



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Committee of Visitors Review of the BES Materials Sciences and Engineering Division

Basic Energy Sciences Advisory Committee

March 23, 2018

Linda L. Horton

Director, Materials Sciences and Engineering Division

History of COVs in SC/BES

- The first SC-BES COV was in 2002
- This will be the sixth review for MSE. All previous COV reports and BES responses can be found at:
<http://science.energy.gov/bes/besac/bes-cov/>
- COV recommendations are taken very seriously by BES and have resulted in substantive changes
 - Portfolio Analysis and Management System
 - Improved documentation of award decision making process
 - Additional resources for program manager travel
 - Endorsement of use of white papers as a key aspect of communication with the community

Portfolio Analysis and Management System (PAMS)

- The Portfolio Analysis and Management System (PAMS) is enabling the “rigorous collection of data on all aspects of proposal solicitation, review, funding recommendation, proposed action and all metrics associated with progress ...” (2008 COV)
 - Recommendations for portfolio management tool in all subsequent BES COVs; SC responded with development of PAMS
 - Fully implemented for grant review/award process beginning in FY 2014
 - All grant award approval/declination signatures are electronic; PIs receive notification of status automatically by PAMS
 - Progress reports submission to PAMS began in February 2015
 - Demographic information (optional) for all PAMS users in February 2015
 - PAMS products (e.g., publications) can be entered into the system (and updated as needed)
 - PAMS also used for new and renewal national laboratory applications
 - The COV will use PAMS COV Module for the upcoming review



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.



Office of Basic Energy Sciences

Harriet Kung, Director

BES Budget and Planning

Vacant, Financial Management
Donetta Herbert, Financial Management
Thomas Russell, Senior Technical Advisor

BES Operations

Kerry Hochberger, Program Support Specialist
Robin Hayes, Program Manager
Natalia Melcer, Program Manager
Katie Runkles, Program Analyst / BESAC*
Andy Schwartz, Senior Technical Advisor for EFRCS*

* Basic Energy Sciences Advisory Committee
* Energy Frontier Research Centers

Materials Sciences and Engineering Division

Linda Horton, Director

Teresa Crockett, Program Analyst
Vacant, Secretary

Scientific User Facilities Division

James Murphy, Director

Vacant, Program Support Specialist
Rocio Meneses, Program Assistant

Chemical Sciences, Geosciences, and Biosciences Division

Bruce Garrett, Director

Vacant, Program Assistant

Materials Discovery, Design, and Synthesis

Helen Kerch, Acting
Vacant, P.A.

Condensed Matter and Materials Physics

Jim Horwitz
Vacant, P.A.

Scattering and Instrumentation Sciences

Helen Kerch
Vacant, P.A.

Materials Chemistry

Craig Henderson
Michael Sennett

Experimental Condensed Matter Physics

Michael Pechan

X-ray Scattering

Lane Wilson

Biomolecular Materials

Mike Markowitz

Theoretical Condensed Matter Physics

Jim Davenport
Matthias Graf

Neutron Scattering

Thiyaga P. Thiyagarajan

Synthesis and Processing Science

Bonnie Gersten

Physical Behavior of Materials

Refik Kortan

Electron and Scanning Probe Microscopies

Jane Zhu

Batteries and Energy Storage Hub; Technology Coordination

Craig Henderson
John Vetrano

Mechanical Behavior and Radiation Effects

John Vetrano

Experimental Program to Stimulate Competitive Research (DOE EPSCoR)

Tim Fitzsimmons

Operations

X-ray and Neutron Scattering Facilities
Peter Lee
Thiyaga P. Thiyagarajan

NSRCs **

George Maracas

Accelerator and Detector Research

Eliane Lessner

Facilities Coordination; Metrics; Assessment

Van Nguyen

Construction

Linac Coherent Light Source-II
Phil Kraushaar

Facilities Upgrades and ME* Projects**
Phil Kraushaar
Ed Stevens

*** Major Items of Equipment

Fundamental Interactions

Jeff Krause
Vacant, P.A.

Atomic, Molecular, and Optical Sciences
Tom Settersten

Gas Phase Chemical Physics
Wade Sisk

Condensed Phase and Interfacial Molecular Science
Gregory Fiechtner

Computational and Theoretical Chemistry
Mark Pederson

Photochemistry and Biochemistry

Gail McLean
Vacant, P.A.

Solar Photochemistry
Christopher Fecko
Vacant

Photosynthetic Systems
Stephen Herbert

Physical Biosciences
Robert Stack

Fuels from Sunlight Energy Innovation Hub
Christopher Fecko

Chemical Transformations

Raul Miranda
Vacant, P.A.

Catalysis Science
Viviane Schwartz
Chris Bradley

Separation Science
Philip Wilk
▲ Chuck Peden
Vacant

Heavy Element Chemistry
Philip Wilk

Geosciences
James Rustad

LEGEND

▲ Detailee from BMI/PNNL

P.A. Program Assistant

Administrative Staff

MaryBeth Luther
Teresa Crockett

Materials Sciences and Engineering Division

Linda Horton, Division Director

New
since the
last COV

Materials Discovery, Design, and Synthesis Team

Team Lead - Helen Kerch (A)



Condensed Matter and Materials Physics Team

Team Lead - Jim Horwitz



Scattering and Instrumentation Sciences Team

Team Lead - Helen Kerch



Materials Chemistry



Michael
Sennett



Craig
Henderson

Biomolecular Materials



Mike Markowitz

Synthesis and Processing Science



Bonnie Gersten

Batteries and Energy Storage Hub & Integrated Energy Research



John
Vetrano



Craig
Henderson

Experimental Condensed Matter Physics



Michael Pechan

Theoretical Condensed Matter Physics



Matthias
Graf



Jim
Davenport

Physical Behavior of Materials



Refik Kortan

Mechanical Behavior & Radiation Effects



John Vetrano

X-ray Scattering



Lane Wilson

Neutron Scattering



Thiyaga P. Thiyagarajan

Electron and Scanning Probe Microscopies



Jane Zhu

DOE EPSCoR Program



Tim Fitzsimmons

MSE Division – by the Numbers

- MSE has an annual budget of ~\$360M
 - EFRCs and Hub are ~\$80M
 - Funding: 40% universities, 60% national laboratories
 - 10 core research areas plus EPSCoR
- MSE staffing
 - 2 team leads
 - 13 program managers
 - 2 administrative: program assistant and analyst
- Annual new and renewal proposals: 700 to 800
- Annual progress reports: ~450
- Annual white papers: >500 (estimate)



COV Covers Applications for Funding Opportunities and Lab Announcements in FY 2015 – 2017 plus Award Management

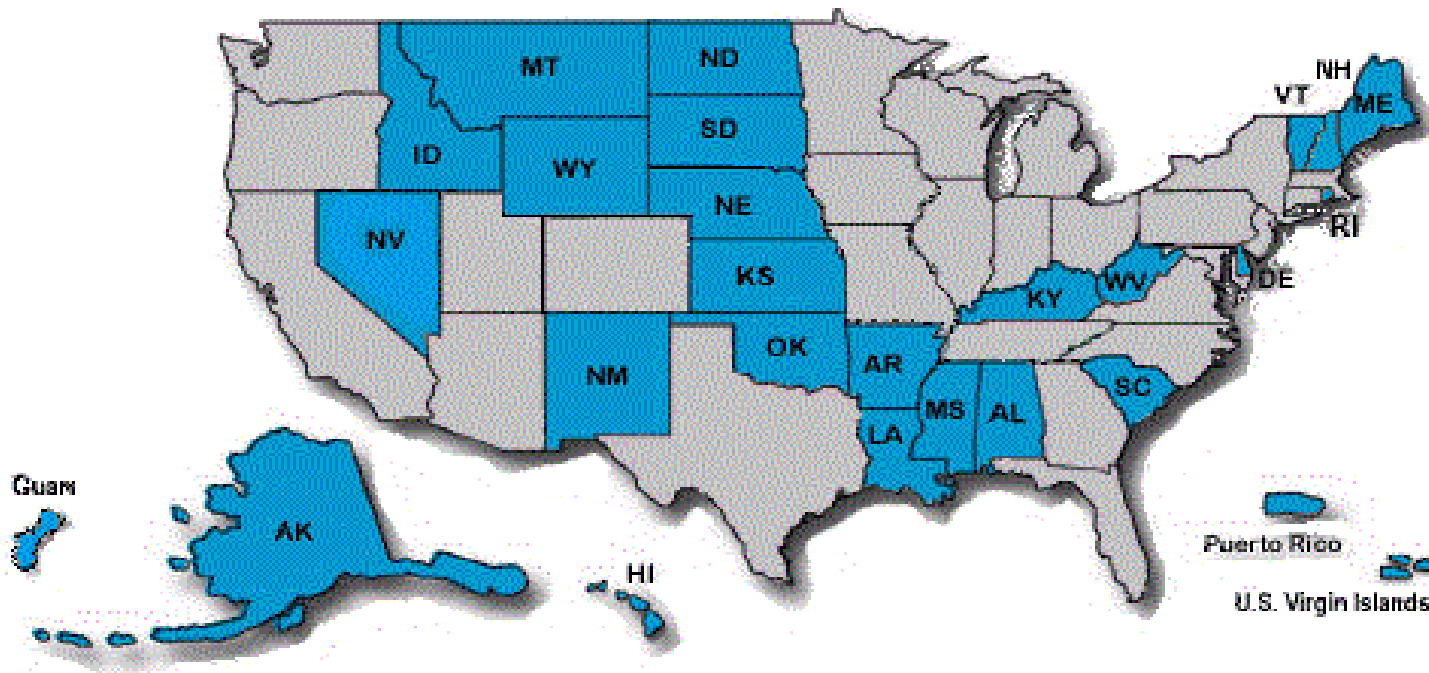
- FY 2015 – 2017 Office of Science Annual Funding Opportunity Announcements
 - Open year round for new and renewal applications for grants
 - Pre-applications not required
- FY 2015 – 2017 Early Career Research Program
 - First time inclusion in the COV
 - Pre-applications required
- FYs 2015 and 2016 – Computational Materials Sciences (CMS)
- FY 2017 Scientific Discovery through Advanced Computing (SciDAC)
- FY 2016 - EPSCoR State National Laboratory Partnership Applications
 - Pre-applications required
- National Laboratory new applications and triennial reviews

Not included

- Batteries and Energy Storage Hub; Energy Frontier Research Centers

DOE EPSCoR

- Helps address disparities in competitiveness for Federal research support
- Highlights the importance of geographical diversity in the nation's energy R&D portfolio



DOE EPSCoR follows the NSF EPSCoR RII eligibility criteria. Twenty four states, Puerto Rico, Guam, and the U.S. Virgin Islands were eligible to participate in the DOE EPSCoR program during most of the COV review period . [Note that Missouri lost eligibility in April 2015 and was not eligible for EPSCoR funding in subsequent FOAs. New Mexico lost eligibility in January 2018.]

FY 2018 BES-MSE Committee of Visitors

- Prof. Esther Takeuchi, Stony Brook University and BNL, chair
- April 18-20, 2018, Rockville Hilton
- PAMs-based COV
- 17 COV panelists organized into 4 panels (Centered on the 3 MSE Division programmatic teams and EPSCoR)
 1. **Scattering and Instrumentation Sciences Team** – Susanne Stemmer, University of California - Santa Barbara
 2. **Materials Discovery, Design, and Synthesis Team** – Monica Olvera de la Cruz, Northwestern University
 3. **Condensed Matter and Materials Physics Team** – Harold Hwang, SLAC/Stanford University
 4. **Experimental Program to Stimulate Competitive Research (EPSCoR)** – Jeff Nelson, SNL



COV Members

First Name	Last Name	Affiliation
Esther	Takeuchi	Stony Brook University/ BNL
Harold	Hwang	SLAC/Stanford University
Monica	Olvera de la Cruz	Northwestern University
Susanne	Stemmer	University of California - Santa Barbara
Jeff	Nelson	SNL
John	Allison	University of Michigan
Svilen	Bobev	University of Delaware
Dawn	Bonnell	University of Pennsylvania
Jim	DeYoreo	PNNL/University of Washington
Nuh	Gedik	MIT
Randall	Headrick	University of Vermont
Yu	Huang	University of California - Los Angeles
Jeanie	Lau	Ohio State
Phuan	Ong	Princeton
Andy	Millis	Columbia
Sunil (Sunny)	Sinha	University of California - San Diego
Boris	Yakobson	Rice University

Questions?



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