

**EPA Science Advisory Board
 Committee on Valuing the Protection of Ecological Systems and Services
 Public Teleconference
 August 23, 2004, 1:00 p.m. - 2:30 p.m. Eastern Time**

Purpose: The purpose of the teleconference is for the Committee to make progress on two topics: 1) Committee workgroup’s analysis of EPA’s 2003 Confined Animal Feeding Operation (CAFO) benefit assessment, and 2) draft advice to improve ecological benefit analysis at EPA for economically significant rules. Work on these two topics began at the Committee’s June 14-15, 2004 meeting.

1:00-1:05	Opening of Teleconference	Dr. Angela Nugent, Designated Federal Officer
1:05-1:10	Review of the Agenda	Dr. Domenico Grasso, Chair
1:10-1:50	Overview of Status Report on “Review of Recent Benefit Analyses Supporting National Agency Regulatory Actions” and Attachment 1: “Challenges to the Use of Valuation for EPA Rule-Making” (10 minutes)	Dr. William Ascher
	Plans for Additional Fact-Finding (10 minutes)	Dr. James Boyd
	Committee Discussion (20 minutes)	
1:50-2:20	Overview of Progress Memo on the CAFO Analysis (15 minutes)	Dr. Terry Daniel, Dr. Buzz Thompson
	Committee Discussion (25 minutes)	
2:20-2:30	Summary of Next Steps	Dr. Domenico Grasso
2:30	Adjourn	

Status Report on "Review of Recent Benefit Analyses Supporting National Agency Regulatory Actions"

**Section 4.2.1 of the Report being prepared for the SAB Committee on Valuing the Protection of Ecological Systems and Services (C-VPESS)
(Report from Bill Ascher, Greg Biddinger, Jim Boyd)**

Background

Given that the overall charge of the C-VPESS is to "assess Agency needs and the state of the art and science of valuing protection of ecological systems and services, and then will identify key areas for improving knowledge, methodologies, practice, and research," one of the major activities of the C-VPESS is to consider benefit assessments supporting regulations protecting ecological systems and services. This topic was the major focus of the June 2004 meeting of the Committee.

At that meeting, members reviewed a "Background Document for Discussion of Science Issues Related to a Retrospective Look at Recent History of Ecological Benefit Analysis at EPA for Economically Significant Rules." This document provided an overview of final rules that met the criteria "economically significant rule" under Executive Order 12866 for which ecological effects or ecological benefits were described. Lead presenters (Drs. William Ascher, James Boyd, Gregory Biddinger) characterized the assessment of ecological benefits provided in rule summaries and supporting documents extracted for them, and identified suggestions for improving the use of data, approaches and methods in the short term and areas for research. The Committee discussion that followed their presentations provided initial assessments and suggestions for advice that the presenters are developing into a draft chapter for the Committee's report. Attachment 1 summarizes the major observations and areas for advice identified by the presenters and the Committee discussion that followed.

Need for Additional Fact-Finding

The group working on this topic has identified several reasons to gather additional information before providing a fully-detailed draft of their section to the whole committee: 1) because the group and Committee focused their attention on a limited set of rules and only on the final versions of those rules, the group has identified the need to understand a broader context for assessing ecological benefits associated with rulemaking; 2) the group wishes to collect information on the overall process for conducting ecological benefits analyses and the extent to which individual assessments may relate to or build upon one another; 3) the group believes that EPA's understandings of the technical requirements (as they pertain to both the data and types of analysis) of E.O. 12866 and OMB's Circular A-4 may differ from the requirements as understood by OMB and others, and wishes to gather information on this topic; and 4) the group wishes to gather information that will help the Committee develop advice that will be relevant and practical for EPA

Process for Additional Fact-Finding

Dr. James Boyd will take the lead in working with the Designated Federal Officer and the SAB Staff Office to identify individuals or groups to interview in person or by telephone. Other members of the group will participate, as appropriate.

The DFO will handle all communications related to enquiries, be present for all meetings and conversations, and prepare written summaries of the meetings. All discussions will be documented and available to the public as part of the Committee's records under the Federal Advisory Committee Act. Summaries of these conversations will be made available to the Committee. All parties involved in the discussions will be informed that the discussions are on the record and will be documented.

Initial List of Questions for Fact Finding

1. What are your understandings of the requirements of E.O. 12866 and OMB's Circular A-4 as it pertains to the type and quality of data and types of analysis used to characterize ecological benefits? What is your understanding of how uncertainty should be characterized?
2. How much advance planning is there at EPA for ecological benefits assessments for rulemakings? How much cross-office collaboration is there? Are individual assessments developed independently of each other? Are assessments considered in the aggregate through a process such as strategic planning? Are the assessments related to the strategic planning process through any mechanism?
3. Are there standards for admissibility of data or types of analyses or the adequacy of data or types of analyses for characterizing or measuring ecological benefits? Who sets them? Are there standards for admissibility for other kinds of benefits assessments that could inform how eco-benefits standards should be set? What kinds of criteria or standards would be most useful?
4. Please describe the ways in which economists and non-economists (e.g., ecologists) interact in the process of assessment.
5. Please identify your perceptions of the barriers to or challenges associated with valuing the protection of ecological systems and services-- in principle and in practice.

Initial List of Contacts for Fact Findings

- John Graham, OMB-OIRA
- Ruth Soloman, OMB-OIRA
- Al McGartland, NCEE, EPA
- Jim DeMocker, Chief Economist, Office of Air and Radiation
- Matt Clark, Economist, National Center for Environmental Research, Office of Research and Development

- OPEI Staff tasked with reviewing cost-benefit analyses for conformance with OMB Circular A-4
- Sharon Hayes, OW, EPA
- Geoffrey Grubbs, Director, Office of Science Policy, Office of Water
- Senior ecologists or other non-economists concerned with developing rules concerned with protecting ecological resources
- A consultant who has developed regulatory impact analyses for EPA (e.g., Gerald Stedje, Abt Associates).

Attachment 1 -
DRAFT

Challenges to the Use of Valuation for EPA Rule-Making

William Ascher, Greg Biddinger, & James Boyd

EPA Valuation SAB

August 4, 2004

1. Review of recent benefit analyses supporting national Agency regulatory actions

1.1 Background

This section of the report responds to the Committee's charge, to "assess Agency needs and the state of the art and science of valuing protection of ecological systems and services, and then to identify key areas for improving knowledge, methodologies, practice, and research," as that charge pertains to Agency needs relating to benefit analyses supporting regulations.

The Committee began to engage this portion of its charge at its June 14-15, 2004, public meeting in Washington DC. At that time, the Committee participated in a session entitled "Science Issues Related to a Retrospective Look at Recent History of Ecological Benefit Analysis at EPA for Economically Significant Rules."

For that discussion, the Committee reviewed a *Background Document* (EPA SAB Staff Office, 2004) providing a list of final rules over the period 1996-2003 that met the criteria for a significant regulatory action, as defined by Executive Order 12866 (e.g., that would have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety in State, local, or tribal governments or communities). The document provided the summary for rules that specified ecological endpoints and extracted text from relevant *Federal Register* notices where the supplementary text discussed ecological benefits. The document also provided extracts from economic analyses/Regulatory Impact Analyses (RIA) illustrative of issues associated with benefits assessment of rules with ecological effects. The first example was an extract from the RIA Supporting the "Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone" (EPA, 2003). The second example was an extract from the economics analysis titled *Economic Analysis for Final Action for Effluent Guidelines and Standards for the Construction and Development Category* (EPA, 2004)

In reviewing the *Background Document*, the Committee identified the need to strengthen the science supporting Agency rules, as described in sections X.3 , Obstacles to Sound Valuation for Rule-Making. The Committee notes that the need to strengthen

such science has been a continued focus for advice from the Science Advisory Board and the Advisory Council on Clean Air Compliance Analysis (Council) for many years (EPA SAB 200, 2001, 2002, 2004a, 2004b and EPA Council, 2001), while these reports contained few suggestions that have made a practical difference in the Agency's actual practice of valuing ecological benefits.

Following the discussion of that document, the Committee undertook a series of interviews designed to develop a broader understanding of 1) the context for assessing ecological benefits associated with rulemaking; 2) the overall process for conducting ecological benefits analyses and the extent to which individual assessments may relate to or build upon one another; and 3) the ways in which EPA's understandings of the technical requirements (as they pertain to both the data and types of analysis) of E.O. 12866 and OMB's Circular A-4 may differ from the requirements as understood by OMB and others. (WHEN INTERVIEW PROCESS IS COMPLETE, DESCRIBE INTERVIEW PROCESS GENERALLY AND INSERT REFERENCES TO INTERVIEW SUMMARIES)

1.2 Criteria of Sound Valuation for Rule-Making

Valuation in the service of rule-making must strive for a) reliability; b) credibility; c) transparency—of both methods and assumptions; and d) usefulness for both the current rule-making *and* subsequent rule-making.

1.3 Obstacles to Sound Valuation for Rule-Making

The obstacles to success are:

1.3.1 Relegating Non-Quantified or Non-Monetized Benefits to Secondary Status

Because the analysis undertaken in support of rule-making will be perceived (whether intended or not) as “promotional,” and because analysts are inevitably concerned about maintaining their credibility (both for the sake of professional standing as well as to increase the likelihood that the analysis would be accepted), analysts involved in valuation tend to exclude less monetizable and quantifiable benefits from what is presented as the core estimates. In fact, it appears that currently the EPA spends the bulk of its resources on “narrow” monetization efforts (i.e., accounting only for monetizable benefits, which usually represent only a subset of the benefits provided by a given regulation, program, or action).

Passing muster before the Office of Management and Budget's Office of Information and Regulatory Affairs (OIRA) appears to be a very significant preoccupation for EPA officials in charge of the analyses supporting rulemaking. This is certainly a legitimate concern, but it seems that the desire to maintain an image of rigor truncates the OIRA's instructions to go beyond monetization. The RIA and OMB guidance documents, provide clear guidance on the preferred general methodologies to be used. The OMB hierarchy of analysis is to first monetize; if that is impractical, to quantify; if neither is possible, to discuss. EPA's rule-making analyses seem to have failed to progress beyond monetization. The analyses almost completely ignore the opportunity to

measure and communicate benefits by quantifying the biophysical and socioeconomic indicators of changes associated with the rule or action that are not amenable to straightforward monetization. This results in failures to benchmark and quantify actual effects; to communicate sources of ecological value, things that limit and enhance that value; and to communicate the economic principles involved.

It should be emphasized that the question is not whether an effect *can* be quantified and monetized—one can hypothesize the strength of any effect, calculate impacts, and assign values—but whether the results are regarded as solid enough to include in the analysis. Ecosystem benefits do fall into two categories—quantifiable and/or monetizable and non-quantifiable and/or non-monetizable—they are all quantifiable/monetizable but to varying degrees of certainty and credibility.

Although the less monetizable or quantifiable aspects may be mentioned in the analytic documents¹, the focus of attention in determining the rule is likely to be predominantly on the core estimates. The problematic consequence is that for ecosystem protection that actually has high (but not fully monetizable) value, the limited valuation presented as more solid and credible will imply a less stringent ecosystem-protecting regulation than is appropriate. This is because direct economic costs are typically easier to estimate than the benefits of environmental improvements; therefore when analysts decide not to include particular potential benefits or costs in the analysis, ecosystem protection tends to be under-valued. Even if the rule would not have been influenced during the relevant time period, the reluctance to present the full justification for a stronger rule may reduce the chances that subsequent rule-making will be sufficiently ambitious.

1.3.2 The Criteria for Including Effects within the Core Analysis Are Ad Hoc

Analysts express judgments about what effects, given the state of scientific knowledge, can be considered adequately supported estimates and what effects are a matter of guesswork. Often analysts and policymakers (not necessarily EPA analysts and policymakers) assume that leaving uncertain information or relationships out of the analysis will safeguard the soundness of the analysis. Obviously, this cannot be true if taken literally; all information and posited relationships entail some uncertainty, so under

¹ Note, for example, the following passage from the RIA supporting the “Finding of Significant Contribution and Rulemaking for Certain State in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone (NOx SIP Call)”:

“Present analytical tools and resources preclude EPA from quantifying the benefits of improved forest aesthetics in the eastern U.S. expected to occur from the NOx SIP call. This is due to limitations in our ability to quantify the relationship between ozone concentrations and visible injury, and limited quantitative information about the value to the public of specific changes in visible aesthetic quality of forests. However, there is sufficient supporting evidence in the physical sciences and economic literature to support the finding that the proposed NOx SIP call can be expected to reduce injury to forests, and that reductions in these injuries will likely have a significant economic value to the public.” (p. 50 in the “Background Document)

this logic the analysis would be totally empty. The real questions are what degree of certainty is needed and by what criteria is this to be established?²

The standards that govern these judgments in EPA analytic documents supporting rule-making seem to be rather *ad hoc*. Sometimes the judgment rests on the fact that published studies on the relationship exist, or a prior EPA analysis tried to estimate the effect, or an SAB report endorsed or questioned the reliability of the effect. Presumably the analysts make these judgments based on their assessment of the intrinsic reliability of the relationship, but also on the implications for credibility that invoking the relationships in the core assessment would have.

There does not appear to be a mechanism either for establishing consistent criteria or certifying that particular effects or relationships are sufficiently established. It may be that EPA analysts *anticipate* OMB objections to thinly-supported effects or relationships, thus imposing constraints on themselves without either consistency or testing how far the assessments can actually capture ecosystem benefits. Possibly the Office of Policy, Economics and Innovation could undertake one or both of these functions. Another option would be to have SAB panels serve these functions. It is also possible that the experience with EPA's risk assessments of chemical hazards could serve as a parallel. Prior to 1990, each EPA program office was doing its own health hazard assessment for chemicals of interest to other parts of the Agency. The EPA initiated the "Integrated Risk Information System" which set up a process for developing and internally peer reviewing health hazard information and then established a database that gave Agency staff access to that information. In 1990-1992 there was a push to get this information systematically peer reviewed and make it publicly available; it is now on line.

Similarly, there does not seem to be a mechanism by which effects and relationships can be identified for further study (by the EPA itself or contracted to other agencies or non-governmental entities) so that they can be incorporated credibly within EPA core benefit-cost assessments. It is likely that the monitoring of impacts of existing rules, in order to validate or modify models and benefit-transfer applications, has been neglected. Again, the Office of Policy, Economics and Innovation may be able to undertake this function.

1.3.3 *The Neglect of Qualitative Description and Characterization of Benefits*

The analyses seem to neglect the communication of qualitative information about environmental benefits. This is especially, though not exclusively, the case for non-use values, even though non-use values are often important to the public. Even if the descriptions do not help to gauge the magnitude of the benefit, more attention to determining and communicating the nature of the impacts would heighten public awareness of the importance of protecting ecological systems and services. The analyses should identify core objectives—what systems is the rule trying to protect, how the rule will protect them, how actions specified in the rules will benefit humans and the ecosystem, as well as how the results can be measured. Ecologists and other

² In principle, one should be able to determine whether the addition of a given piece of information, with a given degree of uncertainty, will increase or decrease the error of the overall benefit-cost analysis. Yet in practice, too much uncertainty with respect to other elements exists to permit this determination.

environmental scientists should play a greater role in writing the reports. You cannot conduct a good regulatory analysis according to a formula.

The importance of conveying qualitative information is not simply a matter of focusing attention on the non-quantifiable and non-monetizable, it is also a matter of conveying the context and the meaning of the changes that are projected. We appreciate the potential for subjectivity in the selection of what qualitative descriptions will be presented and how they will be presented. Yet presenting quantitative information is also subject to the discretion of the analyst.

1.3.4 The Difficulty and Risks of Expressing Uncertainty

In addition to determining which effects or relationships to include in the core assessment, and how to express the range of values, analysts need to convey how much uncertainty is entailed in the estimates. Expressing uncertainty poses complicated risks for the analyst: expressing great uncertainty may jeopardize the credibility of the assessment, but the same can occur if uncertainty is underplayed. Apparently, EPA analysts are not required to follow any particular protocol in expressing uncertainty; nor how to convey the range of possible values (e.g., 95% confidence intervals, inter-quartile ranges). Efforts to establish uniform protocols for expressing uncertainty in environmental and natural-resource-related analyses should be explored to consider possible adoption by the EPA.³

A related factor that affects both the usefulness of the valuation and its credibility is the communication of the assumptions underlying monetization and the technical (as distinct from the philosophical) limitations in the process of monetization. The EPA analyses do little to communicate these assumptions, which are often quite heroic (e.g., the benefits transfer assumption that a unit of environmental or related improvement will have the same value across different contexts). Ironically, the fact that the core estimate is distinguished from the presumably less reliable additional relationships, combined with the neglect of revealing the assumptions underlying monetization, may exaggerate the appearance of accuracy of the monetized core estimate.

³ Moss & Schneider (2000) have formulated recommendations for consistent reporting of uncertainty for authors of the Intergovernmental Panel on Climate Change (IPCC). Charles Weiss (2002) has proposed a code of ethics for presenting analysis with clear indications of what is believed to be fact, “mainstream” opinion, minority opinion, etc., based on legal distinctions among categories of evidence. (Moss, R.H. and S.H. Schneider. 2000. “Uncertainties in the IPCC TAR: Recommendations to Lead Authors for More Consistent Assessment and Reporting,” in R. Pachauri, T. Taniguchi and K. Tanaka, eds., *Guidance Papers on the Cross Cutting Issues of the Third Assessment Report of the IPCC*. Geneva: World Meteorological Organization, pp. 33-51; Weiss, Charles. 2002. “Scientific Uncertainty in Advising and Advocacy,” *Technology in Society*, 24: 375-386). See also Costanza, R., S. O. Funtowicz, and J. R. Ravetz. 1992. Assessing and communicating data quality in policy relevant research. *Environmental Management* 16:121-131; and Costanza, R. and L. Cornwell. 1992. The 4P approach to dealing with scientific uncertainty. *Environment* 34:12-20,42.

The analyses are also prone to the uncertainty associated with capturing the complex interactions between ecological systems and the ways in which human benefits are derived from them. In other words, if we view the valuation exercise as involving two steps—first predicting the impact of policies on the physical and social systems, and then assessing the value of resulting benefits and costs—we would have to conclude that the EPA analysts put their predominant effort into the second step, thereby probably giving less attention to the underlying complexity of integrating ecological conditions and socio-economic impacts, and certainly do not alert the reader to the uncertainties associated with these linkages.

1.3.5 Weak Connection between the Valuation Efforts and the EPA's Broad Strategies and Criteria

For valuation to be most useful in EPA decision making, each assessment should be linked to the EPA's overall strategic plan, it should invoke the same criteria emphasized in the strategic plan, and it should take into account the assumptions, transferred benefit valuations, and findings of other rule-backing analyses. This would add to the consistency of valuations across different rules, as well as enhance the likelihood of determining whether the benefits of one rule are being over-estimated because another rule is contributing to the same benefit.⁴ However, unless EPA also evaluates the impact of “non-significant” rules (which may nonetheless be ecologically significant), it will not be possible to control for all possible double-counting. Insofar as analyses for several rules rely on the same data sets, this cross-checking could also identify which data points, assumptions and values are most pivotal to the validity of the whole set of analyses, thus pointing the way to supportive research.

⁴ For example, an air pollution rule that could have a given *ceteris paribus* improvement in wetlands ecosystem health if implemented without other rules may have less impact if a water pollution rule is also being implemented.

REFERENCES

- EPA Advisory Council on Clean Air Compliance Analysis. 2001. *Review of the Draft Analytical Plan for EPA's Second Prospective Analysis - Benefits and Costs of the Clean Air Act, 1990-2020: An Advisory by the Advisory Council for Clean Air Compliance Analysis*. EPA-SAB-COUNCIL-ADV-01-004.
- EPA Office of Air Quality Planning and Standards & Office of Atmospheric Programs. 2003. *Regulatory Impact Analysis for the NOx SIP Call, FIP, and Section 126 Petitions*. EPA-452/R-98-003
- EPA Office of Water. 2004. *Economic Analysis for Final Action for Effluent Guidelines and Standards for the Construction and Development Category*. EPA-821-R-02-008).
- EPA Science Advisory Board. 2000. *Toward Integrated Environmental Decision-making*. EPA-SAB-EC-00-011
- EPA Science Advisory Board. 2001. *Understanding Public Values And Attitudes Related To Ecological Risk Management: An SAB Workshop Report Of An EPA/SAB Workshop*. EPA-SAB-EC-WKSP-01-001
- EPA Science Advisory Board. 2002. *Underground Storage Tanks (UST) Cleanup & Resource Conservation & Recovery Act (RCRA) Subtitle C Program Benefits, Costs, & Impacts (BCI) Assessments: An SAB Advisory Review Of The UST/RCRA Benefits, Costs & Impacts (BCI) Assessments By The UST/RCRA BCI REVIEW Panel Of The SAB'S Executive Committee*. EPA-SAB-EC-ADV-03-001
- EPA Science Advisory Board. 2004a. *Review of the Environmental Economics Research Strategy of the U.S. Environmental Protection Agency; A Report by the EPA Science Advisory Board Environmental Economics Advisory Committee*. Draft Document, Revised after May 18, 2004).
- EPA Science Advisory Board Staff Office. 2004b, *Background Document for Discussion of Science Issues Related to a Retrospective Look at Recent History of Ecological Benefit Analysis at EPA for Economically Significant Rules*. Unreviewed Background Document Provided to the SAB Committee on Valuing the Protection of Ecological Systems and Services for discussion on June 14, 2004.

PROGRESS MEMO CAFO Analysis

Reporters: Terry Daniel & Buzz Thompson

The Committee has provided us with extremely valuable comments on our draft report on the Workgroups' analysis of EPA's CAFO benefits assessment. We are currently revising the draft to incorporate these comments and will circulate a new draft of the report prior to the Committee's September meeting. The report of the CAFO exercise is intended to stand alone as a summary of the comments and conclusions from the Workgroup sessions. A report of the CAFO exercise will also be incorporated into the final report of the Committee, with refinements and extensions reflecting the Workgroups report and subsequent deliberations by the Committee. The purpose of this "progress memo" is to identify areas in which the comments that we have received, both from the Committee and EPA, suggest the need for additional discussion or additional research and analysis. Some of the suggested discussions and research are specific to the CAFO exercise and need to be completed before finalizing the Committee's analysis of EPA's CAFO assessment. Other suggestions might better be extended beyond the CAFO exercise.

Our plan is to revise the separate report on the Committee's review of the CAFO benefits assessment **by October 1, 2004**, with the restrictions in scope noted below. In addition to the comments we have already received, we are requesting a number of **specific inputs from members of the Committee by September 10** to assist in the revision.

In the next draft we intend to increase the specificity of many of the Committee's suggestions and to provide a better sense of the priorities among our many recommendations for improvements in EPA's benefits assessment process. If you have specific recommendations that you have not yet expressed (or that we have so far failed to adequately represent), please identify them in the upcoming teleconference call and send an email to the DFO and to us.

A. Process for Conducting Benefit Assessments for Rulemaking

At the Committee's June meeting, the two working groups spent significant time discussing issues of process as well as substantive approaches to valuation. The last draft of our report reflected that by discussing both the Committee's critique of what it understood to be EPA's process in the CAFO valuation and the process that the Committee believes should have been used. In their comments on the draft report, EPA staff suggests that the Committee may not have been made aware of all the critical elements of the process that EPA used in the CAFO analysis, and that the process used in the CAFO analysis may not be fully representative of the process currently used by EPA in benefits assessments. Although we could obtain additional information from EPA on the process followed in the CAFO analysis and rethink the Committee's criticisms, we do not believe that this would be valuable, particularly given the question of whether the CAFO analysis was representative. As a result, we plan to drop the more general process

criticisms from the next draft of the report, and focus more specifically on the CAFO Environmental and Economic Benefits Assessment (EEBA) analysis and report itself. We will retain the discussion of the process that the Committee would have used if it had prepared the CAFO analysis, which should preserve virtually all of the important substantive points.

Comments from EPA staff, however, strongly suggest that the Committee should engage in a comprehensive study of the process that EPA currently uses to prepare benefits assessments. It is our understanding that the Committee group focusing on benefit analyses supporting rulemakings more generally will be engaging in this study as part of their survey of EPA and OMB officials and other parties who may have played a significant role in the process of these analyses. We suggest that study should include consideration of:

- EPA’s use of interagency (and extra-agency) workgroups to ensure a full evaluation of the potential benefits of a regulation (in the CAFO analysis, EPA apparently assembled a working group that included officials not only from multiple EPA offices but also from USDA, DOJ, DOE, and USGS);
- EPA’s preparation of analytic blueprints at the outset of benefit assessments and how these blueprints are documented and used to help in both identifying and analyzing potential benefits;
- EPA’s use of a tiering process in its benefit assessments;
- The role of monetization in benefits assessments and reports;
- EPA’s use of independent “peer” (or scientific) reviews in its benefit assessments, including reviews of individual methods used and their integration in the overall analysis;
- the manner in which OMB administers Information Collection Reports and the degree to which EPA believes that it is able to collect important information under this system;
- the manner in and degree to which EPA integrates public input into its benefit assessments; and
- the adequacy of the EPA’s guidance documents and training procedures for environmental and economic benefits assessments.

B. Fundamental Issues

We received a wide range of comments on several fundamental issues related to benefits assessment processes. There appears to be a range of opinions on these issues and we believe that they require separate, focused attention by the Committee in a broader context than the CAFO exercise report. We propose that the Steering Group plan sessions devoted to these issues at future meetings. Selected members might be

commissioned to prepare and present summary papers to support Committee discussion on each of these issues with the goal of identifying specific recommendations for how EPA might improve benefit assessments for rulemakings. These discussions might be made more concrete by including specific examples from the EPA's CAFO assessment. For our separate report of the CAFO exercise, we propose only to identify the range of views expressed on these issues and defer resolution to subsequent discussion by the full Committee.

B.1. Stakeholder and Public Involvement

The comments of Committee members highlighted significant differences on the appropriate role for the public and stakeholders in regulatory benefit assessments. Some committee members, for example, believe that it is very important to involve stakeholders or the public in the initial scoping of potential benefits and in specific valuation exercises; other members are very doubtful about the wisdom and acceptability of such involvement. Based on these comments, we believe that it would be useful for the Committee to discuss (1) the specific ways in which stakeholders or the public might be involved in regulatory benefit assessments; (2) existing research on the potential advantages and disadvantages of each involvement method, and (3) potential best practices based on this research.

B.2. Proper Roles for Monetary Benefit Estimates

The comments of Committee members suggest that there may be fundamental differences of opinion among members regarding the role of monetary valuations of ecological systems and services. The comments of some Committee members suggest that EPA should attempt to monetize ecological benefits wherever possible, in part to provide a common metric across benefits and costs. These comments, however, suggest differences in what criteria EPA should use in determining whether a particular monetization is appropriate--although none of the comments specifically address this issue. At least one Committee member, by contrast, suggests that monetized benefit estimates should not be presented as "objective" measures of value; instead they are "invariably subjective, judgmental, assumption-dependent, and constructed. The best one can do is to construct them in a *defensible* way and then subject them to the political process."

Although we are not sure whether the differences among Committee members can be fully bridged, the question of how monetized values should be characterized, and how much they should be emphasized in benefit analyses cannot be ignored. The discussion, however, may benefit from additional presentations on and analysis of available monetary valuation techniques and therefore might be most appropriate later in the Committee's deliberations. We propose that the Committee consider (1) the specific options available for monetary valuation of environmental benefits; (2) available alternative valuation approaches (such as multi-attribute utility and constructed preference methods); (3) existing research on the potential advantages and disadvantages of these valuation options; and (4) potential best practices based on this research.

Assuming that monetary evaluations will continue to play a role in EPA benefits assessments, the comments also suggest that the Committee might benefit from an explicit consideration of the criteria that EPA should use in determining whether to include given monetary estimates. For example, a thorough analysis of available CVM approaches – as well as a discussion of the central issues in the use of CVM (e.g., the choice of WTP versus WTA) – seems critical to the Committee’s work. In addition, for CVM and other valuation techniques, we need to specify what conditions are required to make benefits transfers appropriate.

B.3. Assessing and Reporting Ecological Benefits

A number of members cited the need for better analysis and reporting of biological/ecological benefits of the CAFO rule– including reduced eutrophication in estuaries, reduced pathogen contamination of public and private groundwater wells and improved soil conditions. Our draft report suggests that EPA should develop and make greater use of environmental/ecological metrics or indices. EPA has asked for further elaboration on and refinement of this recommendation. In particular, what metrics might exist currently that EPA could use to quantify the benefits of nationwide rules such as the revised CAFO regulations? What metrics should EPA develop? EPA seems quite enthusiastic about this suggestion, but would like the Committee’s further guidance on it.

Assessment and effective communication of ecological effects, and especially the *benefits* of those effects, is fundamental to the Committee’s charge, and raises a number of difficult questions that extend well beyond the specific case of the CAFO rule. We propose that the Committee devote some time to review currently available environmental/ecological indices (such as the water quality index considered in the CAFO analysis), as well as non-quantitative indicator approaches, and develop specific recommendations for how these might most effectively be used by the EPA in benefits assessments and reports.

C. Detailing the Committee’s Analysis of the CAFO EEBA

In its analysis of EPA’s benefits assessment for CAFO, the Committee made a number of general observations regarding how EPA could have improved the analysis. The comments that we received from both EPA and some Committee members raise the question of whether EPA in actuality could have been expected to follow these suggestions. These comments effectively ask the Committee to demonstrate more specifically how EPA could have done a better job in the CAFO assessment. To address these concerns, **we propose that Committee members provide to the DFO by September 10th information that will allow us to prepare a more specific discussion of how EPA could have improved the CAFO benefits assessment.** We are seeking your specific suggestions, including appropriate citations to the relevant literature. We do not believe that leaving our criticisms and recommendations at their current level of generality provides EPA with sufficient guidance on how to improve its future nationwide benefit assessments. Below are some specific topics that would benefit from further specification.

C.1. Benefits Transfer & CVM in the CAFO Assessment

The Committee suggested that EPA could have done a better job of benefits transfer, in particular by basing transfers on more recent and more appropriate CVM studies. In their comments on the draft report, EPA staff asked that the Committee provide specific criteria for the use of CVM and benefits transfer in its regulatory valuations. EPA will likely continue to make use of CVM and benefits transfer in future regulatory impact analyses requiring the valuation of ecological systems and services. ***With regard to the CAFO analysis and report, we need citations of specific, more contemporary CVM studies/methods that would have been more appropriate than those used. We need to specify what aspects of the benefits transfer approach used in the CAFO analysis were insufficient and how they might have been improved.***

C.2. Validation of National Models

The Committee also criticized EPA for not making adequate use of watershed-specific case studies to test the applicability of nationwide models. Comments from EPA staff indicate that specific case studies were used in the CAFO analysis, though these were not apparent from the report. For example, EPA used the BASINS modeling package on specific watersheds. Because of substantial differences in scale and input-output parameters they were not able to make direct comparisons to validate the NWPCAM results. In their comments, EPA officials also ask whether the Committee believes that it would be valuable for EPA to engage in actual, post-regulation valuation of benefits, as a means of measuring and valuing the benefits that are actually accruing. ***EPA staff would welcome Committee suggestions about how they should have approached the validation of nationwide models. In particular the Committee is asked to provide more detailed suggestions for how EPA could have used watershed specific case studies to improve its national benefits assessment for the CAFO rule. How should EPA go about such exercises? What benefits should be measured and valued? When? How?***

C.3. Alternative Methods of Valuation

The Committee also suggested that EPA might have used other techniques to value various ecological benefits of the CAFO rule, including the examination of historical data and greater use of revealed preference studies. However, other members of the Committee, in their comments, have questioned whether some of the suggested approaches – in particular, use of historical data – would provide an accurate valuation of the benefits. One member suggested (outside of the Workgroup discussions) that damage awards in nuisance/trespass actions against CAFOs might be a means of valuing some of the benefits of EPA's revised regulations. Several members recommended multi-attribute utility methods in place of, or in addition to, monetary valuation methods. ***We need to define these additional methods more precisely, and provide more specific guidance to EPA about how and when to use them in the CAFO assessment in particular, and in benefits assessments in general.***

One EPA comment on the draft report also asked whether it would be valuable for EPA to engage in actual, post-regulation valuation of benefits. In the CAFO context, for example, should EPA be trying to measure and value the benefits that are actually

accruing? *We need the input of committee members on whether we should recommend such post-regulation valuation and, if we do, how committee members believe EPA should approach this task*

C.4. Assessing and Reporting Ecological Benefits of CAFO Rule

In the draft report, the Committee suggests the need for better assessment and representation of ecological benefits in the CAFO EEBA, including greater use of environmental/ecological indicators and indices. A number of members cited in particular that the assessments and reporting of the benefits of reduced eutrophication in estuaries, reduced pathogen contamination of public and private groundwater wells, and improved soil conditions were insufficient. The analysis and representation of secondary effects, as on off-shore fisheries, were also noted as inadequate. EPA seems quite enthusiastic about these suggestions, but would like the Committee's further guidance. *We need to provide more specific information on what methods would have been available at the time of the CAFO analysis, or could be adapted or developed with reasonable effort and resources. In particular, what metrics might exist currently that EPA could use to quantify the benefits of nationwide rules such as the revised CAFO regulations? What metrics should EPA develop?*

C.5. Prioritization of Recommendations

The draft report cites numerous possible improvements to the CAFO assessment process, and EPA has limited resources. In their comments, both EPA officials and some of the Committee members therefore suggest that it would be valuable if the Committee could prioritize its recommendations for improvements in the CAFO EEBA. Of the many recommendations that the Committee is making in the CAFO context, what are the most important? Which are of more marginal value? Are there any recommendations that, even though valuable, would not be worth the cost in resources? *A brief survey is attached as one means for members to indicate their judgments of the relative importance/priority of the recommendations planned for the CAFO report that are not included in sections A and B above. Please respond to this survey by September 10, as well as providing any additional thoughts and comments on how the Committee's recommendations should be prioritized for EPA.*

Priority Survey for Recommendations in CAFO Report

For each of the following recommendations, please indicate in an email addressed to the DFO how important it is for EPA to implement the recommendation, recognizing that EPA has limited resources. We suggest that you note whether each recommendation is “very important,” “important,” “marginally important,” or “not worth the needed resources.” But you should feel free to use a different metric if you prefer. Also, although we have tried to list all of the major recommendations in the draft report, we may have missed some. So please add other recommendations that you believe should be included.

- _____ Improve criteria for benefits transfer
- _____ Develop better CVM approaches
- _____ Validate national models
- _____ Develop alternative valuation methods (e.g., use of historical data)
- _____ Assess and report ecological benefits for CAFO regulation
- _____ Develop a detailed conceptual model at the outset of its analysis in order to better identify the focus for its valuation efforts.
- _____ Make detailed and systematic effort at the outset to model the rules’ ecological impacts
- _____ Conduct peer review of plans for benefit assessment
- _____ Assemble an interdisciplinary modeling team within the Agency
- _____ Use case studies in support of the national-scale analyses
- _____ Improve the precision of geographic referencing of modeled CAFO facilities
- _____ Account for “enforcement slippage” in EPA’s models
- _____ Incorporate a more exact consideration of timing into EPA’s ecological analyses
- _____ Improve treatment of uncertainty

Other recommendations: