U.S. Environmental Protection Agency
Advisory Council on Clean Air Compliance Analysis (Council)
Special Council Panel for the Review of the Third 812 Analysis
Summary Minutes of Public Teleconference
Date: March 18, 2004

Committee Members: (See Roster - Attachment A)
Date and Time: 12:00 p.m. to 2:00 pm., March 18, 2004 (See Federal Register Notice - Attachment B.)
Location: By teleconference only
Purpose: The purpose of the call was to finalize a Council draft report reviewing EPA's *Draft Analytical Plan for EPA's Second Prospective Analysis - Benefits and Costs of the Clean Air Act, 1990-2020.*

Attendees: Chair: Dr. Trudy Cameron; Ms. Laurie Chestnut, Drs. Charles Driscoll, John Evans, Lawrence Goulder, Katherine Kiel, Nino Kuenzli, James Hammitt, Dale Hattis, Reed Johnson, Virginia McConnell, Warner North, Bart Ostro, Kerry Smith, Chris Walcek.

Other Persons Attending:
From EPA: James DeMocker, OAQPS Staff, Brian Henninger, Natalie Simon, Chris Dockins, Peter Nagelhout, Ann Watkins, Holly Stallworth.
EPA Contractors: Ellen Post, Abt Associates; Jim Neumann and Jason Price, IEc.; Jim Wilson, Pechan Associates.
Other Members of the public: Neil Shaw, Risk Policy Report.

Meeting Summary:

The meeting followed the issues and timing as presented in the meeting Agenda (see Meeting Agenda - Attachment C). The teleconference lasted until 2:00 pm. Mr. DeMocker submitted written comments (Attachment D) and provided oral comments, and there was no other written or oral comment during the discussion.

Welcome, Agenda Review, Brief Introduction to the Draft Report and Introduction of New Council Members

Dr. Angela Nugent, Designated Federal Official (DFO) opened the session at 12 p.m. and took roll. Dr. Trudy Cameron, the Chair, reviewed the agenda. Dr. Cameron welcomed the new members of the Council, Drs. Driscoll, Kiel, Kuenzli, and Walcek, and expressed appreciation for their undertaking work related to the Second Prospective Study.

Dr. Nugent stated that she had circulated written comments from Mr. DeMocker (Attachment D) as well as comments received from Panel members (Attachment E)had been circulated by email prior to the teleconference.

Comments from the Agency

The Chair invited Mr. Jim DeMocker to summarize the comments he had provided by email to the DFO before the meeting.

Mr. DeMocker thanked the Panel and the Council for the draft report, as well as the Health Effects report and the Air Quality Modeling Report. He stated that all three panel reports had been responsive to the many charge questions posed by the Agency, and had provided sound advice and new advice that had stimulated the project team.

Regarding the draft Council report that was the focus of the teleconference, he described his written comments as identifying a few issues he wished to highlight in the teleconference, as well as some minor issues involving lack of clarity or accuracy relating to the draft analytical plan. He expressed appreciation that the eight issues raised at Dec 22 teleconference had been largely or completely resolved in the current draft.

He then took time to identify four minor and one major issue. These issues follow immediately below.

Mr. DeMocker asked for clarification of the advice regarding IPM and HAIKU models and asked if a comparison of demand-side modeling capabilities of the two models would be useful. The Council Special Panel agreed.

Mr. DeMocker asked whether the Council endorsed the Agency's cost of capital as appropriate for estimating the behavior of firms. Dr. Larry Goulder stated that he would clarify the language in the present draft and show how it was consistent with the research of Lynn and Freeman. He asked that the Panel reserve discussion of members issues related to discounting for a time later in the teleconference.

Mr. DeMocker stated that the Project Team believed it understood the Council advice relating to QALYs, to develop QALY-based cost-effective analysis as an alternative estimate. He asked whether the Council wished to limit that advice to 812 context and might consider a wording change on page 64 addressing inadvisable transfers to rulemaking contexts. Council Special panel members asked to address this topic in more detail later in the teleconference.

Mr. DeMocker commented on the Agency's suggestion for more specific wording relating to willingness-to-pay for senior citizens.

Mr. DeMocker identified as a major concern for the Agency the practical approach for implementing computable general equilibrium (CGE) modeling. He acknowledged the Council's advice that the Agency should accept a greater role for CGE modeling. He asked for guidance on strategies that would not require multiple iterations in modeling emission, costs, and benefits. In his view, a full-scale implementation of the Council's advice is beyond the capabilities of

current resources and systems. He asked the Council to give feedback on four options the Agency had developed for implementing the Council's advice. These options will be examined at an all-day Agency workshop planned for April 6, 2004. The purpose is to evaluate the three different models under consideration, the IGEM (Jorgenson-Ho-Wilcoxen model), EMPAX, and AMIGA. He asked the Council special panel for guidance that would help the Agency satisfice on the most significant objectives. He asked for feedback on four proposed options developed by the Agency; the Agency could then use that feedback to guide discussions at the April 6th workshop:

1. single post-processing CGE run, affect benefits and cost side
2. move CGE up front but only integrate with cost sector models
3. similar to Option 3, but apply exogeneous specifications, such as Clean Air Act labor productivity improvements, to capture some dimensions of benefits
4. run entire analytical sequence. with feedback into the CGE model.

The Council Special Panel then discussed these options and acknowledged the costs involved in rerunning non CGE models to integrate their specifications with results of CGE models. In the view of one member, option one provides little integration. It provides some sectoral input into a CGE run but doesn't change inputs to original models. Mr. DeMocker stated that the option envisioned capturing the tax interaction effect, but not shifts in activities or activity patterns.

In the view of this Council member, options two and three involves more integration, and three allows for some integration of benefits analysis. Members generally agreed that option 4 was ideal; option 3 was preferable but difficult, and option 2 represented some progress. The Chair stated that the report text would be revised to reflect an acknowledgement of the costs involved in CGE modeling and might mention long and short-term strategies for improving analysis in this area

Members discussed that full development of the CGE approach was an appropriate focus for the "Learning Laboratory." Members were concerned about the match of assumptions in different sectoral models, for example that the "labor/leisure choice may not match with commodities assumption." One member linked this discussion to the choice of discount rates, because one needs to think about the CGE model in terms of the shadow price of capital that goes into a particular model."

Committee General Discussion of the Draft Report

The first topic discussed was discounting. Dr. Larry Goulder volunteered to clarify text in the report that related the supply-side approach to discounting discussed by Lind and Freeman and that had been the focus of a Council member's comments. He stated that both Lind and Freeman start with observed interest rates (e.g., household rates after tax or rate of return by producers), rather than with ethical assumptions about discounting future utilities. Dr. Goulder stated that he understood Lind and Freeman to show that there can be wedge between the

household interest rate "r" and investor's rate of return "s." When "r" and "s" differ, the supply side approach says that the discount rate should be somewhere between "r" and "s," "depending on what is being crowded out more." Therefore the supply side approach does address consumption.

One Council member asked how this addressed the situation where, in the context of regulation, a private firm has a choice about how to comply and if to comply. Consumers of some products of some products will pay more than other products. is it displacing private productive behavior, Ideally, in his view, the solution for shadow price of capital is an outcome of a stream of dynamic equilibrium model. Another Council member agreed that, in theory, if we take supply side approach, such a model would model taxes, investment and consumption perfectly and could give discount rate to be used. In his view, however, though "we're asking too much if we go down this road." He suggested that the Council give some credence to an alternate approach, a demand side approach which suggests a social rate of discount, based on ethical consideration. He suggested that the Council acknowledge a range of approaches and numbers. Another Council member suggested that the report more clearly characterize relevance of demand and supply side approaches as generic solutions to problems and describe more clearly what each would imply for a discount rate. Another panel member pointed to an example where different discount rates applies: investor-owned vs. government-owned electrical generating facilities. They each experience different discount rates; consumers' experience with each therefore changes. Given this differential, and likely different rate in other sectors, it might be an appropriate focus of the Learning Laboratory to explore a more refined approach to the issue of discount rates.

Another Council member asked about the nature and rationale of the Council's recommendation about discount rates. If 3% represents the best estimate of the social rate and 7% represents the opportunity cost of capital, why should the Agency also use 5%. Dr. Goulder responded that there was a difference of views on the Council about a reasonable central value. Five percent was meant to represent that number. The recommendation was consistent with the rest of the report, which used central vales

The Council then addressed, once again, whether the advice relating to the social discount rate would be used for a firm's private costs. Dr. Goulder stated that he would clarify the text to show that the discount rate used for a firm's private costs would be the firm's own opportunity costs, which may differ from the social discount rate.

The Chair asked Drs. Goulder and Smith to work together revise the text on discounting. Dr. Goulder agreed to provide an initial draft.

The Committee then turned to a discussion of Quality Adjusted Life Years (QALYs). A few members of the Council expressed support for the language in the Executive Summary regarding QALYs but not the language in the text. Some members expressed the view that QALYs should not be used outside the "Learning Laboratory" context. Another member stated that if the Council provided any advice that QALYs might be used, it must include much more

guidance and structure for its use. Several members expressed a concern about a broad mandate to conduct-effectiveness analysis generally.

Several members then mentioned that QALYs are just one kind of cost effectiveness and that cost-effectiveness measures, for example, dollars spent per life saved, can't be used in a benefit cost-analysis. Outside cost-benefit analysis, cost-effectiveness analysis may be appropriate for some purposes.

Several members then discussed specific concerns about the methodologies currently being used for developing QALYs and, given these concerns, questioned the validity of those methods. If the point of EPA's developing a QALY were to provide a number comparable with those in other domains, they viewed the Agency as being required to use invalid, misleading measures.

One member suggested that the Council might state that the concept of QALYs was acceptable, but the implementation of the concept was problematic. Other members responded that they were not ready to support that view. A few members expressed the concern that QALYs only represented health effects, and did not capture benefits, such as ecological effects, that are not reflected in "cost per live-saved" numbers.

One member noted that the issue had two dimensions: The first dimension was a sweeping skepticism among some, but not all, members about cost-effectiveness analysis that involved the "numerator." The second dimension was a concern about the "denominator," how the "QALY" number was calculated. He stated that he was not in favor of EPA applying QALYs as its cost-effectiveness analysis, but he was in favor of encouraging EPA to explore QALYs and how to do them in an appropriate, consistent way as part of the "Learning Laboratory." He suggested that the Council detail its concerns clearly, in terms of 1) specific problems the Council sees with the ways QALYs are measured; and 2) problems with the use of QALYs as linked to cost/benefit analyses, because many benefits intimately linked to expenditures are not captured.

A panel member suggested that the Council report reference a recent OMB report, which contains a discussion of both cost-effectiveness analysis.

The Council then turned to other issues. The Chair noted Dr. Dale Hattis's comment regarding the discussion of uncertainty in the Executive Summary and agreed to revise language. Ms. Laurie Chestnut agreed to provide some alternative language regarding adjustments to VSLs; she suggested that this topic may be appropriate for the "Learning Laboratory.". Several other members suggested that the language reference the Cancer White Paper review report authored by the SAB's Environmental Economics Advisory Committee. Dr. Kerry Smith agreed to work with her on this revision. Dr. John Evans noted the need to qualify some of the language in the uncertainty section and agreed to provide alternative text.

Update on Project Schedule

Mr. Jim DeMocker provided a brief update on the project schedule. He emphasized the importance of the choice of CGE model to the overall length and sequencing of the project. Without the introduction of new CGE requirements, there is generally a delay of 9-12 months between completion of the emission inventories and completion of the draft report. If new CGE requirements are put in place, there could be a six-to-eight month delay in completing the report. The Council acknowledged that choice of a CGE model was a key issue.

Mr. DeMocker also mentioned that the other key variable was whether, how, and how often, intermediate reviews will take place and that he will consult with the SAB Staff Office concerning scheduling of future Council and Subcommittee reviews.

Acknowledgement of Departing Council Member

The Chair took a few moments to recognize the contributions of Dr. Larry Goulder to the work of the Council and to thank him for his contributions. He has completed three two-year terms and will step down from Council work for a period following completion of the Council Special Panel Report.

Next Steps

The Council Special Panel decided not to vote on the draft report and instead to circulate a revised draft after separate parts of the text had been revised and circulated for discussion. The revised draft would be circulated for an email vote prior to being finalized.

Action Items

1. Dr. Larry Goulder will revise language relating to discounting on page 40 of the current draft.
2. Dr. Trudy Cameron will revise the report text to reflect an acknowledgement of the costs involved in CGE modeling and might mention long and short-term strategies for improving analysis in this area
3. Drs. Goulder and Smith will work together revise the text on discounting. Dr. Goulder agreed to provide an initial draft.
4. The Chair noted Dr. Dale Hattis's comment regarding the discussion of uncertainty in the Executive Summary and agreed to revise language.
5. Dr. Trudy Cameron will revise the QALY discussion in light of views expressed during the teleconference
6. Ms. Laurie Chestnut and Dr. Kerry Smith agreed to provide some alternative language regarding adjustments to VSLs; she suggested that this topic may be appropriate for the "Learning Laboratory."
7. Dr. John Evans noted the need to qualify some of the language in the uncertainty section and agreed to provide alternative text.

The Chair concluded the meeting by thanking members for their participation. The teleconference was adjourned at 2:00 pm.

Respectfully Submitted:

/s/
Angela Nugent,
Designated Federal Official
Certified as True:

/s/
Trudy Cameron

Trudy Cameron
Chair

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by the Council members and consultants to the Agency during the course of deliberations within the meeting. Such ideas, suggestions and deliberations do not necessarily reflect definitive consensus advice from the Council. The reader is cautioned to not rely on the minutes to represent final, approved, consensus advice and recommendations offered to the Agency. Such advice and recommendations may be found in the final reports prepared and transmitted to the EPA Administrator following the public meetings.

ATTACHMENTS

Attachment A	Roster of the Special Council Panel
Attachment B	Federal Register Notice
Attachment C	Meeting Agenda
Attachment D	Comments from Mr. James DeMocker
Attachment E	Committee comments on the Council draft report

Attachment A - Roster

U.S. Environmental Protection Agency
Science Advisory Board
Advisory Council on Clean Air Compliance Analysis
Special Council Panel for the Review of the Third 812 Analysis

CHAIR

Dr. Trudy Cameron, Raymond F. Mikesell Professor of Environmental and Resource Economics, Department of Economics, University of Oregon, Eugene, OR

Also Member: Executive Committee

MEMBERS

Dr. David T. Allen, The Henry Beckman Professor in Chemical Engineering, Department of Chemical Engineering, University of Texas , Austin, TX

Ms. Lauraine Chestnut, Manager, Stratus Consulting Inc, Boulder , CO

Dr. Lawrence Goulder, Associate Professor, Department of Economics & Institute for International Studies, Stanford University, Stanford, CA

Also Member: Environmental Economics Advisory Committee

Dr. James Hammitt, Professor of Economics and Decision Sciences, Department of Health Policy and Management, School of Public Health, Harvard University, Boston, MA

Dr. F. Reed Johnson, Principal Economist and RTI Fellow, RTI Health Solutions, Research Triangle Institute, Research Triangle Park, NC

Dr. Charles Kolstad, Professor, Department of Economics, Bren School of Environmental Science and Management, University of California, Santa Barbara, CA

Dr. Lester B. Lave, Professor, Graduate School of Industrial Administration, Carnegie Mellon University, Pittsburgh, PA

Dr. Virginia McConnell, Senior Fellow; Professor of Economics, Resources for the Future, Washington, DC

Dr. Bart Ostro, Chief, Air Pollution Epidemiology Unit, California Office of Environmental

Health Hazard Assessment (OEHHA), Oakland, CA

Dr. V. Kerry Smith, University Distinguished Professor, Department of Agricultural and Resource Economics, College of Agriculture and Life Sciences, North Carolina State University, Raleigh, NC

OTHER SAB MEMBERS

Dr. Dale Hattis, Research Professor, Center for Technology, Environment, and Development, Marsh Institute, Clark University, Worcester, MA

Member: Environmental Health Committee

CONSULTANTS

Dr. John Evans, Senior Lecturer on Environmental Science, Harvard University, Portsmouth, NH

Dr. D. Warner North, President, North Works Inc, Belmont, CA

Dr. Thomas S Wallsten, Professor, Department of Psychology , University of Maryland, College Park, MD

SCIENCE ADVISORY BOARD STAFF

Dr. Angela Nugent, Designated Federal Officer, 1200 Pennsylvania Avenue, NW, Washington, DC, Phone: 202-564-4562, Fax: 202-501-0323, (nugent.angela@epa.gov)

Attachment B - Federal Register Notice

Science Advisory Board (SAB) Staff Office; Notification of Multiple Public Teleconference Meetings

[Federal Register: March 4, 2004 (Volume 69, Number 43)]
[Notices]
[Page 10230-10231]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr04mr04-56]

ENVIRONMENTAL PROTECTION AGENCY
[FRL-7631-9]

Science Advisory Board (SAB) Staff Office; Notification of Multiple Public Teleconference Meetings

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

SUMMARY: The Environmental Protection Agency Science Advisory Board (SAB) Staff Office announces upcoming

[[Page 10231]]

teleconferences of the following two Advisory Panels:
(1) Advisory Council on Clean Air Compliance Analysis Special Council Panel for the Review of the Third 812 Analysis: Public teleconference to finalize its advice on the Agency's draft analytical plan for that analysis.
(2) SAB Multimedia, Multipathway, and Multireceptor Risk Assessment (SAB 3MRA) Modeling System Panel: Public teleconference to allow the Panel to confirm that final changes to the draft report were made correctly.

DATES: The Special Council Panel for the Review of the Third 812 Analysis will hold a public teleconference on March 18, 2004, from 12 p.m. to 2 p.m. (eastern time).
The SAB Multimedia, Multipathway, and Multireceptor Risk Assessment (SAB 3MRA) Modeling System Panel will hold a public teleconference on March 18, 2004, from 1 p.m. to 3 p.m. (eastern time).

ADDRESSES: Participation in the meetings indicated above will be by teleconference only. Supplemental materials and an agenda for each meeting will be announced on the SAB Web site, http://www.epa.gov/sab prior to each teleconference.

FOR FURTHER INFORMATION CONTACT: Members of the public who wish to obtain the call in number and access code to participate in either of the teleconferences, or who wish to submit written or brief oral comments (three minutes or less) must contact the appropriate Designated Federal Officer (DFO) listed below:
(1) For information regarding the Special Council Panel for the

Review of the Third 812 Analysis please contact Dr. Angela Nugent, telephone/voice mail: (202) 564-4562, fax: (202) 501-0582, or e-mail: nugent.angela@epa.gov.

(2) For information regarding the SAB 3MRA Panel contact Ms. Kathleen White, telephone/voice mail: (202) 564-4559, fax: (202) 501-0582, or e-mail: white.kathleen@epa.gov. To reach a central number at the SAB Staff Office, please call via telephone (202) 564-4533, U.S. EPA Science Advisory Board (1400A), 1200 Pennsylvania Avenue, NW., Washington, DC 20460. General information about the SAB and Council can be found on the SAB Web site at http://www.epa.gov/sab.

SUPPLEMENTARY INFORMATION:

The Special Council Panel for the Review of the Third 812 Analysis is holding a public teleconference for the Council to finalize a draft report advising the EPA on its plans for the Third 812 analysis. The overall charge to the Panel is to provide advice to the Agency regarding data and methods to be used for the Agency's planned analysis under section 312 of the Clean Air Act (CAA) of the impacts of the Clean Air Act (CAA) on the public health, economy, and environment. Background on the Committee and its charge was provided in 68 FR 7531-7534, February 14, 2004. More information regarding this advisory activity can be found at the SAB Web site at http://www.epa.gov/science1/panels/scpanel812heesaqms.htm.

The SAB 3MRA Panel is holding a public teleconference to confirm that final changes to its draft report were made correctly. Background on the SAB 3MRA Panel, and this review was provided in 68 FR 17797-17800, April 11, 2003. Additional meetings of the Panel were announced in 68 FR 46606-46607, August 6, 2003. More information regarding this review can be found at the SAB Web site at http://www.epa.gov/sab/panels/SAB3MRAmspanel.html.

Providing Oral or Written Comments at SAB Meetings: It is the policy of the SAB Staff Office to accept written public comments of any length, and to accommodate oral public comments whenever possible. The SAB Staff Office expects that public statements presented at its teleconferences and meetings will not be repetitive of previously-submitted oral or written statements. Oral Comments: In general, for teleconference meetings, opportunities for oral comment will be limited to no more than three minutes per speaker and no more than fifteen minutes total. Requests to provide oral comments must be in writing (e-mail, fax or mail) and received by the DFO no later than noon eastern time five business days prior to each teleconference in order to reserve time on the teleconference agenda. Written Comments: Although the SAB Staff Office accepts written comments until the date of the meeting (unless otherwise stated), written comments should be received in the SAB Staff Office at least seven business days prior to the teleconference date so that the comments may be made available to the committee or panel for their consideration. Comments should be supplied to the DFO at the address/contact information noted above in the following formats: one hard copy with original signature, and one electronic copy via e-mail (acceptable file format: Adobe Acrobat, WordPerfect, Word, or Rich Text files (in IBM-PC/Windows 95/98 format)).

Meeting Accommodations: Individuals requiring special accommodation to access these teleconferences, should contact the appropriate DFO at least five business days prior to the teleconference so that appropriate arrangements can be made.

Dated: February 26, 2004.

Vanessa T. Vu,
Director, EPA Science Advisory Board Staff Office.
[FR Doc. 04-4823 Filed 3-3-04; 8:45 am]
BILLING CODE 6560-50-P

Attachment C - Agenda

U.S. EPA Advisory Council on Clean Air Compliance Analysis
Special Council Panel for the Review of the Third 812 Analysis
Advisory Teleconference
March 18, 2004, 12:00-2:00 Eastern Time

Purpose of Meeting: To finalize a Council draft report reviewing EPA's *Draft Analytical Plan for EPA's Second Prospective Analysis - Benefits and Costs of the Clean Air Act, 1990-2020.*

12:00-12:05	Opening of Meeting and Roll Call	Dr. Angela Nugent, Designated Federal Officer, SAB Staff Office
12:05-12:15	Welcome, Agenda Review, Brief Introduction to the Draft Report and Introduction of New Council Members	Dr. Trudy Cameron, Chair
2:15-12:30	Agency Comments	Mr. James DeMocker, Office of Research and Development
12:30-1:20	Council Discussion and Decision on Draft Report	
1:20-1:40	Thanks and Acknowledgment of Contributions of Council Member with Concluding Term	Dr. Trudy Cameron
1:40-1:50	Update on Project Schedule	Mr. James DeMocker
1:50-2:00	Summary of Action Items	Dr. Trudy Cameron
2:00	Adjourn	

Attachment D
Comments received from Mr. James DeMocker, March 17, 2004

812 Project Team March 17, 2004 draft comments on
February 23, 2004 draft of SAB Council advisory report
-1-
Key issues/comments:
1. Page 25-26: In the discussion of IPM and HAIKU, the draft Council report states first that it would be helpful to be more clear about the electric demand modeling capabilities of IPM, then states that HAIKU "has a better-developed demand side." The Project Team is unclear how the comparative statement is consistent with the claim of insufficient information about IPM's demand-side capabilities. A comparison of the demand-side modeling capabilities of the two models, however, could be conducted if it would be useful to do so.

2. Page 31: lines 4-8: The draft Council report suggests that the Project Team intended to use a CGE model only as a check on engineering cost estimates. Our initial proposal, however, was to use a CGE (a) to measure spillover costs, (b) to generate estimates of social costs that incorporate tax interactions, and (c) to provide estimates of the effect of the CAAA on employment and GDP. After the 2001 Council review, we broadened our goals to include exploration of the effect of incorporating benefits-side health impacts on spillover costs, GDP, and employment. Pursuant to this goal, we planned to run the CGE only after both the sector-specific cost modeling and the health effects modeling were complete and available to help configure the CGE model (i.e, the CGE would be run in a "post-processor" mode in the sense that all the key direct regulation-induced cost and benefit effects would be modeled in the CGE).

In addition, advice in Chapters 4 and 6 on the need for CGE modeling seems potentially inconsistent. In chapter 4, page 16, line 42, the Council states that "we cannot hold fixed the level and mix of economic activities, independent of the regulatory regime." This chapter stresses the overall need for consistency in income growth assumptions, relative prices (e.g., for fuels), and presumably, population and other emissions drivers. Chapter 6, however, allows for the possibility, at least, that a CGE might be used later in the analytic chain to estimate spillover effects, though on page 35 the Council also notes that tax-interaction effects might be considered using estimates of benefits side impacts. It does not seem possible to satisfy both goals–modeling changes in sectoral activity and incorporating benefit-side tax interaction effects–in this 812 analysis without an iterative modeling approach, that is, one that could be replicated by feeding benefits side results back into the CGE and converging on a solution. However, a multiple iteration modeling approach is not likely to be feasible given current limitations in data and models.
If we move a CGE to the front of the analytic chain, then it could still be used to estimate changes in economic growth attributable to CAAA-induced changes on the cost side.

However, we would not be able to incorporate the effects of health benefits on economic growth unless we (a) applied some set of exogenously-specified labor productivity and availability adjustments using available literature and/or results of the previous 812 analysis, or (b) ran the entire modeling sequence –including up-front CGE modeling– through health benefits and then re-ran the entire sequence with the CGE reconfigured to incorporate the health-related improvements. The first option sacrifices accuracy while the second option entails a major increase in analytical time and resources.

Under the current circumstances, it would be helpful if the draft Council report could clarify how the Council views the merits of each of four options and their attendant sacrifices:

(1) single, post-processor CGE run to estimate first-order benefit and cost spillovers but with no up-front integration and reconciliation of CGE and sector models (except to ensure consistent input assumptions such as population growth),

(2) up-front integration of a CGE but only to capture cost-side effects,

(3) same as option 2 but apply exogenous estimates of CAAA-related labor productivity and availability improvements based on available literature and/or previous 812 analysis, or

(4) full run of the analytic sequence as outlined in the Blueprint to obtain a first approximation of scenario-specific values for both cost and benefit effects for the with- and without-CAAA scenarios, followed by a second set of full runs (including supplemental and disaggregated runs) starting with a reconfigured CGE.

3. Page 40, lines 34-37: Overall the Council's advice on discounting is clear. The one question we have is whether the Council believes that use of the cost of capital is appropriate for estimating the behavior of firms (e.g., whether they will install a scrubber or purchase allowances, for example). Does the Council endorse the use of the IPM with a cost of capital to predict behavior, but a social rate to annualize capital costs and to compute net present values? The discussion from December 2003 implies that the answer is "yes."

4. Page 64, line 27: The Project Team's interpretation of the draft report is that the Council is suggesting that (a) EPA is obligated by new OMB guidelines to prepare cost effectiveness analyses (CEA), (b) QALYs are widely used in CEA within health policy contexts but may be problematic for environmental policy analyses, and (c) other effectiveness measures are available and should be considered for the main CEA in the 812 report (e.g., $/life and/or $/life-year)... but (d) conducting an "alternative" CEA using QALYs as the effectiveness measure would be consistent with the exploratory and evaluative nature of a "Learning Laboratory" process within the 812 studies. If this interpretation is correct, it might be useful to modify the text on page 64, line 27 to clarify that the advice to conduct a QALY-based CEA pertains specifically to the 812 study and not necessarily to other EPA analyses; for example by changing line 27 to read: "...appropriate for EPA to conduct a QALY analysis for this project to at least explore the practical and..."

5. Page 127, line 20-21: Council says, concerning the "senior death discount" issue, "In reality, the issue at stake is much closer to 'how much money should seniors be required to pay for small risk reductions.' " This wording seems to miss the mark. Wouldn't it be more appropriate to say, "how much money should we pay for small risk reductions for seniors, and should it be the same as the amount paid for the same benefits for middleaged individuals and children?"

Editorial/typographical comments:
6. Page 5, line 29, FN number 1 needs to be superscript
7. Page 14, line 23: "r quality" to "air quality"
8. Page 19, lines 15 and 16, "NAACS" to "NAAQS" and insert "as" before "the baseline"
9. Page 77, line 24, looks like the words "Engineering Costs" might at one time have been a header but were meant to be deleted.
10. Page 124, line 26, delete "that". Line 35, change "and" to "an".
11. Global change of "EMPAC" to "EMPAX"

Attachment E Committee Comments on the Council Draft Report

COUNCIL COMMENTS ON DRAFT COUNCIL REPORT TO BE DISCUSSED AT THE MARCH 18, 2004 SPECIAL COUNCIL PANEL TELECONFERENCE

Laurie Chestnut, March 16, 2004, comments on draft Council report

Issues for discussion

Context specific mortality risk valuation: Page 3, lines 2-12, and pages 55-56.
I am squeamish about the recommendation that the VSLs literature be culled to those values estimated in contexts that most closely match the policy context here. This is correct theoretically, but the reality is that there are very few, if any, values in the literature from a context that exactly matches this policy context. This leaves the analyst with having to guess about what aspects of the context matter. This needs to be the subject of meta-analyses and future research, but as of now we have lots of hypotheses and very little empirical evidence about what aspects of context matter and how much they matter. Mostly what we have now is unexplained differences in results across studies (e.g., the wide range in VSL estimates from the wage-risk literature within which the contexts and the estimation methods are very similar). I'm concerned that if we don't qualify this recommendation we point the analysts toward the approach used in the literature review the Council reviewed for the first analytical blueprint, which excluded a lot of studies from any quantitative consideration because of a list of fairly arbitrary criteria in an effort to select the most "suitable" studies. Unless we know what aspects of the valuation context matter and are confident that these are the reasons for this differences in results across studies (rather than random, or unidentified, variance), I don't see how we can be comfortable saying that these estimates are more suitable for this application. I suggest we recommend that studies that are way out of bounds in terms of the policy context, such as wage-risk studies of policemen, be excluded, and that this issue of context be given emphasis in meta-analyses and future research.

It also seems odd to put so much emphasis on context and then recommend primary focus on Viscusi-Aldy, which includes only the wage-risk studies.

Central discount rate: Page 2, lines 25-31.
The report recommends use of a central estimate of 5% in addition to the alternatives of 3% and 7% proposed by EPA. I agree with the need to identify a primary central estimate so that every number presented does not have to be done twice, once with 3% and once with 7%. I think the double treatment would give too much emphasis to discount rates as a major issue. However, why not recommend that this primary central estimate be 3%? The Council report puts a great deal of emphasis on the point that the conceptually correct discount rate for this analysis is the social rate of discount. EPA's question states that their best estimate of the social rate of discount is 3% and that 7% is selected as a measure of the opportunity cost of capital. If we agree that 3% is a reasonable choice as a "best estimate" for the social rate of discount, why not urge that this be used in the primary central estimates of benefits and costs, with 7% used as an alternative in

some sensitivity analyses to illustrate the quantitative impact of using a different discount rate? This seems to be consistent with the argument that the social rate of discount is the appropriate measure to use and it avoids recommending that EPA estimate 3 sets of benefit and cost numbers.

QALY recommendation: Page 3, lines 13-21, and pages 63-64
The Executive Summary makes a firm statement that the Council does not recommend that EPA conduct a QALY analysis. The text in Chapter 13 is not so adamant, and seems a bit inconsistent with the summary statement in the ES. How strong a statement do we want to make?

Adjustment for aggregate income growth: Page 57, lines 8-19
This paragraph does not acknowledge that these adjustments for aggregate income growth were applied to WTP values for mortality and morbidity in the first prospective study and were therefore either approved or overlooked by the previous Council. I think the first two sentences and last two sentences need to be revised or deleted. I am comfortable with the rest of the language in this section urging caution, caveats, etc.

Suggested edits/corrections

page 1, line 43, change this sentence to read:
Those elements that are both highly uncertain and have the potential to significantly change the results should be the focus of sensitivity analyses.

page 2, lines 7-8, change this sentence to read:
In the Executive Summary of the planned prospective analysis report and in the body of the text itself, the Agency should report the best central estimate as the "base case."

page 2, line 14, change last word of line to "have"

page 2, lines 25-26, change this sentence to read:
The Prospective Study is concerned with arriving at discounted present values of the benefits and costs that may extend into the future for Clean Air Act emissions reductions in selected years.

page 3, line 2, change this line to read:
<u>Value of Human Health Risk Reductions Associated with Reductions in Air Pollution</u>:

page 3, line19, insert "public" in front of "health context"

page 5, line 25, change "will review" to "reviews" at the end of the line.

page 5, line 29, make the footnote indicator a superscript.

page 7, line 42, change the sentence to read:

Those elements that are both highly uncertain and have the potential to significantly change the results should be the focus of sensitivity analyses.

page 9, line 5, delete “on” in front of “all the time.”

page 10, line 5, replace “planned attempt” with “plans”

page 10, line 6, replace “While” with “Although”

page 10, line 7, delete “however,”

page 10, lines 27-29. Delete the last sentence of this paragraph. I don’t see why we should call this a sidebar enterprise, and I think we have already said that it needs to be done (hence already implying that resources need to be put to it).

page 11, line 7, insert “quantified” in front of “in the previous”

page 12, line 1, insert “the potential to significantly change” in place of “a significant impact on”

page 14, line 23, the “r” in the middle of the line should be “air”

page 15, line 16, insert “of the original study populations.” after “income levels”

page 19, line 15, change “C” to “Q” in NAAQS

page 19, line 16, insert “as” in front of “the baseline”

page 20, line 38, replace “utility” with “EGU”

page 23, line 2, replace “Committee” with “Council”

page 38, lines 20-21, Change the first sentence to read:
The Prospective Study is concerned with arriving at discounted present values of the benefits and costs that may extend into the future for Clean Air Act emissions reductions in selected years.

page 44, lines 13-14, change the first part of this sentence to read:
However, the Council now recognizes the importance of heterogeneity across human health risks in arriving at monetary valuation estimates, as well as...

page 45, line 32, insert “improved” at the end of the line

page 45, line 33, insert “increased yields for” in front of “commercial forests”

page 48, line 5, insert “of the estuaries affected by air pollution emissions,” after

"representative"

page 49, line 21, insert "study" after "hedonic"

page 51, line 7, change the first line to read:
There are some published visibility valuation studies available

page 51, line 15, delete "the unpublished"

page 51, line 16, insert "b, c" after "1990"
There are actually two references for this, both with dates 1990 and neither are in the reference list. They are below. The citation already listed as Chestnut and Rowe (1990) should become "a"

Chestnut, L.G., and R.D. Rowe. 1990b. "New National Park Visibility Value Estimates." In *Visibility and Fine Particles,* Transactions of an AWMA/EPA International Specialty Conference, C.V. Mathai, ed. Air and Waste Management Association, Pittsburgh.

Chestnut, L.G. and R.D. Rowe. 1990c. *Preservation Values for Visibility Protection at the National Parks.* Cooperative Agreement #CR-813-686, U.S. Environmental Protection Agency: Research Triangle, North Carolina.

page 51, line 16, insert "for valuing changes in visibility at national parks." after "transfer"

page 51, line 17, change "far superior" to "preferred"

page 51, line 19, insert "and the data available to support specification of calibration parameters." after "estimates"

page 51, lines 38-44: The points in this paragraph are not clear to me. I'm not sure how to edit to fix. Need to discuss briefly, probably with Reed and Kerry.

page 51, line 42, changes citations to read: "Chestnut and Rowe, 1990a; Smith and Osborne, 1996"

page 52, line 2, insert "of residential visibility values from" in front of "both"

page 52, lines 19-24: The point here is not clear to me. I'm not sure how to edit to fix. Need to discuss briefly, probably with Reed and Kerry.

page 52, line 34: "aesthetic" spelling used elsewhere??

page 52, line 39, insert "to" between "damage" and "structures"

page 53, line 1, delete "also"

page 53, lines 9-10, If we don't have any comments on this proposal, do we need this sentence?

page 55, line 42, replace "should be encouraged" with "is encouraged"

page 57, line 24, is "approximations" supposed to be "assumptions"

page 58, line 8, replace "VSLs" with "monetary values for health risk reductions"

page 61, line 29, replace "specific" with "specified"

page 61, line 36, no cap on "satellite"

page 65, line 12, delete "Second,"—I'm not sure what was first.

page 65, line 13, replace "would" with "might"

page 65, line 14, insert "However," in front of "given"

page 65, line 16, delete "however,"

page 65, lines 12-16. I think it makes sense to move this paragraph down and make it the beginning of a paragraph that continues with line 36, with some words added to make the transition. Something like:
An alternative to a workshop that might be a more effective way to obtain technical input about the QALY analysis would be to establish a panel designated to advise the Agency concerning this analysis.

page 71, line 34, this should be "Cropper and Krupnick"

page 71, line 35, replace "provide" with "provides"

page 73, line 15, replace sentence with:

Larry Goulder's Comments

Comments on 24 February 2004 Council Draft

Lawrence Goulder

Executive Summary

p 2, line 26: replace "reveal spillovers" with "reveal indirect costs" -- I think it's clearer. Some might interpret spillovers as referring to environmental spillovers.

Chapter 6: Computable General Equilibrium Modeling

p 29, line 26: change "spillovers" to "indirect costs or spillovers"

p 30, line 27: I'm not clear what this sentence means. Should it be "engineering cost estimates?"

p 31, lines 15-26: Suggest replacing these two paragraphs with:

> CGE models can gauge how regulations indirectly affect demand and supply conditions in related sectors. These changes can influence emissions levels as well as economic costs. These general equilibrium impacts on emissions can be important. The Analytical Plan emphasizes the use of CGE models on the cost side, but the impact on emissions are potentially important as well. These indirect impacts on emissions should be explored.

p 31, lines 28-32: I feel this paragraph is redundant and can be dropped.

p 32, lines 24-25: Change the sentence starting with "However" to "However, it does not model natural resource stocks explicitly and issues of exhaustibilty of domestic petroleum stocks are not represented."

(the current draft credits the model with too much)

p 34, line 32: suggest removing "still"

p 37, lines 4-6: suggest removing this paragraph, which seems redundant to me.

General comment re Chapter 6: this chapter identifies and contrasts CGE and econometric models. What about sector-specific numerical simulation models? The have considerable detail, but are not general equilibrium. They may or may not be econometrically estimated. Perhaps the draft should emphasize the useful complementarities between sector-specific numerical models and (less detailed) CGE models.

Chapter 7: Discounting

p 38, line 31: remove "also"

p 40, lines 36-37: suggest replacing sentence that starts with "This" with:

> To determine the feasibility of this approach, further analysis will be needed.

Comments from Dale Hattis

Dear Angela,
I have a couple of minor comments on the current executive summary. I'm sorry I did not get these to you yesterday, as requested:

p. 12 (bottom) p. 13 (top). I am still a little uncomfortable with the summary advice we are giving on the quantitative representation of uncertainties. The inadvertent emphasis of the current text is on the limitation of quantitative uncertainty analysis to only the most influential variables. I would rather place some more positive stress on the enterprise as a vital part of fair communication of the results of such a complex analysis. This might be accomplished in part by changing the second sentence of the last paragraph on page 12 to read, "Those elements that are both highly uncertain and have a significant impact on the results should be the focus of sensitivity analyses; and the results of these sensitivity analyses should be presented in close proximity to the central estimates in summary tables of 812 impacts." (The underlined portion is an addition to the current text.) In the current executive summary text it appears that we are suggesting a central estimate "base case" projection as the main vehicle for communication of results but not necessarily immediately accompanied by any quantitative information on uncertainties. There is a useful call for the inclusion of balanced low and high "alternative" cases, but no clear directions to feature the results of these sensitivity analyses in the summarization of the main 812 findings. I think it might be helpful to add that it is generally a mistake to present result tables in a form where there is no simultaneous communication of at least the readily quantifiable portions of the uncertainties and sensitivity analysis findings. This is important so that busy administrators, legislators, and journalists are not facilitated in their natural tendencies to neglect the uncertainties as boring footnotes to the meat of the results of interest only to nerdy pedants.

p. 13, lines 33-46 or the valuation discussion on the next page—The issue of spillover economic benefits of the large projected positive changes in mortality and morbidity (e.g., the general equilibrium economic effects of fewer lost work-days, and modest changes in the size, likely productivity, and earnings of the labor force) should at least be mentioned in passing here, even if there is no plan at this time to try to quantify them.

Reed Johnson Comments

Provided "correction to some garbled text in Section 11.3, and notes on my lingering concerns about the responsiveness of Section 13 on QALYs."

11.4. Worker Productivity 27

The Agency plans to follow the same approach to worker productivity as they did in the first assessment. They will use the study by Crocker and Horst (1981) on the effect of ozone concentrations on worker productivity. As it does for other endpoints involving productivity losses and the value of time, the Agency will use mean or median wage rate. However, the relevant outcomes are impacts on marginal product and the marginal valueof time in a given activity. Mean Average wage rates are, at best, crude proxies for the average marginal product.

Averages may either overstate or understate marginal values.

13. QALY-BASED COST EFFECTIVENESS

This section treads a difficult line between consistently advocating valid welfare-theoretic benefit measures and accommodating the current interest in QALY-based benefit measures to facilitate CEA comparisons for health improvements in other contexts. While the report offers general cautions about using QALYs, I wonder whether it is adequately responsive to EPA's questions. The report provides thoughtful guidance on many technical matters elsewhere in the document, but the panel gives little guidance to EPA in this section on how to implement these unfamiliar methods. For example, selection of appropriate QALY weights for specific conditions is crucial to achieve the comparability advantages sought by adopting this approach. However, empirical QALY weights obtained using different elicitation methods give systematically different results—often quite different for the same health condition. Moreover, published QALY studies rarely employ sample sizes and representativeness, validity and reliability tests, and careful statistical analysis, including appropriate confidence intervals, that environmental economists have come to expect in competent benefit studies. Are the meta-analytic techniques discussed for uncertain VSL values appropriate for QALY-weight estimates, as well? Or does the comparability criterion argue for using the most commonly employed weights used in other studies, regardless of scientific merit? Other controversies in this area involve whether or not to discount life-years, whether empirical failures of QALY simplifying assumptions suggest the direction and size of potential biases, and the merits of using VSL estimates to construct WTP per QALY.

Virgina McConnell's Comments

Here are brief mostly editorial suggestions on the draft. Overall, I think it looks good, and I think the executive summary highlights the major findings very well.

1. Should the letter say "quantifying benefits and costs" in line 30?

2. COI estimates are first refered to on page 3, line 24. The name should be written out that first time it is used..

3. Page 9, line 5 - there is an extra "on"

4. Page 11, lines 39, 40. should read ..utility costs analysis include some assessment...

5. There appears to be some extra language that doesn't tie together on pages 25, line 44 and page 26, lines 1 and 2. I recommend just dropping the two sentences that start: "In addition...."

6. Page 77, line 24. Take out "Engineering Costs" (not sure why it is there).

7. Page 78. Indirect costs and Learning assumptions are supposed to be other sources of cost uncertainty - they need not be separate sections.

In response to comment 1. from the 812 Project Team, March 17, 2004.
The main point here is that we would like to have a clear explanation of the how the demand side is addressed in the IPM model. Exogenous demand appears to an input to the model, so it is not clear how changes in electricity prices or alternative scenarios about the costs and prices are built into the model. An understanding of this is also important to determine whether this part of the assessment is consistent with assumptions made throughout the analysis about energy prices and elasticities. A comparison of IPM with HAIKU or other models would also be helpful in understanding the advantages and disadvantages of the IPM model.

Warner North Comments:

After reading through the 147 page draft, I commend you and the others who have worked long and hard to accomplish the revisions in this new version. I am pleased with the Executive Summary, particularly the sections on uncertainty and the "812 Learning Laboratory." Our report indicates there are many issues with theoretical or data-deficiency difficulties such that the Special Panel cannot now give EPA concise advice on how to proceed with the analysis called for under Section 812. So the "Learning Laboratory" seems very appropriate as a summary recommendation. I like the conclusions about uncertainty and the supporting discussions on Charge Questions 26 and 27. While I think some of our other charge question responses are a bit long and theoretical, I am inclined to approve the document in its present form rather than delay to polish further or to shorten the main document by moving some of the discussion into appendices.

I found one substantive wording problem. I think we should rewrite the following sentence (main text page 10, Adobe page 21, lines 18-19) "The Agency is likely to find that MACT is justified for some chemicals and unjustified for others." Section 112 requires MACT for the chemicals Congress placed on the list: See the paragraph above, lines 8-9. The Agency does not have discretion in this matter, and I believe that Section 112 of the Clean Air Act makes no mention the use of cost-benefit analysis to help the Agency in making its decisions on how to implement this section of the Act. The Agency can take steps under the law to have a chemical removed from the list, and I support what we say about the origin and weak scientific support for some of the chemicals on the Section 112 list (in lines 9-10 above). Many people believe that Congress put in the MACT provisions of the Act out of frustration that EPA was moving too slowly in dealing with air toxics. We might want to check our wording with lawyers familiar with the

provisions of the Clean Air Act, especially in this discussion about Section 112 in relation to the mandate in Section 812. As a matter of principle I do not think SAB reports ought to say that actions by EPA that are mandated by existing law are "likely" to be "unjustified." We of SAB should rather say, in carefully chosen words, that environmental laws need to be implemented so as to be consistent with available scientific information, and that EPA should advise Congress on how such implementation may be improved.

While the report draft seems quite clean for a document of its length and complexity, there are minor errors -- especially a lot of places where acronyms are used before they are defined. Another pass at the document focused on such copy editing is clearly needed. I include some notes on needed copy editing below.

I will await the discussion Thursday and receiving comments from others, but as of now I am inclined to approve both the Minutes (as corrected) of the December 22nd telephone conference and the draft report, subject to needed further minor corrections by staff.

Notes on opy edit problems:

Adobe page 18 [A18] (main text p. 7) lines 30-31. Insert "on a few selected HAPS" or something similar between "case studies" and "are merely a beginning."

Adobe page 25, (main text p. 14), line 17. Insert "air" between "ambient" and "quality". Same page, line 23: "air" not "r".

Abbreviations used prior to definition:

COI, used A14:24, defined A77:13
CVPESS, EES used A22:20-21, defined A57:20-21.
PACE used A32:18, defined A38:38
JHW used A40:35 defined 42:34
No doubt there are other examples.

Page A88:23 add blank line for formatting.