



U.S. DEPARTMENT OF
ENERGY

Office of
Science

**FY 2017 Report of the Committee of Visitors
BES Division of Chemical Sciences, Geosciences,
and Biosciences (CSGB)**

FY 2014, 2015, 2016

March 28-30, 2017

Rockville, MD

Presented to the Basic Energy Sciences Advisory Committee

Bruce Kay, COV Chair

July 14, 2017

Committee of Visitor Charge (Standard)

1. For both the DOE laboratory projects and the university projects, assess the efficacy and quality of the processes used to:
 - (a) solicit, review, recommend, and document proposal actions, and
 - (b) monitor active projects and programs.

2. Within the boundaries defined by DOE missions and available funding, comment on how the award process has affected:
 - (a) the breadth and depth of portfolio elements, and
 - (b) the national and international standing of the portfolio elements.

Not included: EFRCs, Fuels from Sunlight Energy Innovation Hub, SC Early Career Awards, SC Graduate Fellowship Program, EPSCoR, SBIR/STTR

FY 2017 Committee of Visitors

Chair: Bruce Kay, Pacific Northwest National Laboratory

Location: Rockville Hilton Hotel

Dates: March 28 – 30, 2017

COV Demographics

- 18 COV panelists organized into 3 panels
- 12 from academia, 4 from DOE labs, 2 from other Federal Agencies (NSF and AFOSR)
- 9 female, 9 male
- 12 funded by CSGB
- 3 served on prior COVs (Kay, McCoy, Berman)
- 1 BESAC member (Kay)

Three Panels

Panel 1: Fundamental Interactions

Atomic, Molecular, and Optical Sciences

Gas Phase Chemical Physics

Condensed Phase and Interfacial Molecular Science

Computational and Theoretical Chemistry

Panel 2: Photochemistry and Biochemistry

Solar Photochemistry

Photosynthetic Systems

Physical Biosciences

Panel 3: Chemical Transformations

Catalysis Science

Separations and Analysis

Heavy Element Chemistry

Geosciences

Panel Structure and Membership

Panel 1: Fundamental Interactions, Anne McCoy, University of Washington

Michael Berman AFOSR
Gary Douberly University of Georgia
Kelly Gaffney SLAC
Evelyn Goldfield NSF
Amber Krummel Colorado State University

Panel 2: Photochemistry and Biochemistry, Robert Blankenship, Washington University

David Britt University of California, Davis
Marilyn Gunner City College of New York
Jennifer Ogilvie University of Michigan
Cyndi Zoski New Mexico State University

Panel 3: Chemical Transformations, Michael Hochella, Virginia Tech

Donna Chen University of South Carolina
Pete McGrail PNNL
Laura Pyrak-Nolte Purdue University
Lynda Soderholm ANL
Peter Stair Northwestern University

PAMS was used by the COV

COV members had read-only access to proposals that had actions (awarded, declined, or withdrawn) in fiscal years 2014, 2015, and 2016

Material provided:

- Reference Materials
 - Description of programs
 - Lists of awarded, declined, and withdrawn proposals
- Solicitation Folders
 - Letters of intent/preproposals
- Proposal Folders
 - Proposals
 - Reviews
 - Declination memos
- Award Folders
 - Budgets
 - Selection statements

COV Agenda

Day 1

- Plenary session: welcome, BESAC charge, BES and CSGB overviews, introduction to review process and PAMS COV module
- Panel breakout sessions: brief portfolios overviews from CSGB team leads; first read of selected packages by COV; Program Managers on call
- Executive session: preliminary report drafting and first assessment of key elements and gaps

Day 2

- Executive session: completion and discussion of first read reports
- Panel breakout sessions: portfolio overviews available if requested, second read by COV; Program Managers on call
- Executive session: merge first and second read input; draft and discuss panel reports

Day 3

- Executive session: finalize draft panel reports
- Closeout plenary session: presentation of major findings and recommendations

2017 CSGB COV Summary

- Four Major Findings
- Three Major Recommendations
- Four Other Comments and Suggestions

Major Finding 1

The COV realizes that the processes of solicitation, review, documentation, and monitoring of proposals by DOE Program Managers is work that is intricate and difficult, requiring astute scientific insight, not-to-be-taken-for-granted organizational skills both within and outside of DOE, deep understanding of organizational mission (both now and for the future), and thoughtful human interaction skills. This COV has found the Program Managers, although at various stages in their careers in these positions, to be dedicated, focused, professional, committed and effective to serve the DOE and the nation to the very best of their abilities. We truly commend their efforts in supporting current scientific efforts with a vision to future endeavors.

Major Finding 2

The COV judges that DOE continues to maintain the breadth and depth of the portfolio elements, as well as the quality of the science and principal investigators, to be excellent. The Program Managers have successfully balanced the mission-oriented nature of the DOE with the flexibility required for high-quality scientific research. For example, the program managers have specifically encouraged innovative and unique research directions to broaden the portfolio.

Additionally, the portfolio includes a balance of internationally renowned senior scientists and a significant fraction of early- to mid-career scientists with similarly promising career trajectories.

Major Finding 3

The COV commends the practice of encouraging submission of white papers by university PIs, with feedback by the Program Managers, to help screen proposal submissions to those within the programmatic scope and provide guidance on how scientists can improve their full proposal prior to submission.

While this process is effective, additional tracking of the whitepapers is encouraged. This process could benefit from better documentation concerning success statistics and PI demographics.

Major Finding 4

The COV was honored to be the first to employ the PAMS COV module.

Navigating PAMS proved to be more challenging than anticipated. The lessons learned from our experience will undoubtedly benefit future COVs within BES.

Major Recommendation 1

The COV strongly recommends providing the opportunity and resources for Program Officers to travel to national and international conferences, as well as to visit the laboratories of researchers in their programs. Attending conferences is critical for PMs to maintain cutting edge portfolios and identify emerging research opportunities. Visiting the laboratories of principal investigators allows the Program Managers to maintain closer contact with these researchers and to discuss new research directions within their programs.

Overall, increased travel will broaden participation in the BES programs and ensure that the research remains at the scientific frontier.

Major Recommendation 2

Implementation of the PAMS system is laudable. Nonetheless, additional modules and improvements will be beneficial.

- Additional functionality is needed to facilitate analysis of demographic data. Such data are critical for determining how the reviewing process could be improved and the diversity of the investigator pool could be broadened.
- The National Laboratory module needs to be developed and deployed to facilitate efficient and effective review of laboratory programs.
- Attention needs to be paid to the ease of use for people who are new to the system, e.g., members of a COV.

Major Recommendation 3

The COV commends CSGB's initial implementation of strategic planning and encourages broadening the scope to identify synergies and new research opportunities among various CSGB teams and with other BES divisions.



Other Comments and Suggestions 1

With the excellent descriptions of funding decisions already generated by the PMs, we encourage the program managers to consider ways in which some of this information could be extracted from these documents, and transmitted to the PI in writing as well as over the phone. This is particularly important for proposals that are being declined or terminated.

Other Comments and Suggestions 2

With the blurring of boundaries between different areas of research, and the importance of multidisciplinary and interdisciplinary science, the COV suggests occasional cross-team PI meetings between various programs within BES.

Other Comments and Suggestions 3

The COV greatly appreciated having the program stature documents. These are exceptionally useful in marketing and promoting the programs appropriately (and impressively!). We suggest that the structure and content of these documents become uniform across the programs in the future.

Other Comments and Suggestions 4

At present the email response to whitepapers simply indicates whether a full proposal is encouraged or discouraged but without explanation. In order to provide more feedback to the PI, without significantly increasing the burden on the PMs, a checkbox system could be implemented.

For example, checkboxes might include:

- Unresponsive to the solicitation topic
- Outside the programmatic scope
- Lacks innovation relative to funded program components
- Etc.

Many Thanks!

- Harriet Kung, Associate Director of Science for BES
- Gail McLean, Previous Acting Director of CSGB
- Bruce Garrett, Director of CSGB
- John Hemminger, Past Chair of BESAC

- Outstanding BES Program Managers and Staff!

- Diane Marceau (BES) and Connie Lansdon (ORAU)

- Terrific COV Members!