

US EPA Science Advisory Board Committee on Valuing the Protection of Ecological Systems and Services (C-VPESS) Public Teleconference March 27, 2008, 1:00 p.m. – 2:00 p.m. (Eastern Time)

Committee: The SAB Committee on Valuing the Protection of Ecological Systems and Services (C-VPESS) (See Roster - Attachment A)

Date and Time: March 27, 2008, 1:00 p.m. – 2:00 p.m. (Eastern Time)

Location: Participation by Telephone Only

Purpose: The purpose of the teleconference is to reach committee consensus on a draft report related to valuing the protection of ecological systems and services. (See Meeting Agenda - Attachment C)

Attendees: Members of the C-VPESS:
Dr. Kathleen Segerson (Vice-Chair)
Dr. Ann Bostrom
Dr. James Boyd
Dr. Terry Daniel
Dr. A. Myrick Freeman
Dr. Dennis Grossman
Dr. Robert Huggett
Dr. Mark Sagoff

Consultant to the C-VPESS:
Dr. Joseph Arvai

EPA SAB Staff
Dr. Angela Nugent [Designated Federal Officer, DFO]

Other Members of the Public (see Attachment D)

Teleconference Summary:

The teleconference generally followed the meeting agenda (see Meeting Agenda - Attachment C) to continue discussion of the March 2008 C-VPESS draft.

The Vice-Chair, Dr. Kathleen Segerson led the call, noted the absence of Dr. Buzz Thompson due to an unavoidable conflict, and thanked members for their participation. She followed the same process used during the call on March 26, 2008. The committee discussed only the written comments that merited committee discussion for chapters 5, 6, and 7. Appendix F to these minutes provides a table summarizing resolution of the issues for 5, 6, and 7. Text below provides additional summary of the discussion of chapter 7.

Members of the committee noted that the tables used in chapter 7 were not reader-friendly and did not help the reader to identify the “take-home messages.” They preferred a narrative format with a logical organizational structure. One member called for an organization that prioritized recommendations. Another member suggested linking findings and recommendations.

Dr. Segerson noted that the final committee activities involve documentation of responses to comments on the March committee draft, final committee approval of the report, development of the letter to the Administrator, development of an executive summary, and development of a lay report.

Dr. Segerson noted that the DFO would circulate a list of the disposition of comments that were received, which would reflect decisions reached on the teleconferences. The committee agreed that chapter 7 would be circulated to the entire committee for approval. Dr. Segerson asked the DFO to send an email to the entire committee asking whether they wished to review chapters 1 through 6 again or whether they were content to rely on other self-identified gatekeepers to ensure that final committee revisions were made faithfully to reflect the discussions during the March 26 and 27, 2008 teleconferences. Committee members participating in the call agreed with this approach

Summary of Action Items

1. The DFO will circulate a list indicating the disposition of comments that were received, which would reflect decisions reached during the teleconferences.
2. The DFO will circulate chapter 7 to the entire committee for approval.
3. The DFO will send an email to the entire committee asking each member whether s/he wished to review chapters 1 through 6 again or instead to rely on other self-identified gatekeepers to ensure that final committee revisions were made faithfully to reflect the discussions during the March 26 and 27, 2008 teleconferences.

Respectfully Submitted:

Certified as True:

_____/s/_____

/_____/s/_____

—
Angela Nugent
Designated Federal Official

Dr. Kathleen Segerson, Vice- Chair
SAB Committee on Valuing the
Protection of Ecological Systems
and Services

List of Attachments

Attachment A: Roster of the SAB C-VPES

Attachment B: Federal Register Notice

Attachment C: Meeting Agenda

Attachment D: Attendees from the Public Who Requested or Were Provided Call-in Information

Attachment E: Response to Comments Received for or Discussed at March 27, 2008 C-VPES Teleconference

**Attachment A:
Roster of the U.S. Environmental Protection Agency
Science Advisory Board
Committee on Valuing the Protection of Ecological Systems and
Services**

CHAIR

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

VICE-CHAIR

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

MEMBERS

Dr. William Louis Ascher, Donald C. McKenna Professor of Government and Economics, Claremont McKenna College, Claremont, CA

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

Dr. Ann Bostrom, Associate Professor, School of Public Policy, Georgia Institute of Technology, Atlanta, GA

Dr. James Boyd, Senior Fellow, Director, Energy & Natural Resources Division, Resources for the Future, Washington, DC

Dr. Robert Costanza, Professor/Director, Gund Institute for Ecological Economics, School of Natural Resources, University of Vermont, Burlington, VT

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

Dr. A. Myrick Freeman, William D. Shipman Professor of Economics Emeritus, Department of Economics, Bowdoin College, Brunswick, ME

Dr. Dennis Grossman, Director, DGO, Vienna, VA

Dr. Geoffrey Heal, Paul Garrett Professor of Public Policy and Business Responsibility, Columbia Business School, Columbia University, New York, NY

Dr. Robert Huggett, Consultant and Professor Emeritus, College of William and Mary,

Williamsburg, VA

Dr. Douglas E. MacLean, Professor, Department of Philosophy, University of North Carolina, Chapel Hill, NC

Dr. Harold Mooney, Paul S. Achilles Professor of Environmental Biology, Department of Biological Sciences, Stanford University, Stanford, CA

Dr. Louis F. Pitelka, Professor, Appalachian Laboratory, University of Maryland Center for Environmental Science, Frostburg, MD

Dr. Stephen Polasky, Fesler-Lampert Professor of Ecological/Environmental Economics, Department of Applied Economics, University of Minnesota, St. Paul, MN

Dr. Paul G. Risser, Chair, University Research Cabinet, University of Oklahoma, Norman, OK

Dr. Holmes Rolston, University Distinguished Professor, Department of Philosophy, Colorado State University, Fort Collins, CO

Dr. Joan Roughgarden, Professor, Biological Sciences and Evolutionary Biology, Stanford University, Stanford, CA

Dr. Mark Sagoff, Senior Research Scholar, Institute for Philosophy and Public Policy, School of Public Affairs, University of Maryland, College Park, MD

Dr. Paul Slovic, Professor, Department of Psychology, Decision Research, Eugene, OR

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

CONSULTANTS TO THE COMMITTEE

Dr. Joseph Arvai, Professor, Environmental Science and Policy Program, and Department of Community, Agriculture, Resource and Recreation Studies (CARRS), Michigan State University, East Lansing, MI

Dr. Allyson Holbrook, Assistant Professor of Public Administration and Psychology, Survey Research Laboratory, University of Illinois at Chicago, Chicago, IL

Dr. Jon Krosnick, Frederic O. Glover Professor in Humanities and Social Sciences, Professor of Communication, Director, Methods of Analysis Program in the Social Sciences, Associate Director, Institute for Research in the Social Sciences, Stanford University, Palo Alto, CA

SCIENCE ADVISORY BOARD STAFF

Dr. Angela Nugent, Designated Federal Officer, 1200 Pennsylvania Avenue, NW
1400F, Washington, DC, Phone: 202-343-9981, Fax: 202-233-0643,
(nugent.angela@epa.gov)

Attachment B: Federal Register Notice

Science Advisory Board Staff Office; Notification of Two Public Teleconferences of the Science Advisory Board Committee on Valuing the Protection of Ecological Systems and Services

PDF Version (2 pp, 83K, About PDF)

[Federal Register: March 4, 2008 (Volume 73, Number 43)]

[Notices]

[Page 11636-11637]

From the Federal Register Online via GPO Access [wais.access.gpo.gov]

[DOCID:fr04mr08-63]

ENVIRONMENTAL PROTECTION AGENCY

[FRL-8537-3]

Science Advisory Board Staff Office; Notification of Two Public Teleconferences of the Science Advisory Board Committee on Valuing the Protection of Ecological Systems and Services

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: The EPA Science Advisory Board (SAB) Staff Office announces two public teleconferences of the SAB Committee on Valuing the Protection of Ecological Systems and Services (C-VPES) to discuss the Committee's draft report related to valuing the protection of ecological systems and services.

DATES: The SAB will conduct two public teleconferences. The public teleconferences will occur on March 26, 2008 and March 27, 2008. The call on March 26, 2008 will begin at 1 p.m. and end at 3 p.m. (eastern daylight time). The call on March 27, 2008 will begin

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at 1 p.m. and end at 2 p.m. (eastern daylight time).

FOR FURTHER INFORMATION CONTACT: Any member of the public wishing to obtain general information concerning the public teleconferences may contact Dr. Angela Nugent, Designated Federal Officer (DFO), via telephone at: (202) 343-9981 or e-mail at: nugent.angela@epa.gov. General information concerning the EPA Science Advisory Board can be found on the EPA 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, consultation, and recommendations to the EPA 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.

Background: Background on the SAB C-VPES and its charge was provided in 68 FR 11082 (March 7, 2003). The purpose of the teleconferences is for the SAB C-VPES to discuss the Committee's draft advisory report calling for expanded and integrated approach for valuing the protection of ecological systems and services. The discussion is related to the Committee's overall charge: to assess Agency needs and the state of the art and science of valuing protection of ecological systems and services and to identify key areas for improving knowledge, methodologies, practice, and research.

Availability of Meeting Materials: Agendas and materials in support of the teleconferences will be placed on the SAB Web Site at: <http://www.epa.gov/sab/> in advance of each teleconference.

Procedures for Providing Public Input: Interested members of the public may submit relevant written or oral information for the SAB to consider during the public teleconferences. Oral Statements: In general, individuals or groups requesting an oral presentation at a public SAB teleconference will be limited to three minutes per speaker, with no more than a total of one-half hour for all speakers. To be placed on the public speaker list, interested parties should contact Dr. Angela Nugent, DFO, in writing (preferably via e-mail) five business days in advance of each teleconference. Written Statements: Written statements should be received in the SAB Staff Office five business days in advance of each teleconference above so that the information may be made available to the SAB for their consideration prior to each teleconference. Written statements should be supplied to the DFO in the following formats: One hard copy with original signature, and one electronic copy via e-mail (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 Dr. Angela Nugent at (202) 343-9981 or nugent.angela@epa.gov. To request accommodation of a disability, please contact Dr. Nugent preferably at least ten days prior to the teleconferences to give EPA as much time as possible to process your request.

Dated: February 27, 2008.
Anthony Maciorowski,
Deputy Director, EPA Science Advisory Board Staff Office.

Attachment C: Meeting Agenda

**EPA Science Advisory Board
Committee on Valuing the Protection of Ecological Systems and Services (C-VPES)
Public Teleconference
March 27, 2008, 1:00 p.m. - 2:00 p.m. (Eastern Time)**

Agenda

Purpose: The purpose of the teleconference is to reach committee consensus on a draft report related to valuing the protection of ecological systems and services.

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| 1:00 – 1:05 | Opening of Teleconference | Dr. Angela Nugent, Designated Federal Officer |
| 1:05 – 1:10 | Review of Agenda | Dr. Kathleen Segerson, Vice-Chair |
| 1:10 – 1:55 | Discussion and Resolution of Committee-identified issues | Committee |
| 1:55– 2:00 | Summary and Next Steps | Dr. Kathleen Segerson |
| 2:00 | Adjourn | |

Attachment D: Attendees from the Public Who Requested Call-in Information

Members of Public Requesting Information about March 2008 Calls

Larry Biles, University of Georgia

Jorge Brenner, Ph.D.
Texas A&M University - Corpus Christi

Robert Brown, North Carolina State University,

Steve Bullard, University of Kentucky

Jim Christman
Hunton & Williams
Richmond, VA

Adam T. Deck
U.S. Army Center for Health Promotion and Preventive Medicine

W. Barry Gillespie, Jr., Ph.D.
Entrix
Houston, Texas

Maria Hegstad
Inside Washington Publications

Brian Kleinman
Office of Management and Budget

Anne W. Rea, Ph.D.
Office of Air Quality Planning and Standards
U.S. EPA;

B. Sachau
Florham Park, NJ

Attachment E: Response to Comments Received for or Discussed at March 27, 2008 C-VPESSTeleconference

Chapter 5

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| 1. | P. 101, lines 24-29: Correct the section numbers. | Freeman | Will do |
| 2. | P102, L13-14-- ... impacts of the relevant Agency decision or action , predicting the effects of these impacts on ecosystem services , and valuing the consequences of these effects. | Daniel | Add commas |
| 3. | Pg. 102, lines 13 & 14. Commas needed after action and after services | Slovic | same as above |
| 4. | p. 104, lines 28 and 29: The sentence is quite redundant with the preceding paragraphs, and can be completely eliminated. The second sentence in the para can be the lead sentence. | Ascher | remove sentence |
| 5. | Pg. 105, lines 16 & 17. No hyphen in covariance | Slovic | Make correction |
| 6. | Pg. 106, line 27-28. I disagree with the statement that expert elicitation should be used when Monte Carlo analysis is not feasible. Expert judgment is notoriously prone to bias and error. What experience would allow an expert to make good judgments in situations so uncertain and complex that Monte Carlo analysis is not feasible? Expert and Monte Carlo methods should be used in tandem, as is indicated at the bottom of page 106. | Slovic | Committee members agreed on 3/27/08 call that report should mention upcoming SAB advisory projects on expert elicitation and uncertainty analysis and soften recommendations about using expert elicitation in this report. C-VPESST report can note that current Agency focus in EE is on human health but that the approach may be useful for ecological valuation. The committee, however, has not focused |

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| | | | on this. |
| 7. | <p>Maybe there should be at least a footnote in chapter 5, section 5.1.4, that gets to the points Bob Huggett and Paul made, regarding the evidence that, depending on the context, explicit uncertainties may be perceived as indicating dishonesty or incompetence (Johnson, 2003; Johnson and Slovic, 1995, 1998) and are sometimes treated in public policy as indicating junk science (e.g., Freudenberg et al, 2008). The note could emphasize that uncertainties are inherent in all science, that good science acknowledges remaining uncertainties, and that those communicating uncertainty should beware of unintended effects and design and test their communications accordingly.</p> <p>References:</p> <p>Johnson, Branden B. (2003). Further Notes on Public Response to Uncertainty in Risks and Science. <i>Risk Analysis</i>, 23(4),781-789.</p> <p>Johnson, Branden B. and Slovic, P. (1995). Presenting uncertainty in health risk assessment: Initial studies of its effects on risk perception and trust. <i>Risk Analysis</i>, 15, 485-494.</p> <p>Johnson, Branden B. and Slovic, P. (1998). Lay views on uncertainty in environmental health risk assessment. <i>Journal of Risk Research</i>, 1, 261-279.</p> <p>Freudenberg, William R., Robert Gramling and Debra J. Davidson (2008). Scientific Certainty Argumentation Methods (SCAMs): Science and the Politics of Doubt. <i>Sociological Inquiry</i>, Vol. 78, No. 1, February 2008, 2-38.</p> | Bostrom | <p>Add footnote and references</p> <p>Emphasize that uncertainty cannot be eliminated from environmental decision making and that admitting uncertainty and representing it scientifically doesn't reflect incompetence.</p> |
| 8. | <p>Pg. 107. A study by Branden Johnson found that, when EPA communicated uncertainty about its risk assessments, the agency was judged more honest but less competent. This poses a challenge to the communication of uncertainty. (Johnson, B. B., & Slovic, P. (1998). Lay views on uncertainty in environmental health risk assessment. <i>Journal of Risk Research</i>, 1(4), 261-279.)</p> | Slovic | <p>see comment from Ann Bostrom above and response</p> |

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| 9. | P107, L1--5.1.4. <u>Communicating uncertainties in ecological valuations</u> | Daniel | Make change |
| 10. | Pg. 108. But if the uncertainties are great, shouldn't the valuation assessments themselves be questioned and given less weight in decisions? Especially if theoretical or model uncertainty is the cause? | Slovic | Addp text that emphasizes that uncertainty information will allow decision maker to make a more informed decision |
| 11. | Page 110 lines 13-16: Not sure these warrant separate lines each. Can you edit lines 12-16 to read: "including: (1) select content that takes into account the reader's prior knowledge; (2) group information in such a way that it facilitates storing that information in memory hierarchically; (3) state ideas concisely; and (4) cite sources appropriately, and keep information up to date." | Bostrom | make change |
| 12. | Pg. 110, line 20. I suggest deleting summative evaluation and substituting "testing messages." The latter is clearer. | Slovic | Make change |
| 13. | p. 110, line 29: Unbold the first word—this bolding is not used for emphasis previously p.111, line 19: same | Ascher | Make change |
| 14. | p. 111, line 26: "making" instead of "makings" | Ascher | Make change |
| 15. | Page 112 line 4 edit "effect" to read "affect" | Bostrom Freeman | Make change |
| 16. | Pg. 112, line 4. Should effect be affect? The sentence is unclear. | Slovic | Make change |
| 17. | Page 112-113 (line 31 on 112 through line 6 on page 113): Edit to read: Among the advantages of interactivity are that it supports: active (rather than passive) audience participation; tailoring information for individual users; assisting the assessment process; and visualizing risks under different scenarios (allowing | Bostrom | Make change |

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| | users to ask ‘what if’ questions). | | |
| 18. | Pg. 114, line 1-13. Those who construct models need to run them to determine what their implications are. Sometimes the implications are surprising and unacceptable to the modeler. For example, Slovic et. al. found that people preferred a convex function (their general model) to express the value of varying numbers of lives lost, yet made choices in violation of this abstract model. They hadn’t realized that the abstract model implied choices that were unacceptable to them. In other words, the modeling needs to be interactive and mixed with examples of the model’s specific implications. (Slovic, P., Fischhoff, B., & Lichtenstein, S. (1982). Response mode, framing, and information-processing effects in risk assessment. In R. Hogarth (Ed.), New directions for methodology of social and behavioral science: No. 11. Question framing and response consistency (pp. 21 36). San Francisco: Jossey-Bass.) | Slovic | Add footnote at end of sentence that summarizes this point. |
| 19. | p. 115, line 12: Sometimes “EPA” is used without the “the”; sometimes it is. This should be consistent. | Ascher | EPA style sheet says use terminology “EPA will” not “The EPA will.” Make all references consistent |
| 20. | When did we decide that Deliberative Processes was a cross-cutting issue? I think that this material goes better in Section 4.2.6. | Freeman | Move section on deliberative processes to the beginning of chapter to communicate that it is relevant at the start and possibly throughout the valuation process. |
| 21. | Page 115 lines 12-22: This paragraph is somewhat opaque. I think it was the “however” that threw me off in the opening sentence. It sounds like the committee is trying to distance itself from stakeholder processes, from the tenor of the paragraph as it now reads Ann Bostrom provided the following text by email on 3/27 As emphasized throughout this report, stakeholder processes that involve some form of interaction between stakeholders and those with relevant scientific | Bostrom | Adapt text provided by Ann |

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| | <p>expertise are an important approach to eliciting informed public input into valuation. Deliberative processes involving stakeholders require financial and staff resources to adequately address and incorporate relevant science, as noted in a report on this topic by the SAB (SAB 2001). While stakeholder processes are sometimes used as a decision mechanism per se, they are considered in this report as a way of providing informed input from the public into valuation processes. The 2001 SAB report assesses stakeholder processes involving environmental science, and concludes that they are appropriate as a decision making mechanism per se in only a modest subset of environmental regulatory decisions under select conditions, if at all.</p> | | |
| 22. | <p>P115, L12-22 My concern here is that the paragraph comes off as rather damning of “stakeholder processes.” Note that all of the methods we discuss require relevant science, necessary support, financial resources, time, and staff. Special care is certainly needed, but the real issue here is the role of stakeholder processes as <u>input to the decision making process</u> (usually accepted as proper and desirable, if not mandatory for public agencies) versus using stakeholder processes to actually make the decision (not widely accepted as appropriate—by decision makers or by the public). This distinction is not clear in the current text.</p> | Daniel | See response to 21 |
| 23. | <p>p. 115, line 22: Replace “careful” with “carefully-assessed”</p> | Ascher | Make change |
| 24. | <p>p. 116, line 7: remove colon</p> | Ascher | Make change |
| 25. | <p>Pg. 116, line 23. Add after analysis: Limitations on the valuation exercise due to uncertainties, should also be explained.</p> | Slovic | Make change |
| 26. | <p>Page 117 line 22 – delete “Where feasible” ? or replace with “To the extent feasible”</p> | Bostrom | Replace with “To the extent feasible” |

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| 27. | <p>P118</p> <p>Is there no conclusion or recommendation from the deliberative processes (5.3) part of this section?</p> | Daniel | <p>Provide recommendation: (suggestions)</p> <ul style="list-style-type: none"> • These deliberative processes, if done in a careful way, recognizing the need for resources, can provide useful input for valuation by identifying what people care about • Deliberative processes can be especially useful for providing input for valuation in situations where public may not be fully informed about ecosystem services. Such processes involving science, agency, stakeholders can be helpful for getting an idea of what an informed public might value. |
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Chapter 6

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| 1. | Refer to web accessible materials (Method information, survey methods) at start of chapter | Daniel | Make change |
| 2. | p. 120, line 12: close parenthesis at the end | Ascher | Make change |
| 3. | p. 120, line 12: close parenthesis at the end | Ascher | Make change |
| 4. | p. 121, line 19: Change “current” to “currently proposed” | Ascher | Make change |

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| 5. | p. 127, line 8: random utility models have been neither defined nor described. | Ascher | Define random utility models |
| 6. | Page 127 – some references still missing on line line 11 | Bostrom | Add citations for RUMs |
| 7. | p. 127, lines 25 and 27: Sometimes “meta-analysis” is as one word; sometimes as “meta analysis”. This should be consistent. | Ascher | Use “meta-analysis” consistently |
| 8. | Page 129 – reference missing on line 13 | Bostrom | Update reference USDA Forest Service Timber Assessment Market Model (EPA, 1999, p. 92-93) |
| 9. | Page 130 line 26 still says “CHECK”. | Bostrom | Bob Huggett checked and OK’d |
| 10. | p. 130, line 29: Add comma after “estimates” | Ascher | Make change |
| 11. | P133—Where did we get figure 4? If members of the committee created it, that should be made clear (and they should be applauded). If not, we need to cite the source. | Daniel | Diagram came from Hal Mooney as part of work on source example. Re-title: General Overview of the Impact of CAFOs at Multiple Scales as Conceptualized by the C-VPES Develop footnote noting that the table was prepared by C-VPES members |
| 12. | p. 133: Figure 4 doesn’t include ecosystem services | Freeman | Change text introducing Figure 4. Mention that identifying impacts doesn’t go far enough for a conceptual model and that ecosystem services should be identified. |

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| 13. | P136, L2-4--Nonetheless, explicit identification of benefits in categories 2 and 4 can help ensure that non-monetized benefits receive sufficient attention in benefit assessments. {Category 3 seems useful only to call out the need for additional ecological information. Perhaps the categories should be reordered, swapping places for 3 and 4.} | Daniel | Make it clearer that the categories in the report link to the OMB Circular categories. Look for opportunities to emphasize that category 4 is important |
| 14. | P138, L21-24--If the change relates to a service that is not important to people, the value of that change (i.e. , e.g., the willingness to pay for it) would be low regardless of the number of people living in the vicinity. {We have agreed elsewhere in the report that w-t-p is a measure of “benefit” rather than “value.” This sentence does raise an interesting question—if an important (negative) ecological change were threatened in an area inhabited by poor people who showed low or no w-t-p to avoid it, would there be any benefit to preventing the change?} | Daniel | Make indicated change |
| 15. | p. 139, lines 28-29. Because relegating the non-economic methods to a separate section would marginalize them, the sentence should end after “the methods used.” | Ascher | Make change |
| 16. | P140, L8-11--By also including key quantified but non-monetized impacts that are measured in biophysical units or in terms of expressed social importance or attitudes, along with indicators of economic benefits and a detailed description of the non-quantifiable impacts, the Agency can provide a more accurate and complete indication of total benefits as called for by Circular A-4. | Daniel | Make change, consistent with language on p. 138, lines 5-19 |
| 17. | P140, L31--... investments in research in at least three areas: ... | Daniel | Make change |
| 18. | p. 141, line 12: “making” instead of “makings” | Ascher | Make change |
| 19. | P.143, L10-11 Circled and marginal note “unlikely to work” | Smith | Drop sentence |

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| 20. | P. 145, line 7: To avoid the impression that this sentence deals only with local rather than state, county, or other sub-national levels, change “local” to sub-national” | Ascher | Make change |
| 21. | p. 145 Correct section numbers cited in text | Freeman | Will do |
| 22. | p. 149, lines 21-23: delete colon; change semicolons to commas. | Ascher | Will do |
| 23. | Page 149 line 27 change “illustrate” to “exemplify” | Bostrom | Retain illustrate |
| 24. | Page 151 DELETE lines 9-26: Because lines 9-26 are all speculation at this point (none of this came out from our discussions with Chicago Wilderness, to the best of my recollection; the section includes no references) I suggest omitting these two paragraphs. They detract from the lessons to be learned from the Chicago Wilderness. The strongest impression I received from our work on the Chicago Wilderness is that it is a model of the good things partnerships can accomplish. The partnership was heading toward valuation processes at a steady pace, and building up to them through science-based deliberations (just as the SAB 2001 report would endorse, I imagine). Some of the points about the partnership strengths demonstrated by Chicago Wilderness made in previous drafts (e.g., in the Sep 24 draft on page 172, lines 28-31) seem to be missing from this version, which is perhaps what makes this section stand out more than it did in the previous version (?). | Bostrom | Drop text |
| 25. | On page 152, line 14: Add "million". | Huggett | Make change |
| 26. | P 153, line 18: “processes” rather than “processe” | Ascher | Not needed. see response to Bostrom comment |
| 27. | P. 153 Correct section numbers cited in text | Freeman | Will do |
| 28. | Page 153 line 16-19. Rewrite as “For illustrative purposes, suppose Chicago wilderness wished to characterize impacts on these ecosystem services in McHenry County based on three ecosystem services: minimizing flooding; | Bostrom | Change to “For illustrative purposes, suppose Chicago wilderness wished to characterize impacts in McHenry |

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| | <p>maintaining or increasing groundwater recharge; and maintaining or increasing wetland communities.”</p> <p>I don’t see why this section should refer back to deliberative processes in 6.1.3. While the points made here are important, Chicago Wilderness has employed deliberative processes of the sort that could be used as a model for prioritizing ecosystem services, and included such concerns (e.g., the role of wetlands in improving water quality in adjacent open waters” in its Biodiversity Recovery plan (see page 150 line 28-31).</p> | | <p>County on three ecosystem services:...”</p> |
| 29. | <p>Page 154 lines 18-21, edit to read: “Because it is a well developed partnership, as it moves forward to address valuation, Chicago Wilderness is in a position to demonstrate how open communications and dedication to participative processes can ensure that the results of such analyses reflect the values of the community, informed by the appropriate scientific expertise.”</p> | Bostrom | <p>Change text to “As a well-developed partnership, dedicated to participatory processes, Chicago Wilderness is well positioned to ensure that the results of such analysis reflect the values of the community, informed by appropriate scientific expertise.”</p> |
| 30. | <p>Page 154 line 32 – sounds like this section (6.2.2.4) used to be in front of the discussion in the previous section regarding what valuation could do for McHenry County. Wasn’t the McHenry county discussion all in a box previously? The section might flow better if it was still in a box, rather than in line in the text.</p> | Bostrom | <p>Look for ways to improve flow in text</p> |
| 31. | <p>p. 157, line 28, the reference should be to Ridker and <u>Henning</u>.</p> | Freeman | <p>Correct reference</p> |
| 32. | <p>Page 159 line 22 – missing citations –</p> | Bostrom | <p>Incorporate citations provided by Ann - (e.g. Sunstein et al, 2002; and maybe Sen, 1977) Sen, Amartya K. (1977). Rational</p> |

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| | | | <p>Fools: A Critique of the Behavioral Foundations of Economic Theory. <i>Philosophy and Public Affairs</i>, 6(4), (Summer, 1977), pp. 317-344.</p> <p>Sunstein, Cass R.; Daniel Kahneman; David Schkade; Ilana Ritov (2002). Predictably Incoherent Judgments <i>Stanford Law Review</i>, Vol. 54, No. 6., pp. 1153-1215.</p> |
| 33. | p. 160 L. 1-8 Don't agree. No consistent link | Smith | Will follow-up to clarify concern; possible language to include: "could be expected to defer considerably" |
| 34. | p. 164, lines 3 & 4: commas instead of semicolons. p. 166, line 17: "its" instead of "their" | Ascher | *- |
| 35. | p. 171, line 13: "characterization" rather than "characterizations" | Ascher | Make change |
| 36. | P. 176, lines 43-44 and the next page: Most of these are NOT ecosystem services as we have defined the term. | Freeman | Revise text |
| 37. | p. 182 line 4, citations for population level effects | ? | <p>Nacci, D. E., and A. A. Hoffman. 2006. Genetic variation in population-level ecological risk assessment. in L. W. Barnthouse, W. R. Munns, Jr., and M. T. Sorensen, editors. <i>Population-level ecological risk assessment</i>. SETAC, Pensacola, Florida, USA, in press.</p> <p>Nacci, D. E., T. R. Gleason, R.</p> |

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| | | | <p>Gutjahr-Gobell, M. Huber, and W. R. Munns, Jr. 2002. Effects of chronic stress on wildlife populations: a modeling approach and case study. Pages 247-272 in M. C. Newman, M. H. Roberts, Jr., and R. C. Hale, editors. Coastal and estuarine risk assessment: risk on the edge. CRC/Lewis, New York, New York, USA.</p> <p>Nacci, D. E., M. Pelletier, J. Lake, R. Bennett, R. Haebler, J. Grear, A. Kuhn, M. Nicholson, and W. R. Munns, Jr. 2005. An approach to predict risks to wildlife populations from mercury and other stressors. Ecotoxicology 14:283-293.</p> |
| 38. | p. 186, line 27: “ecosystems” rather than “ecosystem” | Ascher | Make change |
| 39. | p. 190, line 15: “linkthe” should be “link the” | Ascher | Make change |

Chapter 7

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| 1. | <p>Tables 4 and Table 5 in the Summary Chapter capture the most important recommendations that our Committee has to offer EPA on this topic. Having all of these dense conclusions crammed into these tables does not do them justice. It is hard to read them as separate thoughts, and to allow each one to have an individual impact. I think we can keep the structure of the organizing principles</p> | Grossman | Revise text iknto narrative |
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| | behind the tables, but spread out the recommendation into a more digestible full-page format. | | |
| 2. | . We need to start over with Section 7.2 Recommendations. Cut the tables. They don't highlight the really important recommendations and include too many unimportant ones. We should go back to something like the text of the October 2007 draft, but with some changes that I will be glad to help with if there is agreement on this point. | Freeman | Will remove tables. |
| 3. | One of the Committee's recommendations in Section 7.2 should be (exact language is negotiable): "Many Agency actions affect not only ecosystems and ecological services but also other things that contribute to human well-being, for example human health, and on the cost side, incomes and the prices of goods and services. In these cases, valuation methods that focus solely on ecological effects will necessarily provide an incomplete picture of the consequences of the Agency's actions. The Agency should use valuation methods that capture information on the widest possible range of effects of Agency's actions. | Freeman | Will insert language to this effect in Chapter 7, and also insert in Chapter 4 (should also be emphasized by using similar language at p. 58, line 9), and section 2.1.4 |
| 4. | p. 190, line 20: "There is" rather than "There are" | Ascher | Make change |
| 5. | Pg. 190, line 21. Again, consider the word experiment. Is it clear what that means? Is it the right word? See my earlier comments. | Slovic | See comments on chapter 2 |
| 6. | P. 190, lines 19-29, there should be a conclusion. "Therefore, it is important to recognize that different methods measure different things and might not be additive or comparable. | Freeman | Will make change |
| 7. | In Section 7.1 Findings, add the following at p. 190, line 18 (exact language is negotiable): "At this time, the Agency's capability to do this is limited. This is a major barrier to carrying out credible valuations of actions to protect ecosystems and | Freeman | Add language to chapter 3 and 7: Will emphasize that EPA's capability is limited. EPA should focus effort and resources to develop its capacity in this area. |

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| | ecosystem services." | | |
| 8. | <p>. In Section 7.1 Findings, add the following at p. 190, line 29 (exact language is negotiable):</p> <p>"Therefore, it is important to recognize that different methods measure different things and the results are not necessarily additive or comparable."</p> | Freeman | Will make change |
| 9. | Add an additional bullet, multiple methods, metrics, hazards of aggregating in simple minded way. page 190. Even dollars can't be added up unless you know where they come from. (teleconference comment) | Daniel | Create extra bullet ensure it tracks with distinct conclusion in chapter 1 |
| 10. | Pg. 191, lines 1 & 2. What if there is not "some uncertainty" but "great uncertainty"? "How uncertain is uncertain enough" to prohibit spending time and energy on producing a non-defensible and potentially misleading analysis. | Slovic | Based on teleconference discussion, insert language in Chapter 5 and 7. Valuations should characterize uncertainties fully and provide decision makers with information needed to evaluate how they should be used. |
| 11. | Page 191 lines 3-5 edit slightly to read: The success of ecological valuations depends on how EPA obtains and uses information about public concerns in the valuation process, and how it communicates the resulting ecological valuation information to decision makers and the public. | Bostrom | Make changes; make sure language in chapter 5 is consistent |
| 12. | P. 191, line 6 says: "The expanded approach to valuation proposed in this report can and should be applied to national rule making." I can agree with this ONLY if it is limited to referring to the Expanded and Integrated Approach of Figure 1. I don't agree that the different _methods_ should be applied And by the way, this is a recommendation more than a finding. | Freeman | Revise text in chapter 6 and 7 |
| 13. | Page 193 Table 4 column 3, last point, edit to read [or something like this]: "..but should ensure that a summary of uncertainty is given as much prominence as the | Bostrom | Make change; make sure language in chapter 5 is consistent |

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| | valuation estimate itself, with careful attention to how recipients are likely to understand the uncertainties. “ | | |
| 14. | Regarding recommendations having to do with uncertainty, the comment I made with regard to the table on page 193 Table 4 column 3 last point applies to the recommendations both at the end of chapter 5 and in chapter 7. The addition of "with careful attention to how recipients are likely to understand the uncertainties" was inspired by research findings by Johnson and Slovic. | Bostrom | Make change |
| 15. | Page 193 Table 4 last column 4 th point (as suggested above) edit to read: “To the extent feasible..” or “As feasible...” | Bostrom | Make change |
| 16. | P195 , column 4, row 2 : EPA should experiment with a range of valuation methods because site specific decision contexts do not prescribe use of economic methods | Daniel | Make change |
| 17. | Page 195 Table 4 4 th column last row: should “regional” be “local” ? | Bostrom | Make change |
| 18. | Page 195 Table 4 last column 2 nd point: Do we want to say follow best practices as discussed in the report? Or refer to the Chicago Wilderness as an example? This last sentence in the 2 nd point makes almost it sound like there aren’t any effective stakeholder involvement practices at regional scales now. | Bostrom | Change language to say “ follow best practices as discussed in the report” |
| 19. | it would be helpful if we could more clearly prioritize the recommendations that require new resources, or the reallocation of current resources, to help the agency make the difficult tradeoffs that are implied. | Daniel | |
| 20. | Suggested recommendation. That EPA commission the National Academy of Sciences to review our report and give guidance to EPA on these complex issues of valuation. The NAS should also comment on OMB Circular A4 as a guide to valuation much as they commented on the OMB Risk Assessment Bulletin (National Research Council, 2007). | Slovic | Committee did not support this recommendation |

Appendix and Web materials

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| 1. | Move Appendix A to Web | Ascher Daniel | Make change |
| 2. | Create new appendix describing web-available materials | Daniel | Make change |
| 3. | The first page (index) for the unattached appendices should repeat (perhaps even be a copy of) the overview and individual section descriptions, along with providing separate links to each of the separate presentations. | Daniel | Make change |
| 4. | Survey appendix P201, L16-30 An important issue not clearly noted here is that the title of the survey, that named source/investigators, introductions and other “context” information should not bias who decides to participate in the survey, or how participants interpret and answer the questions posed. For example, the same set of questions might attract a different set of participants and a different set of answers when introduced as “the EPA wants to know” versus “the American Petroleum Institute wants to know.” | Daniel | Obtain and insert language |

References

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| 1. | I immediately noticed that the reference citations to me have some errors (p 244, lines 20-30). They should read: 1995, Roughgarden, J., Can economics protect biodiversity? Pp. 149-156 in: T. Swanson, Ed., The economics and ecology of biodiversity decline. Cambridge University Press. | Roughgarden | Correct and add references |
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| <p>1995, Brown, G. and J. Roughgarden, An ecological economy: notes on harvest and growth. In Perrings, C., K.G. Maler, C. Folke, C.S. Holling and B.O. Jansson (Eds.), Biodiversity Loss: Ecological and Economic Issues, Cambridge, Cambridge University Press, pp. 150-189. (Reprinted in: J. Barkley Rosser, Jr., 2004. Complexity in Economics, Volume III. The International Library of Critical Writings in Economics 174. Edward Elgar, Cheltenham, UK, pp. 383-423.)</p> <p>1996, Roughgarden, J. and F. Smith, Why fisheries collapse and what to do about it. Proc. Nat. Acad. Sci., (USA), 93:5078-5083</p> <p>1997, Brown, G. and J. Roughgarden, A metapopulation model with private property and a common pool. Ecological Economics, 22:65-71.</p> <p>1998, Roughgarden, J., Primer of Ecological Theory. Prentice Hall, Upper Saddle River, New Jersey. 450 pp., illustr.</p> <p>1998, Roughgarden, J., Production functions from ecological populations: a survey with emphasis on spatially explicit models. In: Tilman, D. and P. Kareiva, (eds.) Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions, Princeton University Press, pp. 296-317.</p> <p>1998, Roughgarden, J., How to manage fisheries. Ecological Applications, 8(1):S160-S164.</p> <p>2001, Roughgarden, J. and P. Armsworth. Managing ecosystem services. In: Press, M. N. Huntly, and S. Levin, (eds.) Ecology: Achievement and Challenge, Blackwell Science, pp. 337-356.</p> <p>2001, P. Armsworth and J. Roughgarden. An invitation to ecological economics, Trends in Ecology and Evolution 16:229-234.</p> | | |
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| | <p>2001, Roughgarden, J. Guide to diplomatic relations with economists. Bull. Ecol. Soc. America 82:85-88.</p> <p>2003, Armsworth, P. and J. Roughgarden. The economic value of ecological stability. Proc. Nat. Acad. (USA) 100:7147-7151.</p> <p>The reference to these can be added to the appropriate places in the main body of the text too where the existing references are mentioned</p> | | |
| 2. | Correct Slovic references attributed to Simon | Bostrom | Correct references |
| 3. | Many of the references are not in the reference list. | Freeman | Check references |