

External Expert Review of DOE Benefits Forecasts

Guidelines for Expert Reviewers

I. Background

Benefits analyses, which are part of the Department of Energy's (DOE) compliance with the Government Performance Results Act of 1993 (GPRA), are done to understand the potential impact of DOE programs. Historically, each program office within DOE undertook its own benefits analyses. Predictably, this resulted in inconsistencies in the estimation of benefits across the various offices.

With direction from Under Secretary Garman, the Science and Technology Working Group (STWG), an arm of the R&D Council's Interoffice Working Group (IWG), has formulated a methodology to begin integrating benefits analyses to improve the value of this information for DOE decision-making. Participating DOE program offices include:

- Electricity Delivery and Energy Reliability
- Energy Efficiency and Renewable Energy
- Fossil Energy
- Nuclear Energy
- Science

The integration of DOE benefits analyses is being done to assist DOE senior management in budgeting and planning; in response to reviews undertaken by the National Academy of Sciences/National Research Council; and in response to requests from the Office of Management and Budget.

II. Main Objectives of the DOE Benefits Forecasts

The primary value of DOE Benefits Forecasts is to improve portfolio management, budget decisions, and the overall effectiveness of DOE R&D investments. The objective is to ultimately develop a fully integrated DOE benefits analysis process that can serve as a useful tool for decision makers evaluating the entire DOE research portfolio. Annual DOE benefits projections are also performed to enable program offices to maintain compliance with the Government Performance and Results Act (GPRA) of 1993 and the President's Management Agenda (PMA). GPRA requires Federal Government agencies to develop and report on output and outcome measures for each program. The analysis thus produced helps meet GPRA requirements by identifying potential outcomes and benefits of realizing DOE program goals (outputs). Moreover, the forecasts that emerge from the GPRA analyses are useful for decision support, as they provide a means to compare across programs. However, the current benefits estimates do not reflect the technical risks or probabilities of realizing these goals in a consistent manner across

programs, and thus their use for decision support is limited. Those concerns are addressed separately.

Rather, the reported benefits reflect only the net annual improvement from a beginning year to a future end-point of program activities included in the Budget Request of a given year. They do not, generally, reflect benefits from past work. Additionally, the benefits estimates assume continued funding for program activities consistent with multiyear program plans. The linking of estimated benefits to budget levels enables the analysis to address the performance-budget integration goal of the PMA.

III. Purpose of the Expert Review of DOE Benefits Forecasts

While the estimation of benefits is complex and thus amenable to various levels of review, the specific purpose of the current review is to validate and improve the methodology, assumptions, and approach used to forecast benefits in a consistent manner across all DOE energy technology research, development, demonstration, and deployment programs.

IV. Review Chairperson and Panel

A panel of 8 to 10 experts, including a chairperson, will be assembled for this review.

Role of the chairperson

The chairperson of the review is an objective, unbiased, and independent expert from outside the programs being reviewed. He or she is expected to serve a unique and important role that will begin as early in the review process as he/she is selected. Areas where the chairperson provides direction, oversight, and possibly final decisions can include the following:

- Selection of reviewers
- Establishing review criteria
- Establishing the content and scope of material submitted by research teams.
- Ensuring independence of the panel members during the review and the independence of the review more generally.
- Facilitating the review process or guiding a professional facilitator if one is used.
- Ensuring that the review is focused on substance, and
- Overseeing the production of the review report and signing off on the final report.

Composition of Panel

Given the complexity of the benefits estimation methodology, a balance of technical expertise and subject area knowledge will be needed across the review panel. That balance must include, at a minimum:

- Energy modelers
- Economists
- Policy analysts
- Technology experts

The DOE Benefits Review working group offers a list of candidates as potential reviewers to the chairperson (see Appendix A). The chairperson has responsibility to consider other candidates as necessary and make final selection of expert reviewers.

The two most important criteria to be used for selection of competent and credible peer reviewers are that 1) peer reviewers are selected primarily on the basis of necessary expertise in the subject area under review, and 2) peer reviewers disclose to agencies any conflict of interest prior to being selected, and do not participate in any portion of the review where they have a conflict of interest.

The chair and each panel member will be required to complete a conflict-of-interest form provided in Appendix B.

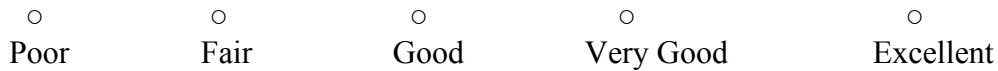
V. Process and Meeting Format

- Material will be assembled from participating offices, as directed previously
- Materials will be sent to reviewers
- A full day session (8:30 am – 5:00 pm) with the reviewers will be held in Washington DC
 - The PI's will give presentations meeting basic minimal levels of information
 - A rigorous question and answer session moderated by the Review Chairperson will follow
 - The panel will be given an opportunity to modify their initial individual ratings as necessary
 - The panel will provide a brief summary of their comments and recommendations and submit their final initial individual ratings to the Review Manager.
- The review chairperson will compile the report of the review.
 - Within 1-2 weeks following the review the Review Chairperson will summarize the reviewers' comments, ratings and recommendations.

VI. Criteria and Possible Charge Questions

The criteria for scoring will be agreed to between the chairperson / review panel and the review working group prior to review. It may include the use of a scale, of the sort shown below in Figure 1, for example – in addition to written comments. But most critically, it must enable a useful measure of the assessment of the expert reviewers, while possessing adequate clarity for relatively easy communication with decision-makers.

Figure 1. Example of a simple scale that may be negotiated for scoring the review



Charge Questions

- Does the documentation clearly describe the basis for benefits forecasts so that all assumptions and calculations are understood?
- Are the assumptions associated with the benefits forecast plausible or believable? (For example: Are assumptions data driven? Are sources cited? Is there clear linkage between R&D budgets and assumptions?)
- Was the methodological guidance for benefits forecasts followed?
- Is the baseline used an appropriate representation of the future without federal funding?
- Are the DOE program goals used in the benefits forecast appropriately represented in NEMS, MARKAL, and any additional calculation tools used?
- Are the scenarios used adequate to test the robustness of the DOE portfolio?
- Do the metrics used sufficiently capture the spectrum of benefits attributable to the DOE portfolio?
- Does the benefits methodology produce results that could be useful to decision makers?
- What are the most important changes to the methodology to improve the credibility and usefulness of DOE benefit forecasts?

In addition to the above criterion and questions, the review panel is asked to provide an overall assessment and rating of the methodology, assumptions and approach used to forecast benefits.

Appendix A

List of Suggested Candidates for Peer Review Panel (Alphabetical Order):

- Arroyo, Vicki, Pew Center on Global Climate Change
- DeCarolis, Joe, EPA
- Edmonds, Jae, PNNL
- Feller, Irwing, Pennsylvania State University
- Frantzis, Lisa, Navigant (possible conflict of interest?)
- Gabriel, Steve, University of Maryland
- Jhirad, David, Georgetown University
- Katofsky, Ryan, Navigant (possible conflict of interest?)
- Kreutz, Thomas, Princeton University
- Kydes, Andy, EIA
- Loughlin, Dan, EPA
- Montgomery, David W., CRA International
- Murphy, Fred, Temple University
- Pizer, Billy, Resources for the Future
- Radin, Beryl, American University
- Ruegg, Rosalie L., Consultant
- O'Brien, Dennis, University of Oklahoma
- Sorensen, James, Sorensenergy, LLC
- Unruh, Brian, EIA
- Weyant, John, Stanford Energy Modeling Forum
- Gumerman, Etan, LBL (likely conflict of interest?)

Appendix B

DOE Conflict-of-Interest Policy and Form

It is important for programs to be aware of expert reviewers' possible conflicts of interest. *Having a conflict of interest in one area does not necessarily exclude a person from serving as a reviewer.* This agreement must be completed by individuals prior to their participation in DOE peer reviews. This policy and agreement have been formulated based on advice from the DOE General Counsel's Office and recognize that (1) expert reviewers of programs in-progress do not make funding decisions and (2) programs often must balance perceived conflict of interest and the need for expert advice from a small community of experts.

Please forward this form, along with your Curricula Vita (if you have not already done so), to the DOE review leader.

You have been nominated by DOE to serve as a Peer Reviewer for DOE Benefits Forecasts. Your participation in this review will be greatly appreciated. However, it is possible that your personal affiliations and involvement in certain activities could pose a conflict of interest or create the appearance that you lack impartiality in your evaluations and recommendations for this peer review. In order to assess if you have a real or perceived conflict of interest in regard to the program/projects that will be evaluated in this peer review, please complete the information below. This information will be reviewed by the peer review leader in order to identify potential conflicts of interest and assure that you are not placed in a position to review and evaluate projects that may present the appearance of partiality.

SECTION 1: AFFILIATIONS, ACTIVITIES AND PROGRAM INVOLVEMENT

At the end of this section you will be asked to list those specific projects or areas on the agenda where a conflict or appearance of conflict could exist and explain the nature of that conflict. A conflict in one area does not necessarily exclude you from serving as a reviewer in another area. The review leader may call you for more information.

Affiliations or activities that could potentially lead to conflicts of interest may include the following:

- a) Work or known future work for parties that could be affected by your judgments on projects or program developments that you have been asked to review.
- b) Any personal benefit you (or your employer, spouse or dependent child) might gain in a direct or predictable way from the developments of the program/projects you have been asked to review.
- c) Any previous involvement you have had with the program/projects you have been asked to review, such as having participated in a solicitation to

the program area that was subsequently not funded, or having a professor, student, or collaborator relationship with the program or its research staff.

d) Any financial interest held by you (or your employer, spouse or dependent child) that could be affected by your participation in this matter.

e) Any financial relationship you have or have had with DOE such as research grants or cooperative agreements.

Personal involvement with a research program or with other DOE program areas.

	Yes	No
I previously was involved in research funded by this program/project	_____	_____
I participated in a solicitation from this program/project	_____	_____
I reviewed this program/project previously.	_____	_____
I am a former professor or student of a Principal Investigator	_____	_____
I previously collaborated with the Principal Investigator in a research activity in program/project area.	_____	_____

Project or technical area on review agenda	Nature of conflict of interest

(Continue on another sheet if necessary)

SECTION 2: CONFLICT OF INTEREST AGREEMENT

CONFLICT OF INTEREST AGREEMENT

This agreement must be completed by individuals prior to their participation in DOE peer reviews. Please contact (contact info for agency peer review official) to discuss any potential conflict of interest issues at your earliest convenience, but no later than

_____.

I have reviewed the information contained on this form and to the best of my knowledge I have disclosed any actual or potential conflicts of interest that I may have in regard to the program/projects that I have been nominated to evaluate. In addition, prior to my participation as a peer reviewer, I agree to disclose any actual or perceived conflicts of interest as soon as I am aware of the conflict.

Signature

Date

Printed Name