



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Basic Energy Sciences Update

Basic Energy Sciences Advisory Committee Meeting

December 6, 2021

Linda Horton, Bruce Garrett, and Andy Schwartz

Office of Basic Energy Sciences

Exciting Times Continue

- ▶ Organization Changes and Progress...
- ▶ FY 2021 statistics summary
- ▶ FY 2022 funding, Facility/Projects Update
- ▶ FY 2022 FOA Updates (Andy Schwartz)
- ▶ FY 2022 FOA Updates plus cross DOE coordination and related strategic planning workshops/roundtables (Bruce Garrett)
- ▶ BESAC COV Charge - 2022



DEPARTMENT OF ENERGY

Boards and Councils

Secretary
Deputy Secretary



Energy Regulatory Commission (FERC)
Inspector General (IG)
Ombudsman

Under Secretary for Nuclear Security and Administer, NNSA



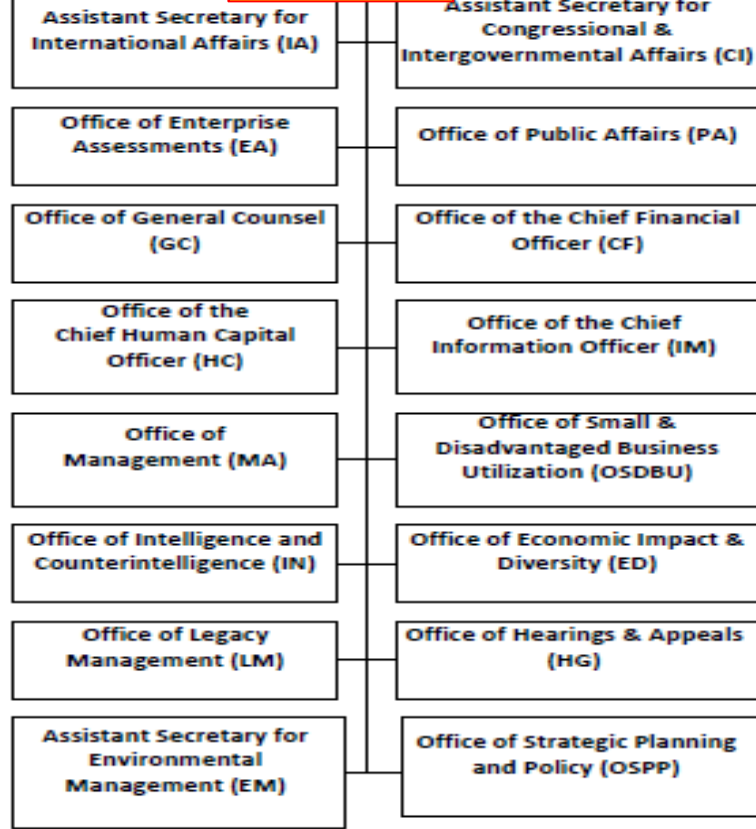
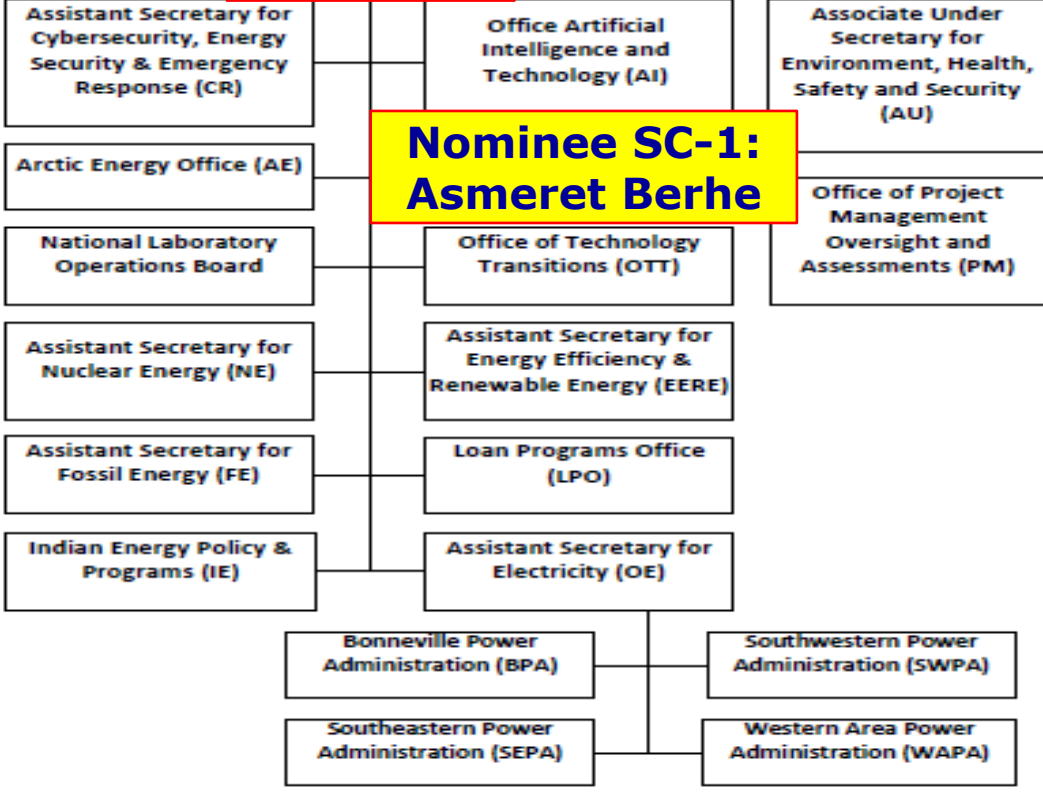
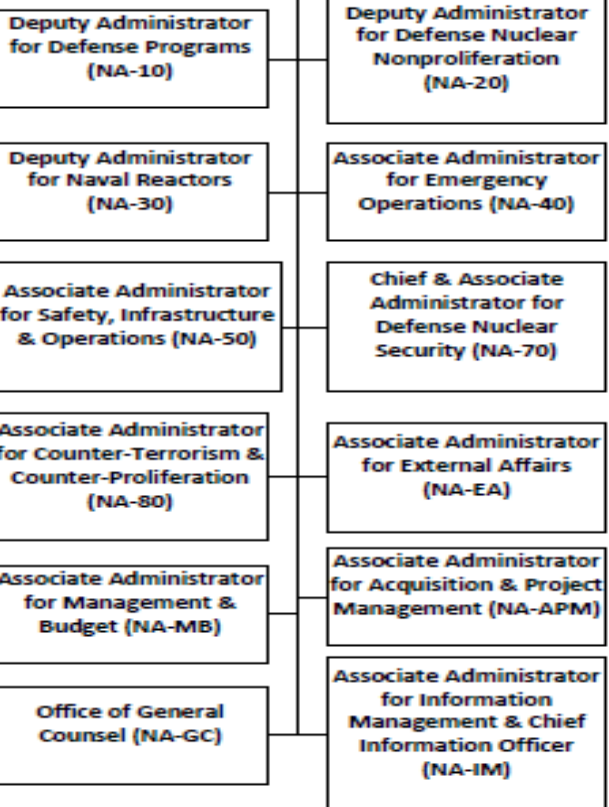
Under Sec. for Science & Energy (S-4)
Geraldine Richmond

Under Secretary (S-3)

Jennifer Granholm

David Turk

Advanced Research Projects Agency – Energy (ARPA-E)



Office of Basic Energy Sciences

Associate Director
Linda Horton

BES Budget and Planning

Kara Beles, Financial Management
Donetta Herbert, Financial Management
Thomas Russell, Senior Technical Advisor
(Vacant, Senior Technical Advisor)

BES Operations

Teresa Crockett, Program Analyst
Robin Hayes, Program Manager
Kerry Hochberger, Program Analyst / BESAC*
Andy Schwartz, Senior Technical Advisor for EFRCS**
(Vacant, Program Support Specialist)

* Basic Energy Sciences Advisory Committee
** Energy Frontier Research Centers

Materials Sciences and Engineering Division

Andy Schwartz, Acting Director

Shawn Chen, AAAS Fellow

Scientific User Facilities Division

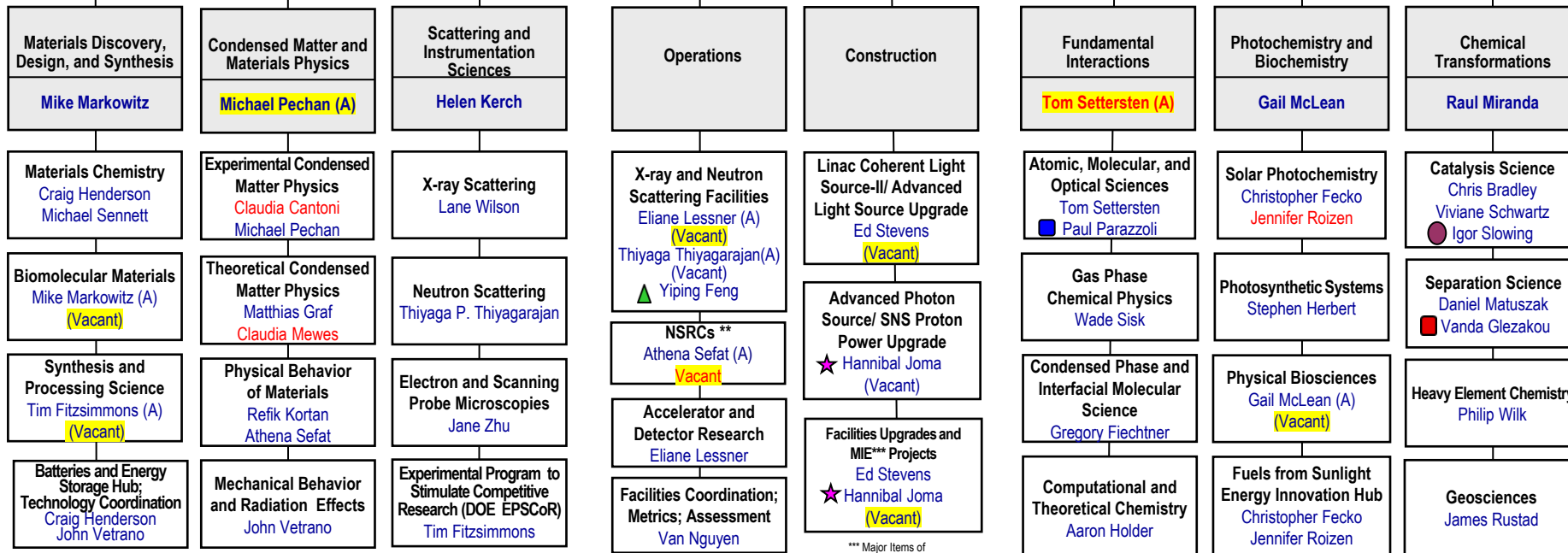
Linda Horton, Acting Director

Rocio Meneses, Program Support Specialist

Chemical Sciences, Geosciences, and Biosciences Division

Bruce Garrett, Director

Brandon Rohnke, AAAS Fellow



** Nanoscale Science Research Centers

*** Major Items of Equipment

LEGEND

- Detailee (50%) from PNNL ■ IPA from SNL
- ▲ Detailee (70%) from SLAC ● Detailee (80%) from Ames
- ★ Detailee (50%) from Bay Area Site Office (A) Acting

November 2021-Rev 12-05-2021

Posted November 12, 2021

Congratulations to George Maracas Retirement after >8 years with DOE



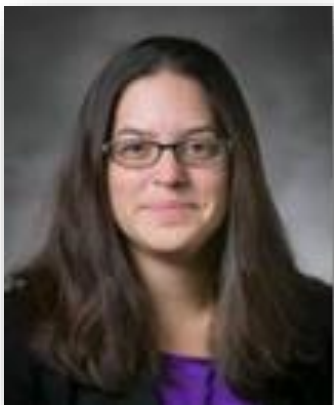
Dr. George Maracas
Program Manager for the Nanoscale Science Research Centers

Joined DOE in 2013.

Prior Roles: Program Director at the National Science Foundation (2010);
Motorola (1994), including Director of Nanotechnology (2005);
Arizona State University Department of Electrical Engineering,
Associate and Full Professor (1984).

George was a proactive champion of the NSRCs, their impact, and the importance of the science and user programs in nanoscale science. During his tenure, users at the NSRCs have grown to over 3,700; around 200 science highlights were posted to Office of Science websites on NSRC research; and the Electron Beam Microcharacterization Centers were merged with the NSRCs. In addition, he was key in the launch of the ongoing Major Items of Equipment project that provides funding for upgrading the equipment at the NSRCs. He served on the Office of Science and Technology Policy, National Nanoscale Science Engineering and Technology (NSET) Subcommittee.

New Hire – Solar Photochemistry Program & Fuels from Sunlight Hub



Dr. Jennifer Roizen

Program Manager, Solar Photochemistry & Fuels from Sunlight Hub
Chemical Sciences, Geosciences and Biosciences Division

Expertise

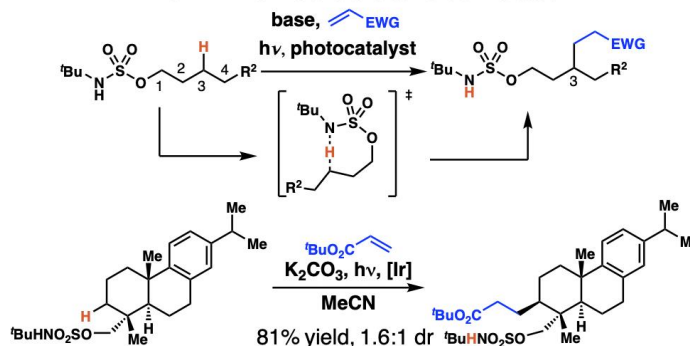
- Organic chemistry
- Radical-mediated C-H functionalization methods, including photochemically- and electrochemically-driven approaches

Experience

- Duke University, Asst Professor of Chemistry
- 2020 Dean's Award for Excellence in Mentoring
- Stanford University, Postdoctoral Fellow
- California Institute of Technology, Ph.D.

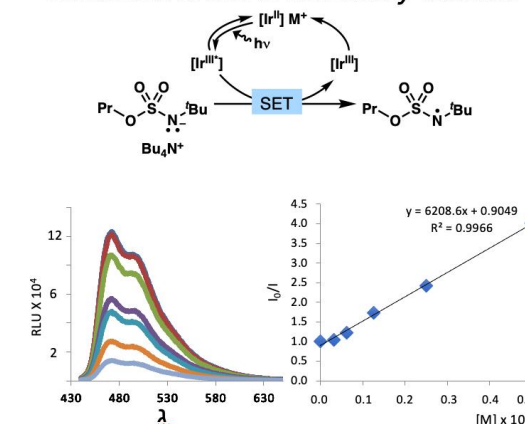
Sulfamate esters direct otherwise infeasible C-H functionalization reactions

DFT calculations and product selectivity consistent with 7-membered transition state



Angew. Chem. Int. Ed. **2018**, *57*, 296; *Org. Lett.* **2019**, *21*, 6089; *Chem. Sci.* **2020**, *11*, 217

Stern-Volmer analysis: direct oxidation of sulfamate anion is kinetically feasible



U.S. DEPARTMENT OF
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<https://science.osti.gov/bes/csgb/About/Staff/Dr-Jennifer-Roizen>

New Hire – Experimental Condensed Matter Physics Program



Experience

- DOE SBIR program
- 4-month detail with BES
- Oak Ridge National Laboratory
- University of Salerno, Ph.D.
- University of Naples Federico II, MS

Dr. Claudia Cantoni

Program Manager, Experimental Condensed Matter Physics
Materials Sciences and Engineering Division

Expertise

- High temperature superconductivity
- Synthesis and characterization of quantum materials

- Before joining BES, Claudia served as the Commercialization Program Manager for the Office of Science SBIR/STTR Program.
- Prior to Federal service, she was a member of the R&D staff at Oak Ridge National Laboratory, where she specialized in synthesis and characterization of complex, correlated electron quantum materials, working in several groups including that of Brian Sales, performing research in an FWP with long-time support from the ECMP program.

New Hire – Theoretical Condensed Matter Physics Program



Dr. Claudia Mewes

Program Manager, Theoretical Condensed Matter Physics
Materials Sciences and Engineering Division

Expertise

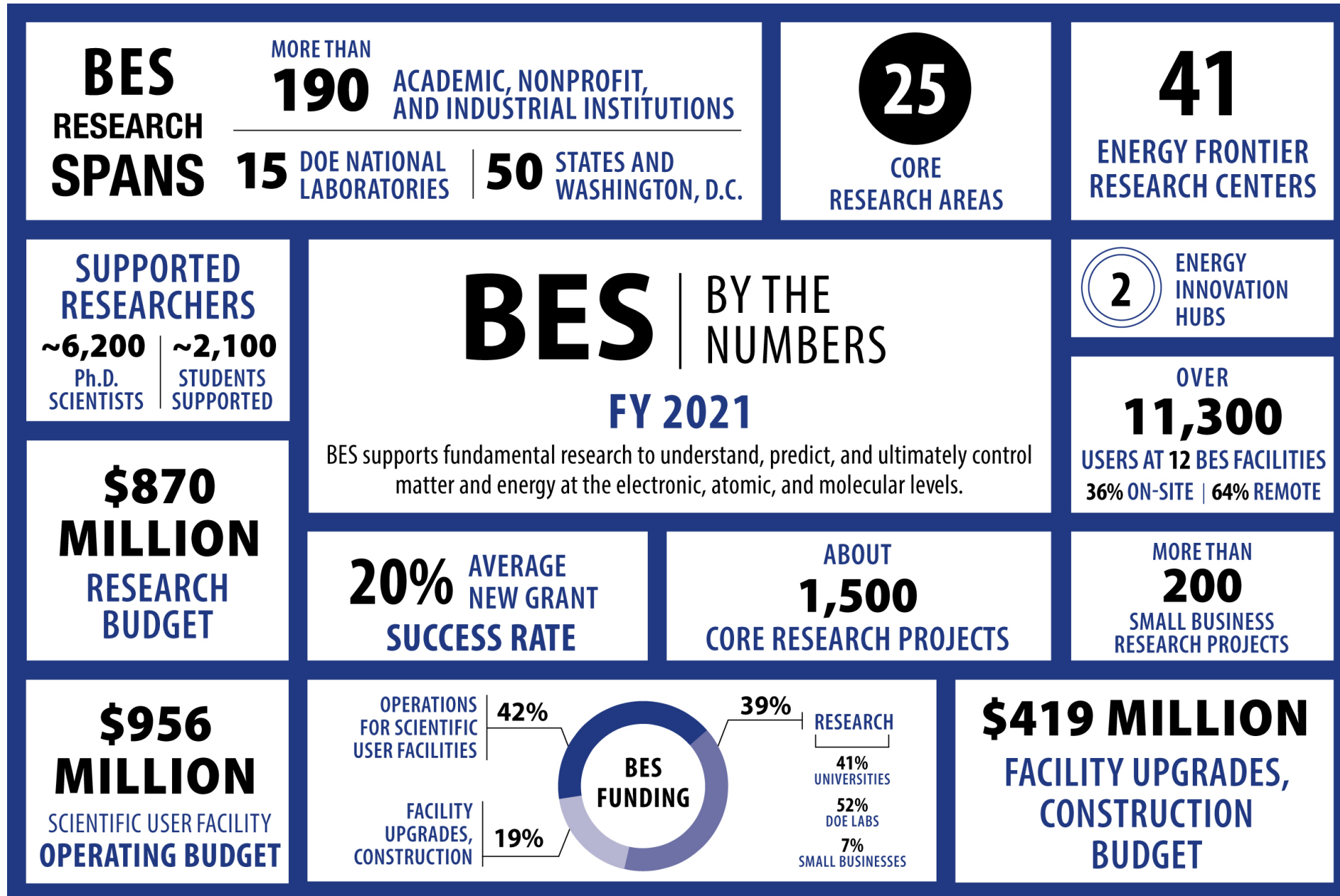
- Magnetic and topological materials; spintronics and spin logic; spin and magnetization dynamics
- Quantum optics; quantum and neuromorphic computing

Experience

- University of Alabama
Professor, Dept. of Physics & Astronomy
- Ohio State University,
Postdoctoral Fellow
- University of Kaiserslautern,
PhD in Physics

- Before joining BES, Claudia was a Professor of Physics and Materials Science at the University of Alabama, where she was a Leadership Board Faculty Fellow, in recognition of her teaching and scholarship.
- In 2011 she was a Visiting Fellow at the NIST Center for Nanoscale Science and Technology.
- In addition to her research accomplishments, Claudia has shown dedication to Diversity, Equity, and Inclusion, founding the “Women in Physics and Astronomy Club” and the “Girls in Science” program, among other outreach activities.

Basic Energy Sciences at a Glance (2021)



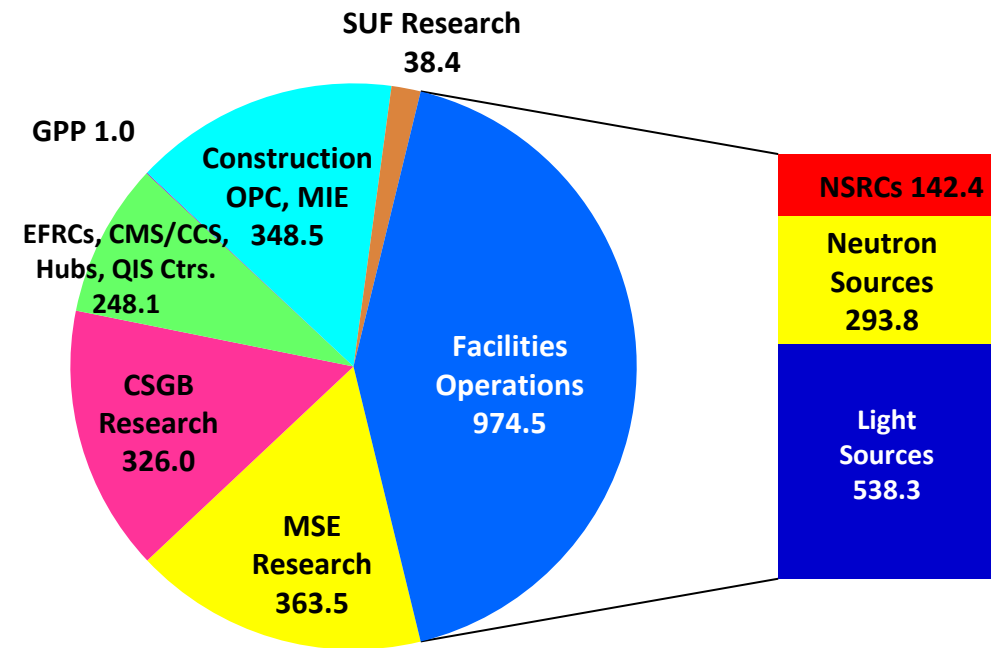
FY 2022 President's Request: Marks Similar to Request \$2,300M (+\$55M or +2.4% above FY 2021 Enacted)

Research programs $\Delta = +\$109.3M$

- ▶ Research (\$689.5M, **+\$92.3M**) includes new and expanded investments in research for clean energy, manufacturing, microelectronics, and RENEW (\$5M, Reaching a New Energy Sciences Workforce)
 - ▶ EPSCoR continues (\$25M)
- ▶ Computational Materials and Chemical Sciences, Energy Innovation Hubs, and National QIS Research Centers continue (~\$118M)**
- ▶ Energy Frontier Research Centers continue (~\$130M, +\$15M)

Scientific user facilities $\Delta = +\$15.7M$

- ▶ Operations of 12 facilities continue at ~97% of optimal (\$974.5M)
- ▶ Facilities research continues for AI/ML; increases for accelerator R&D (\$38.4M)



Construction/MIE* $\Delta = -\$70.0M$

- ▶ APS-U (\$106M); LCLS-II (\$32.4M); LCLS-II-HE (\$53M); ALS-U (\$75.1M); PPU (\$17M); STS (\$32M); CRMF (\$3M)
- ▶ MIEs: NSRC Recap (\$15M); NEXT-II (\$15M)

*includes OPC, **includes ~\$2M SBIR-related correction

Engagement with Minority Serving Institutions (MSIs) and Underrepresented Groups (URGs)

▶ Office of Science Initiatives

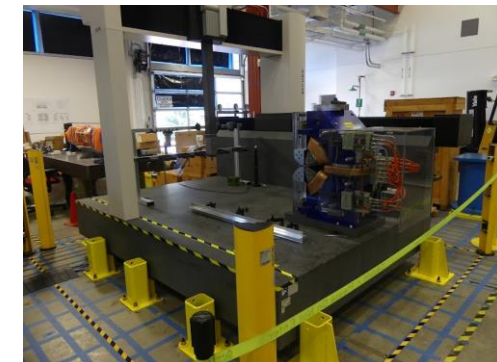
- ❖ Identifying and developing opportunities to engage MSI faculty in SC-sponsored research funding and increasing the number of applications (and associated proposal success rates) having MSIs as the lead institution submitted to SC-sponsored funding opportunity announcements (FOAs)
- ❖ Developing partnerships to attract and sponsor URGs in SC-sponsored research
- ❖ Increasing outreach, engagement, and recruitment of underrepresented students and faculty to SC-sponsored research opportunities at the DOE national laboratories, including those from MSIs

▶ BES Actions/Plans

- ❖ BES FY 2022 FOAs include language encouraging applications from MSIs, including HBCUs, that are underrepresented in the BES portfolio, as well as from individuals from groups historically underrepresented in STEM
- ❖ BES participation in outreach and listening sessions to understand and address challenges MSIs and URGs face in obtaining funding for and conducting basic research

BES – Construction Projects

- ▶ **Linac Coherent Light Source-II: Re-baseline (10/13/2020).** New TPC \$1,136M; Upgrade for high-repetition-rate (1 MHz), ultra-bright, transform-limited femtosecond x-ray pulses (0.25-5 keV). Installation of accelerator and x-ray systems, and commissioning, including the cryoplants. Both soft and hard x-ray undulators operational. Completion (CD-4) projected for 2Q FY 2024.
- ▶ **Advanced Photon Source Upgrade:** CD-3 (7/25/2019). TPC \$815M. Continued procurement, testing of storage ring and experimental equipment, and long beamline building construction; COVID-related delays and user access priorities moved dark time for installation to ~3Q FY 2023. Completion (CD-4) projected for 2Q FY 2026.
- ▶ **Proton Power Upgrade:** CD-2/3 (10/6/2020). TPC \$272M. Construction to double the Spallation Neutron Source accelerator beam power to 2.8 MW, including target upgrades. Completion (CD-4) projected for 4Q FY 2028.
- ▶ **Advanced Light Source Upgrade:** CD-2 (4/2/2021)/3A (12/19/19). TPC \$590M. Upgrade to multi-bend achromat lattice to reduce emittance and generate 1,000 times brighter soft x-rays with higher coherence. Long-lead procurements, design, and prototyping activities underway. CD-3 projected for 1Q FY 2023; CD-4 projected for 4Q FY 2029.
- ▶ **Major Items of Equipment: NEXT-II: CD-2/3 (10/13/2021).** TPC is ~\$95M. Builds out 3 priority beamlines at the NSLS-II. CD-4 projected for 4Q FY 2028.

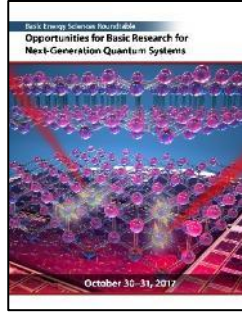
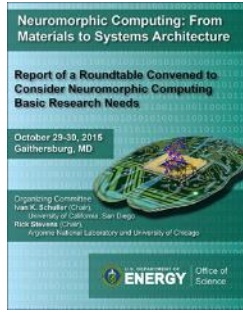
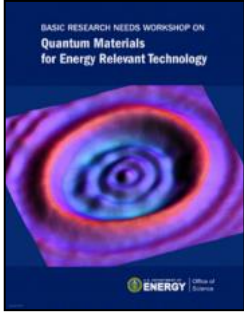


BES – Construction Projects

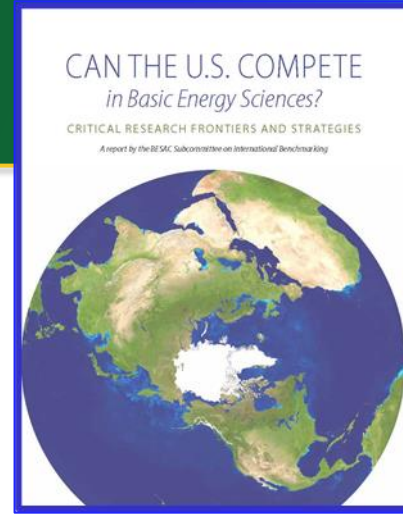
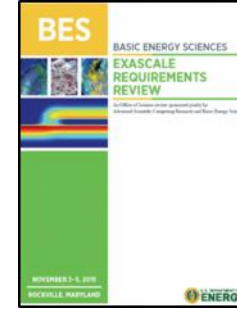
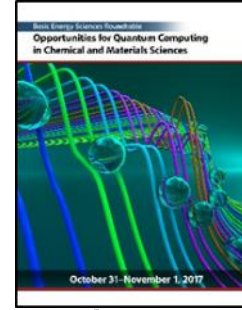
- ▶ **Linac Coherent Light Source-II – High Energy:** CD-1 (9/21/2018), Long Lead Procurements 3A (5/12/2020). Increase the linac energy to 8 GeV at 1 MHz and deliver ~1,000-fold higher average brightness for hard x-rays (5-12 keV). New scope added for a low emittance superconducting electron gun (current TPC estimate is \$660M). Baseline/Start of Construction (CD-2/3) projected for 4Q FY 2022 (delay expected to 4Q FY 2023); Project Completion (CD-4) currently projected for 3Q FY 2031.
- ▶ **Second Target Station:** CD-1 (11/23/2020). Continued design, R&D, and engineering activities for a complementary pulsed source with an order of magnitude higher brightness cold neutrons at the Spallation Neutron Source. TPC range is \$1,800M to \$3,000M; Preliminary point estimate of \$2,242M. Baseline/Start of Construction (CD-2/3) projected for 2Q FY 2025. Completion (CD-4) projected for 2Q FY 2037. Replanning to accelerate schedule underway.
- ▶ **Cryomodule Repair and Maintenance Facility:** CD-0 (12/6/2019). Conceptual design and analysis of alternatives for a facility to repair and maintain cryomodules and other accelerator components requiring clean environments and cryogenic capabilities. TPC range is \$70M to \$98M. Alternative selection and cost range approval (CD-1) projected for 1Q FY 2023.
- ▶ **Major Items of Equipment: NSRC Recap:** CD-1/3A, Long Lead Procurements (4/15/2021). Provides up to 17 instruments to upgrade capabilities at the Nanoscale Science Research Centers. TPC is \$80M. CD-2/3 projected 2Q FY 2022.

Defining Research Priorities: Basic Research Needs Strategic Planning Workshops and Roundtables

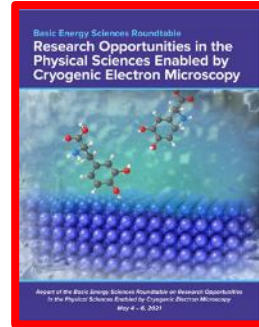
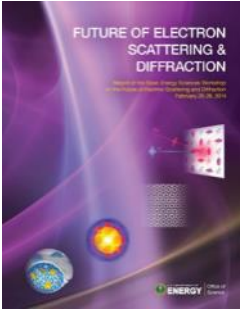
Quantum Science



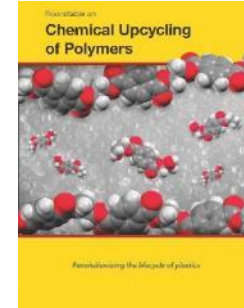
Theory, Modeling & Computation



Characterization

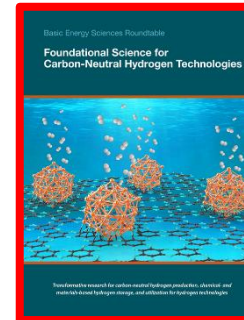
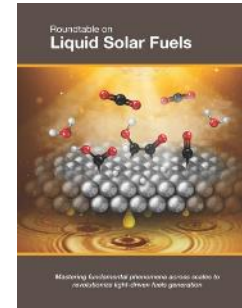
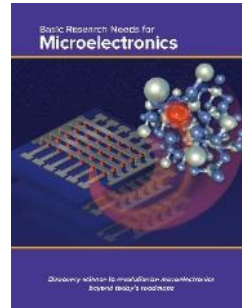
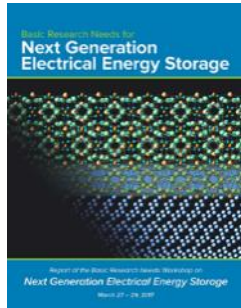
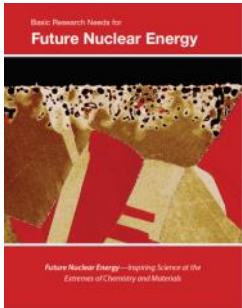
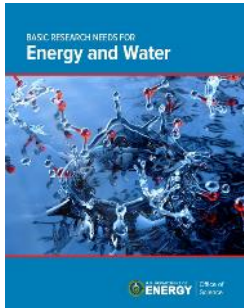


Synthesis



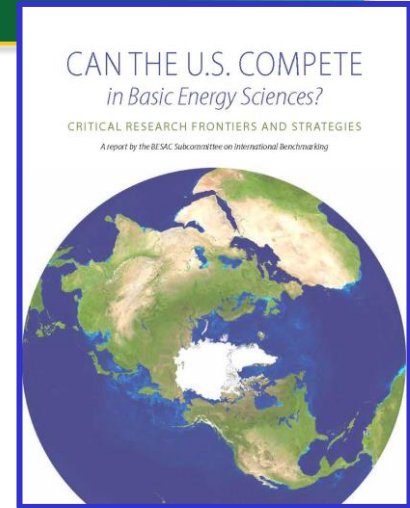
BES Advisory Committee:
International Benchmarking Report

Cross-Cutting Energy



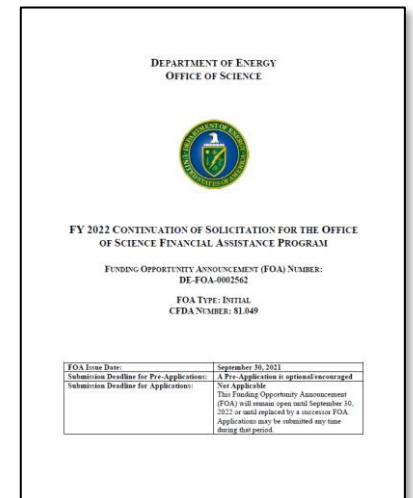
BESAC International Benchmarking Assessment – Posted!

- ▶ Report “Can the U.S. Compete in Basic Energy Sciences? Critical Research Frontiers and Strategies” is posted: https://science.osti.gov/-/media/bes/besac/pdf/Reports/AH_DOE2021-Benchmarking_202108.pdf
- ▶ **BESAC Charge:** to identify critical research areas in basic energy sciences; to examine U.S. competitiveness in these areas, in major research facilities and tools, and in funding mechanisms; and to suggest strategies that could enhance the U.S. position in comparison to its global competitors
- ▶ **Finding:** in critical areas, China is surging, Europe leads in quantum information science, and the U.S. is flattening or falling behind
- ▶ **Strategies for Success:** Increased investment in research, facilities, instrumentation; greater support for early- and mid-career scientists; improve opportunities for facility staff scientists; better integrate energy sciences research from basic to applied to industrial
- ▶ **Follow up actions** under discussion



Continuation of Solicitation for the Office of Science Financial Assistance Program (annual “Open Call”)

- ▶ The annual, broad, open solicitation that covers all research areas in the Office of Science and is open throughout the Fiscal Year
- ▶ For BES, the solicitation includes brief descriptions of 22 core research areas, with current priorities/areas of interest and contact information for cognizant program managers
- ▶ For the FY 2022 Open Call BES identified the following “overarching research priorities” relevant to multiple core research areas:
 - ❖ Fundamental Science to Enable Clean Energy
 - ❖ Critical Materials/Minerals
 - ❖ Fundamental Science to Transform Low-Carbon Manufacturing
 - ❖ Artificial Intelligence and Machine Learning (AI/ML)
 - ❖ Quantum Information Science (QIS)*



* Renewal proposals for FY 2019 QIS and Data Science grants will be accepted via the open call.

SC Early Career Research Program

▶ FOA Scope:

- Support the development of individual research programs of outstanding scientists early in their careers and to stimulate research careers in the areas supported by SC.
- All BES core research areas participate, including SUF
- Topics alternate to maintain reasonable applicant pool, ease reviewer burden, and improve success statistics.

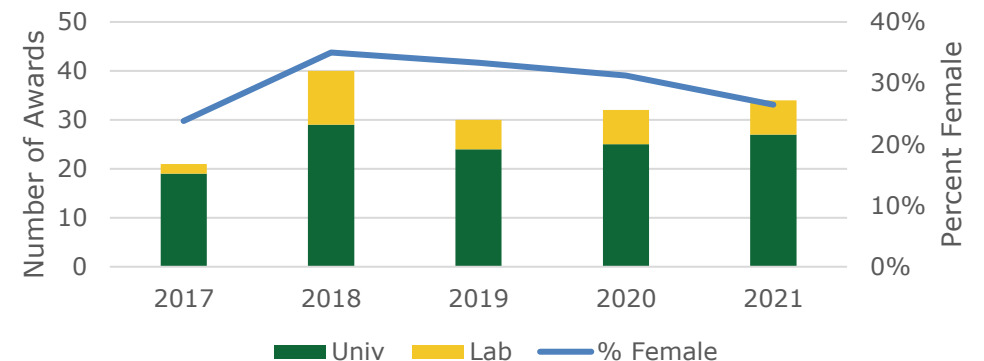
▶ FOA Details:

- **Eligible Applicants:** Untenured university professors on tenure track and DOE Lab Scientists, both within 10 years of PhD; each applicant may apply a maximum of three times; extension for major life events of at least 3 months
- **Typical funding:** University: \$150K/yr for 5 years; DOE Lab: \$500K/yr for 5 years
- **FY 2022 Timeline:** FOA published on Sept. 9, 2021; Pre-application responses sent on Dec. 1, 2021; Applications due by January 20, 2022

▶ Active BES Awards (2017 – 2021)

- 37 states and 77 unique institutions
- 4 new institutions in 2021 (since program inception)
- 30 awards to EPSCoR institutions; 7 new in 2021
- 1 HBCU & 15 HSI awards; 1 HBCU & 4 HSI new in 2021

BES ECRP Awards by Year



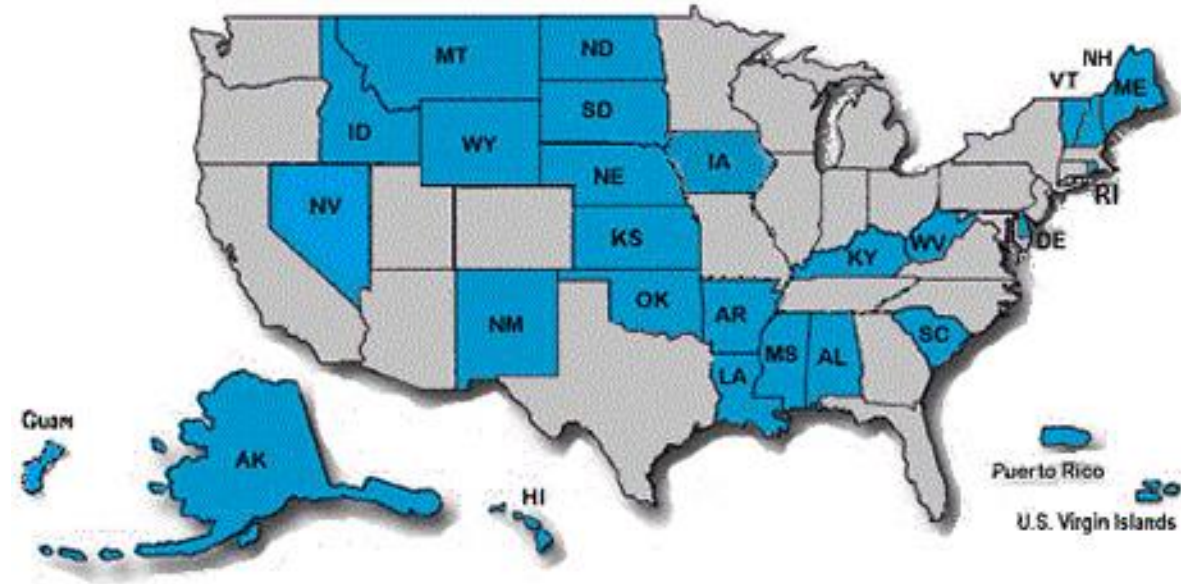
FY 2022 EPSCoR-State/National Lab Partnership FOA

► FOA Scope:

- Early-stage, fundamental scientific and engineering research relevant to DOE's energy mission
- Collaborative partnerships with DOE National Laboratories, advance the geographic diversity of researchers conducting competitive energy-related research
- BES coordinates with programs across DOE

► FOA Details:

- **Publication Date:** December 6, 2021
- **Eligible Institutions:** Follows NSF determinations ([FY 2022 eligibility table](#)) within 28 jurisdictions (see map)
- **Estimated award size/duration:** Fully funded awards up to \$250K per year for three-year awards
- **Pre-applications required:** Single PIs and small groups; limited to 3 pre-applications per institution
- **Timeline:** Pre-applications due January 13, 2022; encourage/discourage decisions by February 24; applications due by April 7



Energy Frontier Research Center FY 2022 FOA

- ▶ Per the FY 2022 President's Budget Request, BES plans to issue an EFRC Funding Opportunity Announcement for both new and renewal applications
- ▶ As in past EFRC FOAs, applications from multi-disciplinary teams would be required to propose both discovery science and use-inspired basic research that addresses priority research directions and opportunities identified by a series of BES workshop and roundtable reports
- ▶ Consistent with the Budget Request, EFRC emphasis may include the following:
 - ❖ **Science for Clean Energy** (Carbon-Neutral Hydrogen, Solar Energy and Fuels, Nuclear Energy, Catalysis, Energy Storage, Energy/Water, Subsurface, Direct Air Capture of CO₂)
 - ❖ **Science for Advanced Manufacturing** (Transformative Manufacturing, Chemical Upcycling of Polymers, Microelectronics, Synthesis Science)
 - ❖ **Other National Priority Research Areas** (Quantum Information Science, Quantum Materials)
- ▶ EFRCs will continue to support cross-DOE initiatives, including the [Energy Earthshots](#).
- ▶ As in past FOAs, preapplications are likely to be required with a limit on the number per institution.
- ▶ As for all FOAs, applications led by, or in partnership with, Minority Serving Institutions (MSIs), including Historically Black Colleges and Universities (HBCUs), that are underrepresented in the BES portfolio and applications including individuals from groups historically underrepresented in STEM would be encouraged.

Priority Research Opportunities for Cryogenic Electron Microscopy in the Physical Sciences

Discover emergent behavior and coupled processes at interfaces

- ▶ How do complex and dynamic processes give rise to chemical functionality and physical properties at interfaces?

Elucidate the role of heterogeneity in hierarchical systems

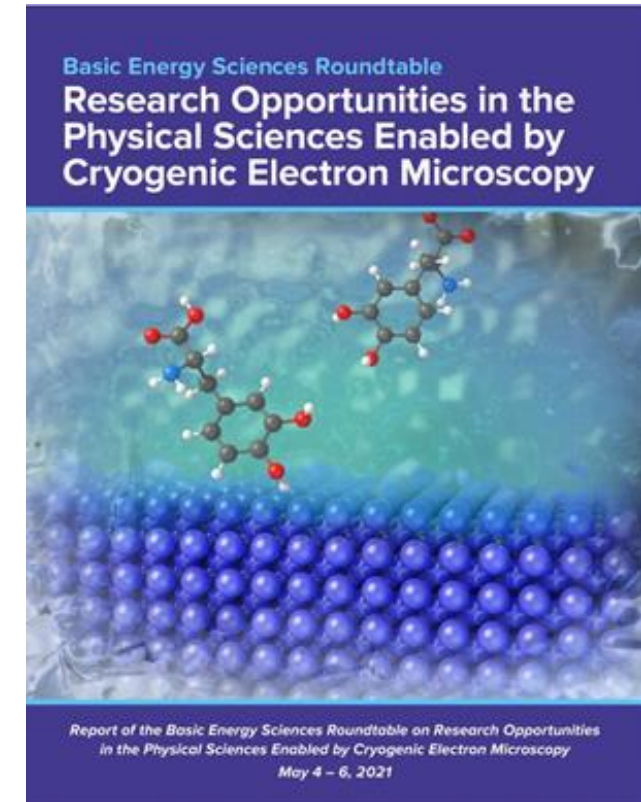
- ▶ What are the dominant interactions across length and time-scales that control behavior in hierarchical systems?

Understand the evolution of matter in variable environments across length and time scales

- ▶ How is matter assembled from its constituent units? How can we map the energy landscape that controls dynamic behavior and processes?

Harness data analytics and automation to expand the role of cryoEM in enabling scientific discoveries

- ▶ What advances in artificial intelligence and machine learning can be harnessed to enable cryoEM to advance beyond what is currently possible?



Roundtable Report and Brochure published on BES website:

<https://science.osti.gov/bes/Community-Resources/Reports>

Computational Chemical Sciences FY 2022 FOA

- ▶ BES issued the CCS Funding Opportunity Announcement for both new and renewal applications on November 18, 2021; preapplications due January 7, 2022 (encourage/discourage February 4); applications due March 25, 2022
- ▶ The FOA seeks basic research to develop and deploy new validated, public-access codes and databases that enable the chemical sciences community to fully utilize the power of exascale
- ▶ The FOA solicits new computational capabilities to advance research priorities in scientific topics underpinning clean-energy technologies and transformative, low carbon manufacturing
- ▶ CCS capabilities are anticipated to support cross-DOE initiatives, including the [Energy Earthshots](#).
- ▶ Preproposals are required: Limit to 2 per institution; 1 per lead PI; option for 3-PM review for down-selection
- ▶ Up to a total of \$19M over 3 years (\$6.25M/year) will be provided
- ▶ As for all FOAs, applications led by, or in partnership with, Minority Serving Institutions (MSIs), including Historically Black Colleges and Universities (HBCUs), that are underrepresented in the BES portfolio and applications including individuals from groups historically underrepresented in STEM would be encouraged.

Chemical and Materials Sciences to Advance Clean Energy Technologies and Transform Manufacturing FY 2022 FOA

- ▶ Per the FY 2022 President's Budget Request, BES plans to issue a Funding Opportunity Announcement for new applications to advance clean-energy technologies and low-carbon manufacturing
- ▶ This new FOA would focus on applications from **single PIs and small teams** to address both discovery science and use-inspired basic research in areas informed by priority research directions and opportunities identified by a series of BES workshop and roundtable reports
- ▶ Consistent with the Budget Request, this FOA may include the following:
 - ❖ **Science for Clean Energy** (Carbon-Neutral Hydrogen, Solar Energy and Fuels, Nuclear Energy, Catalysis, Energy Storage, Subsurface, Direct Air Capture of CO₂)
 - ❖ **Science to Advance Low-Carbon Manufacturing** (Transformative Manufacturing, Chemical Upcycling of Polymers, Catalysis Science, Synthesis Science)
 - ❖ **Critical Materials** (a crosscutting area important for clean energy technologies and manufacturing)
- ▶ Research supported by this FOA is anticipated to support cross-DOE initiatives, including the [Energy Earthshots](#).
- ▶ As in past FOAs, preapplications are likely to be required with a limit on the number per institution.
- ▶ As for all FOAs, applications led by, or in partnership with, Minority Serving Institutions (MSIs), including Historically Black Colleges and Universities (HBCUs), that are underrepresented in the BES portfolio and applications including individuals from groups historically underrepresented in STEM would be encouraged.

DOE Energy Earthshots Initiative

Hydrogen Shot – announced June 7, 2021

Goal: \$1 per 1 kg in 1 decade (1-1-1)

- ▶ Cross-DOE activity led by EERE-HFTO, co-led by SC-BES and FECM, with NE and ARPA-E

Long Duration Storage Shot – announced July 14, 2021

Goal: Reduce storage costs by 90% from Li-ion baseline to storage systems that deliver 10+ hours of duration, in 1 decade

- ▶ Cross-DOE activity led by Offices of Electricity (OE) and EERE, with participation by multiple offices including SC, FECM, ARPA-E, NE

Carbon Negative Shot – announced November 5, 2021

Goal: Durable and scalable carbon dioxide removal under \$100/net metric ton within a decade

- ▶ Cross-DOE activity led by FECM, co-led by SC-BES, EERE-BETO, and ARPA-E



1 Dollar



1 Kilogram



1 Decade

Long Duration Storage Shot

Reduce storage costs by **90%***...
*from a 2020 Li-ion baseline

...in storage systems that deliver **10+** hours of duration

...in **1** decade

Clean power anytime, anywhere.



<100 Dollars



1 Ton



1 Decade

Priority Research Opportunities to Advance Foundational Science for Carbon-Neutral Hydrogen Technologies

Discover and Control Materials and Chemical Processes to Revolutionize Electrolysis Systems

- ▶ How do we co-design multiple components that work together to enable stable, efficient electrolysis for the carbon-free production of hydrogen from water?

Manipulate Hydrogen Interactions to Harness the Full Potential of Hydrogen as an Energy Carrier

- ▶ How do we acquire fundamental insights across the entire range of energies to allow selective tuning of hydrogen interactions with molecules and materials?

Elucidate the Structure, Evolution, and Chemistry of Complex Interfaces for Energy and Atom Efficiency

- ▶ How can co-existing and evolving interfaces be tailored at multiple length scales to achieve energy-efficient, selective processes and enable carbon-neutral hydrogen technologies?

Understand and Limit Degradation Processes to Enhance the Durability of Hydrogen Systems

- ▶ How do we identify and understand the complex mechanisms of degradation to obtain foundational knowledge that enables the predictive design of robust hydrogen systems?



Roundtable Brochure published on BES website on Hydrogen Day (10-08-2021); Brochure & Technology Status Document available at:

<https://science.osti.gov/bes/Community-Resources/Reports>

Roundtable on Foundational Science for Carbon Dioxide Removal (CDR) Technologies

Organized by SC-BES (lead), FECM, EERE, and ARPA-E

Goal: Identify the key underpinning science needs and priority research opportunities that will accelerate research, development, and deployment of CDR technologies

Roundtable Scope (draft): Consider areas for BES research to enable future, as well as advance current, CDR technologies:

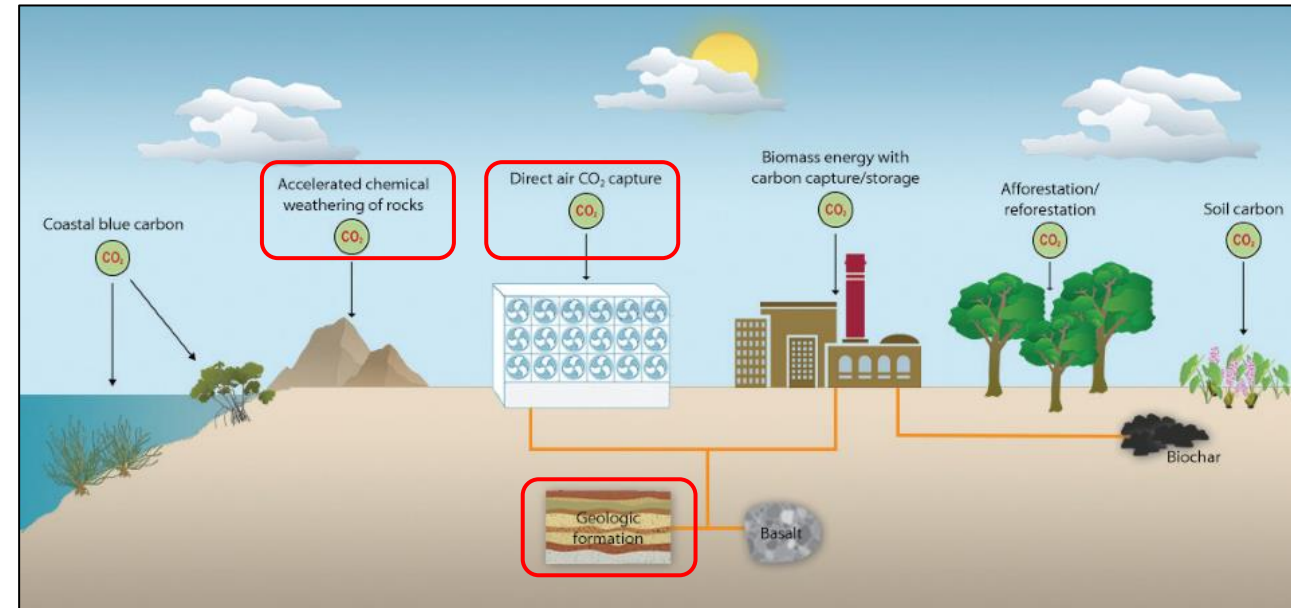
- ▶ CO₂ capture from dilute sources
- ▶ Durable CO₂ storage in minerals and materials
- ▶ Geological sequestration

Participants: A diverse group of up to 30 participants representing labs, universities, industry, and other stakeholders

Roundtable date: late February or early March

Output: A public report describing Priority Research Opportunities that identify fundamental science needs to overcome technological barriers in areas outlined in National Academies Negative Emissions Technology consensus study* and other studies; report posted mid-summer

* <https://www.nap.edu/catalog/25259/negative-emissions-technologies-and-reliable-sequestration-a-research-agenda>



DOE SC Data Management Overview

SC data management principles			
Enable discovery	Share, preserve, validate	Cost management	

Data Management Plan (DMP) requirements			
Share, preserve, validate	Make data associated with publications accessible	Availability of data management resources	Privacy, security, confidentiality

- ▶ DMPs are reviewed as part of the overall SC research proposal merit review process
 - ▶ Additional requirements and review criteria for the DMP may be identified in a solicitation
 - ▶ Proposals may include requested funding to implement a DMP, which will be considered during merit review

Complete information available at: <https://science.osti.gov/Funding-Opportunities/Digital-Data-Management>

Updates to Digital Data Management Guidance

- ▶ Office of Science is updating the **Suggested Elements of a Data Management Plan (DMP)** and adding **Guidance for Reviewers of Data Management Plans**
 - ▶ Current guidance will remain in effect for all solicitations issued through December 31, 2021
 - ▶ **Updated guidance will be effective for all solicitations issued after January 1, 2022**
 - ▶ There are **no changes to formal DMP requirements** that are part of solicitations

Suggested Elements of a DMP

- Suggested Elements offer guidance to researchers about what to include in a DMP
- Provide a framework for planning a DMP that satisfies requirements
- Tool to aid in aligning with best practices in data management

Guidance for DMP Reviewers

- Reviewers are asked if the DMP is suitable and supports validation of the proposed research
- Reviewer guidance connects suggested elements to DMP requirements
- Encourages constructive feedback to continue improving future DMPs

PAMS Updates for Reviewers

- PAMS emails to reviewers will include a link to the Guidance for Reviewers of DMPs
- Reviewers will need to certify once a year that they have read the Guidance for Reviewers of DMPs

Complete information available at: <https://science.osti.gov/Funding-Opportunities/Digital-Data-Management>

New Charge to BESAC: COV for the SC Office of Workforce Development for Teachers and Scientists with Report in Summer 2022



Establish a subcommittee of BESAC to serve as a Committee of Visitors (COV) to examine the activities of the Office of Workforce Development for Teachers and Scientists (WDTS) within the Office of Science over the fiscal years 2017 - 2021. This will be the third COV for the WDTS program, all overseen by BESAC. The most recent COV, completed in December 2016 and approved by BESAC in February 2017, provided an important examination of the activities within the program. That COV report confirmed the effectiveness of the WDTS programmatic structure and activities that resulted from a major re-structuring in response to the first WDTS COV completed in May 2010.

For this COV, please assess (1) the efficacy and quality of the processes used to solicit, review, recommend, monitor, and document application, proposal, and award actions; and (2) the quality of the resulting portfolio, including its breadth and depth and its national standing, benchmarked with other comparable Federal STEM programs. In addition to this standard charge, please comment on the effectiveness of the online technology development and evaluation activities in support of WDTS programs and outreach efforts to enhance the diverse and inclusive participation in WDTS programs that include:

- The Science Undergraduate Laboratory Internships (SULI)
- The Community College Internships (CCI)
- The Visiting Faculty Program (VFP)
- The Office of Science Graduate Student Research Program (SCGSR)
- The National Science Bowl® (NSB)
- The Albert Einstein Distinguished Educator Fellowship (AEF)

Appreciation to Marc Kastner

- ▶ Last meeting as Chair of BESAC: 2019-2021
- ▶ Marc's leadership is greatly appreciated
 - ❖ Virtual Meetings!
 - ❖ International Benchmarking Assessment
 - ❖ The Scientific Justification for a U.S. Domestic High-Performance Reactor-Based Research Facility
 - ❖ Three COVs – CSGB, EFRC/Hub, and Scientific User Facilities Division
- ▶ Established a new bar for reports with *BES at 40* that translated to subsequent Advisory Committee assessments

Questions?

