

MEMORANDUM

To: Holly Stallworth, DFO
Science Advisory Board Staff Office

From: Nathalie B. Simon, Associate Director
National Center for Environmental Economics

Date: September 10, 2008

Subject: Charge Questions for SAB-EEAC's October meeting

The purpose of this memorandum is to transmit charge questions for consideration by the Science Advisory Board's Environmental Economics Advisory Committee (SAB-EEAC) during our meeting with them on the *Guidelines for Preparing Economic Analyses* scheduled for October 23 and 24, 2008. These questions touch on important issues in each of the Chapters of the *Guidelines*.

It is worth noting that while we are seeking a thorough peer review of the *Guidelines* document from the EEAC with this charge, we do anticipate additional changes to the *Guidelines* in the near future with the addition of new chapters, the incorporation of new, updated mortality risk valuation estimates, and potential updates to the discounting discussion as indicated in the *Guidelines* and the charge document itself. We anticipate bringing substantial changes of this sort to the EEAC at future meetings for review.

Thank you for your efforts and the efforts of the SAB-EEAC in supporting improvements to our *Guidelines for Preparing Economic Analyses*. We look forward to the SAB-EEAC's review.

Please contact me if you have any questions about the attached charge.

Attachment

Cc: Al McGartland

Guidelines for Preparing Economic Analysis:
Charge to the SAB-EEAC for Upcoming Peer Review

Background: The Environmental Economics Advisory Committee (EEAC or the Committee) is requested to perform a review of a revised guidance document prepared by EPA titled *Guidelines for Preparing Economic Analyses*. The document is designed to represent Agency policy on the preparation of economic analysis called for under applicable legislative and administrative requirements.

The goal of EPA's *Guidelines for Preparing Economic Analyses* is to establish a sound scientific framework for performing economic analyses of environmental regulations and policies. The *Guidelines* provide guidance on analyzing the economic impacts of regulations and policies, and assessing the distribution of costs and benefits among various segments of the population, with a particular focus on disadvantaged and vulnerable groups. The *Guidelines* were last issued in September 2000. Since that time, the literature has grown considerably and OMB issued *Circular A-4*, providing guidance to regulatory agencies on the development of regulatory analysis. Although *Circular A-4* is largely consistent with the previous version of the *Guidelines*, it does describe a number of new requirements. EPA has revised its *Guidelines* to reflect all of these important changes.

As a result, many of the chapters have undergone extensive revision. For example, while the structure of *Chapter 4: Regulatory and Non-Regulatory Approaches to Pollution Control* has remained largely the same as that used for this chapter in the previous version of the *Guidelines*, the chapter itself has been extensively rewritten and expanded and only minimally resembles the version published in 2000.

Chapter 5 also underwent a rather drastic transformation compared to the version in the 2000 edition of the *Guidelines*. Whereas in 2000, Chapter 5 covered a myriad of loosely related topics including economic framework, baseline specification, and analyzing and presenting uncertainty, in the revised *Guidelines* Chapter 5 focuses solely on baseline specification. This discussion has been expanded and updated while the other topics have been relegated to other sections of the document or are under development for future chapters. Specifically, the sections in Chapter 5 on guiding principles for baseline specification, compliance rate, and working with multiple rules are now more detailed and a new discussion of the implications of the baseline specification when benefits are assessed as partial gains to a threshold has been added.

Chapter 6 on Social Discounting still addresses conventional and inter-generational cases; however, the discussion of conventional discounting now focuses more clearly on the shadow price of capital approach and the key question of capital displacement. Much of the text and all of the empirical examples were in the prior draft. The guidance on intergenerational discounting has been almost completely redrafted to more clearly present the Ramsey framework and to reflect more recent literature on the role of uncertainty. The recommendations in this chapter have also been updated. The section on discounting non-monetized effects from the prior *Guidelines* has been removed to be addressed in a separate chapter on cost-effectiveness analysis.

Chapter 7: Analyzing Benefits has also been reorganized and expanded. Specifically, the descriptions of the valuation methodologies have been clarified and largely separated from discussions of specific endpoints. The stated preference discussion has been expanded and a new section on accommodating non-monetized benefits has been added. The guidance on mortality risk valuation is still discussed in Chapter 7; however, many of the details on how the Agency's default estimate has been derived now appear in Appendix B. While the appendix is clearly referenced in the main text, this discussion, meant to reflect current Agency "best practices," has been relegated to an appendix to facilitate future revisions as we continue our efforts to update our approach to mortality risk valuation.

Chapter 8: Analyzing Costs has been extensively rewritten to focus on social cost, defined as the sum of all of the opportunity costs incurred as a result of the regulation. The chapter includes a new theory section on social cost estimation in partial equilibrium and general equilibrium frameworks. The chapter concludes with a fuller description of the strengths and limitations of alternative models that analysts may consider for estimating costs.

Many of the changes to *Chapter 9: Distributional Analyses: Economic Impact Analyses and Equity Assessment* resulted in the reorganization and condensation of information presented and in drawing greater distinctions between the types of distributional analyses where needed. The chapter is still organized according to type of analysis; there is a section for economic impact assessments and a section for equity assessments. Two sections have been added that discuss the modeling or framework used for each analysis. The material for these sections was taken from the original chapter, but is now presented in a more prominent way. The information regarding statutes and policies is now in the introduction, as opposed to within each sub-section.

One new chapter – *Appendix A: Economic Theory* – has been drafted and is included in the version submitted for EEAC review. It is intended to provide a technical discussion of some of the economic concepts mentioned throughout the main chapters of the document. Although some of the included topics are covered in the 2000 Guidelines, moving these discussions to a separate section at the end allows for a more detailed discussion for the interested or uninitiated reader. It also prevents redundancy in defining economic terms throughout the chapters. Instead, readers are referred to the Appendix for an explanation of technical terms and concepts as they come up.

Other chapters are under development, including a chapter on Cost-Effectiveness Analysis (CEA) and one on Uncertainty Analysis, and will be added later. EEAC review of these yet-to-be-added chapters will be sought separately from this request. In addition, the Agency is currently revisiting its approach to mortality risk valuation in a separate project and will be seeking SAB-EEAC advice on this work at a later date.

In addition, EPA has made the following changes to the document: addition of an index and glossary and the use of a new printing format. We plan to release the hard-copy of this document in a three-ring binder rather than a fixed, bound document. This will allow greater flexibility for future revisions and the addition of new chapters as needed.

Charge: The charge to the Committee is to undertake a peer review of the draft document and provide advice to the Agency in response to a series of questions concerning the preparation of

economic analyses by the EPA. The EPA guidance directly refers to methods and practices that enjoy widespread acceptance in the environmental economics profession. The guidance document does not intend to preclude new or path-breaking forms of analysis, but to provide EPA analysts with a reasonably concise and thorough treatment of mainstream thinking on important technical issues that arise in the conduct of economic analysis.

The guidance accounts for some of the practical limitations on time and resources that EPA analysts must contend with when preparing economic analyses. It also is shaped by administrative and statutory requirements that contain direct references to the development of economic information in the formulation of regulations (e.g., evaluations of economic achievability). Some of the language in the guidance was chosen for the express purpose of providing some flexibility to analysts that should enable them to “customize” the analysis to be as complex and complete as is necessary to conform to administrative and legal procedures. The document also emphasizes the need for the EPA analyst to ensure that their analytic efforts are commensurate with the value the information will provide to EPA’s and the government’s regulatory and policymaking process.

The document covers a number of principles and practices that virtually all economic analyses should follow, and it is these items to which the Committee is asked to devote the greatest attention in its review. In general, we believe the Guidance should reflect mainstream economic science and methods that are well demonstrated and relatively straightforward to apply to particular environmental issues. Ideally, these methods should be general enough that EPA program analysts can use them consistently across all of EPA's programs. Thus, while EPA recognizes that this document needs to provide pragmatic guidance, we have also attempted to reflect the state of the economic science. The Committee’s views about whether there are any important omissions or oversimplifications are critical.

The review questions to the Committee are as follows:

1. Do the published economic theory and empirical literature support the statements in the guidance document on the merits and limitations of the different regulatory and non-regulatory approaches discussed in *Chapter 4: Regulatory and Non-Regulatory Approaches to Pollution Control*?
2. Do the published economic theory and empirical literature support the statements in the guidance document on the consideration of the baseline discussed in *Chapter 5: Establishing a Baseline*?
3. Do the published economic theory and empirical literature support the statements in the guidance document on the treatment of discounting benefits and costs discussed in *Chapter 6: Discounting Future Benefits and Costs* in the following circumstances:
 - a. Are the descriptions of fundamental social discounting approaches, conceptual conclusions and recommendations consistent with the appropriate economic literature on social discounting? Are the correct conclusions drawn from the respective literatures on discounting for public projects (government spending) and discounting for regulations (government-mandated spending)?

- b. The Guidelines do not draw a firm conclusion on the extent to which shadow price of capital adjustments are likely to be necessary for most EPA policy analyses. The issue depends greatly on the elasticity of capital supply and EPA plans to pursue additional research on this issue, as noted in the draft Guidelines. Does EPA's conclusion reflect the sense of the literature or can a firmer conclusion be drawn? Does the Committee have suggestions regarding situations where these adjustments would be necessary or unnecessary?
 - c. While EPA concludes that a rate of 3% is generally consistent with estimates from low-risk government securities, the Agency would like to more firmly establish a rigorous basis for a consumption-based rate. What data and methods would the committee suggest EPA pursue?
 - d. Chapter 6 recommends adopting an approach to long term discounting based on the work of Newell & Pizer (2003). While EPA recognizes that data may not clearly support a particular statistical model over other alternatives (e.g., random walk vs. mean-reverting), the Chapter concludes that the recommended approach is an improvement over constant discounting. Does the committee believe this is a reasonable conclusion from the economics literature? More specifically, is the recommendation to use a random walk model as a default reasonable given the state of the literature?
 - e. EPA has struggled with the question of the length of time an analysis should capture and has arrived at some practical recommendations (see Section 6.1.6.3 and 6.4). Are these recommendations consistent with good economic practices? Does the committee have additional recommendations or insights on this subject?
4. Do the published economic theory and empirical literature support the statements in *Chapter 7: Analyzing Benefits* on the merits and limitations of different valuation approaches for the measurement of social benefits from reductions in human health risks and improvements in ecological conditions attributable to environmental policies?
5. Chapter 7 includes a brief discussion of the Agency's current approach to mortality risk valuation with more details provided in Appendix B. These sections will be updated when the Agency concludes its efforts to update its mortality risk valuation approach. In the interim, are the discussions provided in Chapter 7 and Appendix B clear and balanced?
6. Does *Chapter 8: Analyzing Costs* contain an objective and reasonable presentation of the published economic theory, empirical literature, and analytic tools associated with estimating social costs?
7. Does *Chapter 8* contain an objective, balanced and reasonable presentation of the published economic theory, empirical literature, and analytic tools associated with computable general equilibrium (CGE) models? Is the description of the relevance of these models for economic analyses performed by the EPA reasonable?

8. Does *Chapter 9: Distributional Analyses: Economic Impact Analyses and Equity Assessment* contain an objective and reasonable presentation of the measurement of economic impacts, including approaches suitable to estimate impacts of environmental regulations on the private sector, public sector and households? This discussion includes, for example, the measurement of changes in market prices, profits, facility closure and bankruptcy rates, employment, market structure, innovation and economic growth, regional economies, and foreign trade.
9. Does *Chapter 9* contain a reasonable presentation and set of recommendations on the selection of economic variables and data sources used to measure the equity dimensions identified as potentially relevant to environmental policy analysis?
10. *Appendix A: Economic Theory* was prepared for those readers who wished to have a better understanding of the economic foundations underlying benefit cost analyses. Does Appendix A summarize the relevant literature in an objective and meaningful way? Are there topics that warrant (more) discussion in this appendix that were otherwise missed?
11. Please identify and enumerate any inconsistencies you may find across chapters and other issues/topics on which we should provide further elaboration. Also, please identify any definitions provided in the new glossary that are inaccurate or that otherwise need revision.

The EPA requests that the Committee provide written review and documentation, when applicable, to support recommended changes to the guidance document.