

**U.S. Environmental Protection Agency
Science Advisory Board
Reduced Form Tools Review Panel**

**Summary Minutes for the Public Meeting held on
September 10, 2020**

Meeting Participants:

SAB Reduced Form Tools Review Panel Members*

Dr. Jay Turner, Chair	Dr. Alison Cullen
Dr. Richard Belzer	Dr. Sabine Lange
Dr. James Boylan	Dr. Anne Smith
Dr. Louis Anthony (Tony) Cox, Jr.	Dr. Richard Smith

*For Panel member affiliations see Roster¹

Designated Federal Officer

Dr. Suhair (Sue) Shallal, Designated Federal Officer (DFO) for the SAB Reduced-Form Tools Review Panel

Other Attendees

See Attachment A.

Meeting Summary:

Meeting convened

The Science Advisory Board (SAB) Reduced Form Tools (RFT) Review Panel convened for a public meeting via a virtual video format and via teleconference on September 10, 2020.

Dr. Suhair Shallal, Designated Federal Officer (DFO) for the Panel, convened the meeting at approximately 12:00 p.m. eastern time. Dr. Shallal then provided brief opening remarks. She described the membership of the panel stating that panelists are special government employees (SGE) and they are subject to ethics laws. She then explained that ethics information for all panelists had been reviewed and that it was determined that all panel members have no conflict of interest or appearance of a lack of impartiality concerns. Dr. Shallal noted that no public commenters had registered to provide oral comments.

She then indicated that a short clarifying comment period is allotted on the agenda and asked members of the public who would like to speak during this time to register by sending an email to her prior to the conclusion of the break period noted on the agenda at 2:45 p.m. Dr. Shallal provided her email address verbally as shallal.suhair@epa.gov. Dr. Shallal noted there were no written comments provided and gave instructions if someone would like to submit them as well. Dr. Shallal finally noted that minutes would be prepared summarizing the panel's discussions and will be posted publicly on the epa.gov/sab website. Dr. Shallal further explained that all meeting materials were available on the meeting website.

Mr. Thomas Brennan, Director of the Science Advisory Board Staff Office then provided some brief comments thanking panel members, staff, and contractors who are involved in the review and meeting production.

Dr. Jay Turner, the panel chair, followed and began by thanking everyone for their work. He described the process for developing the draft report being discussed during this meeting. He indicated sections were drafted by breakout groups. These drafts were compiled and lightly edited, avoiding substantive changes, but rather attempting to make the report speak with one voice. He then indicated that he expected a lively discussion as this meeting was the first time the draft of the full report had been subject to discussion. Dr. Turner then explained the options for disposition of the report at the conclusion of the meeting and indicated next steps.

Dr. Turner briefly reviewed the agendaⁱⁱ for the meeting and described the order of business: first hear from the agency to provide clarifying comments and context. The panel also had the opportunity to ask clarifying questions of the agency as necessary to wrap-up writing of the report.

Dr. Turner encouraged panel members to focus on substantive changes. If changes were suggested, he asked members to propose specific recommendations for alternative language.

Dr. Turner then asked each panel member to introduce themselves, their affiliations, and areas of expertise before calling on Dr. Erica Sasser, EPA Division Director, to provide comments to the panel on behalf of the agency.

Dr. Sasser thanked the panel and presented a series of slidesⁱⁱⁱ. She said the agency doesn't have any major questions regarding the draft report. They have looked carefully at the panel's draft recommendations and have some general comments. She indicated she could provide some overarching points that would perhaps inform today's discussion. She also indicated she had a group of staff experts available online to answer questions from panelists.

Dr Sasser indicated the agency will embrace the recommendations captured in the panel's report. She said that the agency is already working on a next generation of these tools, and the panel comments are extremely timely for that work. She indicated the agency is working to update benefit per ton calculations, which is the agency's preferred approach, based on full form source apportionment work underway. She acknowledged the reported conclusions were dependent on the underlying comparisons to CAMx and CMAQ as the panel had discussed. She indicated that the agency standard approach is to apply full form air quality models and a "deluxe" version of benefits assessment tools. So, the "gold standard" is CMAQ and CAMx combined with BenMAP. Ultimately, the agency is interested in knowing if reduced form tools can be applied in a regulatory context for future emissions analysis. She assured the panel that the agency does not plan to use the report as a validation of the reduced form tools.

Dr Sasser then went on to acknowledge the agency's intention to provide all necessary underpinnings for the tools. She indicated that the agency is committed to improving in this regard and providing additional disaggregated results, including regional scale data. She also

indicated that all available data and models are posted via the internet on a GitHub site (<https://github.com/>).

She concluded her comments by expressing appreciation, and specifically commented that panel comments on how to apply the tools and how they recommend tools be used will influence the development of a framework on how to apply reduced form tools in an appropriate context. Dr Sasser then answered questions and responded to comments from the panel.

Panelists sought clarity on the status of the report they were reviewing. Dr. Sasser indicated the agency considers the report under-review as final and will not be modifying it in response to the panel's comments. Instead, the agency will incorporate those comments in any new efforts being conducted regarding the development and implementation of reduced form tools.

Panelists expressed some confusion regarding the authorship of the report under-review. Dr. Sasser clarified it is an EPA report prepared for the agency by a contractor with substantial oversight by agency staff. The report includes agency staff edits and agency generated data in addition to contractor provided text and data.

Public comments

There were no registered public commenters.

SAB Reduced Form Tools Review Panel Discussion

Introduction section

Considering Dr. Sasser's comments, the panel decided to refer to the report under-review as the "EPA report" instead of "Draft EPA Report".

Charge question 1.

The panel again discussed the issue of report authorship and attribution and agreed to refer to the report under-review as an EPA report and to remove footnote 1 on page 2.¹

The panel noted that the **second bullet** on page 2, regarding the comparison of air quality surfaces and benefits estimates, should be edited to clarify that once the benefits calculation is standardized the only differences between the models should be due to the different air quality surfaces. They agreed to make footnote 2 a separate bullet item in the text and to add the reference in this text.

The panel discussed the importance of examining the limitations and performance for RFT's when choosing the tools to use for future applications given the comparison is to the "gold standard" full form air quality and benefits modeling.

¹ These minutes refer to mark-ups of the draft report: <https://yosemite.epa.gov/sab/sabproduct.nsf/ea5d9a9b55cc319285256cbd005a472e/90f853894a29ecaf852585c900674464!OpenDocument>.

The panel agreed to remove secondary organic aerosols (SOA) from the response on page 4 line 25 since only ammonium and volatile organic compounds (VOC) are precursor compounds.

The panel questioned the benefit of providing edits to the EPA's report since it will not be revised. They agreed to make suggestions that could be used to inform EPA's future work. This notion would be **added in the introduction section** of the panel's report.

The panel discussed the language to use for recommendations in its report, specifically page 6 line 16 and the "likely to be" phrasing. The panel decided to use instead, "the report provides evidence..."

They also discussed the approach for selecting scenarios for model performance evaluation. They agreed EPA should: ensure a broad distribution of scenarios; maximize the diversity of scenarios; and include a sufficient number of scenarios to make an evaluation. The panel decided to recommend using a systematic approach to maximize possible variations.

The panel had a few specific word changes in the overall text. They discussed the purpose of the EPA's report was the comparison of the RFT against the full form modeling tools.

The panel then discussed the text on page 7 line 20; they decided to add the Krewski *et al.* reference and to include a discussion of broad evaluations performed by CASAC with respect to risk estimates. The panel agreed to strike the phrases "highly controversial" and "fatal deficiency". The panel also discussed OMB circular A4 and data quality guidelines and its relevance to the reproducibility of results presented in the EPA report.

Charge Question 2.

The panel discussed the results presented in figure 3.1 and the benefit of showing results in an absolute sense because it puts ratios into context. The panel agreed to edit the paragraph starting on page 12 line 9, removing language such as, "inappropriate" and "unnecessary."

The panel discussed the reproducibility of results being evaluated in the EPA report. The panel also decided that material in the appendix regarding nitrates (last paragraph of appendix) should be moved into the main text and be included in response to charge question 2.

The panel agreed to include one panelist's attempt to reproduce the modeling results as presented in the EPA report under-review. They agreed this analysis should be summarized in the response to Charge Question 2 with details moved to an appendix.

The panel then discussed the inclusion of the Pearl 2009 reference on page 16 line 22. They also suggested specific citations from the CASAC report would be helpful and these citations should include page and line numbers.

The panel agreed to revise the language on page 16 line 29 changing the phrase, "much evidence..." replacing it with e.g., "some studies...". Three panelists volunteered to adjust the wording of this statement in the draft report and to provide references. They also agreed to delete the sentence on page 17 line 11 through "main conclusion" and make the necessary revisions.

The panel took a short break and restarted its deliberations at 3:07 p.m. EDT.

There was a brief discussion about ensuring the responses in the draft report are referencing previous responses provided for different charge questions and the appendices, e.g., a crosswalk of the responses.

The panel agreed to condense the text from the end of charge question 2a, page 13 line 49, and provide a sentence to summarize this point in the recommendations.

The panel then discussed exhibit 3-8, the table in the EPA report on post processing time requirements and agreed to include some panelist suggestions for making such a table more useful in the future. They also decided to move text in charge question 2c, page 21 lines 17 to 23, into the response to charge question 2a and add the comments about processing time.

The panel decided that, where speciation is relevant to the benefits differences between models being compared, it is important to include a discussion of the fractions calculated. They emphasized that reproducibility is an important concept to consider in future work and reporting.

Charge Question 3.

The panel agreed to consolidate, if possible, the discussion of the Krewski *et al.* study into a single place in the report (for example page 23 the first 3-paragraphs should be moved into previous discussion in charge question 1a).

The panel also decided to expand the discussion and provide further citations to the section about the importance of sensitivity analyses. They concluded the reference to the VSL should be moved to a footnote.

The panel then discussed comparing national and regional estimates. In particular, nitrate was discussed. The panel agreed to move the table to improve clarity of the panel's intentions.

Charge question 4.

Discussion ensued regarding nonlinear concentration response relationships (CRR). Panelists decided to add references and clarify the text responding to charge question 4.

The panel discussed the issue of sensitivity analyses, from page 33 line 17. They agreed that it is important for EPA to report if RFT's can undergo a sensitivity analysis, or not. A panelist agreed to revisit this section and provide revisions text for Question 4c page 33.

Charge Question 5.

The panel the text starting on page 34 lines 35 and 36 and discussion of screening analyses. The issue of disaggregating results from the national scale was revisited. They decided to use the text "may be useful for pre-decisional applications rather than screening purposes." The panel also noted that a citation was needed for the discussion on data quality objectives.

Transmittal Letter

The panel agreed the bullets should be revised to suggest that EPA should explicitly acknowledge the use of CMAQ or CAMx for comparison of RFT performance. A clear justification of why they made that choice should be provided.

They also agreed to replace CCR "slope" with "shapes and relative potency". The panel also decided to revise the other bullets to comport with the changes made in the body of the report.

The panel concluded its deliberations and paused to ask the DFO if any public commenters had registered to ask clarifying questions or make comments.

Dr. Shallal indicated there were no public commenters.

Meeting adjourned

Dr. Turner then discussed the next steps. Panel members were asked to send the revisions of the panel's report to the DFO in one week. The DFO along with the chair would oversee the compilation of a revised draft and ensure the edits, as discussed, would be incorporated into a new draft report. The revised report would be circulated to panel members to seek final concurrence. The panel's revised report would then be transmitted to the full SAB for quality review and decision regarding disposition before transmission to the Administrator. The approach was unanimously approved by the panel.

The DFO adjourned the meeting at approximately 4:58 PM EDT.

Respectfully Submitted and Certified as Accurate,

_____/s/
Suhair Shallal
DFO

_____/s/
Jay Turner
SAB Reduced Form Tools Review
Panel Chair

Date: November 6, 2020

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by committee members during the course of deliberations within the meeting. Such ideas, suggestions, and deliberations do not necessarily reflect definitive consensus advice from the panel members. 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 advisories, commentaries, letters, or reports prepared and transmitted to the EPA Administrator following the public meetings.

Attachment A: Additional meeting participants in attendance or who requested the teleconference call-in number.

NAME	AFFILIATION
Sean Reilley	E&E News
Heather Simon	EPA
Stephani Penn	Industrial Economics Inc.
Kelley Raymond	EPA
Elke Hodson	OMB
Stuart Parker	IWB News
Pat Dolwick	EPA
Bryan Bloomer	EPA
David A. Evans	EPA
Heather Kuoppamaki	Oregon DEQ
Karen Williams	Oregon DEQ
Tom Brennan	EPA
Kirk Baker	EPA

Materials Cited:

The following meeting materials are available on the SAB website (<http://www.epa.gov/sab>) at the page for the September 10, 2020

<https://yosemite.epa.gov/sab/sabproduct.nsf/MeetingCal/8397A7F79DAAC3B1852585C0004A1DFA?OpenDocument>

ⁱ Roster

ⁱⁱ Agenda

ⁱⁱⁱ MS PowerPoint file of Agency remarks