

**NATIONAL CENTER FOR ENVIRONMENTAL RESEARCH (NCER)
STANDING SUBCOMMITTEE****Conference Call Summary
November 1, 2007
1:00 p.m. – 3:00 p.m. EST****Welcome and Overview**

Dr. Martin Philbert, University of Michigan, National Center for Environmental Research (NCER) Standing Subcommittee Chair

Before the meeting was called to order, Dr. Alan Hansen stated that he had not received a notification of the call nor had he received the materials for the call. Ms. Lorelei Kowalski, Acting Designated Federal Officer (DFO) for the Subcommittee, stated that she would send the draft report to Dr. Hansen via e-mail immediately.

Ms. Kowalski mentioned that she is working to correct the problems associated with disbursing payments for Dr. Adam Finkel.

Dr. Martin Philbert welcomed the participants to the third conference call of the Board of Scientific Counselors (BOSC) National Center for Environmental Research (NCER) Standing Subcommittee. He confirmed that all participants had received the draft agenda for the meeting and the draft Subcommittee report. Dr. Hansen noted that he had not been included in these mailings. The materials were sent via e-mail, and Ms. Kowalski stated that she will ensure that Dr. Hansen is a recipient of all future NCER Subcommittee communications.

Dr. Philbert explained that the purpose of this call is to discuss the draft report resulting from the Subcommittee's review of NCER. He incorporated a few edits into the report, and it was formatted by the contractor. During this call, the Subcommittee members will discuss whether substantive changes to the report are necessary.

Dr. Philbert asked all participants to identify themselves and their affiliations. The list of participants is attached to this summary.

Administrative Procedures

Ms. Lorelei Kowalski, Office of Research and Development (ORD), U.S. Environmental Protection Agency (EPA)

Ms. Kowalski thanked the Subcommittee members for participating in the call and stated that she is serving as the Acting DFO for the Subcommittee in lieu of Ms. Susan Peterson. The BOSC NCER Standing Subcommittee is a federal advisory committee that has been asked to respond to a set of charge questions as part of a review of the Office of Research and Development's (ORD) NCER. This is the Subcommittee's third public conference call; the first was held on July 13, 2007, and the second on September 11, 2007. A face-to-face meeting took place in Washington, DC, on July 24–25, 2007.

As DFO, Ms. Kowalski serves as the liaison between the Subcommittee and the U.S. Environmental Protection Agency (EPA) and is required to attend all meetings. She is responsible for ensuring that the Subcommittee complies with the Federal Advisory Committee Act (FACA), which she reviewed briefly. All meetings involving substantive issues—whether in person, by phone, or by e-mail—are open to the public. This applies to all communications that include at least one-half of the Subcommittee members. Meeting announcements must be placed in the *Federal Register* at least 15 days in advance of the meeting. In addition, all advisory committee documents are available to the public, and time is set aside for public comment during each meeting. Ms. Kowalski did not receive any advance requests for public comment; however, she will call for public comment at 1:15 p.m. Comments should be limited to 3 minutes each.

Ms. Kowalski stated that Ms. Peterson distributed the agenda, the draft letter report, and a homework sheet to each Subcommittee member on October 30, 2007. Ms. Kowalski requested that Subcommittee members complete the homework sheets by including work they conducted individually on the Subcommittee's review of NCER since the call on September 11, 2007. Completed homework sheets should be sent to Ms. Peterson.

A contractor from The Scientific Consulting Group, Inc., Ms. Jennifer Griffin, is taking notes and will prepare the meeting minutes. Ms. Kowalski asked that all participants identify themselves when speaking and set their phones to "mute" when not speaking to eliminate background noise.

Dr. Philbert asked if the Subcommittee members had any questions about the administrative procedures. There were no questions.

Subcommittee Discussion

Dr. Martin Philbert, University of Michigan, Subcommittee Chair

Dr. Philbert stated that the Subcommittee members would begin their discussion and would break for public comment at the time scheduled on the agenda. He thanked the Subcommittee members for their contributions to the draft report and remarked that he had inserted placeholders in the draft report to guide the discussion. Dr. Philbert asked if there were additional areas of the report that should be targeted. The Subcommittee members confirmed that there were no additional areas.

Mr. David Rejeski suggested that supplemental information—such as dates and times of Subcommittee meetings, presentations, and so on—should be removed from the introduction of the draft report and inserted as an appendix at the end. He explained that such a format would allow readers to encounter the BOSC recommendations early in the report. Ms. Kowalski added that the Subcommittee members had discussed preparing a letter report initially, but they have formatted their recommendations as a formal report. She asked if it was the Subcommittee's intention to prepare a full report. Dr. Philbert answered that the report length is approximately 12 pages, and the Subcommittee members had planned to submit the review as a letter report. He asked if it would be appropriate to include a brief summary of meetings and presentations in the beginning of the letter report. Ms. Kowalski responded that it would be appropriate. Mr. Rejeski added that in the letter report format, material to supplement the introductory summary would be moved to an appendix.

Public Comment

The Subcommittee members paused their discussion and Dr. Philbert called for public comment. No members of the public offered comments.

Subcommittee Discussion (continued)

Dr. Martin Philbert, University of Michigan, Subcommittee Chair

Summary of Draft Report Progress and Discussion

Dr. Philbert stated that Drs. Seth Tuler and Adam Finkel were responsible for preparing the draft response to the first bullet of the charge. He asked for their comments on that portion of the review. Dr. Finkel responded that compared to the second and third bullets, the section corresponding to the first bullet has a disproportionate amount of recommendations, and less of this section is dedicated to descriptive background information about NCER. He thought it was necessary to make the three sections more uniform. Depending on length constraints, this could involve decreasing the extent or detail of the recommendations or adding additional background information to the first section.

Dr. Finkel explained that he and Dr. Tuler worked on the first section without the participation of Dr. Kenneth Ramos, who was assigned to this workgroup. Dr. Finkel welcomed input from the Subcommittee members assigned to other workgroups. He remarked that this section of the review addresses two topics: (1) the conceptual needs of the Agency and the broader scientific community; and (2) timeliness and process issues at NCER. In the report, Drs. Finkel and Tuler recommended that NCER become more receptive to the needs and demands of research that is external to ORD. In addition, the workgroup recommended that NCER become more proactive in terms of engaging external communities and determining the most important, current topics within the research community. He noted that this recommendation is in contrast to NCER's practice of issuing Requests for Applications (RFAs) without first identifying the research already in progress among potential grantees. Dr. Finkel stated that NCER should not expect scientists to align their research to the needs of the Agency in an abrupt manner. Instead, grantees' research could become aligned with the Agency's mission incrementally.

Dr. Finkel stated that his workgroup focused on the issue of what makes information valuable. The workgroup concluded that an important factor is the ability to influence environmental protection decisionmaking; this is different from the ability to generate outputs that are important strictly to the scientific community. In terms of funding, the workgroup encouraged NCER to adopt more flexible proposal requests, such as letters of intent and pre-proposals. Other institutions employ these methods successfully, but the methods seemingly are avoided by NCER. Dr. Finkel remarked that NCER staff members had referred to the difficulties associated with inviting proposal ideas from potential grantees. Dr. Finkel agreed that such a method would be a burden if unregulated, but he recommended that NCER approach it as an invitation for scientists to send short documents describing the research they think would benefit the Agency based on the scientists' knowledge of EPA's goals. NCER could choose the most promising of the research ideas and model them into RFAs.

Dr. Philbert noted that in the first section of the report draft, Drs. Finkel and Tuler had inserted questions. He asked if these were meant for EPA or the Subcommittee. Dr. Finkel responded that the questions were directed to the entire Subcommittee.

Dr. Philbert asked if Dr. Tuler wanted to comment. Dr. Tuler agreed that the report should be made more uniform in terms of the proportions devoted to background information and recommendations across the sections of the charge. Dr. Philbert asked if the Subcommittee members had additional comments. None were offered.

Dr. Philbert stated that Drs. Alan Hansen, Dennis Clifford, and Katherine McComas focused on the second section of the charge. Dr. Hansen explained that his workgroup applied the recommendations from the 2003 BOSC review of ORD to the current BOSC review of NCER. The workgroup found that many of the recommendations made in the 2003 report had current relevance to NCER. EPA published a formal response to the report in 2005; the workgroup consulted this document in conjunction with the presentations given during the previous Subcommittee calls and meeting to assess the current state of

NCER. Dr. Hansen noted that some of the Subcommittee's questions for NCER remained unanswered, but the questions were not so crucial as to preclude preparation of the draft report.

Regarding communication, the workgroup found very little to criticize, and determined NCER's communication efforts to be innovative, thorough, and evolving. The fact that the National Oceanic and Atmospheric Administration (NOAA) regards NCER as a model for its own communication efforts exemplifies the effectiveness of NCER's communication strategies. The only limitations were funding and staffing deficits.

Dr. Hansen asked if Drs. Clifford or McComas wanted to comment. They confirmed that Dr. Hansen had summarized their review sufficiently. Dr. Philbert thanked the workgroup members and asked if they could offer any specific recommendations. The workgroup members agreed that, in terms of this part of the charge, NCER is using the available resources appropriately.

Dr. Philbert asked if any of the Subcommittee members had comments regarding this section of the charge. Dr. Finkel asked if the workgroup could comment on the degree to which the one-page documents published by NCER address how its research has led to decisionmaking, changes in environmental quality, or other tangible results that indicate impact. Dr. Hansen responded that he had not analyzed the one-page documents at that level of detail. Dr. Clifford remarked that the one-page documents are available on the Internet, but he had not been successful in accessing them.

Dr. McComas stated that the charge includes language about the dialogue between NCER and its audiences. Her impression was that NCER expected the Subcommittee members to review its communication materials to some extent. Drs. Finkel and Tuler commented that they had viewed some of the communication materials on the Internet, but had not conducted a systematic analysis. Dr. Finkel mentioned that he had seen information about NCER-sponsored events, and noticed that there was more emphasis placed on communicating the grantees' research than on inviting external scientists and decisionmakers to comment on the research landscape.

Dr. Finkel requested a representative sampling of NCER's one-page documents so the Subcommittee members could assess how well NCER is communicating the influence of its research on rulemaking, risk assessment, environmental impacts, and so on. Dr. Philbert asked Ms. Kowalski whether this was appropriate for a BOSC review. Ms. Kowalski replied that it would be acceptable to review the one-page documents, but if the Subcommittee members determined that technical changes to the draft report were warranted, the Subcommittee would need to convene another public call. Ms. Barbara Klieforth remarked that another public call would need to be scheduled to discuss the response to the overall charge question. Ms. Kowalski responded that she would raise that issue later in this call.

The Subcommittee members volunteered to review the following documents: (1) Dr. Finkel requested five one-page documents regarding air pollution, air toxics, air criteria, risk analysis, and/or methods development; (2) Dr. Clifford requested 10–12 reports from the past 3 years involving drinking water issues; (3) Dr. Hansen requested reports or any other materials related to air quality and analysis and/or instrumentation; (4) Dr. Philbert requested materials regarding neurotoxicity issues and/or nanotechnology; and (5) Dr. Baker requested materials related to nonpoint pollution, water pollution, and/or pollutant trading relative to nutrients. The Subcommittee members agreed that, if their comments remained laudatory after reviewing these materials, there would be no need for another call to be scheduled to address these new materials because it would not be necessary to change the letter report.

Dr. Clifford asked whether the Subcommittee members would be in compliance with FACA if they reviewed the NCER communication materials individually. Ms. Kowalski explained that the report resulting from the BOSC review is a consensus document, and as such, the Subcommittee members should discuss their conclusions with each other in a public forum before drafting revisions to the report. She clarified that if only non-technical or editorial issues result from a review of the communication materials, a fourth call would be unnecessary.

Dr. McComas supported the plan to review the communication outputs of NCER, but she cautioned against reviewing a select group of documents for which the audience is not known definitively. She noted that there are a number of other types of NCER products that would be overlooked in such an analysis. She stated that the true impact of NCER could best be assessed by conducting audience-based research, but NCER staff members have stated that they are prevented from taking an audience-based approach.

Dr. Sallie Keller-McNulty asked for a definition of the one-page reports. Dr. McComas responded that they are short descriptions of all research projects that are being developed for distribution to different audiences. Dr. Hansen asked if a Subcommittee member would explain the rationale for focusing on the one-page documents. Dr. Finkel responded that they are the most concise research documents that NCER produces, and given their length, he thought the one-page documents would most likely be targeted to readers who desire a cursory, but complete, overview of NCER projects. These readers might be less interested in the details of the science. Dr. Finkel agreed that other vehicles for communication exist at NCER, and these would be overlooked in an analysis of the one-page documents. He explained that if NCER did not include the impacts and relevance of the research in its one-page documents, its work might not be appreciated by its public audience or by policymakers.

Dr. Philbert stated that analysis of one output may not convey adequately the impact of the entire strategy. Dr. Finkel agreed and said the Subcommittee members could read a sampling of all of the most current communication materials instead of focusing on the one-page documents. Dr. Clifford remarked that if the Subcommittee wants to compliment NCER for its communication efforts, then Subcommittee members should be informed about the communication outputs. He added that it would be difficult to conduct a credible analysis with a small sample size.

Dr. Philbert clarified that EPA would send the documents to the entire Subcommittee via e-mail, the documents would be reviewed individually, and Subcommittee members would send their comments to Dr. Hansen, the lead for Workgroup 2. Dr. Hansen subsequently would synthesize the comments into a brief recommendation to be included in the letter report. Ms. Kowalski confirmed that the proposed method was appropriate under FACA guidelines. Dr. Philbert added that if Subcommittee members review a subset of communication documents, the report must explain that the analysis was not comprehensive and could be biased.

The Subcommittee members asked if EPA participants on the call had taken note of the list of requested materials and whether the materials were available to the public. Ms. Klieforth responded that she had the list but was not sure that one-page documents were available for each of the research topics requested. She explained also that the one-page documents were not developed for rulemaking or decisionmaking purposes *per se*. Dr. Hansen requested that Ms. Klieforth provide a description of the target audience and the objective of the one-page documents.

Mr. Rejeski requested that NCER provide two or three materials that the Center believes had the greatest impact in terms of communication. The materials do not need to be written documents, but rather could be an event or Webcast. They may be items that were obtained by various press outlets, are quoted, or are used widely. The primary requirement would be that the materials have reached a broad audience that includes non-scientists. Mr. Rejeski emphasized that examples of NCER's efforts toward developing "new media" communications would be useful. These materials may have a substantial impact on rulemaking but might be overlooked if the Subcommittee restricts its review to written documents. Dr. Philbert asked if the request was reasonable, and Ms. Klieforth confirmed that it was.

Dr. Clifford asked that the Subcommittee not restrict itself to one-page documents and highest impact documents. Instead, he requested any materials that were representative of NCER communications, even if such materials are frequently cited, peer-reviewed journal articles. Dr. Philbert commented that the requests were beginning to reflect a comprehensive scan. He asked if the Subcommittee could suggest a more focused approach.

Dr. Hansen explained that the Subcommittee thus far has focused on how NCER communicates with its audiences and measures the impact of its communications. The Subcommittee members have not investigated the actual communication media to assess their effectiveness. Dr. Philbert agreed and summarized that the Subcommittee is moving from process to peer review. He asked Ms. Kowalski whether the Subcommittee was deviating from its charge. Ms. Kowalski replied that the Subcommittee is required to respond to the charge questions, but if the members intend to review additional topics within the purview of NCER, that is their prerogative.

A Subcommittee member asked to be reminded of the exact language of the second bulleted question of the charge, which read: “What advice can be offered on ways to measure and improve the effectiveness of our communications so that decisionmakers will make greater use of our products?” The Subcommittee member agreed that, given the charge, the letter report cannot recommend methods to improve effectiveness unless the Subcommittee reviews samples of NCER’s communication products.

Dr. McComas remarked that the Subcommittee members can review the communication materials in an *ad hoc* manner, but they cannot extrapolate their opinions of the materials to an analysis of the decisionmakers’ opinions of the materials. Ultimately, the Subcommittee will be limited in the conclusions they can draw from the analysis. Dr. Philbert agreed, adding that the Subcommittee members would not have time to conduct a statistically significant analysis of the communication materials, and their review would only identify the concurrence between what the Subcommittee and NCER both classify as effective communication strategies.

Dr. Hansen noted that NCER staff members responsible for communications most likely ensure that their materials are edited so that they will appeal to their intended audience. He acknowledged, however, that it is not clear whether NCER has accomplished this goal. Dr. McComas added that focus groups or in-depth interviews would be crucial to identify the impact of NCER research on its intended audiences.

Mr. Rejeski suggested that NCER submit information from any past evaluations it conducted on its own communication efforts. This would be in lieu of the Subcommittee members reviewing communication products themselves. Dr. McComas remarked that NCER has explained that it cannot do large-scale surveys of its audiences. Instead, NCER conducts more indirect measures such as bibliometrics. Dr. Tuler acknowledged that it would be difficult for NCER to obtain Office of Management and Budget (OMB) approval to survey its audience, but he noted that other organizations conduct analogous surveys successfully. Dr. Hansen replied that he had interpreted NCER’s inability to survey its audience as a reflection of financial constraints.

Dr. Philbert recommended that the Subcommittee insert language into the report explaining that, while the Subcommittee did not review the communication products, it recommends that NCER evaluate the effectiveness of its communication efforts on the scientific community, its target audiences, and policymakers. Ms. Kowalski added that the Agency cannot provide feedback to the Subcommittee regarding its potential recommendations. As an independent advisory board, the BOSC should make recommendations that it deems appropriate without the Agency’s influence. Dr. Philbert noted that the rich discussion among the Subcommittee members indicates that it is an important issue for NCER to consider. Dr. Clifford agreed, and pointed out that the charge requests advice on metrics. Although it is not possible for the Subcommittee to measure the impact of NCER’s communication strategies in its review, the Subcommittee instead can recommend that a committee be formed or a survey be used to measure communications. Mr. Rejeski emphasized that even if NCER’s financial restrictions make it difficult to conduct a large-scale survey, it would benefit NCER to identify the most effective and least effective communication strategies among its diverse audiences, so that it can maximize the use of its resources.

Dr. Finkel stated that he did not intend for the discussion to evolve into a question of whether NCER measures its communication efforts effectively. Instead, he was asking initially whether any members of the Subcommittee had reviewed the communication products to determine their likelihood of affecting

decisionmaking. Dr. Finkel cautioned that the Subcommittee members cannot recommend an evaluation of impact if they do not know the purpose for which the communication materials were developed. For instance, if the one-page documents are analogous to abstracts in a journal, then it would be imprudent to ask decisionmakers if the documents are useful, because they would not have been intended for decisionmakers. Dr. Philbert stated that Dr. Finkel had uncovered an interesting and important area with his initial comment, and Dr. Finkel's clarification helps to narrow the focus of the evaluation to whether or not the communication intended for policymakers incorporates the necessary elements to influence policymaking.

Dr. Finkel suggested that NCER submit to the Subcommittee its best examples of communication materials in any form. Dr. Philbert suggested that Dr. Finkel review all of the communication materials and asked for a member of the Subcommittee with expertise in policymaking to review the one-page documents. Dr. McComas offered to conduct this task. Dr. Hansen asked if the Subcommittee had established that the one-page documents were intended for policymakers. Ms. Klieforth responded that the one-page documents are not targeted specifically to decisionmakers, but NCER will send its best examples of decision-oriented communication materials in any media form. Because the Subcommittee must come to a consensus in its evaluation, Ms. Kowalski suggested it would be useful for the materials to be sent to the entire Subcommittee. Dr. Philbert agreed, and added that the Subcommittee members with expertise in decision-oriented communications can lead the Subcommittee through the materials.

Dr. Clifford noted that if a decisionmaker was not familiar with a particular topic, he likely would consult a staff member who was familiar with it. In this regard, the Subcommittee's evaluation should assess whether the communications are readable and are not esoteric.

Dr. Philbert confirmed that there were no other comments regarding the second section of the charge.

Mr. Rejeski stated the third section of the charge: "What metrics are most useful for measuring the impact of NCER's work?"

Mr. Rejeski explained that his workgroup used both retrospective and forward-looking approaches in its review. He commended NCER for designing and instituting its bibliometric analysis; however, the analysis seems to be limited to the impact of science on rulemaking. Although this is important to the Agency's portfolio, rulemaking is a process that can span decades. The workgroup considered whether it was possible to link NCER research to other tools that EPA uses to improve environmental quality. NCER has supported research in economics, and the workgroup wondered whether that research had been transferred to any of the market-based incentives, such as setting up trading markets, risk communication, the social sciences, and information strategies. For instance, NCER cannot regulate radon and must use information strategies instead. Mr. Rejeski noted that research within NCER might have an impact on technological innovation. This could result in better technologies for process control, monitoring technologies, and so on. It is important to consider the impacts of areas such as social science and economics that often are overlooked as the Agency monitors the transfer of research to exposure, fate and transport, risk assessment, and ultimately rulemaking. Mr. Rejeski stated that the workgroup had analyzed prototypical projects and designed an example chart. He acknowledged that long-term monitoring is required to measure impact patterns, but it is crucial to assess policy tools in terms of the link between the research that laboratories have conducted and the tools that EPA has developed. Mr. Rejeski stated that his workgroup attempted to identify the effects of patented technologies. He added that it might be necessary to conduct case studies to determine whether the patents resulted in commercialized products with a measurable impact.

Mr. Rejeski explained that the workgroup applied the analysis technique above to the emerging technology portfolio, which is focused on nanotechnology. He emphasized that, at one time, NCER's forward-looking portfolio included many different projects and flexible solicitations. This portfolio now is consumed by nanotechnology research. Mr. Rejeski stated that nanotechnology, although an important area of research, has prevented NCER from being responsive to other emerging issues.

Dr. Hansen stated that he thought the Nanotechnology Program had been cancelled. Mr. Rejeski responded that the topic of nanotechnology continues to command a significant portion of NCER's portfolio. Dr. Hansen added that he thought the Exploratory Research Program had been eliminated. Mr. Rejeski noted that the program appeared to be transferred to a new Nanotechnology Program, although he did not understand the process fully. Dr. Philbert remarked that in the case of Exploratory Research, funding was re-tasked temporarily to a nanotechnology focus. He added that, during the presentations by NCER, no one speculated on whether the funding would be re-tasked again when nanotechnology research becomes less of a priority.

Dr. Hansen said that he had found numerous typographical errors in the draft letter report. Dr. Philbert noted that he will be editing the report.

Dr. Finkel stated that he had left a placeholder in the first section of the letter report because he thought that Mr. Rejeski's workgroup would discuss the Exploratory Research Program in detail in the third section. Dr. Finkel added that the recommendation he included about revitalizing the Exploratory Research Program in the first section perhaps should be moved to the third section. Mr. Rejeski agreed that the recommendation was important and should be included in the letter report.

Dr. Finkel asked if the workgroup should encourage NCER to investigate impacts beyond those of a rulemaking nature, such as market-based incentives. He suggested that NCER could assess that a rule was changed, but also should assess whether the rule had a subsequent impact on environmental quality. He added that NCER did not have a responsibility to ensure that EPA's regulations have an environmental impact, but it would be a relevant exercise. Dr. Clifford agreed that research should be conducted on the environmental impacts of rulemaking. Dr. Tuler cautioned that a rule does not have to be modified to have an environmental impact. Instead, new research could reinforce the understanding of an environmental issue. For this reason, a complete analysis would include rules that were changed and subsequently improved environmental quality and research that contributed to strengthening the basis of a rule and encouraging more effort into enforcing the rule. Dr. Hansen remarked that the Integrated Science Assessments (formerly the Air Quality Criteria Documents) are one way to judge the scientific basis of rulemaking. The citations in the Integrated Science Assessments that support a rule would address the effectiveness of the rule and indicate a rule's influence. This monitoring method has the benefit of identifying rules that were supported, rather than changed, by new research. Dr. Hansen asked Ms. Kowalski whether NCER was monitoring assessments. Ms. Kowalski did not know, but she said that she would forward Dr. Hansen's question to the appropriate NCER staff member for response.

Dr. Tuler stated that the primary metric within NCER is the citation frequency. Dr. Hansen replied that a document may be cited only once in a given context but still have an influence. Dr. Tuler answered that he did not know of a more appropriate metric to measure influence.

Mr. Rejeski stated that edits to the third section of the letter report should include recommendations regarding the emerging issues portfolio. The Subcommittee members must convey their concern about the Exploratory Research Program being co-opted by nanotechnology research. He emphasized that nanotechnology, although interesting, is not the only emerging topic that warrants NCER's attention.

Dr. Philbert asked if the Subcommittee members had additional comments for the third section of the charge. They confirmed that they did not.

Dr. Philbert requested that the leaders of each workgroup summarize the recommendations corresponding to each workgroup's charge.

Dr. Finkel responded on behalf of Workgroup 1. He stated that many recommendations are listed in the first section of the letter report. He explained that portions of his workgroup's draft are not well organized yet, but the section ultimately will encourage NCER to assess the research that already is underway in the external research community. Such research could be realigned marginally to become useful to the

Agency. The workgroup believes that this strategy would be more effective than writing RFAs without first consulting the research community because researchers may not be willing to restructure their research projects to fit the Agency's mission. Dr. Finkel added that more space holders and language are on page 7 of the draft, but the message is to increase flexibility within NCER and allow rapid mechanisms such as letters of intent to identify the most promising research that also is relevant to the Agency. These research topics then could be modeled into RFAs.

Dr. Hansen spoke on behalf of Workgroup 2. He said that the section of the report responding to the second part of the charge includes recommendations related to judging effectiveness. For instance, NCER uses such methods as bibliometric analyses, expert reviews, and cost-benefit analyses to measure effectiveness. The Subcommittee members believe that NCER focuses on bibliometric analysis and data mining because limited resources preclude NCER from conducting a combination of assessments. Dr. Hansen suggested that, given more resources, NCER could conduct case studies, user-client interviews, expert reviews, and additional cost-benefit analyses. Each of those methods includes effectiveness metrics, which NCER does not pursue extensively. Dr. Hansen asked the Subcommittee members if he should recommend that NCER employ all of the monitoring methods available. Alternatively, the Subcommittee could recommend that NCER add one or more assessments into its regular monitoring practice. Dr. Hansen acknowledged that each of the methods is resource-intensive, and he did not want to recommend something that NCER cannot institute because of financial constraints.

Dr. Tuler suggested that the Subcommittee recommend different ways to gather information but identify specific kinds of information that would be useful to NCER. Dr. Philbert clarified that the recommendation would be on a global scale but also would provide specific suggestions for NCER to consider. In response to a Subcommittee member's request, Dr. Philbert restated that the recommendation would be that NCER evaluate the effectiveness of its communication, and rather than recommending that NCER institute specific changes, the Subcommittee could suggest that the Center consider certain topics related to the kinds of information it should gather and not how it should be obtained.

Mr. Rejeski spoke on behalf of Workgroup 3. He stated that the recommendations of his workgroup involved expanding the linkage between research and impact. In one case, the workgroup recommends that NCER investigate beyond rulemaking to market-based incentives and information strategies. In addition, the workgroup recommended that NCER investigate metrics other than citation analyses; however, Mr. Rejeski acknowledged that it is difficult to develop new metrics. NCER could assess potential relationships between research and environmental quality. Mr. Rejeski noted that another sub-recommendation was to assess the impact of NCER-funded research at an international level, along a technology lifecycle, and in terms of emerging issues. Because nanotechnology has consumed a large proportion of the emerging research portfolio, NCER could investigate whether it is influencing the area of nanotechnology, and Mr. Rejeski expected that NCER had accumulated data on nanotechnology to that end. He stated that the workgroup's draft closes with a recommendation for NCER to reinstate its portfolio for Exploratory Research that goes beyond nanotechnology.

Dr. Philbert confirmed that there were no other comments from the Subcommittee. He requested that the leaders of each workgroup prepare their recommendations as concise statements and transmit the statements to him. Dr. Philbert then will draft the recommendations into the introductory summary of the letter report. Dr. Hansen asked if Dr. Philbert would send him the notes Dr. Philbert took of his workgroup's recommendations. Dr. Hansen then will rephrase the notes into recommendation statements and submit them to Dr. Philbert.

Dr. Philbert asked if there was anything else that needed to be discussed with regard to the format or content of the report. Ms. Kowalski revisited the comment that Ms. Klieforth raised earlier: the charge consists of an overarching question and three sub-questions listed as bullets. The workgroup had focused on the sub-questions, and the Agency also was expecting to receive feedback on the initial question. Ms. Kowalski read the question: "What steps can NCER take to more effectively engage the external scientific community, to better craft a forward-looking portfolio, and meet evolving Agency needs?" She

reiterated that the three sections of the charge that were discussed on the call correspond to the three bulleted questions following the initial question. Dr. Philbert explained that the Subcommittee had used the three bulleted questions to address collectively the overarching charge. He asked if Ms. Kowalski was concerned that the Subcommittee had not answered the main question adequately. Ms. Kowalski stated that she raised the issue because that part of the charge question was not mentioned specifically during the call. She explained that if the Subcommittee members thought that they addressed the overarching question via the bullets, they should explain that in the letter report.

Dr. Philbert asked the Subcommittee members for their comments. Dr. Hansen remarked that they could explain in the summary statement that they approached the overarching question by addressing the bulleted questions; however, he asked if the Subcommittee members used that approach when they were conducting their review. Dr. Philbert noted that, when he assigned the workgroups, the Subcommittee had discussed incorporating a sense of the main question into the bulleted questions. He advised the Subcommittee members to read through the charge again to determine if they addressed the main question.

Dr. Finkel commented that he believed the overarching question was answered indirectly and agreed that the Subcommittee should explain its approach clearly in the letter report. Dr. Hansen added that his workgroup addressed the overarching charge question, but the recommendations were not formatted from the perspective that the bulleted questions all are aspects of the overarching question. Mr. Rejeski mentioned that the overarching question was addressed in the recommendations of his workgroup, but he advised that the Subcommittee move its discussion of the emerging research portfolio to the front of the letter report because it is highly relevant to the main charge question. He noted that by eclipsing the Exploratory Research Program with nanotechnology, NCER has rendered itself ill-prepared to address emerging issues. This is related to NCER's inability or unwillingness to obtain broad input beyond the classical RFAs. Dr. Hansen noted that the strategic planning for RFAs is conducted as a group activity, but the method of obtaining external input is *ad hoc* and consists of conferences and informal discussions. Dr. Finkel agreed. Dr. Hansen restated that by *ad hoc*, he meant that NCER does not host a formal workshop in which it invites experts from various fields to discuss the emerging issues. Instead, NCER synthesizes its strategic plans internally, based on input from conferences, literature, and feedback from other offices. He acknowledged that this is his impression, and it might be incorrect. Dr. Philbert agreed that workshops are an appropriate venue to formalize discussions of emerging issues.

Mr. Rejeski explained that there is a tendency for people to stay comfortably within their own disciplines. He cited literature that indicates a lack of interactions between environmental scientists and the scientists who are developing new technologies. Mr. Rejeski noted that this finding can lead to crises when, after a few decades of commercialization, the technologies become the source of risk assessments or transport studies. Mr. Rejeski added that the individuals in two different disciplines may not even read each other's peer-reviewed literature. He acknowledged that NCER would have to make an effort to interact with these scientists; Mr. Rejeski wondered if they are represented among the external scientists consulted by NCER. Research in the social sciences confirms this lack of interaction, and NCER should develop structured methods for disciplinary mixing. Mr. Rejeski added that this lack of interaction can occur at the level of university campuses, and it is an endemic problem.

Draft Report Next Steps and Schedule

Ms. Kowalski stated that the BOSC Executive Committee expects to receive letter reports from both of the BOSC Standing Subcommittees for review at its meeting on January 24–25, 2008. It is not required, however, that the Subcommittee submit the draft by this date. The Subcommittee should submit the letter report when it has been completed, and the Executive Committee will vet the report at its subsequent meeting. Ms. Kowalski noted that another Executive Committee meeting is scheduled for May 2008, and when necessary, the Executive Committee will convene for a conference call in the interim to vet reports and ensure timely transmission to the Agency.

Dr. Philbert asked whether the Subcommittee members felt equipped to draft the letter report in time for the January 2008 meeting, or if they would rather submit the report in time for the May 2008 meeting. The Subcommittee members confirmed that the report could be completed in time for the January meeting. Dr. Philbert asked for a timeline for submission of a letter report. Ms. Kowalski explained that materials are sent to the Executive Committee 2 weeks in advance of the meeting. The Subcommittee could plan to submit its letter report during the first week in January 2008.

Dr. Philbert asked if the materials requested during this call could be made available within 1 week. Ms. Kowalski replied that she will ask NCER staff members if they can commit to a 1-week timeframe. She noted that Ms. Peterson would transmit the materials to the Subcommittee members when they become available. Dr. Philbert stated that in the interim, the workgroups should incorporate the discussions during this call into the letter report.

Dr. Philbert will prepare a summary statement for the beginning of the letter report. He reiterated that the leaders of each workgroup should prepare their recommendations for NCER and transmit them to him for inclusion in the summary statement.

The Subcommittee agreed to convene for a fourth teleconference on December 14, 2007, from 10:00 a.m. to 12:00 noon (Eastern). Additional requests for information prior to the call should be submitted to Ms. Peterson.

Dr. Hansen asked if time spent at Subcommittee meetings should be included on the homework sheet. Ms. Kowalski answered that only individual work should be included because the DFO tracks the time spent participating in calls and meetings. Dr. Hansen added that he has not reported the hours he spent on the review since the conference call on September 11, 2007. He asked how those hours should be submitted. Ms. Kowalski responded that the date, the number of hours, and a brief description of the nature of the work should be included. Homework sheets can be transmitted electronically by e-mail or facsimile. Dr. Hansen asked if he should wait until he completes the work resulting from this call before submitting his homework sheet. Ms. Kowalski advised that he go ahead and submit the hours he worked between the second and third conference calls; homework sheets will be distributed again at the fourth call.

Ms. Kowalski remarked that issues have arisen with the federal payroll system; she will contact the Subcommittee members if payments are delayed.

Ms. Kowalski noted that she would inform Ms. Peterson that Dr. Hansen was not included on the Subcommittee mailings. She will ensure that he is included as a recipient on all future BOSC NCER Subcommittee communications.

Dr. Philbert asked if the Subcommittee members had any additional business to discuss. They confirmed that they did not. Dr. Philbert thanked the participants for their contributions and adjourned the call at 2:55 p.m.

Action Items

- ✍ Ms. Kowalski will inform Ms. Peterson that Dr. Hansen did not receive notification or materials prior to the teleconference.
- ✍ Ms. Peterson will ensure that Dr. Hansen is included as a recipient in all future e-mails transmitted to the NCER Standing Subcommittee.
- ✍ Ms. Kowalski will work with the appropriate persons to resolve the federal payroll issues that Dr. Finkel is experiencing. If other payroll issues arise, she will notify the Subcommittee members.
- ✍ Subcommittee members will complete their homework sheets by tabulating the hours for the work they have done since the conference call on September 11, 2007. Subcommittee members will send their homework sheets to Ms. Peterson by e-mail or facsimile.
- ✍ Ms. Peterson will process the homework sheets through the payroll system.
- ✍ NCER will provide the Subcommittee with examples of its communication efforts. These may be represented as one-page documents, events, Webcasts, and so on. If possible, NCER will send examples of communications related to the following topics: (1) air pollution, air toxics, air criteria, risk analysis, and/or methods development; (2) drinking water; (3) air quality and analysis and/or instrumentation; (4) neurotoxicity and/or nanotechnology; and (5) nonpoint pollution, water pollution, and/or pollutant trading relative to nutrients.
- ✍ The Subcommittee will review the communication materials to assess whether they convey the influence of NCER-funded research on rulemaking.
- ✍ NCER will specify the target audiences and objectives of its one-page reports.
- ✍ NCER will give two to three examples of communication efforts that had a large impact on its intended audiences.
- ✍ If NCER has evaluated its own communication materials, NCER will provide the results of its evaluation to the Subcommittee.
- ✍ Ms. Kowalski will forward the following question to the appropriate NCER staff: “Is NCER tracking EPA’s rulemaking documents to determine not only that NCER-funded research led to rulemaking, but also that subsequent rulemaking was effective, either in enacting regulations that changed environmental quality or solidifying and reducing uncertainty in existing regulations?”
- ✍ The leader of each workgroup will provide Dr. Philbert with a list of the workgroup’s recommendations.
- ✍ Dr. Philbert will send Dr. Hansen his notes from the call so that Dr. Hansen can review what he stated as his workgroup’s list of recommendations.
- ✍ Dr. Philbert will incorporate the recommendations from each workgroup into the introductory summary at the beginning of the letter report.
- ✍ Dr. Philbert will insert language into the introductory summary to indicate that the Subcommittee approached the overarching charge question by addressing the three bulleted questions.

- ✍ Dr. Philbert will highlight the significance of the Exploratory Research Program in the introductory summary.
- ✍ If possible, NCER will transmit examples of its communication materials within 1 week. Ms. Peterson will coordinate submission of these documents to the Subcommittee members.
- ✍ The workgroups will incorporate the discussions from this call into the draft report.
- ✍ The Subcommittee members will reconvene by conference call on December 14, 2007, from 10:00 a.m. to 12:00 noon EST.
- ✍ If Subcommittee members have additional requests for information, requests should be submitted to Ms. Peterson.

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NCER STANDING SUBCOMMITTEE

AGENDA

November 1, 2007

1:00 p.m. – 3:00 p.m. EST

Participation by Teleconference Only

1:00 - 1:10 p.m.	Welcome <ul style="list-style-type: none">- Roll Call- Purpose of Teleconference Call	Dr. Martin Philbert Subcommittee Chair
1:10 - 1:15 p.m.	Administrative Procedures	Lorelei Kowalski BOSC Executive Committee DFO
1:15 – 1:25 p.m.	Public Comment	
1:25 - 3:00 p.m.	Subcommittee Discussion <ul style="list-style-type: none">- Summary of Draft Report Progress- Draft Report Discussion- Draft Report Next Steps and Schedule	Dr. Martin Philbert Subcommittee Chair
3:00 p.m.	Adjourn	