

Compilation of Board Member Written Comments on ICA Draft Report (7/11/2005)

1. Dr. Cameron

The Advisory represents a lot of careful thought on the part of members of the Panel and should be very helpful in terms of encouraging the Agency to devote more attention to the fundamental economic ideas behind the use of penalties to influence the privately optimal behavior of firms facing environmental regulations.

There are a few minor edits and clarifications that might remove some minor remaining ambiguities and smooth the path for the intended audience. I will itemize these by page and line number from the June 15, 2005 draft.

p. 3, line 23: I had to read this sentence twice. The potential ambiguity stems from whether “potential offenders respond...if detected and punished.” It might lessen a potential ambiguity to say “The first is based on the assumption that potential offenders respond to both (a) the probability of detection, and (b) the severity of punishment, conditional upon being detected and punished.”

p. 4, line 4: “into its penalty policy as a way of [attaining the full intended] deterrent effects of its penalties.” We don’t want to appear simply to advocate bigger deterrent effects.

p. 4, line 8: “by adding [specialized economic expertise] to the staff of the OECA.”
{Unless we are sure that there is not presently anyone who self-identifies as an economist on the OECA staff.}

p. v. Subsection numbering seems to involve random punctuation conventions (i.e. with or without trailing period)

p. 5, line 7: two periods at end of sentence

p. 6, line 17: “economic theory of optimal [penalties] approaches”

p. 6, line 20: same problem as p. 3, line 23:

p. 6, line 24-25: “...the cost of deterring the offense in one or another of these ways.” This is ambiguous. Which ways? Two ways of deterring the offense (certainty versus severity)? Or the “The first is based...” “And second,...” Can you just drop “in one or another of these ways” and end the sentence with “against the cost of deterring the offense”?

p. 7, line 27 (and elsewhere in the document). Is the “EPA Penalty Policy” an explicit policy name, or should we be using “EPA penalty policy”? The upper case variant sounds strange, unless it is a formal name.

p. 8, line 3: “This base fine would then be [divided] by a factor that is based on an estimate of the probability of detection.” Everywhere else in the Advisory, there is talk of dividing, not multiplying, even though the statement as written is correct. The multiplying factor could be the inverse of the probability, but why confuse people?

- p. 12, line 15: "...the development of a penalty target[--]the assessment of illegal competitive advantage..."
- p. 15, line 4-5: Consideration of the size of the violator may also reflect variances granted because of SBREFA (Small Business Regulatory Enforcement Fairness Act, which I associate with protecting small businesses from ruin via environmental regulations). Perhaps a footnote to this paragraph would clarify this possibility. "Firm size may also enter into calculation of the gravity component if the firm is a small business and an analogous penalty might jeopardize the survival of that firm."
- p. 15, line 11: "In addition to the [considerations] in the gravity component stage..."
- p. 15, line 11: "...the third stage of the process—the adjustment stage—is heavily weighted [towards] factors that bear on deterrence..."
- p. 15, line 19-21: "...where one is much less likely to be detected than the other, the [first] requires a larger penalty..."
- p. 18, line 14: It is ambiguous whether "its" refers to the Agency or to the term "illegal competitive advantage." Perhaps use "...the Panel finds that the Agency's use of the term 'illegal competitive advantage' and [also the identification of] four categories of ICA cases [to be] unhelpful."
- p. 18, line 22: What "other categories of ICA"? Perhaps an "(e.g. XXX)" would help keep the reader in tune with what is being discussed.
- p. 21, Figure 2: It would be very helpful to insert the marginal revenue line, so that the designation of QC and QN as the privately optimal output quantities does not seem so arbitrary.
- p. 22, line 5: "economic benefit requires [counterfactual estimation of] the quantities that would have been produced..."
- p. 22, line 7: "If[,] instead of calculating the true economic benefits to the violator, the EPA..."
- p. 22, line 10: "proposition in economics that A is greater than E [(so that E-A is negative)]. If it were not, [even] a compliant firm could..."
- p. 22, lines 12-13: overstates the true economic benefits [to the firm] of noncompliance (i.e., $C+D+E-A$) since $[E-A]$ is negative.
- p. 22, line 17: If a firm has quasi-fixed capital, is it constrained also to have a Leontief production function? If the isoquants are not Leontief, isn't it possible to increase output by increasing, say, labor and materials inputs, even if the capital input remains constant in the short-run? This passage is confusing.
- p. 22, line 20. Please do not ask readers to imagine a different version of Figure 2. Provide Figure 3 with the appropriate changes made and the analogous areas labeled. It is not intuitive that "areas A, B,C, and E would disappear." Instead of describing the revised "Area D" in words, it should be identified explicitly in Figure 3 (perhaps as a

shaded area, since there will be lines passing through it). The reader will be drawing Figure 3 for him/herself in the margin anyway. Make life easier for the reader.

p. 22, line 27: “illegal development of wetlands[, for example].”

p. 23, line 7: “firm to undercut the market price [based on the costs of compliant firms].”

p. 23, line 11: “compliance costs are typically a [relatively] small share of operating”

p. 23, lines 17-19: Indulge in one or two additional sentences that make it clear why a “cost-plus contract” is the same thing as “minimum price regulation.” If one has not dealt with “cost-plus” contracts, this correspondence is not evident.

p. 24, lines 3-10: Firms subject to “cost-based price regulation,” are generally assumed to be natural monopolies for which both marginal and average costs are declining over the range of outputs relevant to the market. It would be helpful to see a “standard diagram” showing how a downward shift in variable costs would lead to a situation where avoided cost would tend to overstate the economic benefit of the utility.”

It seems doubtful that the cost savings due to illegal noncompliance would be factored into the rate-setting process. Wouldn't violations of statutes be likely to be caught in the process of the regulatory hearings?

p. 24, line 27: “The longer the [duration of the] hypothesized effect,…”

p. 25, line 4-5: Please be careful that “it” is unambiguous. “whether noncompliance resulted in sales that [the firm] could not have made legally, or [whether the firm could] have generated the same level of sales…”

p. 25, lines 6-7: “If [the sales could have been made legally,] then benefit…”

p. 25, line 12: “a legal but higher[-]cost way to make those sales.”

p. 27, line 10: Making the product “more effective” is somewhat ambiguous. Changing the nature of the good might increase demand for the good, if it now has more of the desirable attribute called “effectiveness.” In contrast, though, if the good becomes more effective, then a smaller quantity of it may provide the same effect, so that fewer units might be demanded at any price.

p. 27, line 20: I think that “(A)” and “(B)” should probably be lower case.

p. 28, line 1: “in principle, use of the BEN model is [still] appropriate.”

p. 29, lines 3-5: This does not read as a proper sentence. Perhaps use two sentences: “The analysis of Section 4.2 [shows that] measures of delayed and avoided cost overstate economic benefit when output is increased because of lower cost[. This result] holds for both monopoly and competitive market structures.”

p. 29, lines 5-7: “In the frequently-used Cournot model, [the effect of] avoided and delayed cost on the actual level of output understates the gains companies get from not complying.

- p. 29, footnote 9: There are far too many instances of “it” in this footnote, leading to ambiguities. Replace some of these with the relevant noun. Also, “..would have cost to comply[,] given its actual level of output[,] leaves...” Also, are there page numbers for the relevant passages in Shapiro or Tirole?
- p. 30, line 2: “allows [the firm] to enter the market earlier than it [otherwise] would have, [noncompliance] might move forward the entire diffusion path.”
- p. 31, line 6 “...a [wetland] to start a business...”
- p. 31, line 8 “...profits actually earned, the ‘economic benefit recapture’ portion of the...”
- p. 31, line 23 “...from any business plan[, if available,] that justified the action taken...”
- p. 32, line 12-14: Same ambiguity as page 3 line 23.
- p. 32, line 18: Same ambiguity as page 6, lines 24-25.
- p. 32, line 26. insert: “The appropriate penalty would compensate the victim for three days in the hospital.”
- p. 33, line 3: “noncompliance is [actually] the overall socially efficient outcome.”
- p. 33, line 12: “prohibit when its [overall] social costs exceed its [overall] social benefits.
- p. 33, line 17: “violator[, it becomes] more profitable to violate the law.”
- p. 34, line 29 “the cost of estimating harm [with sufficient accuracy] is too great.”
- p. 35, line 27: It might be helpful to point out that openness about the violation (or lack thereof) on the part of the firm seems to be one of the factors that goes into the “gravity” component of the penalty assessment.
- p. 37, line 35: “the base penalty should be [formulated in terms of] the gain to the polluter”
- p. 38, line 67-68: “The applicable probability is therefore less than one[--]how much less could be estimated by examination...”
- p. 39, line 96-97: “probability for self-reporting sources [(by state)] ought to be straightforward, since the reports are likely to be [archived] and there [should] also be some record of enforcement...”
- p. 39, line 99-100: “...has its discharges sampled [in a manner that corresponds to the terms of its permit].
- p. 39: add “A degree of generality in assigning probabilities of detection and successful prosecution is desirable in that this generality may reduce the appearance of arbitrary or capricious assignments of probabilities for different cases. The accuracy of the probability assessments must be traded off against acceptance of the probability algorithm by regulated firms.”

p. R-2, line 655-656: still need full citation
pl R-3, line 717: still need date and citations

2. Dr. Galloway:

Thank you for the opportunity to review the report "Identifying an Calculating Economic Benefit that Goes Beyond Avoided and/or Delayed Costs: A SAB Advisory". The authors of the report are to be congratulated on performing an exceedingly thorough analysis of the topic. My sole comment is that I encourage them to introduce the concept that 'non-compliance could have enduring effects' (p29, line 21) earlier in the report and also in the letter to the Administrator.

3. Dr. Matanoski:

I have reviewed the two documents. The first on "Identifying and Calculating Economic Benefit" is excellent. All I found were two typos.

Page 2 - Exec Summary - line 2 -- I believe a "to" is omitted after "return".

And

Page 21 - Body - line 5 - "mono polistically" is spelled wrong. (Quite a mouthful)

The second paper's message is somewhat confusing. The report implies that the Committee was presented with a plan that had an overall goal that was very global i.e. "to advance EPA's ability to identify, measure, value, and communicate the ecological benefits of its actions in order to improve EPA decision-making at the national regional and local levels". The Committee states in the in the letter that the Agency needs a framework in order to implement a strategic plan. So, I presume they had a problem in that they received a specific plan with no relationship to a framework into which this plan fit. This message is repeated several times in the document. However, it might be helpful for the Committee to discuss in one place what they see as the differences in a framework versus a strategic plan versus specific actions or programs. References to the need for a framework appears throughout the document but there is no centralized discussion of the advantage of starting from such a framework and moving to the strategic plan. It sounds as if the Agency could use such a discussion. It also might provide a point of reference for some of the discussion in the body of the report. I am willing to leave it up to the Committee as to how they wish to handle this suggestion. You could leave it as an implied need that has been omitted from the report but I think a central discussion about the issue would help focus the related points throughout the report.

4. Dr. Morgan:

Note by Granger Morgan on "Identifying and calculating economic benefit that go beyond avoided and/e delayed cost"

The advisory adopts a formulation that is based strictly on economic efficiency. While enabling legislation in areas such as water pollution, adopts a similar formulation, this is not the formulation which is adopted by the clean air act. That act adopts a more "rights-based" formulation. It strike me that this difference should be noted and briefly discussed. IN the case of a rights-based formulation it is not clear that a penalty based only on economic efficiency is appropriate or sufficient. The approach anticipates the use of strategies such as "willingness to pay" to evaluate damages. This raises two questions:

- Since the damages are being imposed on unwilling people, shouldn't the correct measure be "compensation to accept" as opposed to "willingness to pay" given that the former is severely limited by income.
- Since both of these measure show income effects, shouldn't the measure be for some societal average (or maximum), not for the actually people impacted? Otherwise there are serious issues of environmental justice raised. Otherwise, if I violate in a low income neighborhood I end up paying a much lower fine than if I violate in a very high income neighborhood.

While the concept of probability of detection and penalty makes sense in many routine settings, I am less persuaded that it makes sense in more unique situations.

The piece reads as if the choice of penalty is *between* the gain experience *or* the harm done. Perhaps this is not what is intended but if not the language should be clarified. It is what is intended why isn't the answer the sum of the two? To use the example of the mugger/robber that the committee uses several times: shouldn't the robber be forced to pay back what he stole (the gain) and also cover the costs of the harm he inflicted? Why should he get to keep the gain (and use it to offset the cost of the harm)?

What about situations in which a violator has been willfully engaging in a risky activity for the past several years (and profiting from it) but when the violation actually occurs the actual damage done is modest. To use the tanker example, I have routinely engaged in a activity that put the coastal marine environment at great risk (and I have been profiting from this) but when the accident happens (100% detection probability) it turns out (by chance) to cause very little damage. Shouldn't I get penalized for imposing the risk of much greater damage for the past several years, not just for the modest damage my accident actually produced?

What should EPA do in the event that violation is made by a firm which is in economic decline: it is experiencing losses, but those losses are smaller than they would have been without the violation?

The first paragraph at the top of page 2 is good language which might be used in the abstract.

Will EPA staff know what is meant by "methods and data appropriate to each case"? Would an example of two help?

5. Dr. Twiss:

I would express interest in just one issue. Will our comments have the effect of lessening the importance of the category: “- violator initiates construction or operation prior to government approval”? I’m not enough of an economist to gauge the effects of our recommendations on this.

The primary report seems to give weight to this issue under “dynamic benefits” but again, I am not sure that we provide support for consideration of economic benefits derived by violators under this category.

Especially in the emerging technologies, a head start can be of great advantage in establishing and capturing market share, discouraging competition, and brand

p. 1, line 23: “help implement a [more-integrated] framework for assessing” {I confess that I am skeptical about “new” integrated anythings. The report later emphasizes using existing techniques before inventing new ones.}

p. 1, line 31: “Agency should [further] address”

p. 1, line 37: “assessment frameworkd would involve [(and communicate with)] the lay public. {As is, “communicate with it” seems to dangle off the end of the sentence.}

p. 1, line 41: “The [SAB?] emphasizes the importance...” Alternately, this first page might be a good place to introduce the C-VPESS acronym for the committee, and to use it throughout the document. It is helpful to standardize the reference to whomever is “talking” in this document.

p. 3, line 8-9: [Much] of the advice provided by the committee pertain[s] to multiple charge questions, [so] the structure...” {Miss Reimer was a stickler for never beginning any sentence with “Because...”, no matter what comes after that.}

p. 4, lines 27-28: “Language in the [foreword], the initial paragraphs of the executive summary, and the introduction[,] especially[,] should be revised in this light.”

p. 4, lines 40-43: {You refer to these two documents later on, in more general terms, on page 6, lines 37-39. It would be a good idea to establish the reference here, rather than later on, and to refer to it in a more compact form at the next occurrence on page 6.}

p. 5, line 34: “provide a basis for [measuring] the Agency’s progress in meeting its objectives.”

p. 6, line 8: “which is a starting point for [building] such a framework.” {A framework generally doesn’t have starting (or ending) point, but the process of building them probably does.}

p. 6, line 20: Might be a good idea to split this paragraph just before “What is needed instead...” It is a very long paragraph and contains at least a couple of different ideas.

p. 7, line 7-9: “formulation stage[–]during which ecologists, economists, and other scientists need to considermeasurement endpoints and the metrics for valuation[–] provides a striking example” Alternatively, split this into two sentences. For example: “The problem formulation stage provides a striking example of the need for an integrated, logic-based approach. During this stage, ecologists, economists, and other scientists need to consider[, jointly, both the strategies] that will be used for ecological assessment and measurement endpoints and the metrics for valuation.”

p. 7, line 10: {The paragraph needs to be split, probably just before “More generally, risk assessments...”}

p. 8, line 38: “The plan partially addresses [these] objectives...”

p. 8, line 41: {Again, I’d rather not see the SAB advocating a “new” integrated framework, but rather a more-integrated framework. The idea of yet another “new framework” needs to be well-motivated and well-described, or we risk sounding like we

are just asking for yet another new framework, which probably won't be any more successful than the last few "new frameworks." At least we aren't saying "new paradigm."}

p. 9, line 10: "The [committee] does not identify..."

p. 10, line 9: "in the draft plan and [advises] that such an approach [calls] for an integrated..."

p. 10, line 20: Break the paragraph just before "Similarly, the committee notes..."

p. 10, line 35: "comparative studies [using] different methods?" If it is intended to be studies of different methods, perhaps use "studies [to compare] different methods" or "studies [that compare] different methods".

p. 10, line 39: "but also with [its] assessment of other methods" {Miss Reimer also carried on a vendetta against the use of "not only...but also". Apparently, these can often be carved up into at least two sentences. With all the parenthetical material in this long sentence, more bite-sized pieces might be appropriate.}

p. 11, line 3: [Some] sources of value cannot be captured through economic valuation, and [there are] practical issues that [can] make it difficult to quantify and to monetize even those values amenable to capture [using standard] economic methods. [Thus,] the committee..."

p. 11, line 6: The fragment "as 'alternative' methods" seems disconnected. Can it be dropped, or is something missing from this sentence? Perhaps: "The committee supports the [P]lan's call for further investigation of alternative methods (termed "supplemental" methods in the report)."

p. 11, lines 7-9: This sounds like the committee just hasn't gotten around to deciding what to do about these methods. I recommend acknowledging clearly that the "nature, scope, relative utility, and possible contributions of such methods" are very big and important questions and that there is much work yet to be done before the committee can reach a consensus on these issues.

p. 11, line 11: I dislike "to pilot" as a verb. "...not just to [conduct pilot studies] and evaluate supplemental or hybrid approaches alone,..., but rather [to] consider..."

p. 11, line 14: "The committee advises the Agency [to call] for the use of ecological, economic, and other methods..."

p. 11, line 18: "...might arise from the close parallels in the [labels and terminologies used to describe] the underlying..."

p. 11, line 28: "where data are inadequate and [to situations] where knowledge..."

p. 12, line 6: "analyzed statistically to check [for consistency.] This approach..."

p. 12, line 8-14: "Expert" versus "lay-person" is not a binary distinction. Members of the general public probably range continuously along a scale--from uninformed to very well-informed. "Lay persons" are presumed to be nearer the uninformed end of this

spectrum and “experts” are presumed to be nearer the other. The important distinctions are that (a) there is heterogeneity in informedness about the science involved (not only among lay-persons but also among experts), and (b) there is heterogeneity in attitudes concerning the importance of ecological protection. The “importance” of ecological protection usually translates into how much of something else one is willing to give up to obtain that protection.

A so-called “positive” analysis of the distribution of preferences for ecological protection merely asks about the choices people actually *are* willing to make with respect to ecological protection. A so-called “normative” analysis asks what types of tradeoffs they *should* be willing to make (perhaps if they were accurately and fully informed). It is important to ask questions about both types of tradeoffs. A positive analysis can reveal a lot about the likely extent of popular support for a policy and the factors which can drive it. A normative analysis probably ought to guide policy-making.

Unless the question concerns an unequivocal physical measure, it will be impossible to determine “...whether experts are summarizing their technical judgments based on the ‘science’—be it ecological, economic, or other relevant science—versus personal assessments of value, where there is no clear basis in the literature for their judgments.” A more helpful distinction might concern “objective evidence” versus “subjective judgment.” For many things, including ecological systems and services, preferences (and hence tradeoffs willingly made) vary widely across the population. The set of people who have self-selected to become experts in the scientific disciplines relating to ecological systems and services is unlikely to represent a “random sample” from the spectrum of such preferences in the general population. A priori, they are likely to perceive ecological systems and services as more important and more valuable than the average member of society. There is nothing wrong with this at all, but it needs to be acknowledged before we decide who should be an arbiter of value. (By analogy, a colleague who teaches a course on the Economics of Poverty notes that very few of his students sign up for the class because they think there should be more poverty in the world.)

The self-selection of experts into their respective fields thus limits somewhat their authority to make decisions on behalf of the general population. True, their authority is enhanced by their access to better information, but their representativeness is compromised by the self-selection problem. The relevant question is “How would society choose if all members of society had full information about all the consequences of the alternatives they face?) Ecologists alone cannot answer this question. They do indeed possess better information about ecosystems than the public at large, but they are not a representative sample from that public. But neither can this question be answered merely by a survey of a large random sample of individuals drawn from the general population. They may be representative of the “general public,” but they are often woefully uninformed.

Economists defer to so-called consumer sovereignty in attempting to value ecological systems and services, thereby preserving the important “representativeness” dimension (i.e. other economists are only rarely and accidentally members of the general population samples used by economists to estimate tradeoffs people willingly make). However, there is no denying the fact that many members of these general population samples may be uninformed. However, there might be ways to work around this problem to a certain extent. Statistical analyses can sometimes be used to simulate what *would have been* the

choices in these samples, had sample members been better informed. The trick is to allow preference parameters in a statistical model of choices to vary systematically with one or more measures of “informedness.” The dependence of estimated tradeoffs upon level of informedness can subsequently be used to simulate, counterfactually, what would have been the tradeoffs if everybody in the sample has been very high on this informedness scale.

This strategy was demonstrated (crudely) in the context of willingness-to-pay for preventing acidification of high-altitude lakes in the northeast U.S. As a proxy for informedness about the specific ecological systems and services in question, Cameron and Englin (1994) used reported years of prior fishing experience. A substantial share of the estimating sample had zero prior experience.

Cameron TA, Englin J

Respondent experience and contingent valuation of environmental goods
JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT 33 (3):
296-313 JUL 1997

Abstract: Respondent experience (i.e., a respondent's information set) has long been suspected to influence contingent valuation estimates of environmental values. We assess the influence of experience by explicitly modeling the relationship between respondent experience and both fitted individual resource values and the conditional variance of these estimated values. Using three different joint specifications for experience and WTP-normal/censored-normal, Poisson/censored-normal, and zero-inflated Poisson/censored-normal-we find discrete jumps in resource values as experience increases from zero and that more-experienced respondents have smaller conditional variances. Simulation of arbitrary levels of experience allows standardization of the amount of information when developing welfare estimates.

p. 12, line 30: “advises the Agency to [inventory] the”

p. 12, lines 38-39: “The committee also advises that the plan include actions to build [on analytical work conducted outside the Agency[, not just data from these external sources]. Specific areas where [the Agency] could benefit[, in an ongoing way[, from interactions....”

p. 12, line 42: “and identification of [the particular] ecosystem processes...”

p. 12, line 43: “The committee advises the Agency to [take advantage of] the ongoing work.”

p. 13, lines 10-16: “...process models (p. 47). [A catalog] or annotated inventory of models would [indeed] be a reasonable beginning step. [However, it is important to construct] a decision framework for [determining] the applicability and limitations of existing models for specific use in ecological benefit assessment and for developing and applying new models. The committee advises the Agency to include in its revised plan an action to identify [an algorithm] for deciding on proper models for different decision context and testing their appropriateness.” {too much “deciding on decisions”}

p. 13, lines 18-21: “...actions identified [relate] to new research...” “[The Plan should specify (or specifically note as a task to be addressed in the implementation plans)] further guidance to [Agency] units that will develop Requests for Proposals and fund [research].

p. 13, line 25: [The EPA report could usefully incorporate] Figure 7.1 of the NRC report, ...matches valuation techniques with types of valuation[. The latter could be adapted to reflect modifications suggested by recent literature eliminating the problematic distinctions between “direct” and “indirect” methods (Freeman 2003).]

p. 13, line 34: {What is meant by “formative research”?}

p. 13, lines 37+: “The committee advises the Agency to consult with behavioral [scientists] (psychologists in particular, [and] also judgment and decision-making researchers), survey methodologists and organizational behavioral researcher (for firm-level responses to proposed actions)[. These consultations will aid] in the development of [appropriate] questions [to be used in the data collection instruments] that provide the information used in [valuation exercises designed] to recover [informed] individual tradeoffs.

p. 14, line 3: C-VPESS needs to be defined at the beginning of the document (unless I missed it). This appears to be the first use of the acronym.

p. 14, line 15: “broader than [just] research”

p. 14, line 18: “To [produce] short-run results...”

p. 16, line 23: {Is this intended to refer to Agency support for the plan, or public support for the plan? Please be clear.}

p. 16, lines 33-34: “The committee believes that [it is important to characterize and quantify] the benefits of ecological protection to EPA’s [achievement of] its overall goal of protecting human health and the environment.”

p. 18-19, lines 43+: The different ethical bases to which economists and ecologist subscribe should indeed not be characterized as “different ethics” in presentations to an uninitiated audience. I prefer “fundamentally different philosophical bases for valuation.”

2. Dr. Dale:

The report address the charge questions and is very well written and clear. I agree with the Committee that it is critical to think strategically and in an integrated fashion about valuation.

My few comments are mainly to improve the clarity of communication. Comments are presented in the order they are encountered in the report – not in order of importance.

Page 1, Line 17: change “provided” to “provides” since the present tense is used throughout the report.

Page 1 – Divide the long list of bullets into two groups as it done in the text of the report. This breakdown will make the list easier to read and understand.

Page 3 and thereafter – Capitalize “Committee” as in done in the first pages of the report.

Page 4: Line 22 and line 26 – I prefer that the report refer to ecological services and to ecological systems (line 26) so that it refers to all levels of the biological hierarchy (e.g., genetic, species, population, community, ecosystem, etc.).

Page 8, Section 3.6 and page 14, section 4.9 --- these summary statements should not be at the same section level as the points above. Some reorganization of the section numbering is needed.

Page 10, line 9 – “advises” and “calls” -- not “advised” and “called”

Line 11 – I am not clear why “however” is used here. More generally - because of the tense change and the “however,” I am not sure if I am reading this section correctly. Is this section talking about what the Committee thinks or is it referring to the writers of the report that was reviewed?

Page 11, Line 3 - Delete comma after valuation.

Page 11, line 7-9 – I am not sure what “point in time” is being referred to here. What future committee report (what committee). If there are to be future activities of the SAB Committee on Valuing the Protection of Ecological Systems and Services, then those effort should be mentioned in the Executive Summary and elsewhere in the report.

Page 11, line 11 – what stage??

Line 13 – not clear what is meant by “their role as part of an information package.” EPA’s role? The role of the approaches? What information package?

Page 11, line 20 – when broken down this sentence reads “ how to package ... information in a ... package” – use different words here.

Page 11, line 26 – replace “or” with “and.”

Page 11, Line 27 – replace “terms” with “statements” (if that is what is meant here – otherwise the sentence is not clear).

Page 11, line 38 -- Replace “is providing” with “provides” – unless there is information in another report. In any case, the sentence is awkward.

Page 12, line 18 – page 32 of what?

Page 13, line 3 – I am not sure why the report suggests that the EPA is just duplicating the efforts of the Millennium Ecosystem Assessment and the Heinz Foundation. Is this a criticism that needs future development? If not, then the last part of this sentence should be deleted.

Page 13, line 6 – Delete “additional”

Page 13, line 20 – If the report refers to Requests for Proposals, then also include Broad Agency Agreements.

Page 13, line 26 – insert comma after “values”

Page 14, line 3 – spell out C-VPES.

3. Dr. Freeman:

If I am allowed to vote in the QRC process on this Advisory, I vote to approve subject to making one clarifying change to page 11, line 6.

As presently written, the last three words of this sentence do not make sense. I recommend that line 6 be revised as follows:

" ... termed "supplemental" methods in the report. However, we recommend that these methods be termed "alternative" methods. The term "supplemental" implies something that adds to the information contained in the monetary valuations. But at least some of the approaches mentioned in section 4.7 are based on premises and value judgments that are incompatible with those on which monetary valuations are based and thus are more accurately characterized as "alternatives."

4. Dr. Galloway:

Thank you for the opportunity to review the report 'Ecological Benefits Assessment Strategic Plan' prepared by the SAB's Committee on Valuing the Protection of Ecological Systems and Services. My brief comments are as follows:

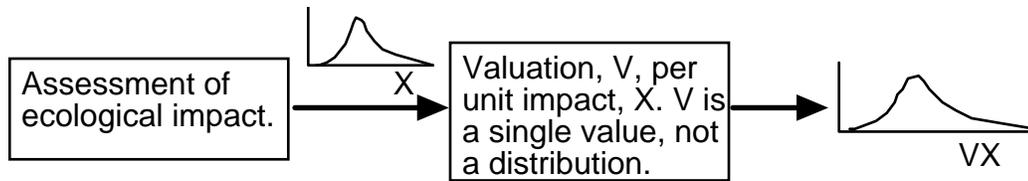
1. The most important conclusions of the report should be bulleted in the letter to the Administrator. As currently written, the letter does not adequately reflect the important findings of the Committee.
2. Two of the charges to the SAB in reviewing the report are to determine if the EPA charge questions have been adequately addressed, and whether the Panel's draft report clear and logical. It is obvious that the Panel has worked diligently to address the charge questions. However, because the structure of the report does not follow the charge questions (page 3, line 9) it is not easy for me (and probably will not be easy for EPA), to fully understand what the panel is recommending, relative to the stated charge questions. I recommend that the Panel consider reorganizing the report to explicitly address the charge questions.

5. Dr. Morgan:

Note by Granger Morgan on "Advisory Review of...*Ecological Benefits Assessment Strategic Plan*..."

I have no basic problems with this Advisory.

I was pleased to see the discussion at the top of page 12 placing emphasis on the difference between considered expert judgment (Case 1) and value judgments that are elicited from experts and others (Case 2). In principle it is not appropriate for a person to place a probability distribution on their own value judgments. (If they do not know their value they should treat it parametrically so that in subsequent analysis they can see the implication of alternative choices.) Thus if one is eliciting a value judgment from someone (Case 2, lines 8-14 on page 12) the only basis for there being uncertainty in the answer should be uncertainty about the magnitude of the impacts (i.e. uncertainty arising from Case 1), i.e.:



Page 9 line 11: "...advises the Agency itself develop..." might better read "...advises the Agency to itself develop..."

Page 11 line 7 Could we please drop " At this point in time" and start the sentence with "The committee is still discussing..."

Page 11 line 12 "...draft plan but rather consider..." might better read "...draft plan but rather to consider..."

6. Dr. Twiss:

Great job it looks like. I offer no silver bullets, but the following questions.

Can the letter to Administrator Johnson be more pointed? I would agree that some overall framework is more important than specific minor suggestions, but would ask if the bulleted items in the executive summary could be condensed and repeated in the letter. Upon examination of the bullets, though (Executive Summary p. 1) I would ask further if they could be made a bit more directive. We seem to be passing a lot back to the Agency without very much guidance as to what to do or how to do it; which might be OK, except that I sense that the Agency was really asking for help, especially as to how to take some next steps.

Could we underscore the importance of this effort, and offer to co-sponsor (upon request) a workshop or other mechanism to help the Agency design the structure and the institutional arrangements that might move things along?

I agree with the report's faithful reportage and can answer "yes" to all questions in our charge, but still am left with the concern that there is not a strong call to action.

7. Dr. Young:

The Advisory is clear, well-written, and responds well to the charge questions.

I have two suggestions:

In the letter, page 1, line 31 and in the Executive Summary, page 1, line 12, I suggest revising the sentence to read "...the need for the Agency to develop an expanded new framework for evaluating ecological *benefits* of policies, *including the linkages between ecological effects and* methods for measuring the economic and non-economic *benefits.*" This revision shifts the emphasis subtly to reflect the committee's statements that ecological valuation encompasses more than any specific methodology and includes more than economic valuation. It is in keeping with the recommendations in Section 4.2 and in the first paragraph of Section 3.

On page 13, line 1, the reference to the Heinz Foundation should, I suspect, be a reference to the Heinz Center (which is actually the H. John Heinz III Center for Science, Economics, and the Environment). They are separate entities.