

U.S .Environmental Protection Agency  
Science Advisory Board (SAB)  
Committee on Valuing the Protection of Ecological Systems and Services (C-VPES)  
Summary Meeting Minutes of a Public Teleconference Meeting  
12:30 p.m. - 2:30 p.m. (Eastern Time)  
March 20, 2007

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

Date and Time: March 20, 2007, 12:30 pm - 2:30 pm (Eastern Time) (see Federal Register Notice – Attachment B)

Location: Participation by Telephone Only

Purpose: The purpose of the teleconference is to discuss draft text developed by committee members for a draft report related to valuing the protection of ecological systems and services. (See Meeting Agenda - Attachment C.)

Attendees: Members of the C-VPES:  
Dr. Barton H. (Buzz) Thompson, Jr. (Chair)  
Dr. Kathleen Segerson (Vice-Chair)  
Dr. Ann Bostrom  
Dr. Terry Daniel  
Dr. A. Myrick Freeman  
Dr. Dennis Grossman  
Dr. Robert Huggett  
Dr. Douglas MacLean  
Dr. Harold Mooney  
Dr. Louis Pitelka  
Dr. Stephen Polasky  
Dr. Holmes Rolston  
Dr. Paul Risser  
Dr. Mark Sagoff

Consultants to the C-VPES  
Dr. Joseph Arvai

EPA SAB Staff  
Dr. Angela Nugent (Designated Federal Officer)

Other Members of the public (see Attachment D)

### **Teleconference Summary:**

The teleconference agenda (see Meeting Agenda - Attachment C) was adjusted because there were no written comments submitted to the SAB and no requests for public comment, and because Dr. Robert Costanza was not able to join the call. The committee discussed draft text related to mediated modeling near the end of the call.

The DFO opened the meeting by noting that the proceedings conformed to the requirements of the Federal Advisory Committee Act and that the members of the chartered SAB had met the requirements of the Ethics in Government Act.

Dr. Buzz Thompson thanked members for their continued participation in the series of teleconference calls. He confirmed that the final scheduled face-to-face meeting of the committee would be held on May 1-2, 2007 in Washington D.C. He noted that he had worked with Dr. Segerson and the DFO to identify “next steps” related to topics discussed at the Committee’s previous teleconference calls and asked C-VPES members to contact Dr. Nugent if there were questions about action items. He asked committee members to refer to the March 9<sup>th</sup> draft report in their comments during the remaining teleconferences.

A committee member asked whether the committee was planning any additional teleconferences beyond the last scheduled C-VPES teleconference on April 10<sup>th</sup>. Dr. Nugent noted that some committee members had asked about mechanisms for providing comments on components of the report not listed on the agendas for the six planned C-VPES teleconferences (February 27<sup>th</sup> through April 10<sup>th</sup>). Dr. Thompson responded that he would consult with Dr. Segerson and Dr. Nugent about the best available approach.

Introduction to Methods Addressing Public and Group Expressions of Value (Part 2, Section 4.5, pp. 78-79) and Referenda and Initiatives (Part 3, Section 6.2, pp. 282-292)

Dr. Thompson introduced the topic of “Public and Group Expressions of Values” with a discussion of the “Referenda and Initiatives,” since Dr. William Ascher had not been able to participate in the call. He summarized the substantive written comments received (see Attachment E), remarked that he believed Dr. Ascher would wish to address all of them in revising the text, and committed to follow up with him regarding revisions.

He noted a question relating to the broad issue of public and group expressions of value and asked the committee whether the section should include any mechanisms for obtaining “public and group expressions of value” other than referenda or citizen value juries. He noted that there was no literature assessing the merits of jury awards as a basis for valuation and observed that jury awards present a variety of potential problems. Another member of the committee expressed concern about including in this section an additional topic that was purely exploratory and was not supported by research related to valuation. Dr. Thompson suggested including additional language in the introduction to

Section 5 regarding the ability of various methods to gather revealed or stated valuation information at a public level. He suggested that the language note that, although other types of actions or decisions exist that might provide some insight into valuation at a public level, the committee believes their use would raise concerns at the moment. Dr. Segerson noted an additional related point. She suggested that the text on p. 78 line 20-23 be modified to state that referenda and initiatives are just two examples of ways the public and groups express values but not list any other specific approaches. She suggested that the text identify the general topic of “public and group expressions” as an area for future investigation.

The committee then provided additional oral comment. One member suggested that the section include specific examples where referenda have been used as a basis for valuation information. Dr. Thompson noted that he could provide Dr. Ascher with references on benefits related to Napa Valley. Dr. Polasky noted that he could also provide Dr. Ascher citations on open-space initiatives, where there were several good examples that could illustrate how information on referenda have been used to obtain valuation information. Dr. Thompson asked other committee members to send Dr. Ascher any relevant citations.

Dr. Polasky also provided oral comment that the first sentence in section 4.5 on page 78 (lines 5-7) should drop the words “as consumers.” He noted that while economic methods captured individual preferences, they were not necessarily exclusively restricted to capturing consumer preferences. Economic stated-preference methods can be used to gather responses about provision of a public good that may have an existence value.

#### Citizen Value Juries (Part 3, Section 6.3, pp. 293-301)

Dr. Thompson opened the discussion by summarizing written comments received. He noted that he was reluctant to discuss in this subsection valuation inferences from actual jury awards because they present special analytical problems. Again, he proposed that the introduction to the section discuss such “alternative” methods of obtaining public and group expressions of value briefly. He acknowledged the need to adjust the text in the following ways:

- possibly softening the language relating to the characterization of the 2002 McMillan article.
- providing a more expanded discussion of the potential of using citizen juries to generate non-monetary valuation metrics or expressions. Such discussion would be included in the main body of the text.
- including discussion of potential disadvantages of citizen juries compared with use of referenda and initiatives

The committee then discussed a written comment from Dr. Terry Daniel regarding the advantages and disadvantages of using citizen juries, compared to other information gathering methods that might be more representative of a broader population that was less informed. Some committee members questioned the “importance of getting opinions from uninformed or less informed people” and asked whether EPA did not have

a responsibility to educate people about ecological impacts. A committee member noted that it was easy to discern the differences between stakeholders participating in a stakeholder negotiation and members of the public participating in a citizen jury (in the former, self-interest is the driver; in the latter, citizen juries make a decision on behalf of the public interest), but surveys of uninformed or less-informed individuals are “somewhere in the middle” and hard to assess. Dr. Thompson noted that this issue was broader than the citizen jury method write-up. He stated that he would consult with Dr. Segerson and the DFO about where and how to enhance discussion of these issues and follow up with Dr. Daniel.

Mediated Modeling (Part 3, Section 5.2, pp. 272-280) -

In the absence of Dr. Robert Costanza, Dr. Thompson asked committee members to expand on general comments that they submitted in writing or that they believed were valuable for committee discussion. He also invited additional oral comment.

One member of the committee asked whether Section 5.2 properly belonged under “Deliberative Processes for Eliciting Values” because, as described, the method did not elicit values and instead “imported” valuation information from other sources. He suggested that the section had merit for the report but belonged elsewhere, perhaps in the section on modeling ecological systems. He noted that the section did not add much content on eliciting valuation information from groups beyond information presented in section 5.1, “Valuation by Decision Aiding/Structured Decision Making.” Another member agreed that the write-up did not focus on eliciting valuation information. Yet other members questioned the proposed relocation of the text, since, in their view, mediated modeling seemed to be broader than ecological modeling.

A member also noted that the scope of mediated modeling seemed broader than value elicitation and seemed to go beyond valuation to a “more complete process of decision-making.” Members noted similarities to section 5.1 “Valuation by Decision Aiding/Structured Decision Making” and asked if the mediated modeling discussion might be combined with section 5.1. They also asked if both section 5.1 and 5.2 methods might be combined under some new heading, such as “Interactive Processes for Stakeholder Involvement.” Dr. Segerson suggested that if both methods were being included in the report because their purpose was to elicit values, both write-ups could benefit from additional detail and information about value elicitation. If the methods, instead, were intended for another purpose involving valuation, it would be helpful for that purpose to be more clearly expressed and the report could categorize the methods more appropriately. The DFO noted that the committee also was considering the placement of text on “Ecological Benefit Indicators” and “Focus Groups,” additional methods that involve group processes.

The committee then discussed the use of the term “value” on page 272, line 29. Members asked that the parenthetical expression “(means toward an end)” be dropped because it is not consistent with usage adopted by the committee for the report.

Dr. Thompson concluded the discussion by noting that he would discuss follow-up related to the mediated modeling section with Dr. Segerson and the DFO and communicate a proposed plan to Dr. Costanza.

Introduction to Methods Using Cost as a Proxy for Values (Part 2, Section 4.6, pp. 79-80)

Replacement Costs (Part 3, Section 7.1, p. 302-303)

Tradeable Permit Prices (Part 3, Section 7.2, p. 303-304)

Dr. Polasky summarized substantive comments received on the topic of “cost as a proxy for value.” He noted that the general discussion on pp. 79-80 could be edited so that it would not suggest a general criticism of Habitat Equivalency Analysis (HEA), but instead focus more narrowly on analytical issues associated with cost as a proxy for value. It could discuss a concern about using HEA costs as value, but not categorically criticize HEA.

Concerning the “Replacement Cost” write-up, Dr. Polasky agreed to expand the section because there is much interest in replacement cost approaches, they are widely used, and they are “easy to abuse.” A member suggested that in addition to the specific criteria that need to be met for replacement costs, the section should also discuss the difference between the economist’s understanding of “substitution at the margin” and the ecologist’s understanding of “replacement in nature.” Substitution at the margin is not the same as replacement of function.

Several committee members also suggested that the section include examples. The committee discussed the merits of including the Catskill example and whether the criteria for replacement costs were met. The group decided that the example was so prominent that it was appropriate to mention it explicitly to discuss the merits of using replacement costs and the challenge of meeting the criteria. References to more detailed discussion of the example could be inserted in a footnote.

Dr. Polasky noted that the Replacement Cost section could be expanded and will illustrate that replacement cost approaches are different from inferring value from a marketable permit.

#### Conclusion of Teleconference

Dr. Thompson thanked members for their participation and committed to identifying action items with the goal of revising text discussed during the teleconference before the May 1-2 meeting. A member also noted that EPA’s Office of Research and Development was sponsoring a “Valuation of Ecological Benefits Progress Review Meeting” on April 23 - 24, 2007. The DFO volunteered to circulate an announcement about the workshop to committee members

The teleconference was adjourned at 2:15 p.m.

Respectfully Submitted:

Certified as True:

/s/

/s/

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Angela Nugent  
Designated Federal Official

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Dr. Barton H. (Buzz) Thompson, Jr.  
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: Comments from Members and Consultants of the SAB Committee on Valuing the Protection of Ecological Systems and Services (C-VPES) on the 3/09/07 draft report for discussion at the 3/20/07 C-VPES public teleconference call

**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**, Principal Associate - Biodiversity Protection and Conservation Planning, Environmental and Natural Resources Department, Abt Associates Inc., Bethesda, MD

**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 Six Public Teleconferences of the Science Advisory Board Committee on Valuing the Protection of Ecological Systems and Services**

[Federal Register: December 28, 2006 (Volume 71, Number 249)]  
[Notices]  
[Page 78202-78203]

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ENVIRONMENTAL PROTECTION AGENCY  
[FRL-8262-8]

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

AGENCY: Environmental Protection Agency (EPA).  
ACTION: Notice.

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

DATES: The SAB will conduct six public teleconferences on February 5, 2007, February 13, 2007, February 27, 2007, March 6, 2007, March 20, 2007, and March 27, 2007. Each teleconference will begin at 12:30 p.m. and end at 2:30 p.m. (eastern standard time).

LOCATION: Telephone conference call only.

FOR FURTHER INFORMATION CONTACT: Any member of the public wishing to obtain general information concerning this public teleconference may contact Dr. Angela Nugent, Designated Federal Officer (DFO), via telephone at: (202) 343-9981 or e-mail at: [nugent.angela@epa.gov](mailto: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-VPSS and its charge was provided in 68 Fed. Reg. 11082 (March 7, 2003). The purpose of the teleconference is for the SAB C-VPSS to discuss components of a draft advisory report calling for expanded and integrated approach for valuing the protection of ecological systems and services. The Committee will discuss draft assessments of methods for ecological valuation and application of those methods for valuing the protection of ecological systems and services.

These activities are 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 teleconference and/or meeting.

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) 5 business days in advance of each teleconference.

Written Statements: Written statements should be received in the SAB Staff Office 5 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](mailto:nugent.angela@epa.gov). To request accommodation of a disability, please contact Dr. Nugent preferably at least ten days prior to the teleconference, to give EPA as much time as possible to process your request.

Dated: December 22, 2006.  
Anthony Maciorowski,  
Associate Director for Science, 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 20, 2007, 12:30 p.m. - 2:30 p.m. Eastern Time**

**Purpose:** The purpose of the teleconference is to discuss draft text developed by committee members for a draft report related to valuing the protection of ecological systems and services.

12:30 – 12:35	Opening of Teleconference	Dr. Angela Nugent, Designated Federal Officer
12:35 – 12:40	Review of Agenda	Dr. Buzz Thompson, Chair Dr. Kathleen Segerson, Vice-Chair
12:40 – 12:50	Public Comments	TBA
12:50 – 1:15	Introduction to Methods Addressing Deliberative Processes that Involve Values (Part 2, Section 4.4; pp. 76-78) and Mediated Modeling (Part 3, Section 5.2, pp. 272-280) - Summary of written comments and response - Committee Discussion - Next Steps	Dr. Robert Costanza  Committee Dr. Buzz Thompson
1:15 – 1:40	Introduction to Methods Addressing Public and Group Expressions of Value (Part 2, Section 4.5, pp. 78-79) and Referenda and Initiatives (Part 3, Section 6.2, pp. 282-292) Summary of written comments and response - Committee Discussion - Next Steps	Dr. Buzz Thompson and Stephen Polasky  Committee Dr. Buzz Thompson
1:40 – 2:05	Citizen Value Juries (Part 3, Section 6.3, pp. 293-301) Summary of written comments and response - Committee Discussion - Next Steps	Dr. Buzz Thompson  Committee Dr. Buzz Thompson
2:05 – 2:25	Introduction to Methods Using Cost as a Proxy for Values (Part 2, Section 4.6, pp. 79-80) Replacement Costs (Part 3, Section 7.1, p. 302-303) Tradeable Permit Prices (Part 3, Section 7.2, p. 303-304) - Summary of written comments and response - Committee Discussion - Next Steps	Dr. Stephen Polasky  Committee Dr. Buzz Thompson
2:25 – 2:30	Summary and Next Steps	Dr. Buzz Thompson

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

Mary Jane Calvey

Pat Casano

Nancy Beck

Jim Christman

Patrick Frey

Pieter Booth

Paul Hendley

Traci Iott

Darrell Osterhoudt

Jean Public

Matt Shipman

Wayne Munns

**Attachment E: Compilation of Comments from Members and Consultants  
of the C-VPESS**

Comments from Members and Consultants of the SAB Committee on Valuing the Protection of Ecological Systems and Services (C-VPESS) on the 3/09/07 draft report for discussion at the 3/20/07 C-VPESS public teleconference call  
Comments received as of 7:00 a.m. 3/20/07

**Comments Received**

<b>A. Comments on Introduction to Methods Addressing Deliberative Processes that Involve Values (Part 2, Section 4.4; pp. 76-78)</b> .....	15
Comments from Bill Ascher .....	15
Comments from Ann Bostrom.....	15
Comments from Rick Freeman.....	16
<b>B. Comments on Valuation by Decision Aiding/Structured Decision Making (Part 3, Section 5.1, pp. 262-271)</b> .....	16
Comments from Bill Ascher .....	16
<b>C. Comments on Mediated Modeling (Part 3, Section 5.2, pp. 272-280)</b> .....	16
Comments from Bill Ascher .....	16
Comments from Ann Bostrom.....	17
Comments from Terry Daniel.....	17
Comments from Rick Freeman.....	18
Comments from Lou Pitelka.....	19
<b>D. Comments on Introduction to Methods Addressing Public and Group Expressions of Value (Part 2, Section 4.5, pp. 78-79) and Introduction to Part 3 Section 6</b> .....	19
Comments from Bill Ascher .....	19
Comments from Lou Pitelka.....	19
<b>E. Comments on Referenda and Initiatives (Part 3, Section 6.2, pp. 282-292)</b> .....	19
Comments from Ann Bostrom.....	19
Comments from Bill Ascher .....	20
Comments from Terry Daniel.....	20
Comments from Rick Freeman.....	20
Comments from Lou Pitelka.....	21
<b>F. Citizen Value Juries (Part 3, Section 6.3, pp. 293-301)-</b> .....	21
Comments from Bill Ascher .....	22
Comments from Ann Bostrom.....	22
Comments from Terry Daniel.....	22
Comments from Lou Pitelka.....	23
<b>G.. Introduction to Methods Using Cost as a Proxy for Values (Part 2, Section 4.6, pp. 79-80), Replacement Costs (Part 3, Section 7.1, p. 302-303), Tradeable Permit Prices (Part 3, Section 7.2, p. 303-304)</b> .....	23
Comments from Bill Ascher .....	23
Comments from Rick Freeman.....	23

**A. Comments on Introduction to Methods Addressing Deliberative Processes that Involve Values (Part 2, Section 4.4; pp. 76-78)**

Comments from Bill Ascher

**Part 2, Section 4.4**

Much of this is word-for-word with the section 6.1 beginning on p. 270

P. 77 line 14 “The final output is either the selection or identification of a preferred management option (if the context is decision making) or a judgment about the current state of the system relative to a previous state (if the context is evaluative).” The second half of this sentence seems too narrow. It seems to exclude the straightforward valuation question of a current or future ecosystem component. It is taken from just one of the steps needed for elicitation of values (p. 253); it is not the “final output.”

p. 77 line 29 “Most importantly, the model and the results derived from it have stakeholder buy-in and reflect group consensus” It may be the intention to promote buy-in and consensus, but it is overly optimistic to presume that buy-in and consensus will inevitably result. Sometimes they do not.

Comments from Ann Bostrom

Page 77 line 5 – “that values are given and that ..” consider defining “given” ? or adding a clarifying statement (context-independent?)

Page 77 lines 8-12: edit as follows: In either case, decision aiding can help at any step of a decision process, including problem structuring (e.g., Beers et al, 2006; Shaw et al, 2003), specification of values and objectives (Keeney, 1992), and the creation, evaluation and selection of attributes and alternatives (e.g., Gregory and Keeney, 1994; Keeney & Gregory 2005).

Page 77 last sentence and top of page 78: Can this be clarified? In what sense must values be “explicitly incorporated into the model” in order to support the exploration of tradeoffs. Maybe ‘the model must be value-focused in order to support analysis of tradeoffs’ – or something like that?

References:

Beers PJ, Boshuizen HPA, Kirschner PA, & Guselaers, WH. Common ground, complex problems and decision making. *Group Decision and Negotiation*, 15 (6): 529-556 NOV 2006

Gregory R, Keeney RI. Creating Policy Alternatives Using Stakeholder Values *Management Science* 40 (8): 1035-1048 Aug 1994

Keeney, RL. Value-Focused Thinking. Harvard University Press, Cambridge Mass, 1992.

Keeney RL, Gregory RS. Selecting attributes to measure the achievement of objectives  
Operations Research 53 (1): 1-11 JAN-FEB 2005.

Shaw D, Ackermann F, Eden C, Approaches to sharing knowledge in group problem  
structuring. Journal of the Operational Research Society, 54 (9): 936-948 SEP 2003

Comments from Rick Freeman

p. 77, lines 3-6: the same premise is also in contrast to the social-psychological methods.

p. 77, lines 20-21: What is the reference, Gregory and Wellman? Or the other Gregory at al.  
2001 listed on p. 379?

p. 77, lines 30-31 and the next page. I share KS's concern. See my remarks on mediated  
modeling below. Valuation is distinct from reaching consensus on the model.

p. 79, lines 7-10: Cite Ashenfelter and Greenstone here, too?

**B. Comments on Valuation by Decision Aiding/Structured Decision Making (Part 3,  
Section 5.1, pp. 262-271)**

Comments from Bill Ascher

**Part 3, Section 5.1 (Intro)**

p. 259, line 5: "There may be significant institutional barriers to the full adoption at EPA of  
this method (the method is "overly" transparent and frequently highlights objectives and/or  
alternatives that may not be favored by managers)." This is gratuitously provocative and  
insulting to EPA managers, in that it implies that they would wish to suppress valid  
information about values and preferences.

**C. Comments on Mediated Modeling (Part 3, Section 5.2, pp. 272-280)**

Comments from Bill Ascher

**Part 3, Section 5.2**

p. 261. The initial section on "brief description of method" has a lot on the rationales of the  
method and requirements—out of place in the section describing the method.

p. 261, line 29. "value (means toward an end)" is confusing. Is this defining value as means  
toward an end?

p. 262, line 10. The statement that “Participants in the mediated modeling process gain deep understanding of the process and products” needs to be caveated that this occurs “if the process is done well.” Sometimes mediated modeling falls prey to the black box problem.

p. 262, lines 15-23. Repetition of the lines above.

p. 263. more detail than is necessary (or typical of the rest of the report) about the case.

p. 263. line 25. What are “open space techniques?”

p. 266. line 3: repetition of prior paragraph.

#### Comments from Ann Bostrom

Pages 272-280:

Page 272 line 29 – clarify by comparison with how the term value is used elsewhere in the report?

Page 272 – lines 15-23 duplicate the previous lines.

Consensus processes may not be optimal compared to majority rules or other processes (e.g., starting with a Delphi process) in terms of bringing to light important variability, uncertainties, or disagreements in beliefs. Consider referencing related group decision research? Add some discussion of this to the section on treatment of uncertainty (p 277 lines 8-12)?

Also, the related question of who (which stakeholders and how many) should be invited to participate in mediated modeling, or, analogously, what criteria should be used to select participants (and how many) needs to be addressed explicitly. Perhaps a reference could be made here to relevant discussion of that issue elsewhere in the report?

Page 277 lines 3-7 duplicate the previous paragraph

#### Comments from Terry Daniel

Mediated modeling

Following are all repeated segments.

P 262

15 The method is inherently dynamic – that is

16 what it does best

17 • The results can be aggregated to get a single benefits number as needed.

18 • Participants in the mediated modeling process gain deep understanding of the process

19 and products. Those who have not participated can easily view and understand the

20 results if they invest the effort. Usually the results can (with some additional effort)

21 be made accessible to a broad audience.

22 • Since the method explicitly discusses and incorporates subjective or “framing” issues,

23 it is at least open and transparent to users.

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3 The most serious obstacle seems to be the fact that this method is very different from  
4 the top-down approach most frequently used in government. It requires that consensus  
5 building be put at the center of the process, which can be very scary for institutions  
6 accustomed to controlling the outcome of decision processes. The final outcome of this  
7 process cannot be predetermined.

#### Comments from Rick Freeman

1. On the plus side, this write up makes a strong case for the value of mediated modeling: (i) to induce interdisciplinary collaboration among scientists developing models of systems being studied; (ii) for using the technique to involve stakeholders in helping to determine what are the important endpoints to concentrate attention on; and (iii) for gaining agreement on a common understanding of how the system works.

2. But, there is very little on valuation here, at least that way we have characterized the problem of valuation in our deliberations.

- If the same participants who discuss the model structure also discuss and reach agreement on the values to be used in assessing alternative strategies, how does this differ from deliberative valuation more generally?

- In the fynbos case (Higgins, et al., 1997), where did the values listed in Table 1 come from? Was there a deliberative process? Was this a form of benefits transfer? The unit value of wildlife harvest might have been simply a market price.

- Valuation is a process that is separate from the modeling of the underlying system. And in the context of the Patuxent River (as I recall it) and fynbos cases, the values appear to have come from outside of the modeling process, not as outputs of this process.

- In the Iron and Steel Industry and Louisiana wetlands cases in Costanza and Ruth (1998), there don't appear to be any values being used at all.

3. Therefore, I propose that this material be recast to emphasize the scientific modeling as described in point #1 above and moved to Part 2, Section 3: "Prediction of Ecological Effects." This is where I think that the real contribution of this material lies. The discussion of valuation here is so cursory that I don't think it adds anything to what is in the materials in the other parts of the section on Deliberative Processes for Valuation.

4. Here are some more specific comments:

A. pp. 272, line 8: I don't understand what is meant by "consensus ... between science and policy." I understand "consensus on the science" underlying a model; and I understand "consensus about policy" - objectives, means, etc. But I think that there is an important distinction between the realms of science and policy.

B. pp. 272, lines 18-19: Similarly, what is the “gulf separating the science and policy communities”? And why do we need to bridge this gulf?

C. pp. 272, line 9: There is no explanation of how the aggregation to get a single benefits number is done by mediated modeling.

D. pp. 274, lines 23, 25: If the terms “atelier approach,” and “open space technique” are retained, I think that they need to be explained.

#### Comments from Lou Pitelka

Part 3, Section 5.2.

1. There are several places where text is repeated, including pg. 273, lines 15-23, and page 277, lines 3-7.
2. A couple of terms need explanation. First, on page 274, line 1, most readers will not know what a plant kingdom is or how many of them there are. Thus, the fact that this is a tiny area yet is recognized as a distinct plant kingdom will be meaningless. So, either leave out this statement or explain better. Also, on page 275, line 10, will readers know what STELLA is?
3. Page 274, lines 12-14 are redundant.

#### **D. Comments on Introduction to Methods Addressing Public and Group Expressions of Value (Part 2, Section 4.5, pp. 78-79) and Introduction to Part 3 Section 6**

#### Comments from Bill Ascher

p. 78 line 20 “Referenda” (the plural) rather than “referendum;” also pluralize “initiatives”.

pp. 78-79 This summary is beautifully written.

p. 79, line 25. “Nevertheless” rather than “nonetheless.” This may seem picky, but “nonetheless” implies equivalent worth, whereas this is not the point; “nevertheless” implies that it happens anyway.

#### Comments from Lou Pitelka

Page 281. This page should be deleted as the material is include in pages 76-78.

#### **E. Comments on Referenda and Initiatives (Part 3, Section 6.2, pp. 282-292)**

#### Comments from Ann Bostrom

Comments on pages 282-292:

General comment: The sensitivity of voting to the formulation/wording of referenda, is discussed little in this section. Add discussion/refs?

P 286 line 19 is incomplete.

P 291 rewrite sentence on lines 13-14 (delete “who” ?).

Page 292 – add a reference for the Resources for the Future efforts?

e.g.

H. Spencer Banzhaf, Wallace E. Oates, James N. Sanchirico, R. David Simpson, Randy Walsh “Voting for Conservation: What is the American Electorate Revealing?” Resources, Winter 2006 (160), Resources for the Future, Washington DC. <http://www.rff.org/rff/Documents/RFF-Resources-160-votingconservation-REV1.pdf>

Page 292 line 11 – change comma to period? Or complete the sentence?

Delete line 7 on page 293.

#### Comments from Bill Ascher

p. 276, line 25. “stated” rather than “sated”

p. 276, line 30. “county” rather than “country”

#### Comments from Terry Daniel

### **Referenda and initiatives**

This section is clearly and convincingly written. The emphasis on public-regardedness/civic values is very appropriate to the multiple method approach to value assessment advocated by C-VPASS. However, there may be a bit more emphasis than merited on getting the method to yield defensible monetary values (e.g., medians, means, and the issues of close versus strongly decided cases). It seems paradoxical, for example, that referenda decided by very large margins should be problematic viz. determining the value to the represented society of the issue/action addressed. Such cases would seem to provide rather strong input to public policy and decision making regarding publicly held values.

The noted cross validations between individual-based w-t-p measures and social w-t-p derived from referenda should be expanded to include cross comparisons with survey and other individual and group assessment methods, with or without dollar measures. With regard to surveys that accompany or follow referenda, the emphasis on validating dollar value estimates should be extended more evenly to include measures of what people thought that they had voted for (beliefs and assumptions) and their motives for voting the way they did (e.g., to send political rather than economic signals to policy makers).

The section seems to end in mid sentence.

#### Comments from Rick Freeman

1. pp. 282, line 1: As long as the method is described as applying to referenda, I am reasonably comfortable with it. But this section starts out including “other formal public decisions.” If this term is meant to include legislative bodies including ,e.g., county commissioners, city councils, and so forth, then I get very uncomfortable.

2. One of my first notes while reading this is that to estimate WTP, we have to assume that individuals have some idea of the financial impact of the referendum on them, if passed. I don’t remember ever seeing an estimate of what that impact would be for any of the many bond referenda on the ballots in Maine through the years nor have I every tried to calculate this impact for my household. The point is finally raised in this writeup on p. 290, lines 3-8. I think that it should be brought up a lot earlier. Also, then, we might not spend so much time talking about WTP estimates in the rest of the section.

3. Some specific comments:

A. p. 285, line 6: Is it steps 2 and 4 or steps 3 and 5? (Same question for p. 297, line 17.)

B. p. 286, line 10: what is “intrinsic validity”? Is this using “validity” in the sense of “validity of a measurement”? Perhaps some other term would be clearer.

C. p. 287, line 2: The reference to a decision in Portland (OR? Or ME?) Has no context. What is this about? See a similar reference to efforts at Resources for the Future on p. 292.

D. p. 289, line 27: I can’t find Lowi, 1964 in the reference list.

#### Comments from Lou Pitelka

Part 3, Section 6.2.

1. The word “ecosystems” is written throughout this section as “eco-systems” and needs to be corrected.

2. I am not sure why the material in Text boxes 14, 15, and 16 is in text boxes. In other sections this sort of detail is included in the main text. This is the first time I have seen text boxes.

3. Page 286, lines 16-19. This should be written as a complete sentence, following on the previous paragraph. It ends with a comma suggesting that some material is missing.

4. Page 292, lines 1-3. Something is missing from this sentence. It does not make sense.

**F. Citizen Value Juries (Part 3, Section 6.3, pp. 293-301)**

### Comments from Bill Ascher

This is a particularly well-written, clear section.

p. 287, lines 6-13. It is fair enough to point to the advantages of citizen juries over initiative/referendum results, but then it would be fairer still to point out that citizen juries do not have standing as actual, official decisions by communities.

Would it be worthwhile to say something about drawing valuation inferences from actual jury awards in cases involving environmental damage?

### Comments from Ann Bostrom

Comments on pages 293-301:

P 299 lines 1-5– Macmillian et al (2002) state that “MS estimates were consistently lower than equivalent WTP measures for the interviewed sample: overall, they were 3.5 times lower than the interview estimates.” Further the specific implementation of the market stall approach included a diary process that I don’t think is common in other citizen jury studies. MacMillian et al. do not appear to have carried out any systematic analysis of group effects. Thus this top paragraph on page 299 appears perhaps overly optimistic.

### Comments from Terry Daniel

#### Citizen juries

The apologies for the “stated versus revealed” nature of citizen jury value assessments may be somewhat overstated. Basically all decision making has a “hypothetical character” in that the consequences of any given decision are not fully known (or even well-projected) at the time of the choice/action, nor are all (or more strictly any) of the relevant options and conditions known with certainty. Revealed preferences may be the most appropriate “gold standard” for value assessments, but it is important to recognize that “actual behavior” can rarely be construed as an unconstrained revelation of “truly held” values (one need only consider the known effects of advertising, shelf placement in grocery stores and music and floor coverings in department stores on “actual purchases”).

Similar to the referendum section, there may be too much concern with how citizen juries can be made to yield dollar valuations, whether as aggregates of individual valuations or as expressions of social/civic values. Indeed one area of research that would parallel research at the individual level of decision making/valuation would be comparisons of jury outcomes for equivalent issues when the “verdict” is required to be expressed in dollar versus other value metrics. As noted, one of the most important areas for application of citizen juries (and many other methods covered in this report) is when dollar valuations can not be supported or when monetary valuations are likely to be viewed as ethically inappropriate.

All of the methods reviewed here share worries about how representative the group participants are to the general public. They also share the fact that the process itself essentially assures that however carefully selected the participants will not be representative of the general public at the time of their decision/expression of value. This is at once a strength and a limitation of the group deliberative methods. For determining “informed values” these may be the best methods. However, if the target is the values/preferences/judgments of the larger, uninformed public, these methods will generally miss the mark. Public policy/decision makers would be well advised to consider both informed and uninformed public values, and to recognize the strengths and limitations of both.

Comments from Lou Pitelka

Part 3, Section 6.3.

1. Page 293, line 30. Does the government pay or the public pay? It seems as though the public pays the government to accomplish whatever.
2. Pages 295-297. While the material in Text Box 18 seems appropriate for a text box, the material in boxes 19 and 20 seems as though it should be part of the regular text.

**G. Introduction to Methods Using Cost as a Proxy for Values (Part 2, Section 4.6, pp. 79-80), Replacement Costs (Part 3, Section 7.1, p. 302-303), Tradeable Permit Prices (Part 3, Section 7.2, p. 303-304)**

Comments from Bill Ascher

pp. 79-80: The denunciation of using cost as a proxy for benefit and therefore value is fair enough, and well explained. However, to avoid throwing two babies away with the bath water, it would be useful to 1) state at least one circumstance in which costs are voluntarily incurred, and perhaps mention that governments make these decisions “voluntarily” all the time; and b) state that HEA does use benefits-based valuation in estimating how much restoration is needed (otherwise, this section may be construed as a general denunciation of HEA).

Sections 7.1. & 7.2: The treatment of cost as proxy is better balanced here; I had no problems with it. Same with 7.2

Comments from Rick Freeman

Replacement Costs:

Good treatment.

At p. 302, line 13: If the Catskill example is used we will probably need to get into Mark Sagoff’s critique, which as I understand it seems to have some merit. But then Geoff will probably want to weigh in, although I am not aware that he has ever responded to Mark on this issue.

