

**Summary Minutes of the United States Environmental Protection Agency (U.S. EPA)
Science Advisory Board (SAB) Research Budget Work Group – March 2, 2012**

Members of the SAB Research Budget Work Group: See Roster¹

Date and Time: March 2, 2012, 10:00 a.m. to 1:00 p.m. Eastern Time

Location: By telephone only

Purpose: To deliberate on responses to charge questions for the SAB's review of the President's requested FY 2013 research budget for EPA.

SAB Participants:

Dr. Taylor Eighmy, Chair	Dr. Christine Moe
Dr. Terry Daniel	Dr. Eileen Murphy
Dr. Costel Denson,	Dr. James Opaluch
Dr. Barbara Harper	Dr. Duncan Patten,
Dr. Kimberly Jones	Dr. Stephen Roberts
Dr. Nancy Kim	Dr. Peter Thorne
Dr. Cecil Lue-Hing	Dr. Paige Tolbert
Dr. James Mihelcic	

SAB Staff Office Participants

Dr. Angela Nugent, Designated Federal Officer (DFO)

Teleconference Summary:

The committee discussion at the teleconference covered the issues described in the agenda.²

Convene Teleconference

Dr. Angela Nugent, SAB DFO, convened the advisory teleconference and welcomed the group. She noted that the teleconference continued discussion of matters discussed by the work group during a teleconference held on March 1, 2012. She noted that the teleconference was announced in the Federal Register³ and that there had been no requests for oral public comments or written comments provided to the work group.

Purpose and Review of the Agenda

Dr. Taylor Eighmy, the SAB work group Chair, reviewed the agenda. He thanked work group members for the preparations for the meeting and asked them to discuss succinct points in response to charge questions for each of the EPA research programs.

Air/Climate/Energy (ACE) Research Budget

Dr. Paige Tolbert provided initial comments summarizing responses from her subgroup, which included fellow lead reviewers Drs. James Mihelcic and Peter Thorne. She addressed each of the charge questions in turn.

1. How well will the requested budget permit EPA to advance its strategic research directions and the priorities identified in the President's Budget? Are there any areas where EPA should increase investments or reduce investments, based on demonstrated accomplishments or clearly identified needs?

The requested budget will permit EPA to address many of the priorities in the strategic research action plan, including research of a multi-pollutant nature, hydraulic fracturing, the shift to new and more efficient monitoring methods, and global change at the local, regional and national levels. The budget will allow for energy research focused on biofuels.

The subgroup sought clarification about the extent of ORD's budgeted research on climate change mitigation, in addition to mitigation. Dr. Dan Costa, the National Program Director for the ACE program noted that EPA plans an increase in mitigation research related to EPA's Endangerment Finding.

The subgroup also noted that research in the economic, social and behavioral sciences were required, but not explicitly funded, for the ACE program.

2. Are the changes since the FY 2012 enacted budget appropriate, taking into consideration overall resources, FTEs, and intramural and extramural resources?

Given resource constraints, the requested budget will allow ORD to conduct important work efficiently as it leverages key resources outside ORD. The modest increase requested is needed to carry out the ACE mission, especially to conduct research related to hydraulic fracturing.

The global change component of the ACE budget represents 5% of ORD's budget, a relatively low percentage compared with the importance of science to this issue and EPA's role as defined by the Endangerment Finding.

EPA has provided appropriate rationales for the research planned to be phased out.

3. Are there well-defined objectives/work products for next year's budget? Can these objectives/work products be achieved with the given resources?

EPA's budget narratives are clearly laid out and appear achievable. Objectives are well defined, but could be more specific and consistent with strategic plans.

4. Are there opportunities to leverage the EPA resources with other resources, particularly federal resources?

The subgroup supports development of mechanisms to foster collaboration across ORD programs. Cross-program collaborations are essential for a systems approach. ORD has appropriately identified opportunities to leverage other federal programs. ORD might build on the 2010 Memorandum of Understanding between EPA and the Peace Corps to study emissions related to cook-stove technology and transferability of such technology.

The work group had no follow-up questions or comments for the subgroup

Safe and Sustainable Water Resources

Dr. Kimberly Jones provided initial comments summarizing responses from her subgroup, which included fellow lead reviewers Drs. Cecil Lue-Hing, Christine Moe and James Opaluch. She quickly presented the subgroup's major responses to the charge questions.

1. *How well will the requested budget permit EPA to advance its strategic research directions and the priorities identified in the President's Budget? Are there any areas where EPA should increase investments or reduce investments, based on demonstrated accomplishments or clearly identified needs?*

The subgroup supports the 6.8% increase for Safe and Sustainable Water Resources. The strategic research action plan provides a well-defined rationale for the increase. The research directions are well characterized and the budget aligns with the research.

It would be helpful to include in future plans a timeline to illustrate expected outputs in 2013 and later years and the path to achieving overall goals.

2. *Are the changes since the FY 2012 enacted budget appropriate, taking into consideration overall resources, FTEs, and intramural and extramural resources?*

Yes. This program has merged programs in ways that will promote efficiency. Cross-cutting research on nutrients and hydraulic fracturing will strengthen the program. The research plan would benefit from a clearer description of how research on pathogens and small systems will be addressed. The program should also explain more clearly how research on emerging contaminants will be covered.

3. *Are there well-defined objectives/work products for next year's budget? Can these objectives/work products be achieved with the given resources?*

The plan does a "great job" of describing the vision for the program and provides a helpful table of outputs. A timeline would help communicate when and how outputs would be generated.

4. *Are there opportunities to leverage the EPA resources with other resources, particularly federal resources?*

Collaboration is essential for the SSWR program and ORD has described opportunities for collaboration well. It would be helpful to have more detail about how these collaborations will function, i.e., which ORD program will take the lead, which program will be responsible for funding, and deliverables for cross-cutting areas. The narrative should also describe how “communities of practice” will function.

After Dr. Jones’ presentation, workgroup members had several comments:

- The SSWR program and budget should involve more emphasis on linkages to human behavior, human systems, institutions, nutrient trading and nutrient markets. The President’s budget emphasizes the importance of non-point pollution; solutions to such problems requires social, behavioral, and economic research.
- Although planned disinvestments in the beaches program, are appropriate, EPA should develop a strategy for maintaining cutting-the edge expertise in waterborne pathogens so the agency will be equipped to address future potential problems.
- Related to question 4: ORD should build partnerships with the Bureau of Land Management and utilities that have expertise in water re-use. These organizations have practical expertise.
- ORD’s Net Zero work highlights several issues related to sustainability: water re-use, energy consumption, and collaboration with the Department of Defense to pilot technologies useful to communities.

Sustainable and Healthy Communities

Dr. Terry Daniel provided initial comments summarizing responses from his subgroup, which included fellow lead reviewers Drs. Costel Denson, Horace Moo-Young, Kenneth Olden, and Duncan Patten.

Before summarizing the subgroup’s initial responses to the charge questions, he expressed thanks to Dr. Rick Linthurst for providing information on the relative allocation of resources across SHC themes. The relative allocations for the four themes fall out as follows:

Theme 1- data and tools for sustainable communities – includes tools for characterizing communities for risk management; includes the Atlas for Sustainability – this theme is among the two themes with the lowest level of effort requested for 2013.

Theme 2 – assessing and forecasting ecological and community health – is the theme with the largest budget request. This theme is at the core of the program and EPA’s responsibilities. It involves key research on national ecosystems goods and services; an ecosystem services classification system, metrics and measurement; and a synthesis report on ecological production functions and benefits.

Theme 3 – near-term solutions for sustainability. This theme includes most of the program’s outputs for 2013 and responses to specific program office needs. It receives the second largest budget request. Topics include: vapor intrusion, asbestos contamination, biodegradation and materials and wastes (somewhat traditional activities

needing science support), as well as concerted research in nitrogen management and the nitrogen cascade.

Theme 4 – integrated solutions for sustainable outcomes. This theme involves new areas of work, such as developing metrics and spatial tools for addressing sustainability in the built and natural environment. The Science to Achieve Results (STAR) fellowship budget is allocated within this theme. This theme receives the smallest allocation in the President’s budget request.

In regard to the four charge questions, Dr. Daniel reported that the subgroup provided the following initial responses:

1. How well will the requested budget permit EPA to advance its strategic research directions and the priorities identified in the President’s Budget? Are there any areas where EPA should increase investments or reduce investments, based on demonstrated accomplishments or clearly identified needs?

The President’s budget identifies a small decrease from 2012, but there is a 14% decrease from the FY 2011 budget. Since the SHC “intersects with” all ORD’s programs and is important to them all, these levels of decline are disturbing and need to be flagged

2. Are the changes since the FY 2012 enacted budget appropriate, taking into consideration overall resources, FTEs, and intramural and extramural resources?

Again, for both research on human health and ecological services there are modest reductions, relative to the FY 2012 budget, but the picture is more disturbing when compared to previous years.

3. Are there well-defined objectives/work products for next year’s budget? Can these objectives/work products be achieved with the given resources?

The rough allocation of effort across the four themes appears to be well justified and closely tracks the strategic plan.

4. Are there opportunities to leverage the EPA resources with other resources, particularly federal resources?

The Net Zero program shows how the Sustainable and Healthy Committees will contribute waste management science to this important initiative. The strategic research action plan identifies a long list of partners for the program. There may be additional important opportunities to partner with the Army Corps of Engineers and National Science Foundation. The SHC strategic research action plan recognizes that partnerships are essential to this program.

After Dr. Daniel's presentation, workgroup members had several comments:

- What are the budget implications for a research program when projects are not completed by a deadline. ORD should explain how overall programs are affected.
- STAR fellowships are very important to the future of ORD science
- Integration of transdisciplinary science and program integration are both critical for success of the SHC program

Chemical Safety for Sustainability

Dr. Nancy Kim provided initial comments summarizing responses from her subgroup, which included fellow lead reviewer Dr. Stephen Roberts.

1. *How well will the requested budget permit EPA to advance its strategic research directions and the priorities identified in the President's Budget? Are there any areas where EPA should increase investments or reduce investments, based on demonstrated accomplishments or clearly identified needs?*

The CSS is an important ORD program, which will help address the many chemicals in existence and those that will be developed. It will help move away from animal testing and move towards sustainability and methods for addressing cumulative exposures. The requested budget increases will allow EPA to advance its strategic research directions. Given the current fiscal climate, this requested budget seems reasonable.

2. *Are the changes since the FY 2012 enacted budget appropriate, taking into consideration overall resources, FTEs, and intramural and extramural resources?*

The investment in sustainable and molecular design is appropriate and will help generate other outputs. Although important work on endocrine disrupting chemicals and nanotechnologies is slated for some reductions, such reductions are reasonable. The sustainable and molecular design program is a featured research effort by ORD and EPA and a high visibility effort

3. *Are there well-defined objectives/work products for next year's budget? Can these objectives/work products be achieved with the given resources?*

It would be helpful for ORD to update the strategic research action plan regularly, especially the table of outputs included in the plan. Themes 7 and 8 are very important. Theme 7 (Dashboards) will help ORD clients understand and use CSS outputs, including high throughput screening. The Dashboard initiative should, if implemented appropriately, respond to the SAB's concern about a linkages between the CSS program and agency risk assessment. Theme 8 (Evaluation) further demonstrates a commitment to adapt ORD outputs to customers' evolving needs and understanding of the CSS program.

4. *Are there opportunities to leverage the EPA resources with other resources, particularly federal resources?*

The CSS program has characterized the opportunities to leverage EPA resources fully.

The work group had no follow-up questions or comments for the subgroup

Human Health Risk Assessment

Dr. Eileen Murphy provided initial comments summarizing responses from her subgroup, which included fellow lead reviewers Drs. Barbara Harper and Paige Tolbert. She summarized the subgroup's initial response to the charge questions.

1. How well will the requested budget permit EPA to advance its strategic research directions and the priorities identified in the President's Budget? Are there any areas where EPA should increase investments or reduce investments, based on demonstrated accomplishments or clearly identified needs?

The budget is "OK" for maintaining but not advancing the Human Health Risk Assessment program. It does not, however, include adequate resources to integrate outputs from the Chemical Safety for Sustainability program. Those outputs are being developed to help address the thousands of chemicals that require human health risk assessment. With a flat budget, it is not clear how innovation or modernization can be achieved. It will be a challenge to modernize, interpret, and incorporate new approaches without additional resources. A tight partnership between the two ORD programs is essential; there is some concern that the Human Health Risk Assessment is expected to take on additional work without additional resources.

It is important to increase resources to address potential risks associated with nano particles and endocrine disrupting chemicals. Those chemicals are relatively new and their risk assessment issues have not yet been addressed. It would be appropriate to increase resources for risk assessments especially for nano-chemicals, because industry is devoting great resources to developing nanotechnologies for drugs and consumer products. A commensurate investment in research on the fate, transport, and toxicity of these chemicals would be appropriate. The SAB made a comment on this issue last year and should reiterate the same comment.

2. Are the changes since the FY 2012 enacted budget appropriate, taking into consideration overall resources, FTEs, and intramural and extramural resources?

The planned reductions in multi-pollutants will cause a delay, but can be addressed through good management.

3. Are there well-defined objectives/work products for next year's budget? Can these objectives/work products be achieved with the given resources?

In general, there are well-defined work products. It is not clear, however, how new and controversial chemicals and chemical mixtures can be addressed

4. *Are there opportunities to leverage the EPA resources with other resources, particularly federal resources?*

A tight partnership within ORD between the Chemical Safety for Sustainability and Human Health Risk Assessment programs is important. ORD should also explore partnership with the computational biologic and systems approach advanced by the National Institutes of Health, Food and Drug Administration, and Department of Defense.

The work group had no follow-up questions or comments for the subgroup

Homeland Security (HS)

Dr. James Mihelcic provided initial comments summarizing responses from his subgroup, which included fellow lead reviewers Dr. Christine Moe.

1. *How well will the requested budget permit EPA to advance its strategic research directions and the priorities identified in the President's Budget? Are there any areas where EPA should increase investments or reduce investments, based on demonstrated accomplishments or clearly identified needs?*

The strategic research action plan primarily focuses on remediation science (related to three themes) at the expense of the Homeland Security program's re-envisioning research. The Homeland Security program could be at the forefront of resilience science – recommendation should be how HS RP not just deal with their mandate on remediation science – but better partner with other ORD partners dealing with sustainability.

ORD did not provide much information about resources for providing science and software to communities

2. *Are the changes since the FY 2012 enacted budget appropriate, taking into consideration overall resources, FTEs, and intramural and extramural resources?*

EPA has appropriately proposed a reduction in decontamination research, considering the maturation of research effort. In contrast, there is a slight increase in water security.

3. *Are there well-defined objectives/work products for next year's budget? Can these objectives/work products be achieved with the given resources?*

The SAB recognizes that this program can generate high quality products. There is concern that the President's Budget identifies new responsibilities related to food and agricultural waste. EPA staff indicated that this topic will not consume significant resources. The SAB cautions against taking on additional responsibilities during times of budget reductions.

4. *Are there opportunities to leverage the EPA resources with other resources, particularly federal resources?*

The partnerships with the Department of the Army and Department of Defense make sense. It is not clear how these logical partnerships are leveraged in terms of budgets and how knowledge generated is disseminated. It is also not clear whether ORD's Homeland Security programs looks beyond its primary clients, regional and program offices, to view water utilities as clients. If the program does view water utilities as clients, how do programs communicate with them?

After Dr. Mihelcic concluded his summary, Dr. Gregory Sayles from ORD provided some brief comments. He noted that ORD has considered the broader question of resilience as a context for the Homeland Security program. ORD does not yet "have the answer," but thinks that the transition is important. The Homeland Security program is actively internally working on what this might look like. ORD welcomes SAB guidance and advice.

The Homeland Security program has a Tri-agency agreement with the Department of Defense and Department of Homeland Security. There are standing workgroups designed to understand each others' programs and look for opportunities. There has been a new joint effort looking at the science of re-suspension of spores. This effort just finished a large field demonstration of field demonstration of clean-up. The different federal agencies have distinct missions and need to work together, because there are common areas of interest and organizations can share expertise.

Although ORD provides technical assistance to the American Water Works Association and utilities, it does not have an independent effort to disseminate ORD products to utilities. ORD generally works through the associations. SAB members underscored the need to get ORD science products to the "grass roots." If t info and products don't get to water utilities, "all of the great products and research won't protect anybody".

Economics and Decision Science

Dr. James Opaluch provided initial comments summarizing responses from his subgroup, which included fellow lead reviewer Dr. Terry Daniel.

1. *How well will the requested budget permit EPA to advance its strategic research directions and the priorities identified in the President's Budget? Are there any areas where EPA should increase investments or reduce investments, based on demonstrated accomplishments or clearly identified needs?*

EPA's National Center for Environmental Economics did not provide strategic research directions just a list of research activities and an extramural budget. The requested extramural budget does show an increase over FY 2012 and that increase is appropriate.

One area for increase would be in the areas of decision sciences. Good topics – investments in energy savings – decision science can be helpful in overcoming barriers to change. Well thought out problem for identifying barriers to change overcoming them

2. *Are the changes since the FY 2012 enacted budget appropriate, taking into consideration overall resources, FTEs, and intramural and extramural resources?*

The increase in the extramural budget is appropriate.

3. *Are there well-defined objectives/work products for next year's budget? Can these objectives/work products be achieved with the given resources?*

The list of future work products is well identified and worthwhile.

4. *Are there opportunities to leverage the EPA resources with other resources, particularly federal resources?*

There are good opportunities to leverage this research program with research conducted at the National Oceanic and Atmospheric Administration on natural resource damages, as well as research conducted at the U.S. Department of Agriculture on ecosystem services.

Work group members provided the following additional comments:

- The NCEE budget and program overview did not explicitly discuss ORD ecosystem service valuation efforts although it did reference projects that made use of the report from the SAB Committee on Valuing the Protection of Ecological Systems and Services (C-VPES)
- The small size of NCEE's extra-mural grant program prevents it from advancing research on ecological valuation
- Last year's SAB research budget review (Science Advisory Board Comments on the President's Requested FY 2012 Research Budget, EPA-SAB-11-007) noted the importance of the Pollution Abatement Cost and Expenditure (PACE) survey series. This key research would complement NCEE's current efforts to study the costs of regulations and might merit mention in this year's SAB report also.
- NCEE has not participated actively in ORD's strategic research planning other than discussions with SHC on selected ecological valuation topics. Although many ORD research programs identify the need for social, behavioral, and economic sciences, linkages with NCEE, EPA's most significant center of economic expertise, has not been made.
- NCEE has not recently developed a strategic plan to guide its own research.

Overarching

Dr. Costel Denson provided initial comments summarizing responses from his subgroup, which included fellow lead reviewers Drs. Eileen Murphy and Duncan Patten.

He noted that the President's Budget and the strategic research action plan do not describe how integration across programs will occur and how they will be supported by the budget. He acknowledged the importance of the strategic action plans for charting future integration and also asked for more specificity.

Work group members provided the following additional comments:

- The STAR program (grants and fellowships) provide an opportunity for ORD to interact with a wider scientific community and collaborate with other federal agencies
- Should STAR fellowships increase if ORD is fostering innovation and new approaches?
- A sustainability focus requires consideration of the human dimension; ORD should budget for integration of the social, behavioral, and decision sciences in its research programs. Human behavior, institutions, markets and trading mechanisms, examination of ex ante and ex post costs are critical.
- Despite ORD’s commitment to systems approaches, budget exercises “make the silos reappear.” Specific incentives are needed for collaboration and new ways of budgeting for collaboration and integration may be necessary.
- There should be institutional structures encouraging collaboration, integration and systems approaches. These changes will not happen organically. Collaboration requires resources. Management and budget issues need to be integrated at some level in a more transparent way.

Action items and next steps

The work group chair suggested that the group discuss key points to be included in the Letter to the Administrator at the work group’s teleconference on March 8, 2012. He expressed thanks to agency personnel for participating and providing information and thanked the work group members and DFO for their efforts.

The Designated Federal Officer adjourned the meeting at 12:47 p.m.

Respectfully Submitted:

/Signed/

Dr. Angela Nugent
SAB DFO

Certified as accurate:

/Signed/

Dr. Taylor Eighmy
Chair, SAB Committee on Science
Integration for Decision Making

**Attachment A: Members of the Public Who Indicated Participation on the
March 2, 2012 Teleconference**

Christopher Michael Clark, EPA

Dan Costa, EPA

Al Edwards

Becca Feeks, EPA

Jenny Hopkinson, Inside EPA

Stacey Katz, EPA

Rick Linthurst, EPA

Michael Loughran, EPA

Andy Miller, EPA

Nicholas Moustakas, Health Effects Institute

Regan Murray, EPA

Christine Muchanic, Special Situations/Height Analytics

Stacey Rabkin, EPA

Greg Sayles, EPA

Betsy Smith, EPA

Tim Watkins, EPA

Materials Cited

The following meeting materials are available on the SAB website, <http://www.epa.gov/sab>, at the page for the March 2, 2012 teleconference: <http://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/fd766e05099ab0cf85257966004b7be0!OpenDocument&Date=2012-03-02>

¹ Roster of the SAB Research Budget Work Group

² Agenda

³ Federal Register Notice announcing the teleconference (77 FR 6796)