

Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model

Introduction

The Chesapeake Bay Program (CBP) uses loading estimates to quantify expected amounts of nutrients (nitrogen and phosphorus) or sediment loads to water from specific land uses or point sources. Changes in estimated loads from a particular piece of land can occur in a number of ways, including: 1) A change in the land use (e.g. forest instead of grassland), 2) an adjustment based on an estimate of effectiveness of a best management practice (BMP), 3) a measured reduction in direct load to the land use, and 4) a measured reduction from a treatment process. The CBP uses these effectiveness estimates and direct load reductions to land to modify the existing baseline loading for particular land uses and practices. Loads from point sources can be adjusted based on a new treatment process or practice.

The Water Quality Goal Implementation Team (WQGIT) is responsible for approving the loading rate reductions, and percentage adjustments to these rates, used in the Chesapeake Bay Watershed Model (CBWM). The 2014 Chesapeake Bay Watershed Agreement, which includes the commitment to meet two-year milestones that accelerate the pace of Chesapeake Bay restoration, and the need to quantify practices to be used in Watershed Implementation Plans (WIPs) that will achieve Total Maximum Daily Load (TMDL) allocations, will likely spur innovation and identification of new BMPs.

Direct nutrient and sediment load reductions and reductions from treatment processes often can be estimated, or measured, with a relatively high degree of accuracy. However, due to the variability of available data, loading rates and effectiveness estimates for BMPs that are not treatment processes may be based largely on best professional judgment. While the use of best professional judgment is reasonable under those circumstances, other sources of scientific information should be used to support the basis of this judgment and clearly referenced in the recommendations. Since the definitions and values used for both loading and effectiveness estimates have important implications for the CBP, it is critical that they be developed in a process that is consistent, transparent, and scientifically defensible.

This document contains three sections addressing the following process steps:

- I. Determine the need for a review process,
- II. Review process:
 - a. For new estimates
 - b. For existing estimates or treatment processes
- III. Chesapeake Bay Program review and approval

The Protocol will be reviewed by the CBP on a biennial basis to incorporate new information and/or changes to process based on input received from the partnership. Any changes to the Protocol will take effect immediately upon adoption by the WQGIT. ~~However, Panels already underway will be exempt from any changes to those process steps that have already occurred within a Panel. For example, a Panel is not required to hold a stakeholder forum, which is typically held once a Panel convenes, if Panel members are already at the stage of finalizing the Panel report.~~ However, all Panel members will be

required to sign conflict of interest disclosure forms¹ if they had not done so already at the beginning stages of the Panel convening process.

I. Determine the Need for a Review Process for Estimates:

A. New Requests for Evaluation of Technologies and Practices

Requests should be submitted to the Chair and Vice Chair of the relevant source sector Workgroup or the appropriate Goal Implementation Team (GIT). Requests should include the following information: (a) a clear and concise definition of the practice with specific information on how it reduces nitrogen, phosphorus and sediment, and (b) reference available science/data on the nutrient and sediment removal efficiencies with the contact information and affiliation of the lead researchers, including the geographical location of where the data was collected.

The GIT or Workgroup Chair may propose that the request be routed to an alternative GIT or Workgroup if he/she feels that placement in another group is more appropriate. These groups will determine if sufficient credible data is available for a full review process. Alternatively, these groups may determine that the requested BMP is sufficiently similar to a previously approved practice or can be combined with another panel request. This determination will be made within 90 days from the date received by the GIT or Workgroup Chair.

When a GIT or a source sector Workgroup determines a request lacks sufficient credible data for a full review process, they will communicate that finding to the WQGIT along with a letter to the requestor describing the basis for such decision, for signature by the GIT or source sector Workgroup Chair.

When a GIT or source sector Workgroup determines a request is sufficiently similar to a previously approved practice, they will document the basis for their recommendation and route it through the Watershed Technical Workgroup (WTWG) to the WQGIT for approval. Once approved, a letter to the requestor describing the resolution of their request will be sent by the GIT or source sector Workgroup Chair. Should the recommendation fail to be approved by the WQGIT or GIT, the request will be returned to the appropriate source sector Workgroup for reconsideration of an Expert Panel.

When a GIT or a source sector Workgroup determines a request is sufficiently similar to another panel request, that request can be combined for a single Expert Panel, they will document the basis for their recommendation and route it to the Water Quality Goal Team for approval. Once approved, a letter to the requestor describing the resolution of their request will be sent by the GIT Chair. Should the recommendation fail to be approved by GIT, the request will be returned to the appropriate workgroup for reconsideration of an Expert Panel.

When a GIT or source sector Workgroup determines a request has sufficient credible data for a full review process, they will communicate that finding to the WQGIT along with a letter to the requestor describing the basis for such decision, for signature by the GIT or source sector Workgroup Chair.

¹ See Appendix III for the National Academies COI Form that will be utilized by all BMP Expert Panels.

The GIT or source sector Workgroup will develop a list of priority BMPs for which they have determined Expert Panels are warranted and present this list to all GITs on no less than a six month basis. The WQGIT, working with the respective source sector Workgroup or GIT Chairs, will develop a combined priority list of BMPs for which new BMP Expert Panels will be convened over the course of the coming year. Proposed technologies and practices that have been identified by jurisdictions in their WIPs will be given highest priority.

B. Proprietary Devices

When a sufficient number of non-proprietary designs for the BMP (e.g., floating wetland treatment BMP) have become available and been researched for removal efficiencies, then that class of BMPs will be eligible for the Expert Panel process. However, proprietary BMPs, which meet the definition(s) and qualifying conditions established by the Expert Panel for a class of BMPs, can receive nutrient and sediment reduction credit assigned to that class. Additional credit for proprietary design modifications to the BMP will not be granted.

C. Existing estimates or treatment processes

The WQGIT will evaluate existing loading and effectiveness estimates on a five year schedule, or sooner, if new science or information becomes available, to determine if a review is warranted. Such reviews can be prompted by the availability of new information, such as a new treatment process or new information on efficiencies. Reviews can also be initiated if current estimates produce illogical model outputs or if there is reason to believe that they were developed using inaccurate information. Requests for reviews are typically submitted by a source sector Workgroup or GIT but are not restricted to these groups.

D. Communication of Requests to the Chesapeake Bay Program

The WQGIT Coordinator will distribute on a monthly basis an email with a status update on the existing BMP Expert Panels and a notification of those Panels that are expected to be convened within the next three months. These email communications will be sent to all of the GITs, the Advisory Committees, and STAR so the Partnership is fully aware of the Panels underway and what is expected to undergo the Panel process in the near future. Specific questions about the Panels listed in the monthly email updates should be sent to the WQGIT Coordinator and Staffers.

IIA. Review Process for New Estimates

Convene a Panel & Expectations of Panel members

The source sector Workgroup, in consultation with representatives from the WTWG, WQGIT ~~Chair, and~~ any other GIT ~~Chair, and the Advisory Committees~~, will coordinate the convening of an Expert Panel, including the development of. ~~The hosting source sector Workgroup is responsible for developing a~~ draft scope and charge of the Panel, along with a proposed list of Panelists. If an Expert Panel Chair is identified prior to the selection of proposed Panelists, then the Panel Chair will be actively involved in the selection process.

Panel membership must include individuals with the specific expertise and experience in pertinent environmental and water quality-related issues needed to address the scientific charge put to the Panel. Priority for Panel membership will be focused on recognized regional or national experts in their field. Members that understand the programmatic implementation of the BMP, how it might be simulated in the CBP modeling tools, and the geography of the Bay watershed are also desirable to help ensure balanced representation and expertise on the Expert Panel. This also includes the consideration of a local practitioner participation on a Panel. Local practitioner is defined in this context as a person with practical, real-world implementation expertise who will provide this technical expertise to the Panel. Examples include but are not limited to a public works director, soil and water conservation specialist, or municipal engineer. In the Panel member selection process, the hosting source sector Workgroup Chair(s) and Coordinator shall collect input from their own Workgroup, the GITs, and WTWG, the CBP Modeling Team, and the Advisory Committees.

A representative from the requesting source sector Workgroup; a representative from the WTWG; a representative from the CBP modeling team, and a representative from EPA Region III² will serve as resources to the Panel, and are tasked with providing requested information and assistance to the Panel's topic experts during their deliberations. A Panel may also invite additional experts to serve as guests on the Panel, either for a few meetings or all of them, such that they can provide input but are not official members of the Panel.

Potential Panel members must provide to the hosting source sector Workgroup a Curriculum Vitae (CV) or any other justification that illustrates the nature of their expertise as it relates to the Panel's charge. In addition, potential Panel members must disclose actual or potential conflicts of interest in writing to the hosting source sector Workgroup. An actual or potential conflict of interest is deemed to exist when:

- A potential Panel member could benefit financially from the Panel recommendations
- The employer of a potential Panel member could benefit financially from Panel recommendations
- A potential Panel member that represents a particular point of view or special interest "where one is totally committed to a particular point of view and unwilling, or reasonable perceived to be unwilling, to consider other perspectives or relevant evidence to the contrary."³

As mentioned previously in this Protocol, all proposed panelists credentials, and associated conflict of interest disclosures and CVs, will be reviewed by the partnership before a Panel membership is finalized to help ensure that no actual or potential conflicts of interest exist. These conditions will minimize the risk that Expert Panels are biased toward particular interests or regions.

² A point of contact from the EPA Region III Office in Philadelphia will be selected to participate by EPA on Panels where permit or other regulatory questions are expected to arise during Panel deliberations.

³ <http://www.nationalacademies.org/doi/10.17232/conform-0.pdf>

~~Panel members will be responsible for following the specific charge of the Panel, as well as this Protocol⁴.~~ The elements of a Panel charge should include the following, at a minimum:

- Background (identification, scope, and definition) of the specific practice(s) under Panel review and deliberation
- Recommendations for Expert Panel member expertise
- Development of a Panel report to address the guidelines and information outlined on pages 5 and 6 of this Protocol
- Proposed timeline for the Panel to finalize their recommendations and submit the Panel report for CBP partnership review. It should be noted that the proposed timelines are subject to change based on Panel deliberations and the partnership's review process

The proposed list of Panelists, as well as the draft scope and charge of the Panel, will be sent to the source sector Workgroups, the WTWG, the GITs, and the Advisory Committees for their review and comment. Final approval of the Panel scope and charge, as well as Panel membership, will be reserved for the hosting source sector Workgroup or GIT⁵ and will follow the Chesapeake Bay Program partnership and WQGIT Governance Protocols. This includes in cases where consensus cannot be reached, the decision is elevated to the next higher decision-making group.

Expert Panel Meetings

~~Panel members will be responsible for following the specific charge of the Panel, as well as this Protocol⁶.~~ The BMP Expert Panels function as independent peer review processes, in accordance with the National Academy of Sciences^{7,8} standard practices for studies of the National Research Council and in compliance with applicable laws. Therefore, Panel deliberations in meetings and conference calls will be closed to the public in order to discuss and develop draft recommendations free from outside influences. However, once a Panel has been convened or re-convened, one of the first meetings will be dedicated to an open forum where interested parties can share and present scientific data with the Panel members⁹. The intent is to provide an open exchange of information that may help inform the Panel as it moves forward with its deliberations, as well as provide an opportunity for the public and interested stakeholders to learn more about the Panel's charge. Announcements of these open forum meetings will be posted on the CBP website and distributed via email to the hosting source sector Workgroup, the GITs, and the Advisory Committees.

~~Following the open forum meeting, the Panel shall consider requests from interested parties to observe Panel discussions as guests on a case by case basis. Signatory representatives will be granted guest~~

⁴~~Copies of the Protocol will be distributed to all Panel members in advance of their first call or meeting.~~

⁵ In the cases where a Panel is coordinated by Virginia Tech, the Chesapeake Bay Watershed-Research and Outreach Collaborative (CBW-ROC) will also have final approval of the Panel charge, scope, and membership.

⁶~~Copies of the Protocol will be distributed to all Panel members in advance of their first call or meeting.~~

⁷ http://www.nationalacademies.org/xpeditio/groups/nasite/documents/webpage/na_069620.pdf

⁸ ~~Appendix II: http://www.nationalacademies.org/xpeditio/groups/nasite/documents/webpage/na_069618.pdf~~

⁹ This open forum meeting should not be scheduled prior to three weeks after its public announcement through the CBP website and email notifications to the CBP partnership.

~~status upon request. Guest will be allowed access to observe the Panel's discussions and deliberations, but should refrain from interjecting or otherwise disturbing the Panel proceedings.~~ The Panel may elect to solicit input from guests prior to the close of a meeting to ensure that the Panel receives the full range of information and science available on the Panel topic. In addition, guests may submit relevant BMP performance data or any other such supporting literature for the Panel to consider. Any writing materials provided to the Panel will be maintained in an archived location that can be made available for review upon request. Should the Panel's discussions or deliberations include proprietary data or other intellectual property not yet published or publicly available, the Panel may exclude guests from those portions of the meetings.

The Panel Chair and Coordinator will be the primary points of contact during the Expert Panel process. While it is recognized that the majority of Panel members serve on a voluntary basis, there are several support mechanisms in place (e.g. contracts, grants) that can provide additional resources to aid in the Expert Panel process. It is up to the Panel Chair and Coordinator on how best to assign responsibilities amongst the Panel members. Questions and requests to utilize these resources should be directed to the WQGIT Coordinator.

When objections or dissenting opinion are raised in the context of Panel discussions and in the development of Panel reports, consensus should be the primary approach taken to resolve such dissent. In the event that consensus cannot be reached, all dissenting opinions must be documented and described in the Panel's report.

Panel Progress Updates

The Panel Chair or Panel Coordinator will routinely update the hosting source sector Workgroup or GIT on the Panel's progress; preliminary findings; and any information or logistical gaps/needs that require input from those beyond the Panel membership. The source sector Workgroup Coordinator will work closely with the Panel Chair and Coordinator on scheduling these status updates during regularly scheduled Workgroup meetings/calls. Status updates will also be solicited on a monthly basis by the WQGIT Coordinator. Status information could include when a Panel expects to release a draft report for review; initial findings of the Panel; or specific issues that the Panel expects the Workgroups and GITs to decide upon. These updates will be compiled for all active panels for distribution to the GITs and will also be posted on ChesapeakeStat: http://stat.chesapeakebay.net/?q=node/130&quicktabs_10=2. Contact information for the Workgroup Coordinator and Staffer will also be available on the source sector BMP web page on ChesapeakeStat.

Ancillary Benefits and Unintended Consequences

The scope of the BMP Expert Panel is to develop definitions and loading or effectiveness estimates for nutrient and sediment reducing technologies and practices. However, Panel members will be expected to identify any significant ancillary benefits or unintended consequences beyond impacts on nitrogen, phosphorus and sediment loads. This expectation will be included in the Panel's charge. Emphasis should be placed on benefits or consequences that have the potential to impact the implementation of the Goals and Outcomes of the 2014 Chesapeake Bay watershed Agreement. Examples include increased,

or reduced, air emissions or changes to habitat. It is recognized that an expanded analyses into ancillary benefits or unintended consequences could be a significant and useful contribution as an appendix to the final Panel report. Therefore, the Panel Chair and Coordinator should notify the appropriate GIT of any identified ancillary effects to determine if the GIT wants to develop and provide such information. Should the identification of ancillary effects originate at a GIT, notification must be submitted to the Panel Chair and Coordinator to inform them of the GIT's intention to draft the ancillary benefits and unintended consequences appendix.

The appendix will include the authors involved in the analyses, as well as the finalization date. It is anticipated that further research into any ancillary benefits or unintended consequences will be conducted concurrently with the Panel itself; however, this assumption does not preclude the development of such an appendix after the Panel report is final.

It is important to note that the purpose of the Panels is not to incentivize or promote the use of any BMP; it's to increase the understanding of the nutrient and sediment reductions associated with these practices. In addition, any appendix on ancillary benefits or unintended consequences does not change the definitions and loading or effectiveness estimates for nutrient and sediment reducing technologies and practices in the final Panel report. State and local governments may then consider both the definitions and effectiveness estimates from the main panel report, as well as ancillary benefits or unintended consequences from the appendix, when deciding upon which technologies and practices they intend to select, fund, and implement within their respective jurisdictions.

Data applicability

Determining which data should be used to develop loading and effectiveness estimates is a critical step. When considering sources of data, the Panel must decide: 1) if the data is appropriate, and 2) how much influence each data source should have on the final estimate. Each of these decisions should be discussed explicitly in the final report for each data source.

Data sources should be characterized using Table 1 (below) and included in the Panel report.

Table I. Data source characterization

	High Quality	Medium Quality	Low Quality
Year Extent of Replication	Published in or after 2000 or seminal research	Published prior to 2000	Published prior to 2000
Applicability	Purpose/scope of research/publication matches information/data need	Limited application	Does not apply
Study location	Within Chesapeake Bay	Characteristic of CB, but outside of watershed	Outside of CB watershed and characteristics of

Commented [PL1]: Further details to be provided by STAC

			study location not representative
Data collection & analysis methods	Approved state or federal methods used; statistically relevant	Other approved protocol and methods; analysis done but lacks significance testing	Methods not documented; insufficient data collected
Conclusions	Scientific method evident; conclusions supported by statistical analysis	Conclusions reasonable but not supported by data; inferences based on data	Inconclusive; insufficient evidence
References	Majority peer-review	Some peer-review	Minimal to none peer-review

The Panel should also consider the following:

- Was the data generated from a BMP design and implementation consistent with those found in the Chesapeake Bay watershed?
- How does the duration of the experiment compare to the intended timeline of the BMP? If the experiment is substantially shorter, how might that influence the evaluation of operational effectiveness of the practice?
- Do results reflect changes in pollution reduction benefits over the lifetime of the practice?
- What parameters were sampled and monitored (paired watershed study, grab samples, ground water, etc.)?
- What, if any, assumptions were made during the experiment and conclusion?

Once the Panel has characterized a data source, they must determine how much influence (i.e. ‘weight’) the data should have on resulting estimates. For example, peer-reviewed publications will usually have more weight than non-reviewed sources. However, the exact influence of a particular data source will also consider other factors, such as those listed in the questions above, which the Panel will consider. Citations to such literature shall be provided in the draft and final Panel reports.

Incremental Recommendations. The duration of a Panel is dependent upon the complexity of the review and workload issues. However, the Partnership may recommend expediting an element of the review process (e.g. partner’s request for BMP effectiveness estimates that have immediate implications for progress or planning purposes). Therefore, a Panel is welcome to make incremental recommendations that can be sent forward for final approval to the WQGIT by working through the normal review and approval procedures identified above and more clearly defined in Section III of the Protocol. If the Panel is charged with producing incremental recommendations at the inception of the Panel, it will be the responsibility of the Panel to produce those incremental recommendations. However, if the request for incremental recommendations is made after the Panel has received its charge and has begun work on

those charges, it is at the Panel’s discretion as to whether or not the interim or incremental recommendations will be pursued. The Panel is still expected to complete and finalize the Panel report which will contain the more comprehensive set of recommendations. These more comprehensive set of recommendations should not modify the incremental recommendations that were previously approved by the WQGIT. If any modifications are proposed, the Panel will be directed to seek Partnership approval of those changes, following the procedures articulated in this Protocol.

Expert Panel Reports

The Expert Panel will develop a report documenting their recommendations for definitions and loading or effectiveness estimates for nutrient and sediment reducing technologies and practices. The Panel will work with the source Workgroup and WTWG to develop a report that includes the following:

- Identity and expertise of Panel members
- Land Use or practice name/title
- Detailed definition of the land use or practice
 - The definition should incorporate descriptive elements that can reasonably be checked by anyone involved in the verification assessment of the practice and result in replicable verification findings
- Nitrogen, phosphorus, and sediment loading or effectiveness estimates (practice performance recommendations)
 - Discussion may include alternative modeling approaches to accommodate a specific land use or practice, if appropriate
- Justification for the selected effectiveness estimates, including
 - List of all data sources considered (peer-reviewed, unpublished, etc.) and a description of how each data source was considered (see Table 1)
 - Panel members can use unpublished data if such data is based on solid documentation as to the origins and the quality of the data
 - Identify data sources that were considered, but not used in determining practice effectiveness estimates
 - Documentation of how the Panel addressed negative results or no pollution reduction in nutrient and sediment loads as a result of implementation of a specific practice
 - Where studies with negative or no pollution reduction data are found (i.e. the practice acted as a source of pollutants), they should be considered the same as all other data
- Description of how best professional judgment was used, if applicable, to determine effectiveness estimates
- Land uses to which the practice is applied
- Load sources that the practice will address and potential interactions with other practices
- Description of pre-practice and post-practice circumstances, including the baseline conditions for individual practices
- Conditions under which the practice performs as intended/designed:

- Include conditions/circumstances where the practice will not perform as intended/designed, or will be less effective. An example: large storm events that could exceed a practice's design specifications.
- Any variations in practice performance due to climate variability, hydrogeomorphic region, or other measureable factors.
- Temporal performance of the practice including lag times between establishment and full functioning, if applicable
- Unit of measure (e.g., feet, acres)
- Locations within the Chesapeake Bay watershed where this practice is applicable
- Useful life; practice performance over time:
 - The Panel will work with the WTWG and the CBP modeling team representatives to recommend a “credit duration” for each practice. This determines the time the practice will receive credit in the CBP modeling tools. When the credit duration ends, the practice will need to be inspected or maintained to verify it is still performing properly in accordance with the practice's definition, and thereby renewing the credit duration.
- Cumulative or annual practice
- Recommended description of how the practice could be tracked, reported, and verified:
 - Include a clear indication that this practice will be used and reported by jurisdictions
- Guidance on BMP Verification
 - Description of the BMP verification guidance must be consistent with the CBP partnership's Chesapeake Bay basinwide BMP Verification Framework¹⁰. Note that verification protocols and the verification of a practice is ultimately the responsibility of a jurisdiction. Panels are expected to provide only their recommendations as to how verification might be considered.
 - In an effort for the Partnership to more efficiently approve the technical requirements for Scenario Builder, National Environmental Information Exchange Network (NEIEN), and the Watershed Model that are required by each Panel report, the CBPO Scenario Builder and Modeling Team will work with the Panel members and the WTWG to develop a technical appendix that describes changes that will be made to the modeling and reporting tools to accommodate the BMP(s). Specific text will include the NEIEN-based procedures for flagging and removing practice data that is past its credit duration. The technical appendix should be developed in conjunction with the Panel report to help ensure that recommendations can be fully incorporated into the CBP modeling tools. Once drafted, each technical appendix will move through the comment process in conjunction with its parent report and must be approved by the source sector Workgroup, the WTWG, and the WQGIT. Any future changes to the approved appendix should be brought to the attention of the appropriate source sector Workgroup, WTWG, and WQGIT.

¹⁰ <http://www.chesapeakebay.net/about/programs/bmpverification>

- Description of how the practice may be used to relocate pollutants to a different location. An example is where a practice eliminates a pollutant from surface transport but moves the pollutant into groundwater
- Suggestion for a review timeline; when will additional information be available that may warrant a re-evaluation of the practice effectiveness estimates
- Identification of any unintended consequences or ancillary benefits associated with a practice
- Outstanding issues that need to be resolved in the future and a list of ongoing studies, if any
- Documentation of any dissenting opinion(s) if consensus cannot be reached
- Operation and Maintenance requirements and how neglect alters the practice effectiveness estimates
- A brief summary of BMP implementation and maintenance cost estimates, when this data is available through existing literature

IIB. Review Process for Existing Estimates or Treatment Processes

If approved by the WQGIT Chair, the review of existing estimates and, when applicable, the definition of a BMP can be conducted within a source Workgroup in consultation with the WTWG. This approach should reduce the amount of time necessary to conduct the review because the definition(s) have already been developed, a background of available data already exists, and issues of how the practices or land use is incorporated into the CBWM have been addressed. Reviews of existing estimates should follow the guidelines listed in IIA above except that a separate Panel is not convened and the information generated is added to the existing support documentation for the estimate.

III. Chesapeake Bay Program Review and Approval

All Expert Panel recommendations will undergo a three-stage formal review and comment process that will include, at a minimum, the following groups:

- Relevant source sector Workgroup. This group will be responsible for reviewing the scientific basis of the recommendation, ensuring that all of the pollutant(s) source loading(s) or BMP pollution reduction mechanisms have been included.
- Watershed Technical Workgroup. This group will be responsible for analyzing the technical components of the recommendation(s) and determining that the tracking and reporting data that is needed to receive credit is available in the appropriate Chesapeake Bay jurisdiction(s) thereby ensuring that no double counting is occurring.
- Water Quality Goal Implementation Team. This group will be responsible for reviewing the process used and the recommendation's consistency with other approved BMP effectiveness estimates.

It should be noted that often times technical, policy, and management issues may have cross-Workgroup and GIT implications that cannot be addressed in isolation by one particular group. Although the definitions above serve to articulate the primary function of these groups in relation to the Expert Panel process, flexibility of those roles should be allowed.

The first review stage will consist of the relevant source sector Workgroup, other Partnership GITs, associated Workgroup(s) and the Advisory Committees. Panel reports will become publicly available when they enter the first stage of review through posting to the CBP website and electronically distributed to these partnership groups. Any other groups interested in reviewing the draft recommendations are welcome to do so at this time. Comments should be provided to the Panel Coordinator. Approval of the draft report will be sought from the relevant source sector Workgroup after the comment period has closed.

Once approval has been reached by the source sector Workgroup, the draft Panel recommendations will enter the second stage of review and approval by the WTWG. This stage may also include a coordinated review by the Modeling Workgroup, depending on the specifics of the BMP and the Panel's recommendations.

Once approval has been reached by the WTWG, the draft Panel recommendations will enter the third and final stage of review, approval by the WQGIT and any other GIT, as appropriate, in accordance with the CBP partnership and WQGIT Governance Protocols.

To initiate each review and comment stage, the Panel Chair and source sector Workgroup Coordinator will provide a presentation that includes:

- Rationale for review Panel
- The recommendations/findings of the Panel for effectiveness and loading estimates
- A table containing the number of studies used for the findings by state, the range of the studies' findings, and range of the years of the studies
- Any dissenting opinion as it relates to the effectiveness and loading estimates
- Next steps and comment period logistics

The Panel Coordinator and/or sector Workgroup Chair will be responsible for distributing the draft Expert Panel report at least ten business days in advance of the first presentation meeting, and at least ten business days in advance of the approval meeting of the subsequent approval meetings.

The review and comment period for each stage shall be twenty business days in duration beginning the business day after each first presentation meeting. Any requests for review extensions can be submitted to the Panel Chair or Panel Coordinator for consideration. During this time, commenters should send specific edits in track change format or more general comments in writing to the Panel Chair and Panel Coordinator.

The Panel Chair and Panel Coordinator will be responsible for developing a "response to comments" document that provides a response to comments received. This document will be posted as an appendix to the final Panel's report. Specific responses will not be provided for:

- Overlapping comments (one response will be provided)

- Comments outside the scope of the Panel or demonstrate no relevancy to the report’s findings
- Editorial changes, such as grammatical edits

In the event that a comment does not result in a change to the Panel’s report, the Panel Chair and Panel Coordinator shall work with the specific commenter(s) to resolve the issue. Commenters are requested to notify the Panel Chair, Panel Coordinator and the Workgroup/GIT Chair prior to the approval meeting if they intend to register a major objection to an Expert Panel report, and request time on the meeting agenda to explain their perspectives. If objections to a Panel report are not addressed in time of the approval meeting, the Workgroup/GIT Chair may table the action until the next meeting of the Workgroup/GIT. In cases where an objection is not identified before an approval meeting, the Workgroup/GIT Chair may choose, at his or her discretion, to ask the Workgroup or GIT to approve the report. Although the goal is consensus, and every effort has been made to address any comments, timelines may necessitate the report moving forward. In all cases, the ~~Chesapeake Bay Program~~ partnership and WQGIT Governance Protocols.

Although the Panel Chair and Coordinator are responsible for managing the comment process, Panel members may be expected to address and respond to comments received during the comment period for the relevant draft of the Panel’s recommendations, as appropriate. Once the comment period has ended and the reports finalized by the GIT, the charge of the Panel has been met and Panel members are released from duty.

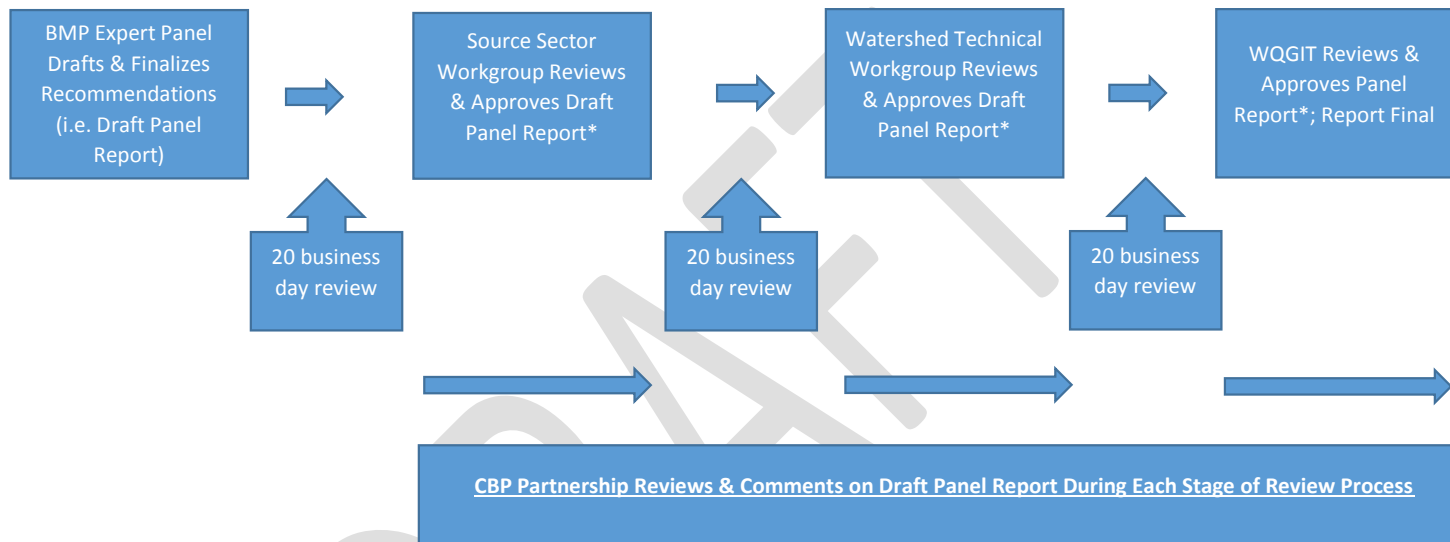
In the event that the Expert Panel recommendation(s) are modified during the review and comment period, a document will be generated that explicitly details the original Expert Panel recommendations and how those recommendations were modified, and the original Panel report will be attached to that document as an appendix. In addition, any unresolved issue(s) or dissenting opinions should also be included.

Once the Panel report has been approved by the WQGIT, the Panel Chair and Coordinator will distribute the final Panel report to the Partnership and post online at:
http://stat.chesapeakebay.net/?q=node/130&quicktabs_10=3

The WQGIT Staffers will be responsible for maintaining two lists derived from each Panel report:

- Follow up actions identified in the Panel reports along with the due dates of those actions and responsible party (such as trial periods, updates, reevaluation schedule, etc.)
- Research needs identified by Panel reports

Appendix I: CBP Partnership Review Process for BMP Expert Panels



*The Panel Chair and Coordinator are responsible for developing a “Response to Comments” document based on feedback received after each partnership review stage. The “Response to Comments” document will be attached to the final Panel report.

Appendix II: The National Academies – Our Study Process¹¹

interest, no individual can be appointed to serve (or continue to serve) on a committee of the institution used in the development of reports if the individual has a conflict of interest that is relevant to the functions to be performed. For more information, see the National Academies' Web site at www.national-academies.org.

Other considerations. Membership in the three Academies (NAS, NAE, IOM) and previous involvement in National Academies studies are taken into account in committee selection. The inclusion of women, minorities, and young professionals are additional considerations.

Specific steps in the committee selection and approval process are as follows:

- Staff solicit an extensive number of suggestions for potential committee members from a wide range of sources, then recommend a slate of nominees.
- Nominees are reviewed and approved at several levels within the National Academies; a provisional slate is then approved by the President of the National Academy of Sciences, who is also the Chair of the National Research Council.
- The provisional committee list is posted for public comment in the Current Projects System on the Web (<http://www4.national-academies.org/cp.nst>).
- The provisional committee members complete background information and conflict of interest disclosure forms.
- The committee balance and conflict of interest discussion is held at the first committee meeting.
- Any conflicts of interest or issues of committee balance and expertise are investigated; changes to the committee are proposed and finalized.
- Committee is formally approved.
- Committee members continue to be screened for conflict of interest throughout the life of the committee.

STAGE 3. Committee Meetings, Information Gathering, Deliberations, and Drafting the Report

Study committees typically gather information through: 1) meetings that are open to the public and that are announced in advance through the National Academies Web site; 2) the

submission of information by outside parties; 3) reviews of the scientific literature, and 4) the investigations of the committee members and staff. In all cases, efforts are made to solicit input from individuals who have been directly involved in, or who have special knowledge of, the problem under consideration.

In accordance with federal law and with few exceptions, information-gathering meetings of the committee are open to the public, and any written materials provided to the committee by individuals who are not officials, agents, or employees of the National Academies are maintained in a public access file that is available for examination.

The committee deliberates in meetings closed to the public in order to develop draft findings and recommendations free from outside influences. The public is provided with brief summaries of these meetings that include the list of committee members present. All analyses and drafts of the report remain confidential.

STAGE 4. Report Review

As a final check on the quality and objectivity of the study, all National Academies reports—whether products of studies, summaries of workshop proceedings, or other documents—must undergo a rigorous, independent external review by experts whose comments are provided anonymously to the committee members. The National Academies recruit independent experts with a range of views and perspectives to review and comment on the draft report prepared by the committee.

The review process is structured to ensure that each report addresses its approved study charge and does not go beyond it, that the findings are supported by the scientific evidence and arguments presented, that the exposition and organization are effective, and that the report is impartial and objective.

Each committee must respond to, but need not agree with, reviewer comments in a detailed "response to review" that is examined by one or two independent report review "monitors" responsible for ensuring that the report review criteria have been satisfied. After all committee members and appropriate National Academies officials have signed off on the final report, it is transmitted to the sponsor of the study and is released to the public. Sponsors are not given an opportunity to suggest changes in reports. The names and affiliations of the report reviewers are made public when the report is released.

HOW THE PUBLIC CAN FOLLOW AND PROVIDE INPUT TO STUDIES

The Current Projects System was established with a link from the National Academies homepage, www.national-academies.org, to make it easy for members of the general public with interest in the subject to follow the progress of a study and submit comments. The system offers separate views by subject and by project title.

Reports of the National Academies are available from the National Academies Press, 500 Fifth Street, NW, Washington, DC 20001 1-800-624-6242 • www.nap.edu.

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

The nation turns to the National Academies—National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council—for independent, objective advice on issues that affect people's lives worldwide. www.national-academies.org

THE NATIONAL ACADEMIES

OUR STUDY PROCESS

Ensuring Independent, Objective Advice



National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

¹¹ http://www.nationalacademies.org/xpeditio/groups/nasite/documents/webpage/na_069618.pdf



For more than 140 years, the National Academies have been advising the nation on issues of science, technology, and medicine. The 1863 Congressional charter signed by President Lincoln authorized this non-governmental institution to honor top scientists with membership and to serve the nation whenever called upon. Today the National Academies—National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council—continue that dual mission.

Like no other organization, the National Academies can enlist the nation's foremost scientists, engineers, health professionals, and other experts to address the scientific and technical aspects of society's most pressing problems. Each year, more than 6,000 of these experts are selected to serve on hundreds of study committees that are convened to answer specific sets of questions. All serve without pay.

Federal agencies are the primary financial sponsors of the Academies' work. Additional studies are funded by state agencies, foundations, other private sponsors, and the National Academies' endowment. The Academies provide independent advice; the external sponsors have no control over the conduct of a study once the statement of task and budget are finalized. Study committees gather information from many sources in public meetings but they carry out their deliberations in private in order to avoid political, special interest, and sponsor influence.

Through this careful study process, the National Academies produce 200–300 authoritative reports each year. Recent reports cover such topics as the obesity epidemic, the use of forensics in the courtroom, invasive plants, underage drinking, the Hubble Telescope, vaccine safety, the hydrogen economy, transportation safety, climate change, and homeland security. Many reports influence policy decisions; some are instrumental in enabling new research programs; others provide program reviews.

STEPS TAKEN TO ENSURE INDEPENDENCE AND OBJECTIVITY

The reports of the National Academies are viewed as being valuable and credible because of the institution's reputation for providing independent, objective, and non-partisan advice with high standards of scientific and technical quality. Checks and balances are applied at every step in the study process to protect the integrity of the reports and to maintain public confidence in them. The study process can be broken down into four major stages: 1) defining the study; 2) committee selection and approval; 3) committee meetings, information gathering, deliberations, and drafting of the report; and 4) report review.

STAGE 1. Defining the Study

Before the committee selection process begins, National Academies' staff and members of their boards work with sponsors to determine the specific set of questions to be addressed by the study in a formal "statement of task," as well as the duration and cost of the study. The statement of task defines and bounds the scope of the study, and it serves as the basis for determining the expertise and the balance of perspectives needed on the committee.

The statement of task, work plan, and budget must be approved by the Executive Committee of the National Research Council Governing Board. This review often results in changes to the proposed task and work plan. On occasion, it results in turning down studies that the institution believes are inappropriately framed or not within its purview.

STAGE 2. Committee Selection and Approval

Selection of appropriate committee members, individually and collectively, is essential for the success of a study. All committee members serve as individual experts, not as representatives of organizations or interest groups. Each member is expected to contribute to the project on the basis of his or her own expertise and good judgment. A committee is not finally approved until a thorough balance and conflict of interest discussion is held at the first meeting, and any issues raised in that discussion or by the public are investigated and addressed.

Careful steps are taken to convene committees that meet the following criteria:

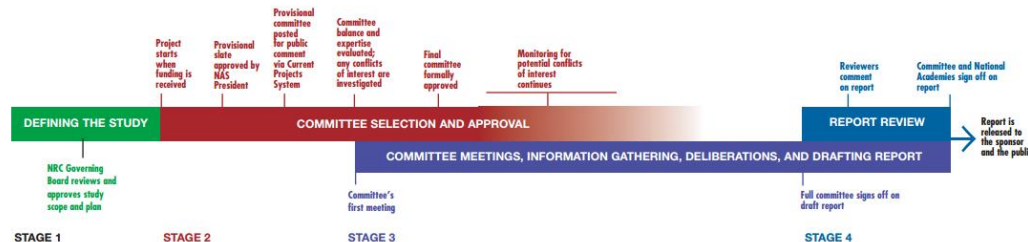
An appropriate range of expertise for the task. The committee must include experts with the specific expertise and experience needed to address the study's statement of task. One of the strengths of the National Academies is the tradition of bringing together recognized experts from diverse disciplines and backgrounds who might not otherwise collaborate. These diverse groups are encouraged to conceive new ways of thinking about a problem.

A balance of perspectives. Having the right expertise is not sufficient for success. It is also essential to evaluate the overall composition of the committee in terms of different experiences and perspectives. The goal is to ensure that the relevant points of view are, in the National Academies' judgment, reasonably balanced so that the committee can carry out its charge objectively and credibly.

POINT OF VIEW IS DIFFERENT FROM CONFLICT OF INTEREST

A point of view or bias is not necessarily a conflict of interest. Committee members are expected to have points of view, and the National Academies attempt to balance these points of view in a way deemed appropriate for the task. Committee members are asked to consider respectfully the viewpoints of other members, to reflect their own views rather than be a representative of any organization, and to base their scientific findings and conclusions on the evidence. Each committee member has the right to issue a dissenting opinion to the report if he or she disagrees with the consensus of the other members.

Screened for conflicts of interest. All provisional committee members are screened in writing and in a confidential group discussion about possible conflicts of interest. For this purpose, a "conflict of interest" means any financial or other interest which conflicts with the service of the individual because it could significantly impair the individual's objectivity or could create an unfair competitive advantage for any person or organization. The term "conflict of interest" means something more than individual bias. There must be an interest, ordinarily financial, that could be directly affected by the work of the committee. Except for those rare situations in which the National Academies determine that a conflict of interest is unavoidable and promptly and publicly disclose the conflict of



Appendix III – Conflict of Interest Form

BI/COI FORM 3

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

**BACKGROUND INFORMATION
AND
CONFIDENTIAL CONFLICT OF INTEREST DISCLOSURE**
For General Scientific and Technical Studies and Assistance

NAME: _____ TELEPHONE: _____

ADDRESS: _____

EMAIL ADDRESS: _____

CURRENT EMPLOYER: _____

NAS/NAE/IOM/NRC COMMITTEE: _____

There are two parts to this form, Part I Background Information, and Part II Confidential Conflict of Interest Disclosure. Complete both parts, **sign** and **date** this form on the last page, and return the form to the responsible staff officer for *The National Academies* project and committee activity to which this form applies. **Retain a copy for your records.**

PART I BACKGROUND INFORMATION

INSTRUCTIONS

Please provide the information requested below regarding **relevant** organizational affiliations, government service, public statements and positions, research support, and additional information (if any). Information is "relevant" if it is related to -- and might reasonably be of interest to others concerning -- your knowledge, experience, and personal perspectives regarding the subject matter and issues to be addressed by the committee activity for which this form is being prepared. If some or all of the requested information is contained in your curriculum vitae, you may if you prefer simply attach your CV to this form, supplemented by additional responses or comments below as necessary.

I. ORGANIZATIONAL AFFILIATIONS. Report your relevant business relationships (as an employee, owner, officer, director, consultant, etc.) and your relevant remunerated or volunteer non-business relationships (e.g., professional organizations, trade associations, public interest or civic groups, etc.).

II. GOVERNMENT SERVICE. Report your relevant service (full-time or part-time) with federal, state, or local government in the United States (including elected or appointed positions, employment, advisory board memberships, military service, etc.).

III. RESEARCH SUPPORT. Report relevant information regarding both public and private sources of research support (other than your present employer), including sources of funding, equipment, facilities, etc.

IV. PUBLIC STATEMENTS AND POSITIONS. List your relevant articles, testimony, speeches, etc., by date, title, and publication (if any) in which they appeared, or provide relevant representative examples if numerous. Provide a brief description of relevant positions of any organizations or groups with which you are closely identified or associated.

V. ADDITIONAL INFORMATION. If there are relevant aspects of your background or present circumstances not addressed above that might reasonably be construed by others as affecting your judgment in matters within the assigned task of the committee or panel on which you have been invited to serve, and therefore might constitute an actual or potential source of bias, please describe them briefly.

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PART II CONFIDENTIAL CONFLICT OF INTEREST DISCLOSURE

INSTRUCTIONS

It is essential that the work of committees of the institution used in the development of reports not be compromised by any significant conflict of interest. For this purpose, **the term "conflict of interest" means any financial or other interest which conflicts with the service of the individual because it (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization.** Except for those situations in which the institution determines that a conflict of interest is unavoidable and promptly and publicly discloses the conflict of interest, no individual can be appointed to serve (or continue to serve) on a committee of the institution used in the development of reports if the individual has a conflict of interest that is relevant to the functions to be performed.

The term "conflict of interest" means something more than individual bias. There must be an *interest*, ordinarily financial, that could be directly affected by the work of the committee.

Conflict of interest requirements are *objective* and *prophylactic*. They are not an assessment of one's actual behavior or character, one's ability to act objectively despite the conflicting interest, or one's relative insensitivity to particular dollar amounts of specific assets because of one's personal wealth. **Conflict of interest requirements are objective standards designed to eliminate certain specific, potentially compromising situations from arising, and thereby to protect the individual, the other members of the committee, the institution, and the public interest. The individual, the committee, and the institution should not be placed in a situation where others could reasonably question, and perhaps discount or dismiss, the work of the committee simply because of the existence of conflicting interests.**

The term "conflict of interest" applies only to *current interests*. It does not apply to past interests that have expired, no longer exist, and cannot reasonably affect current behavior. Nor does it apply to possible interests that may arise in the future but do not currently exist, because such future interests are inherently speculative and uncertain. For example, a pending formal or informal application for a particular job is a current interest, but the mere possibility that one might apply for such a job in the future is not a current interest.

The term "conflict of interest" applies not only to the personal interests of the individual but also to the *interests of others* with whom the individual has substantial common financial interests if these interests are relevant to the functions to be performed. Thus, in assessing an individual's potential conflicts of interest, consideration must be given not only to the interests of the individual but also to the interests of the individual's spouse and minor children, the individual's employer, the individual's business partners, and others with whom the individual has substantial common financial interests. Consideration must also be given to the interests of those for whom one is acting in a fiduciary or similar capacity (e.g., being an officer or director of a corporation, whether profit or nonprofit, or serving as a trustee).

Much of the work of this institution involves scientific and technical studies and assistance for sponsors across a broad range of activities. Such activities may include, for example: defining research needs, priorities, opportunities and agendas; assessing technology development issues and opportunities; addressing questions of human health promotion and assessment; providing scientific and technical assistance and supporting services for government agency program development; assessing the state of scientific or technical knowledge on particular subjects and in particular fields; providing international and foreign country science and technology assessments, studies and assistance. Such activities frequently address scientific, technical, and policy issues

that are sufficiently broad in scope that they do not implicate specific financial interests or conflict of interest concerns.

However, where such activities address more specific issues having significant financial implications -- e.g., funding telescope A versus telescope B, government development or evaluation of a specific proprietary technology, promotion or endorsement of a specific form of medical treatment or medical device, connecting foreign research facilities to specific commercial interests, making recommendations to sponsors regarding specific contract or grant awards, etc. -- careful consideration must be given to possible conflict of interest issues with respect to the appointment of members of committees that will be used by the institution in the development of reports to be provided by the institution to sponsoring agencies.

The overriding objective of the conflict of interest inquiry in each case is to identify whether there are interests -- primarily financial in nature -- that conflict with the committee service of the individual because they could impair the individual's objectivity or could create an unfair competitive advantage for any person or organization. The fundamental question in each case is does the individual, or others with whom the individual has substantial common financial interests, have identifiable interests that could be directly affected by the outcome of the project activities of the committee on which the individual has been invited to serve? For projects involving advice regarding awards of contracts, grants, fellowships, etc., this institution is also guided by the principle that an individual should not participate in any decision regarding the award of a contract or grant or any other substantial economic benefit to the individual or to others with whom the individual has substantial common financial interests or a substantial personal or professional relationship.

The application of these concepts to specific scientific and technical studies and assistance projects must necessarily be addressed in each case on the basis of the particular facts and circumstances involved. The questions set forth below are designed to elicit information from you concerning possible conflicts of interest that are relevant to the functions to be performed by the particular committee on which you have been invited to serve.

1. **FINANCIAL INTERESTS.** (a) Taking into account stocks, bonds, and other financial instruments and investments including partnerships (but excluding broadly diversified mutual funds and any investment or financial interests valued at less than \$10,000), do you or, to the best of your knowledge others with whom you have substantial common financial interests, have financial investments that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments, by the outcome of the project activities of the committee on which you have been invited to serve?

(b) Taking into account real estate and other tangible property interests, as well as intellectual property (patents, copyrights, etc.) interests, do you or, to the best of your knowledge others with whom you have substantial common financial interests, have property interests that could be directly affected by the outcome of the project activities of the committee on which you have been invited to serve?

(c) Could your employment or self-employment (or the employment or self-employment of your spouse), or the financial interests of your employer or clients (or the financial interests of your spouse's employer or clients) be directly affected by the outcome of the project activities of the committee on which you have been invited to serve?

(d) Taking into account research funding and other research support (e.g., equipment, facilities, industry partnerships, research assistants and other research personnel, etc.), could your current research funding and

support (or that of your close research colleagues and collaborators) be directly affected by the outcome of the project activities of the committee on which you have been invited to serve?

(e) Could your service on the committee on which you have been invited to serve create a specific financial or commercial competitive advantage for you or others with whom you have substantial common financial interests?

If the answer to all of the above questions under FINANCIAL INTERESTS is either "no" or "not applicable," check here ____ (NO).

If the answer to any of the above questions under FINANCIAL INTERESTS is "yes," check here ____ (YES), and briefly describe the circumstances on the last page of this form.

2. OTHER INTERESTS. (a) Is the central purpose of the project for which this disclosure form is being prepared a critical review and evaluation of your own work or that of your employer?

(b) Do you have any existing professional obligations (e.g., as an officer of a scientific or engineering society) that effectively require you to publicly defend a previously established position on an issue that is relevant to the functions to be performed in this committee activity?

(c) To the best of your knowledge, will your participation in this committee activity enable you to obtain access to a competitor's or potential competitor's confidential proprietary information?

(d) If you are or have ever been a U.S. Government employee (either civilian or military), to the best of your knowledge are there any federal conflict of interest restrictions that may be applicable to your service in connection with this committee activity?

(e) If you are a U.S. Government employee, are you currently employed by a federal agency that is sponsoring this project? If you are not a U.S. Government employee, are you an employee of any other sponsor (e.g., a private foundation) of this project?

(f) If the committee activity for which this form is being prepared involves reviews of specific applications and proposals for contract, grant, fellowship, etc. awards to be made by sponsors, do you or others with whom you have substantial common financial interests, or a familial or substantial professional relationship, have an interest in receiving or being considered for awards that are currently the subject of the review being conducted by this committee?

(g) If the committee activity for which this form is being prepared involves developing requests for proposals, work statements, and/or specifications, etc., are you interested in seeking an award under the program for which the committee on which you have been invited to serve is developing the request for proposals, work statement, and/or specifications -- or, are you employed in any capacity by, or do you have a financial interest in or other economic relationship with, any person or organization that to the best of your knowledge is interested in seeking an award under this program?

If the answer to all of the above questions under OTHER INTERESTS is either "no" or "not applicable," check here ____ (NO).

If the answer to any of the above questions under OTHER INTERESTS is "yes," check here _____ (YES), and briefly describe the circumstances on the last page of this form.

EXPLANATION OF "YES" RESPONSES:

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During your period of service in connection with the activity for which this form is being completed, any changes in the information reported, or any new information, which needs to be reported, should be reported promptly by written or electronic communication to the responsible staff officer.

YOUR SIGNATURE

DATE

Reviewed by: _____
Executive Director

Date

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