suggested edits on the letter if you are interested, I will be happy to forward but I know that this review has a much broader purpose.
6. **Dr. Jill Lipoti:**
  - a) the original charge questions to the SAB Panel were adequately addressed in the draft report --  
Yes
  - b) the draft report is clear and logical -- Addressing the cross-cutting issues first, before the charge questions was a good strategy to cut down on repetition. Recommending that case studies be used to illustrate points in the Guidelines and providing suggestions for the cases helped with clarity.
  - c) the conclusions drawn, and/or recommendations made, are supported by information in the

body of the draft SAB report -- Yes.

7. **Dr. Steve Roberts:** I have absolutely no expertise in economics, and consequently cannot comment on technical aspects of the SAB report. However, I found the report to be clearly organized and well written. All of the charge questions were adequately addressed, although the committee may want to take a look at the Executive Summary response to Question 5. This question is answered in the main body of the report, but the abbreviated response in the Executive Summary appears cryptic and unrelated to the question. Conclusions and recommendations appear to be supported by information in the body of the draft SAB report. Overall, the report is very well done.
8. **Dr. Valerie Thomas:**
- a) Are the original charge questions to the SAB Panel were adequately addressed in the draft report? Yes.
- b) Is the draft report is clear and logical; and
- c) are the conclusions drawn, and/or recommendations made, supported by information in the body of the draft SAB report?

The draft report is, in most cases, clear and logical and the conclusions are supported in the body of the report. However, overall the Executive Summary is clearer than the body of the report, and some points are only clarified in the comments from individual members. Some points that could be clarified are as follows:

Question 1. The response to question (1) in the Executive Summary, *on the merits and limitations of the different regulatory and non-regulatory approaches discussed in Chapter 4*, says “We also recommend a better distinction between efficiency and cost-effectiveness, improvements to the discussion of “cap and trade,” a better definition of design standards and technology based performance standards and the inclusion of recent literature on voluntary approaches and the observability of information.”

However, in the full response to question (1) these issues (pp. 5-8), while discussed, are not presented clearly; it seems that no references on the observability of information are cited; if Xabadia et al. is the reference on observability that should be clarified. This section would be improved if one paragraph were devoted to each of the points made in the executive summary.

Question 2. The strong and weak forms of the Porter hypothesis are discussed in the body of the report, on page 9 in response to question (2) on baselines, but no references are provided. Inclusion of the references on the strong and weak Porter hypothesis would make the review more useful. Induced innovation is mentioned in the Letter to the Administrator, but is not mentioned in the Executive Summary. This topic seems important enough to be mentioned in the Executive Summary.

Question 10: The response to question 10 on page 5 in the Executive Summary, regarding the appendix on Economic Theory, recommends distinguishing between stock and flow pollutants and the inclusion of the concept of user costs. In the body of the review, on page 28, these same comments are made but need more explanation or support. The point about stock pollutants does seem to be expanded later, in the response to question 11 and the comments from individual members

(p. 32). Clarification and perhaps cross-referencing of these comments would help to clarify this discussion.

#### 9. **Dr. Judy Meyer:** Meyer comments on EEAC report

I found this report very readable. Identifying the cross-cutting issues at the beginning of the report was an excellent approach.

The original charge questions were adequately addressed.

The report is clear and logical.

The conclusions and recommendations are supported by what is in the report.

My one concern with the report is the fact that nothing is said of the extensive research on ecosystem services being done in ORD. Most of my comments below relate to that.

Letter to Administrator, page 2, second paragraph: In addition to acknowledging the CVPESS report, some acknowledgement should be given to the fact that ORD now has an Ecosystem Services Research Program that will be providing useful information to the agency on these very issues.

Text of report

p. 2, paragraph 2: Here is another place where ecosystem services are mentioned and where some mention of the work being done on this subject in ORD could be acknowledged. It is an area where there currently is significant EPA investment in research; I think that should be acknowledged and the potential usefulness of that research should be recognized.

pp. 16-18, point 6 dealing with ecosystem services. Here is another place where the fact that there is currently considerable ORD research dealing with ecosystem services and their valuation should be recognized. It seems appropriate to suggest that they consult with the Ecosystem Services Research Program as they revise this section. It seems as though they have not used the expertise in this area that is available in the agency!

I'm not sure I have seen an appendix with individual's comments in it in previous reports. What do we expect the recipients of the report to do with that? Are these comments that the group could not or did not bother to agree with? They are more than editorial in many cases, so I wonder if some statement about what they represent is needed as an introduction.

#### 10. **Dr. Kerry Smith**

Issues for discussion –V. Kerry Smith 8-6-2009

1. VPES report and *economic measures of tradeoffs*
2. CGE –costs AND benefits; separability and feedbacks; no examples when they exist in literature –Espinosa and Smith (1995), Carbone and Smith (2008) Smith and Carbone(2007a,2007b) –why in costs and not benefits; also types of CGE work –sorting vs conventional CGE; -sorting work – Timmins and Murdoch (2008), Bayer Keohane and Timmins(2009), Walsh(2007), Banzhaf and Walsh (2008)
3. handbook of environmental economics (2005) has updates to methods seem to be ignored; updates to topic areas spotty –VSL yes; travel cost no as well as hedonic not complete or current

4. connection between research and practice and criteria for updating practice\*
5. quasi experimental work and nonmarket valuation
6. field experiments
7. research program and connecting to it\*
8. recent work by Morgenstern, Heinzerling and Harrington
9. carbon and double counting for criteria air pollutants
10. systematic means to communicate with env economists doing research about challenges facing policy analysts\*

## Attachment E

### Brief Responses to comments on EEAC Advisory on *Guidelines for Preparing Economic Analyses*, Cathy Kling, August 3, 2009

KATHY SEGERSON (lead reviewer)

#### Some Specific Comments:

1. p. 3: I don't know what "ensemble modeling" is. This should be explained.

Once I find out, we'll include it.

2. p. 3: The fact that nonpoint pollution is characterized by unobservable and stochastic emissions means that policy instruments such as an emissions tax cannot be used, but, contrary to what is stated here, it does *not* mean that second-best policies are required. There are first-best policies (based, for example, on ambient water quality) that can, at least in theory, be used to address non-point pollution, and experimental literature suggests that under certain conditions these instruments can lead to first-best outcomes even in the lab. So, this statement needs to be corrected.

Good point. This will be corrected.

3. p. 3: The discussion of the allocation of resources in undertaking economic analysis suggests that the decision regarding how much to invest in collecting new data depends on the size of the project, and that one might want to collect new information "even if they lead to only small changes in the final regulation or policy decision." However, the decision regarding whether a certain expenditure on data collection is "worth it" or not should be based on a "value of information" argument, i.e., whether the net benefit of having the information exceeds the cost of collecting it. It is well-known from the VOI literature that, if the information will not change the regulatory decision, then the benefit of collecting the information is zero, and therefore, if collecting the information is costly, it should not be collected. The language in this paragraph should be changed so that it does not imply that information should be collected even when it will not change decisions much.

This requires a re-write as we clearly didn't get our point across correctly. We were attempting to say that even seemingly small changes in policy can be associated with large benefits and/or costs and so the VOI from undertaking a study could be quite large, even if it results only a small change to a decision. An example might be the level to set a standard. Perhaps an improved benefit-cost analysis would show that a standard should be set 1% tighter which sounds at first blush like the cost of doing the study could hardly be worth it. But, if the 1% tighter standard results in millions of dollars of benefits then the VOI from the study will clearly have been worth it. We can rewrite and pass it by Dr. Segerson.

4. p. 11: I would like to see here a clearer distinction between consumption discounting and utility discounting, with a discussion of the possible implications of this distinction in a specific context like climate change. Something like the debate among economists over the Stern Report could be

used to illustrate/motivate the discussion. To say that the discount rate is “best understood as being determined by a price” both suggests that there is only one discount rate and does not draw a clear distinction between these two types of “discount rates” (as the term is used in policy debates). Furthermore, the report should be clearer about the fact that, unlike the consumption discount rate, the utility discount rate can be viewed as a parameter of the social welfare function, and different people will have different views about what that parameter “should” be (e.g., whether it is ethical to have positive utility discounting, whereby the utility (not consumption) of future generations is given less weight in the social welfare function than the utility of the current generation). The controversy and debate over this issue needs to be acknowledged. It is not simply a question of “estimating” the discount rate, as suggested in the *Guidelines*.

All good points. We will work to incorporate them, this will probably require going back to a couple of committee members to get help on language.

5. p. 11: I don’t understand the sentence that states “Economic evaluation is normative in that it is conducted in order to compare alternative policies, yet it is positive in that it attempts to identify the policy that maximizes the perceived welfare of the affected population.” First, comparing the *impact* of alternative policies on, for example, behavior is a form of positive analysis, not normative analysis. And any analysis that is based on social welfare maximization is normative, not positive. So it seems that the report is not using the terms “positive” and “normative” in the way that they are typically understood.

I agree that the terminology “positive” and “normative” are problematic here. I think the point that we were trying to make relates to problems with time inconsistency and ideas like “soft paternalism.” Again, rewrite is in order.

6. p. 15: For some reason some of the references here are cited by the title of the publication rather than by the author(s), which is inconsistent with the format in the rest of the report and makes it hard to look them up in the reference list. This should be changed.

☹ sorry, we’ll fix this.

7. p. 17: I believe the publication/copyright date on the NRC Report is 2005, not 2004.

We will check and fix.

8. p. 17: In the “strong” recommendation to provide “quantitative measure of ecological impacts and a qualitative characterization of ecological effects”, it is not clear whether the intent is to have EPA do this *when benefits cannot be monetized*, or even when they can be. Of course, some type of quantification of effects is a necessary input into monetization, but it should be clarified how this information relates to other information that would be provided about monetized benefits.

The intent was to suggest that EPA do this whether they monetize benefits or not.

9. p. 21: The report states that “newer stated preference studies...should be referenced” but does not suggest any references. I think it would be helpful to provide at least one or two examples of the newer studies the SAB is suggesting be referenced here.

Fair enough. We will add them.

### **TIMOTHY BUCKLEY**

Dr. Buckley’s editorial suggestions regarding the letter to the Administrator are all welcome improvements and will be incorporated.

### **STEVE ROBERTS**

Dr. Roberts suggests that we revise the Executive Summary question #5 response to make it more directly respond to the charge. We will do so.

### **JIM SANDERS**

Dr. Sanders’s suggests that we add an additional paragraph to the Executive Summary (taken largely from the letter) which we can certainly do. The remainder of his suggestions are useful editorial improvements that we will incorporate.

b) The review of the draft report was clear and logical. I thought the letter to the Administrator was especially well done in presenting the major points in a succinct manner.

c) The conclusions drawn, and the recommendations made were supported by information in the body of the review of the draft SAB report. Good job!

## Attachment F

**Otto Doering, 8/9/2009 10:37 p.m. (Post teleconference suggestions)**

Here are my suggestions for the review as modified by the teleconference discussion;

Executive Summary:

page 1, point 1; You might even strengthen the point about effectively distinguishing cost-effective from other concepts like least cost, efficiency, etc and urge that these all be well defined. In addition, the point can be made that for policy what needs to be emphasized is the trade-offs involved in alternative choices.

page2, point 3.b; I just wonder whether the shadow price of capital is really very useful. If it is for generational transfer periods of time I am not sure it can be calculated as anything other than an extremely rough proxy. Is it worth EPA spending a lot of time on it? This relates somewhat to the public comment on the difficulty of very long term benefit/cost analysis.

Body of the text:

Pages 1 and 2; I would give even more emphasis to the discussion of uncertainty and add the need to be concerned about data quality and validation of models to the point where there is confidence that the results are good enough for the task at hand.

page 7, 3rd paragraph (which links back to page 3, first full paragraph) I think it would help to add here that in looking at second best solutions, what the policy maker also needs is a clear exposition of the trade-offs involved between various choices.

Pages 24 and 26; I think you can expand the discussion on CGE models. Kerry Smith's comments on recent developments are certainly part of this. From my part it is not just that the CGE models are complex, but they are also status quo oriented by design (the average historical elasticities are one factor in this). They are not very good when the economic environment is in flux or when an event beyond the historical experience is simulated. The limitations here are rather severe and not given much explicit treatment.

I leave this up to you to determine which of these comments is worth dealing with for the review.

## **Attachment G**

Web Link for Draft Economic Analysis Guidelines

<http://yosemite.epa.gov/EE/epa/eerm.nsf/vwRepNumLookup/EE-0516?OpenDocument>