

# Office of Science Federal Advisory Committees

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Office of Science

[Energy.gov/science](https://energy.gov/science)

# Office of Science Federal Advisory Committees

- Committees provide valuable, independent advice to the Office of Science (SC) regarding complex scientific and technical issues influencing the planning, management, and implementation of research programs.
- SC has at least one established Federal Advisory Committee (FAC) for each of the core science programs.
- These committees are governed by the Federal Advisory Committee Act (FACA) of 1972 (Public Law 92-463) and all applicable FACA Amendments, Federal Regulations, and Executive Orders.
- While these committees provide advice and guidance, federal program officials make all programmatic decisions.

# SC Federal Advisory Committees

- Advanced Scientific Computing Advisory Committee (ASCAC)  
<https://science.osti.gov/ascr/ascac>
- Basic Energy Sciences Advisory Committee (BESAC)  
<https://science.osti.gov/bes/besac>
- Biological and Environmental Research Advisory Committee (BERAC)  
<https://science.osti.gov/ber/berac>
- Fusion Energy Sciences Advisory Committee (FESAC)  
<https://science.osti.gov/fes/fesac>
- High Energy Physics Advisory Panel (HEPAP) – Joint with NSF  
<https://science.osti.gov/hep/hepap>
- Nuclear Science Advisory Committee (NSAC) – Joint with NSF  
<https://science.osti.gov/np/nsac>
- Isotope R&D and Production Advisory Committee (IRDPAAC) forthcoming

# Charter

- To conduct business, every Advisory Committee must have an approved active Charter.
- The Charter specifies the committee's mission or charge.
- Charters must be renewed every two years.
- <https://www.facadatabase.gov/>

# Membership

- The Secretary of Energy (or designee) holds authority to nominate, appoint, renew, and or terminate any of the committee's membership. Currently, this is delegated to the Deputy Director for Science Programs in the Office of Science.
- Committee members are appointed as Special Government Employees, Representatives, or Ex-Officio.
- A variety of factors are considered in formulating a Committee's membership: primary among these is professional experience and qualifications; other factors include balance of representation across disciplines, institution types, geographical regions, and diversity.

# Notification and Frequency of Meetings

- Public announcements of Advisory Committee meetings must be published in the Federal Register at least two weeks prior to the meeting date.
- Relevant program web pages include meeting agendas, presentations, and minutes.
- Each SC Advisory Committee typically meets two or three times per year.
- A Designated Federal Officer (DFO) manages each committee.
- Often, the Director of the Office of Science addresses committee meetings to deliver an update and to answer any questions.
- Notices of upcoming meetings sent through GovDelivery.



# How SC uses Advisory Committees

- Review of program elements - e.g., Committees of Visitors
- Assess broad societal benefits - e.g., retrospective look on program impacts
- Strategic planning - e.g., long range plan, grand challenges report
- Prioritization - e.g., new or upgrade of scientific user facilities, transition of program elements

# Committees of Visitors

- The Director of the Office of Science charges the relevant advisory committees to assemble special subcommittees, known as Committees of Visitors (COVs), to assess the Office of Science programs on a regular basis.
- The COVs assess the efficacy and quality of the processes used to solicit, review, recommend, monitor, and document funding actions and to assess the quality of the resulting portfolio.
- The national and international standing of the programs' sub-elements are part of the evaluation of the breadth and depth of the portfolio.



# Nominations

- SC Program Offices solicit recommendations for advisory committee members through several mechanisms - striving for a diverse representation of the scientific community.
  - Dialogue with members in the scientific community
  - Engagement with professional societies
  - DOE technical staff
  - Office of Science Federal Advisory Committees
  - Senior DOE and SC leadership
- If you would like to nominate someone to serve on an SC advisory committee, please use the form at <https://science.osti.gov/About/Federal-Advisory-Committees>

Office of Science Federal Advisory  
Committee Nomination  
Submission Form



# Breakout Sessions

- Advanced Scientific Computing Research - ASCAC
- Basic Energy Sciences - BESAC
- Biological and Environmental Research - BERAC
- Fusion Energy Sciences - FESAC
- High Energy Physics - HEPAP
- Nuclear Physics - NSAC

# Advanced Scientific Computing Research

Advanced Scientific Computing Advisory Committee (ASCAC)



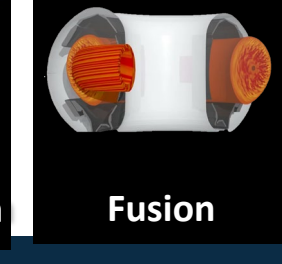
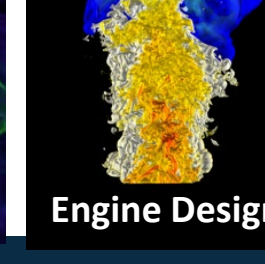
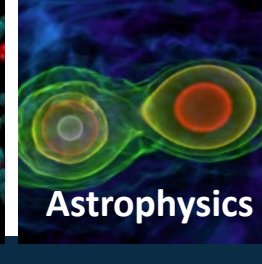
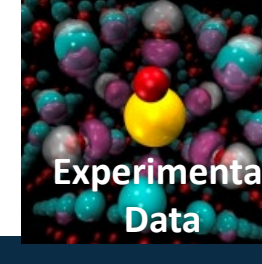
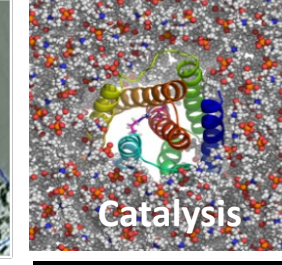
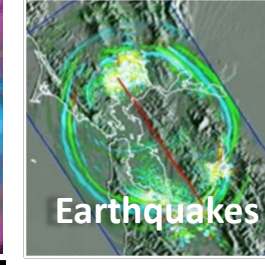
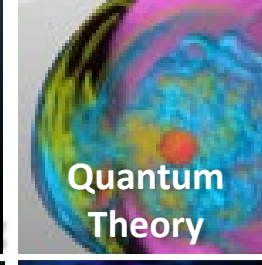
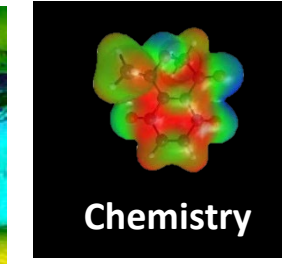
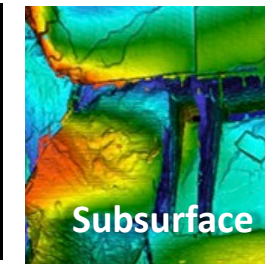
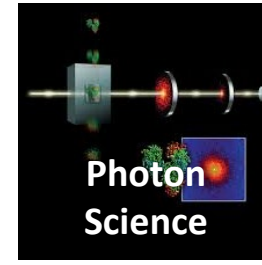
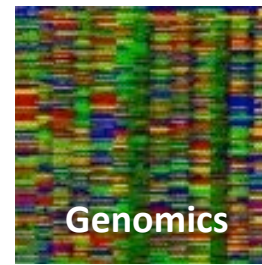
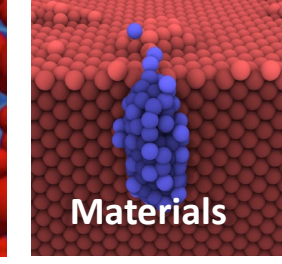
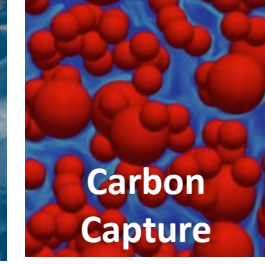
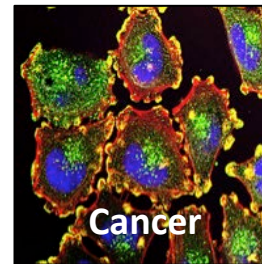
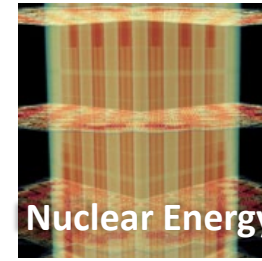
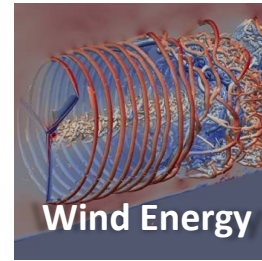
Office of Science

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# How ASCR uses ASCAC

ASCAC provides independent advice on complex topics related to ASCR through:

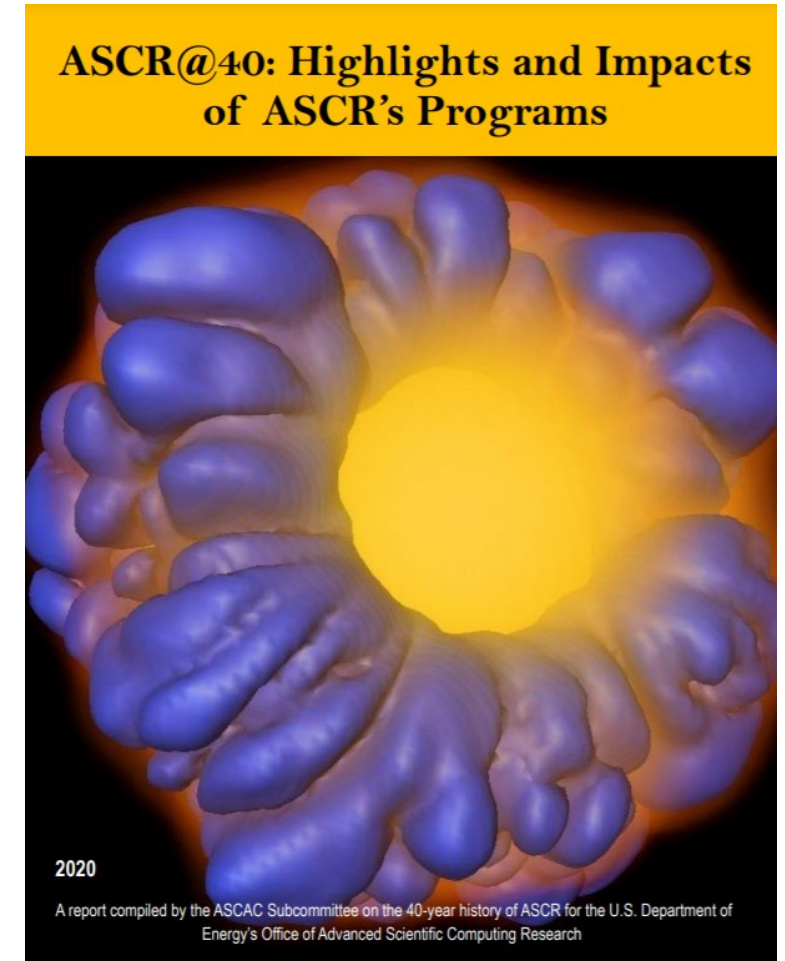
- Periodic reviews and recommendations of elements.
- Advice on completing long-range plans, priorities, and strategies.
- Advice on appropriate levels and sector allocation of funding.
- Advice on national policy and scientific issues related to advanced scientific computing.



# Report (2020): ASCR@40

Charge: Produce a report that assesses and documents the historical accomplishments of ASCR and its predecessors over the past four decades.

- ASCR's vision and sustained investments have produced decades of extraordinary scientific and technological impacts.
  - Conveys some of the most significant outcomes.
  - Broke ASCR's most significant technical impacts into 5 subsections: computational science, mathematics, computer science, computer architecture, and computing and networking facilities.
  - Described impacts to U.S. industry
  - Distills key lessons from ASCR's history.
- Reviewed 100s of documents and communicated with 100s of individuals who took part in ASCR's history.

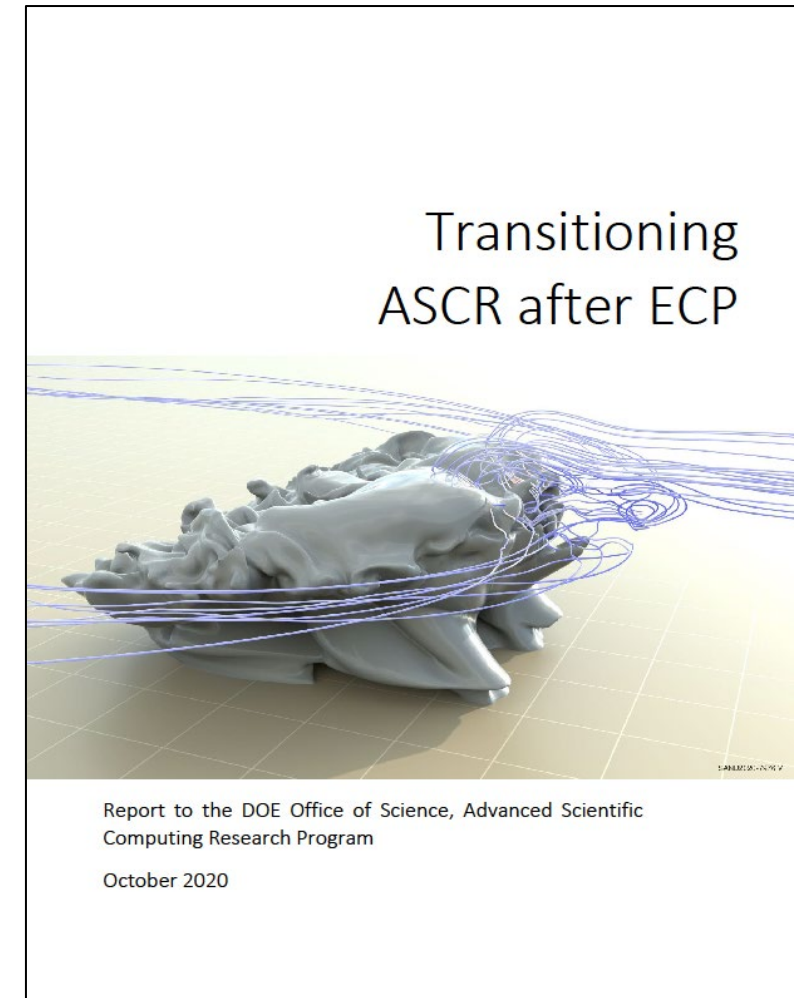


[ASCR at 40](#)

# Report (2020): After the Exascale Computing Project (ECP)

Charge: Identify key elements of ECP that need to be transitioned to ASCR/SC's program to address opportunities and challenges for HPC.

- This transition report focuses on the next steps ASCR should take beyond ECP's conclusion.
- Recommendations:
  - Sustain and build on the fruits of ECP
  - Broaden base R&D programs in computing and mathematics
  - Grow the workforce
  - Maintain and extend national and international leadership in advanced computing
- Recommendations reflect an understanding and appreciation of the achievements of ECP, as well as the engagement of the DOE communities.



[Transitioning ASCR after ECP](#)

# Report (2022): U.S. Leadership in HPC

Synopsis: The U.S. is not the unambiguous leader in HPC. Discusses paths to maintaining innovation and security while balancing global competition.

Recommended:

1. Four key areas to focus future efforts for achieving and sustaining global leadership.
2. Develop a decadal-plus post-exascale vision and strategy.
3. Articulate a vision, associated goals, and milestones for international collaboration focused on post-exascale computing and networking.
4. Invest in long-term co-design research for advanced computer architectures and system concepts for future scientific computing



# Report (2023): Facilities Subcommittee Recommendations

Charge: Assess the necessity for new or upgraded facilities. Evaluate five specific ASCR facilities and rate the readiness for construction.

Report makes 3 recommendations:

1. Ensure the continued support and development of all 5 ASCR computational facilities reviewed — ALCF, OLCF, NERSC, HPDF, and ESnet.
2. View ASCR facilities as integral components of a single, larger integrated computational ecosystem.
3. Mount a comprehensive, coordinated R&D program delivering prototype computing systems over a 5-year timescale, operational by 2034.





# Community of Visitors (2021)

Reviewed FY 2016–2019 Programs:

- Applied Mathematics
- Computer Science
- Computational Partnerships
- Research and Evaluation Prototypes

Key recommendations:

1. Identify and document ASCR's "North Star," including a 5-year plan
2. Develop procedures to better communicate the impact of programmatic shifts
3. Investigate strategies to identify early-to-mid-career researchers and ways to enable them to develop into PIs of large DOE projects
4. Implement a pre-proposal process to reduce the burden on the community of writing and reviewing proposals that have little chance of being funded
5. COV presentations should provide clear summary statistics for each solicitation

# Recent Charges and Meetings

In July 2024, ASCAC formed a subcommittee that is examining the effectiveness and impact of the Computational Sciences Graduate Fellowship (CSGF). This subcommittee is charged with assessing the:

- Effect, impact, and tailoring of the program
- Diversity in the program and broadening applicant pool
- Evolution of the program
- Support for historically underrepresented students

Recent Meetings: May 29, 2024 and September 26, 2024

Upcoming meetings: Notionally planning 2-3 meetings in 2025

# Basic Energy Sciences

Basic Energy Sciences Advisory Committee (BESAC)

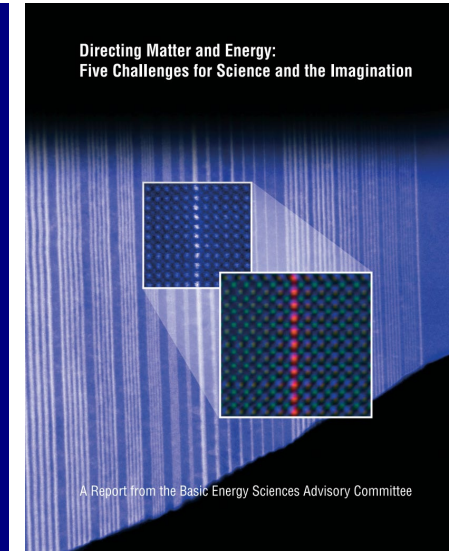


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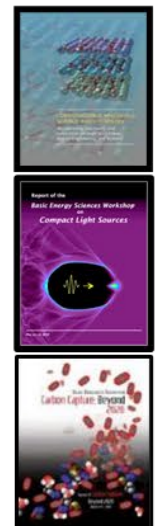
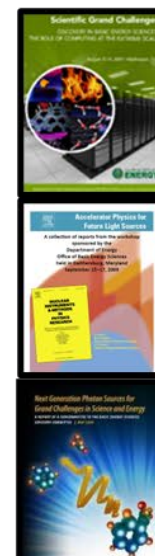
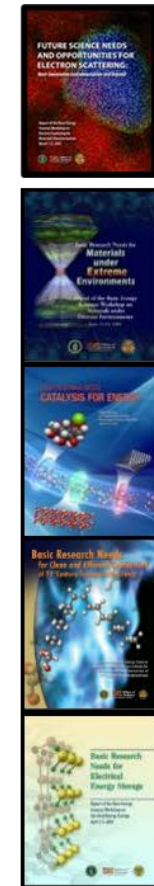
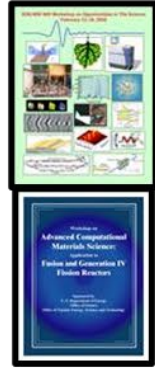
# BESAC is an integral part of BES strategic planning

- BES strategic planning is driven by both **bottom-up** portfolio analysis and planning and **top-down** organizational prioritization
  - **Bottom-up**
    - Program manager expertise and community engagement
    - BES workshops and roundtables; **BESAC reports**
    - National Academies reports
    - Cross-DOE activities
  - **Top-down**
    - Annual OMB Science and Technology Priorities Memo
    - White House-led Interagency Engagement and Planning
    - SC, Administration, and Congressional priorities
- The first “Basic Research Needs” (BRN) Workshop was held in 2002 in response to a BESAC charge.
  - Survey of science needs across the energy technology landscape
  - Established the model for future BRNs
  - Provided foundation for the first cadre of BES topical BRN workshops, and subsequently the BESAC “Grand Challenge” report



# BES Workshops and Roundtables: A (Nearly) Complete Timeline

BES Workshops  
 BES Roundtables  
 BESAC sponsored



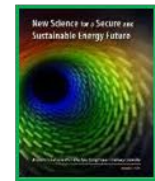
20-Year  
 BES  
 Facilities  
 Roadmap



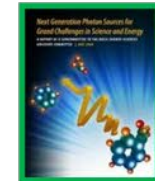
2006



2008



Energy Frontier  
 Research Centers



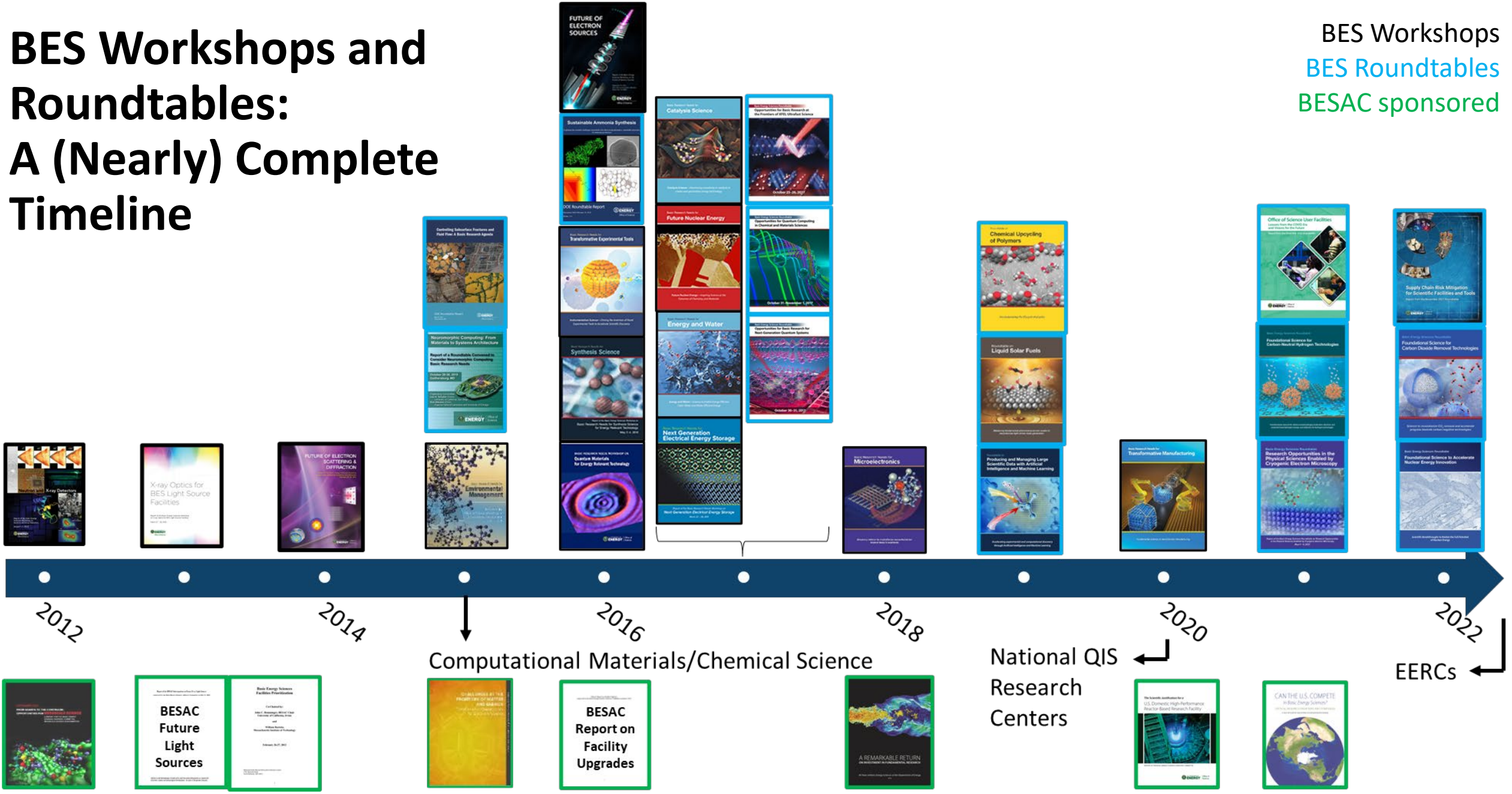
2010



Early Career  
 Research  
 Program;  
 Energy  
 Innovation  
 Hubs

# BES Workshops and Roundtables: A (Nearly) Complete Timeline

BES Workshops  
 BES Roundtables  
 BESAC sponsored



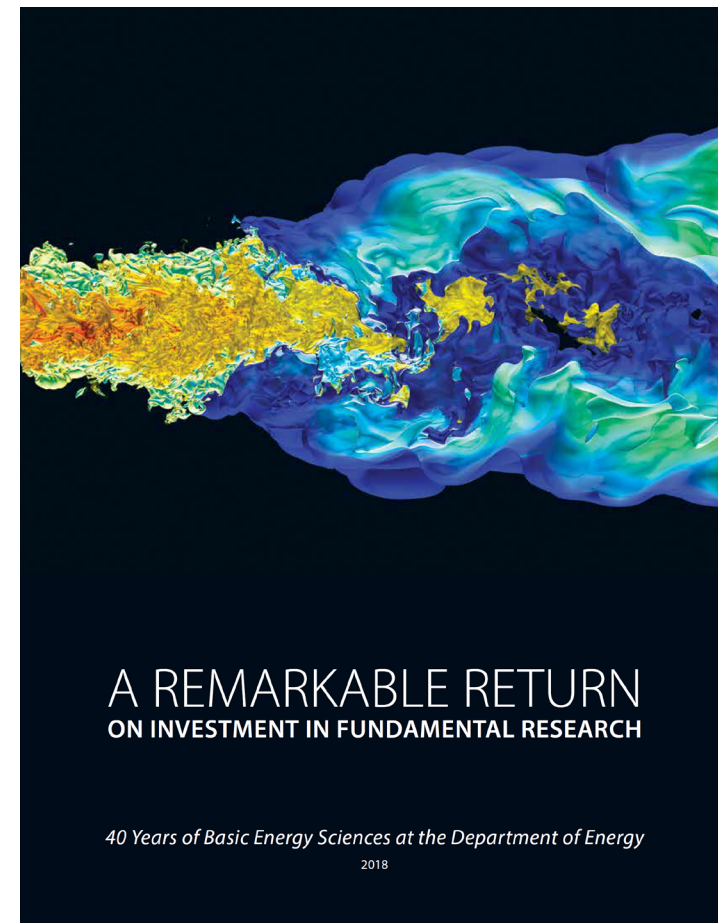
# Summary of BESAC Demographics

The 2024-2025 Basic Energy Sciences Advisor Committee (BESAC):

- 34 members (<https://science.osti.gov/bes/besac/Members>)
- Technical Distribution:
  - Condensed Matter/Materials Physics (17); Chemistry, Biology, Geology (20); X-Ray, neutron, and electron scattering (8); Computational/Theoretical Science (5)
- Institutional Distribution:
  - 25 universities, 9 national labs, 2 industry, 3 other (including joint appointments)
  - 21% MSIs (7): Alabama A&M, University of California-Santa Barbara, City College of New York, Florida A&M, University of New Mexico, University of Oklahoma, University of Texas-Austin
  - 24% from EPSCoR states (8): Alabama, Delaware, Iowa, Louisiana, New Mexico, Oklahoma, South Carolina, Wyoming
- Geographical Distribution:
  - 5 Northeast, 9 South, 8 Midwest, 9 West, 3 International

# BES at 40: A Remarkable Return on Investment in Fundamental Research (2018)

- This report highlighted outstanding examples of major scientific accomplishments emerging from 40 years of BES research support, including how these discoveries have helped fulfill the Department of Energy's mission and have led to new technologies and industries that contribute to American innovation and prosperity.
- By examining past successes, this report sought to illuminate guiding strategies and approaches that will be critical to ensuring future U.S. leadership.
- 1700 members of the research community were asked for recommended stories.
- Interviews were held with key scientists.
- Subcommittee chair met with congressional staff and OMB during preparation and after rollout.

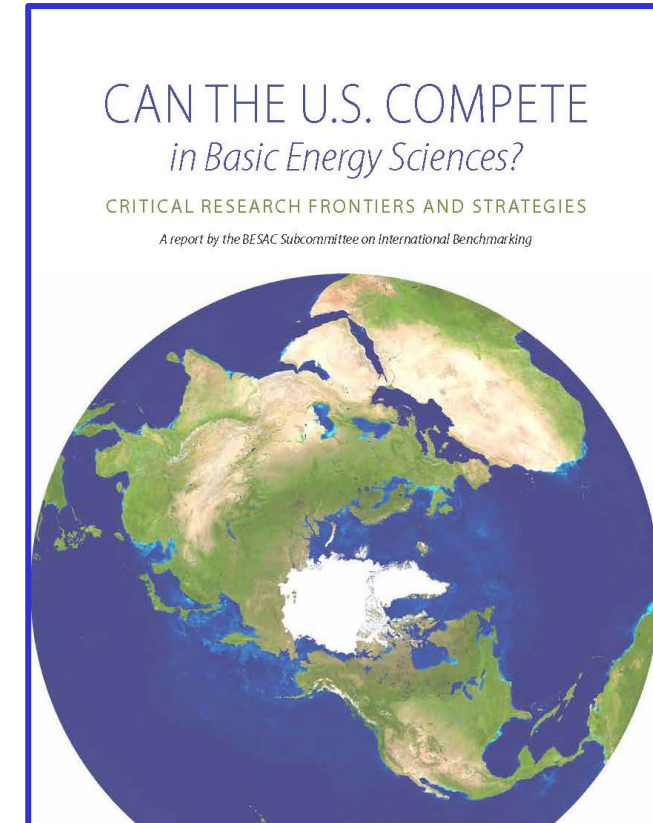


[https://science.osti.gov/-/media/bes/pdf/BESat40/BES\\_at\\_40.pdf](https://science.osti.gov/-/media/bes/pdf/BESat40/BES_at_40.pdf)



# Can the U.S. Compete in Basic Energy Sciences? A report by the BESAC Subcommittee on International Benchmarking (2021)

- **Report responded to 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 sciences, 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.



Report: “Can the U.S. Compete in Basic Energy Sciences? Critical Research Frontiers and Strategies”:  
[https://science.osti.gov/-/media/bes/besac/pdf/Reports/AH\\_DOE2021-Benchmarking\\_202108.pdf](https://science.osti.gov/-/media/bes/besac/pdf/Reports/AH_DOE2021-Benchmarking_202108.pdf)

# Recent Charge: Report on the Nanoscale Science Research Centers

- BESAC was charged in 2023 with establishing a subcommittee to assess the impacts and future directions of the five NSRCs.
- The five NSRCs began operations between 2006 and 2008 with the aim of bringing state of the art nanoscience instrumentation and expertise to a national user community. Today, the NSRCs host nearly 4000 unique users per year and span a broad range of research topics.
- The subcommittee found that DOE should sustain and strengthen the collection of NSRCs, and that they have become a key element of US competitiveness through research in high-priority areas and in instrumentation development.



<https://science.osti.gov/-/media/bes/besac/pdf/Reports/BESAC-NSRC-Subcommittee-Report-20240405-watermark.pdf>

# Recent Charge: Research Portfolio Prioritization Strategies

- **Charge:** Identify area-agnostic strategies for investment that BES can apply to its portfolio in the medium- to long-term.
  - **Topic prioritization:** How to better determine that a topical area is a high priority for increased investment, or a low priority that could be reduced or phased out? How should BES identify new and/or crosscutting topical areas for investment?
  - **Investment balance:** How should support for research and instrumentation be balanced at National Laboratories? For academic grants?
  - **Modality balance:** How should support for research modalities (i.e., single investigator, small groups, team research) be balanced for the future?
  - **Discovery and Use-driven balance:** How should BES weigh the potential for technological impact in defining investment priorities? How can BES play a useful role in enabling innovations to cross the “valley of death”? How sharp or fuzzy should the “basic-applied boundary” be?
  - **International:** How should BES take account of international competition in its research domains?
  - **Frequency:** How frequently should these evaluations be revisited?
- **Recommendations** included: continue and expand community engagement, including with industry; balance the portfolio across multiple axes; facilitate basic to applied transition with cross-office interaction; explore investment in and adoption of tools for portfolio analysis coupled with expert opinion

# Recent Charge: BESAC Assessment of New and Upgraded Facilities

**Charge:** Identify what new or upgraded facilities will best serve SC needs in the next 10 years (2024-2034). More specifically, 1) consider what new or upgraded facilities are required to maintain SC position at the forefront of scientific discovery, and 2) assess each facility with respect to its potential to contribute to world leading science and its readiness for construction.

**New and Upgrade Facilities Considered:** High Flux Isotope Reactor Pressure Vessel Replacement, Spallation Neutron Source Second Target Station, National Synchrotron Light Source (NSLS) – II Experimental Tools III and NSLS-II Upgrade; Linac Coherent Light Source II High Energy, Low Emittance Injector, and next generation (X) upgrade; green field “Future Light Source(s)”

**Findings:** All proposed facilities are absolutely central for future science, offering unique capabilities to the community, but with different states of technical readiness and different levels of clarity on the science case.



# Recent and Upcoming Meetings

- Next meeting: TBD (Spring 2025), virtual
- Previous meetings:
  - September 24-25, 2024 (hybrid) - Office of Basic Energy Sciences Update; Research Investment Strategies Subcommittee Report Out and Discussion, DOE Public Access Plan and Data Management Panel Discussion, Overview of the Office of Critical and Emerging Technologies; Early Career Panel
  - April 9-10, 2024 (hybrid) - Welcome from Office of the Under Secretary for Science and Innovation; Office of Basic Energy Sciences Update; Update on Research Investment Strategies Subcommittee; Report Out for the NSRC Subcommittee; Scientific Progress in Biomolecular Materials; Facilities Charge Report Out and Discussion
  - December 12, 2023 (virtual) - Office of Science Welcome; Office of Basic Energy Sciences Update; Update on FY 2023 Charges; Science Opportunities with the Upgraded LCLS; Accelerator Instrumentation BRN; Distinguished Scientist Presentation; WDTS and BES/MSE Committees of Visitors
  - July 27, 2023 (virtual) - Update on Charges; Office of Science Welcome; Office of Basic Energy Sciences Update; Defining Strategic Directions for Research (NIH); BRN Update; Update on Computational Chemical and Materials Sciences
- Agenda, minutes, presentations, and recordings are available at [science.osti.gov/bes/besac/Meetings](https://science.osti.gov/bes/besac/Meetings)

# Biological and Environmental Research

Biological and Environmental Research Advisory Committee (BERAC)



Office of Science

[Energy.gov/science](https://energy.gov/science)

# Summary of BERAC

- BERAC Chair: Bruce Hungate, Arizona State University
- BERAC Vice-Chair: Maureen McCann, National Energy Renewable Laboratory
- BERAC Members:
  - 32 full members
  - New/Renewing Members appointed to terms (typically between 2-3 years), with ~10yr maximum appointments
  - Affiliated with universities, government labs, and private sector
  - Distributed across science areas: Atmospheric Science; Bioimaging/Structural Biology; Earth System Modeling; Computational Biology; Environmental System Science; Microbiology; User Facilities; Genomic/Systems Biology; Plant Biology
- Designated Federal Officer – Dorothy Koch
- Executive Secretary – Tris West
- Committee Manager – Andrew Flatness

# Membership Selection

Based on the following criteria:

- Representation of BER science areas on BERAC
- Practicing scientist with deep knowledge of field, broad knowledge of relevant adjacent fields, and community leadership
- Potential members identified from recent awardees, by program managers, and who demonstrate proven leadership in the research community and at conferences and workshops



# BERAC Charter – Scope of Activities

- Periodic reviews of and recommendations for elements of the biological and environmental research program including aspects of genomic science, environmental sciences, earth system science, and underlying competencies, such as data management, data analysis, computational science, and scientific user facilities.
- Advice on competing long-range plans, priorities, and strategies to address more effectively the scientific aspects of energy-related biological and environmental issues of departmental policies and programs.
- Advice on appropriate levels of funding to develop those plans, priorities, and strategies and to help maintain an appropriate balance between competing elements of the biological and environmental research program.
- Advice on scientific aspects of biological and environmental science issues of concern to DOE as requested by the Secretary of Energy or the Director, Office of Science.

# BERAC Charter – Logistics

**Description of Duties.** The duties of the Committee are solely advisory in nature.

**Official to Whom the Committee Reports.** The Committee will report to the Director, Office of Science.

**Estimated Number and Frequency of Meetings.** The Committee will meet approximately two times a year.

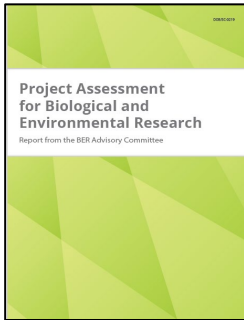
**Termination.** The Committee terminates two years after the Charter filing date and may not meet if the Charter is not renewed biennially.

**Membership and Designation.** The Committee will be comprised of approximately 35 committee members, who will be appointed by the Under Secretary for Science and Innovation (or designee). Members shall be experts in their respective fields and appointed as special Government employees, regular Government employees, or representatives of entities including, but not limited to, research facilities and academic institutions, should the Committee's task require such representation. The Chair and Vice Chair of the Committee will be appointed by the Under Secretary for Science and Innovation (or designee) from among the Committee members.

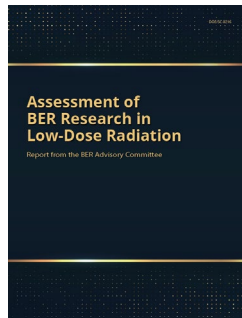
# BERAC Charter – Subcommittee Function

**Subcommittee(s).** To facilitate the functioning of the Committee, subcommittees may be formed with DOE approval. The objectives of the subcommittees are to make recommendations to the parent committee with respect to particular matters related to the responsibilities of the parent committee. Such committees or workgroups may not work independently of the chartered committee and must report their recommendations and advice to the full committee for full deliberation and discussion. Subcommittees and workgroups have no authority to make decisions on behalf of the parent committee nor can they report directly to the DOE.

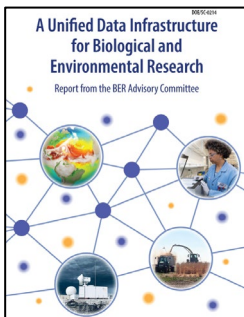
# Recent Subcommittees and Completed Reports



- Nine projects regarding **facility capabilities** were assessed for “potential to contribute to world-leading science” and “readiness for construction”.



- Provided input on the potential scope of an impactful **low dose radiation research program** in BER that draws on DOE’s unique research and enabling capabilities that could complement ongoing efforts in other agencies



- Review the existing capabilities in data management and supporting infrastructures that are relevant to the breadth of BER science and recommend a strategy for the **next generation data management and analysis** within a unified framework

Fourteen BERAC reports have been completed since 2010.

<https://science.osti.gov/ber/berac/Reports>

# Committee of Visitor (COV) Reviews

## Operated under DOE Office of Science COV Guidance, Version 2 (April 2021):

- A COV is a subcommittee that reports to a chartered FAC (i.e., BERAC)
- Programs that recommend or award funds are to be reviewed by a COV at regular intervals of up to five years.
- The COV report is presented to the FAC at a scheduled meeting open to the public. The report is reviewed, discussed, modified if necessary, and approved by the FAC.
- The reviewed program's response to the COV findings and recommendations is presented at a subsequent scheduled meeting of the FAC.

## COV Membership:

- The COV chair is selected and appointed by the chair of the FAC
- The Committee will have significant scientific and technical expertise, as well as other relevant core competencies across all covered areas, and the topical subject matter expertise coverage should not rely upon one person alone. A good practice is to include 25% or more committee members who do not receive direct research support from the program being reviewed.

# Committee of Visitor (COV) Reviews

## The core COV charge components are:

1. Assess the efficacy and quality of the processes used during the fiscal years under review to:
  - a. solicit, review, recommend, and document application and proposal actions and
  - b. monitor active awards, projects, and programs.
  
2. Within the boundaries defined by DOE mission and available funding, comment on how the award process has affected:
  - a. the breadth and depth of portfolio elements, and
  - b. the overall scientific and technical quality of the portfolio elements.

**Eight COV reports have been completed since 2010.**

<https://science.osti.gov/ber/berac/BER-COV>

# Fusion Energy Sciences

Fusion Energy Sciences Advisory Committee (FESAC)



Office of Science

[Energy.gov/science](https://energy.gov/science)

# How FES uses FESAC

- Strategic planning - e.g., long range plan, international benchmarking
- Prioritization - e.g., new or upgrade of scientific user facilities, transition of program elements
- Assess broad societal benefits - e.g., scientific discoveries and new technologies beyond fusion<sup>1</sup>
- Review of program elements - e.g., Committees of Visitors
- FESAC website: <https://science.osti.gov/fes/fesac>

<sup>1</sup> [https://science.osti.gov/-/media/fes/fesac/pdf/2015/2101507/FINAL\\_FES\\_NonFusionAppReport\\_090215.pdf](https://science.osti.gov/-/media/fes/fesac/pdf/2015/2101507/FINAL_FES_NonFusionAppReport_090215.pdf)

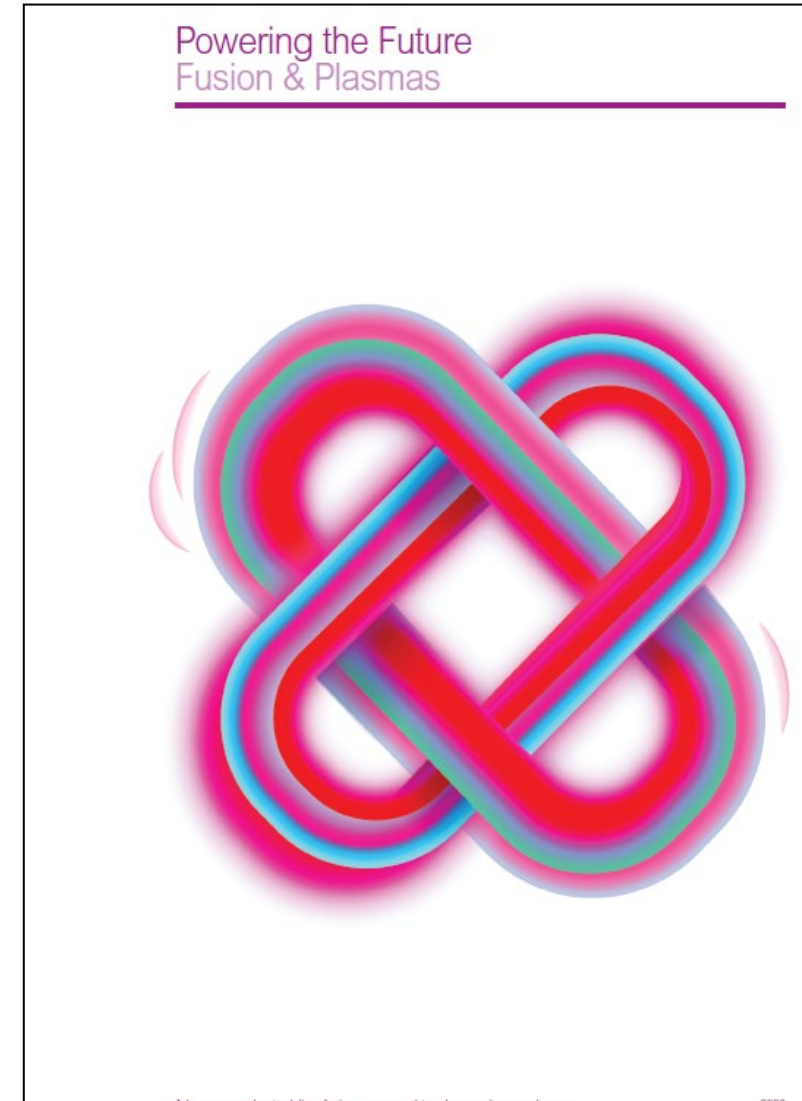


# Recent Reports

- FESAC reports inform the priorities and direction of the FES program
- The 2020 **Long-Range Plan (LRP)** report is the main guiding document for FES
- Based on the LRP recommendations, FES has been emphasizing the closing of gaps in the Fusion Materials & Technology (**FM&T**) area and the strengthening of Public-Private Partnerships
- The LRP along with other recent and upcoming FESAC reports and other community input will inform the FES **S&T Roadmap** that is under development

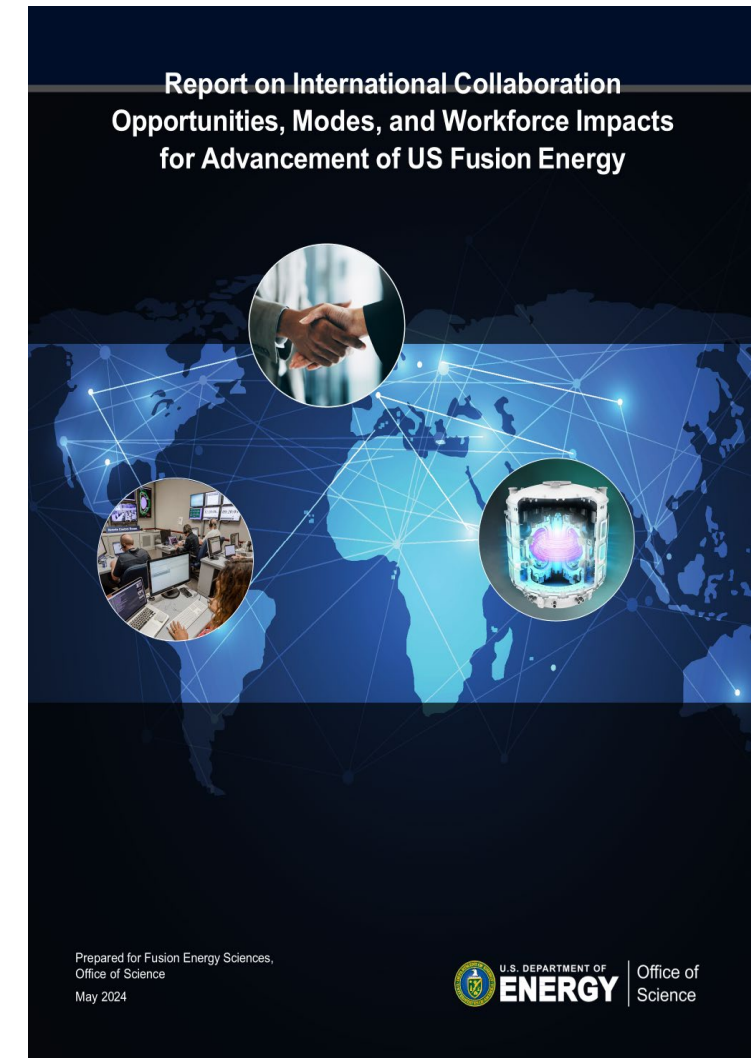
# FESAC: Powering the Future: Fusion & Plasmas

- This report provides a decade-long vision for the field of fusion energy and plasma science and presents a path to a promising future of new scientific discoveries, industrial applications, and, ultimately, the delivery of fusion energy. The report identifies critical areas for research and development and prioritizes investments to maximize impact.
- This report is the culmination of a two-year, two-phase strategic planning process. The first phase, the Community Planning Process (CPP), was the primary mechanism for all members of the fusion and plasma science community to provide input. The second phase, the FESAC Long Range Planning study, used the CPP report as a starting point.
- The FESAC subcommittee sought input from the community and other sources, including community focus groups, workshops, and briefings from experts in fusion and plasma science.
- [Powering the Future: Fusion & Plasmas](#)



# Report on International Collaboration Opportunities, Modes and Workforce Impacts for Advancement of US Fusion Energy

- This report evaluated the status of international collaborations in fusion energy development, fundamental plasma science and related technology areas, and identified opportunities for such collaborations in the coming decade.
- The report focused on the needs and context of the LRP, recent National Academies of Sciences, Engineering, and Medicine (NASEM) reports, and other input, including identification of optimal modes of international collaboration, ways to leverage the growing private sector in fusion, and strategies to address U.S. workforce needs.
- The report also assessed U.S. leadership status in key areas of fusion research.
- The report found that the FES energy mission and foundational plasma science goals can benefit significantly from international collaboration.
- [https://science.osti.gov/-/media/fes/fesac/pdf/2024/2311-16425-Humphreys-IB-Report\\_240513.pdf](https://science.osti.gov/-/media/fes/fesac/pdf/2024/2311-16425-Humphreys-IB-Report_240513.pdf)



# Report of the FESAC Facilities Construction Projects Subcommittee

- This report assessed new or upgraded world-leading fusion and plasma science facilities over the next decade.
- The subcommittee determined that four facilities best served fusion: the blanket component test facility, the fuel cycle test facility, the fusion prototypic neutron source, and ITER.
- The subcommittee determined that eight other facilities are important and well-deserving of FES support.
- The four best-served facilities are currently being prioritized by SC.

<https://science.osti.gov/-/media/fes/fesac/pdf/2024/FCPREPORT--final-submittedapproved0424.pdf>

# Charge to FESAC on a Decadal Plan for the FES Program

- FESAC was asked to form a subcommittee to assess the FES program elements and their alignment with the FESAC Long Range Plan science drivers and the Bold Decadal Vision (BDV).
- The subcommittee is identifying opportunities for each program element to contribute to the LRP Fusion Materials and Technology and fusion plasma science gaps establishing the basis of a Fusion Pilot Plant.
- The subcommittee is identifying program elements that can be deferred with minimal or modest impact on the FES program to enable redirection in support of the LRP FM&T gaps and the BDV.
- The subcommittee will consider sustainable support for foundational research as synergies between discovery plasma science and fusion energy development, as well as the impact of its recommendations on workforce continuity, diversity of the workforce, and continuing U.S. leadership in fusion and plasma science.
- The subcommittee expects to submit its report to FESAC in January 2025.
- <https://science.osti.gov/-/media/fes/fesac/pdf/2024/FESAC-09-30-DECADAL-UPDATE-Presentation-FINAL.pdf>

# Disciplines Represented on FESAC

- Experimental Fusion Research - including tokamaks, stellarators, and alternate concepts
- Experimental Basic Plasma Science
- Fusion and Plasma Science Theory and Computation
- Fusion Nuclear Science and Materials Research
- High Energy Density Plasmas, Inertial Fusion Energy
- Industry

## Recent and Upcoming Meetings

- FESAC's most recent meeting was held virtually on **September 30, 2024**. The primary purpose of the meeting was to provide an update on the progress and plans of the Decadal Plan subcommittee.
- The next meeting is expected to be in **January 2025** during which FESAC will consider for approval the report of the Decadal Plan subcommittee.

# High Energy Physics

High Energy Physics Advisory Panel (HEPAP)  
Astronomy and Astrophysics Advisory Committee (AAAC)



Office of Science

[Energy.gov/science](https://www.energy.gov/science)



# HEP Advisory Committees

- Two Federal Advisory Committee (FACA) committees report to HEP.
  - The High Energy Physics Advisory Panel (HEPAP) is jointly chartered by DOE and NSF.
    - DOE is responsible for managing the committee.
    - HEPAP advises on aspects of High Energy Physics.
    - For more: <https://science.osti.gov/hep/hepap>
  - The Astronomy and Astrophysics Advisory Committee (AAAC) was created by Congress to help ensure coordination of the nations astro program among three agencies that support it: DOE, NASA, and NSF.
    - NSF is responsible for managing the committee.
    - AAAC advises HEP on our Cosmic Frontier program.
    - For more: <https://www.nsf.gov/mps/ast/aaac.jsp>

# How HEP uses HEPAP

- The HEPAP Charter lays out these responsibilities:
  - Periodic reviews of the program and recommendations of any changes considered desirable on the basis of scientific and technological advances or other factors such as current projected budgets and status of other international high energy physics efforts;
  - Advice on competing long-range plans, priorities, and strategies for the national high energy physics program, including relationships of higher energy physics with other fields of science;
  - Advice on recommended appropriate levels of funding to assure a leadership position and to help maintain appropriate balance among the various elements of the program; and
  - **Advice on any issues relating to the program as requested by the DOE Director, Office of Science, and the NSF Assistant Director, Mathematical & Physical Sciences Directorate.**
- Office of Science policy calls for HEPAP to form committee of visitors periodically.
- The Office of Science sometimes asks all SC FACA committees to answer a common charge.
  - Facilities Prioritization and International Benchmarking are examples of these.

# Current and Recent Charges

- Charge from Office of Science to HEPAP to form a Committee of Visitors to assess HEP Facilities Division
  - [Charge Letter](#)
  - The COV is expected to report the results of the evaluation of the HEP Facilities Division at the next HEPAP meeting.
    - December 5-6, 2024
- Charge to Office of Science Advisory Committees - Facilities Construction Projects
  - HEP requested HEPAP form a subpanel that would evaluate the science impact and readiness for construction of several proposed future facilities. This served as input to an SC wide project prioritization process.
  - [Charge Letter](#)
- Charge to Carry Out an International Benchmarking Study
  - The subpanel was to gauge the competitiveness and cooperative nature of the HEP program with other international programs (Europe, Japan,...).
  - [Charge Letter](#)
- Charge to form the 2023 Particle Physics Project Prioritization Panel (P5)
  - This is the periodic development of an HEP strategic plan that is conducted every 5-10 years.
  - [Charge Letter](#)

# A Selection of Recent Reports

- The P5 report is the basis for the HEP strategic planning.
  - 2023
- The International Benchmarking Study looked at the US HEP community competed and cooperated with HEP physicists around the world.
  - 2023
- An assessment of the progress in implementing the P5 plan.
  - 2020
- HEP Portfolio Review of Operating Experiments
  - 2017
- Assessment of workforce development needs in Office of Science research disciplines.
  - 2014
- There have also been multiple committee of visitor reports.

# Particle Physics Project Prioritization Panel (P5) Report

There have been multiple P5 reports since 2003. Full strategic plan reports were completed in

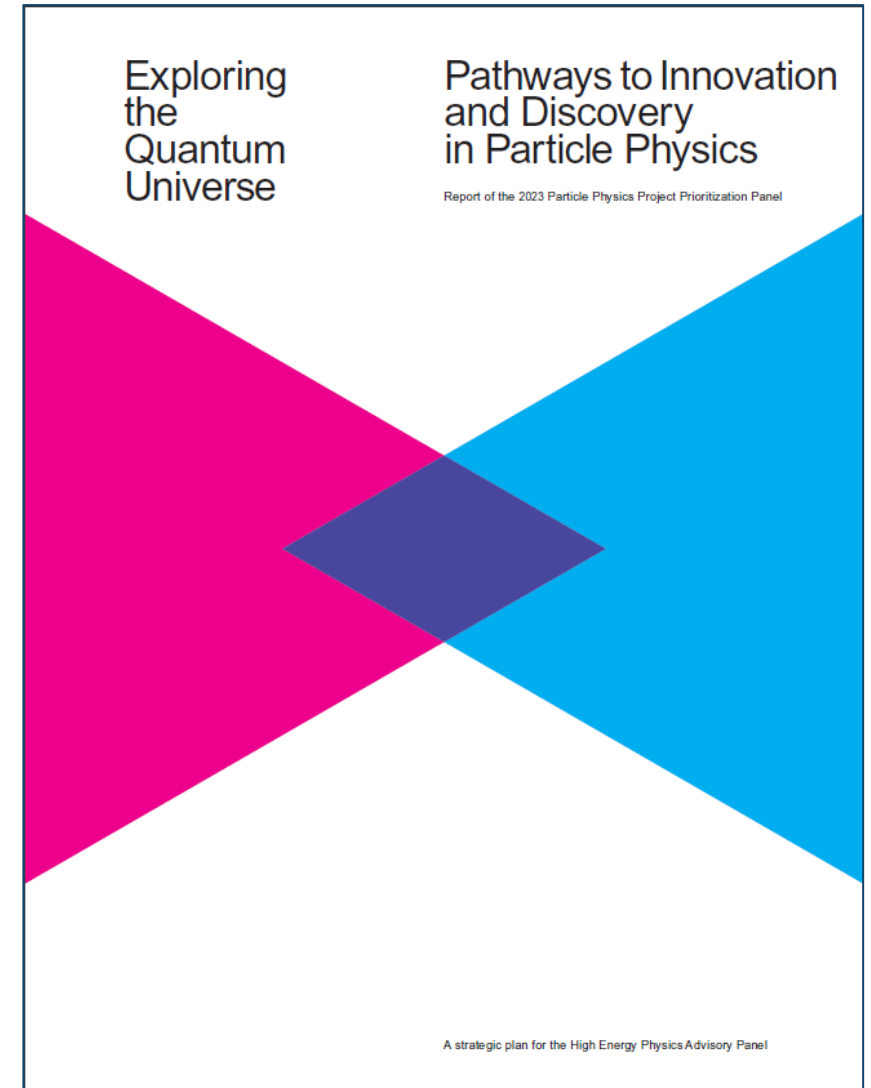
- 2003
- 2008
- 2014
- 2023

Additional specialized reports on narrower topics have also been done.

- 2004
- 2007
- 2010

All reports are available at

<https://science.osti.gov/hep/hepap/Reports>



# International Benchmarking Study

## Key Finding

Frontier research in particle physics necessitates international collaboration and cooperation. The combined expertise and resources from nations around the world enable discoveries and technological advances impossible to achieve by any single nation. It is the global particle physics program that collectively addresses the burning scientific questions across the breadth of the field.



# HEPAP Membership

- HEPAP members are appointed by the Under Secretary for Science and Innovation (or designee) and the Director of the NSF.
- There are approximately 20 members to serve on the HEPAP.
- Members are experts in their respective fields and appointed as special Government employees, regular Government employees or representatives of entities including, but not limited to, research facilities and academic institutions, should the HEPAP's task require such representation.
  - Particle physicists both experimental and theoretical.
  - Astrophysicists both experimental and theoretical
  - Accelerator physicists
  - Experts in Computation with an emphasis in Machine Learning and QIS
  - Experts in Project Management who are usually also particle physicists.
- Ex-officio non-voting members may be appointed, as necessary.
- The current list of members is always available at the [HEPAP website](#).

# Diversity of the HEPAP membership

- HEPAP has 17 Special Government Employee (SGE) members, 2 Foreign Representatives and 1 Ex-Officio member
- HEP aspires to have diverse panel that represents U.S. society.
- Under-represented minorities are on HEPAP:
  - Black/African American
  - Hispanic
  - Asian
- Institutional Distribution:
  - 17 universities, 4 national labs
    - 4 MSIs
    - 6 from EPSCoR states
- Geographical Distribution:
  - 3 Northeast, 5 South, 5 Midwest, 3 West
- Technical Distribution
  - 3 Cosmic Frontier, 4 Intensity Frontier, 5 Energy Frontier, 4 Theory, 2 Accelerator Research, 2 Detector Research



# Recent and Upcoming Meetings

- Last Meeting
  - May 9-10, 2024
  - Hilton Rockville
    - 1750 Rockville Pike, Rockville, MD 20852-1699
- Next Meeting
  - December 5-6, 2024
  - Hilton Rockville
    - 1750 Rockville Pike, Rockville, MD 20852-1699

# How HEP uses AAAC

- Congress established AAAC to advise NSF and NASA with the National Science Foundation Authorization Act of 2002
- The Department of Energy High-End Computing Revitalization Act of 2004 added DOE to the AAAC's responsibilities.
  - NSF is the lead agency for AAAC & responsible for meetings, members and Federal Register notices.
- Charged to:
  - "Assess, and make recommendations regarding, the coordination of astronomy and astrophysics programs of NSF, DOE and NASA.
  - Assess the status of the agencies' activities relating to the NAS/NRC Decadal Survey on Astronomy and Astrophysics.
  - By March 15 of each year, transmit a report on the AAAC's findings and recommendations to the
    - NSF Director, the NASA Administrator, the Secretary of Energy
    - Committee on Science of the House of Representatives
    - Committee on Commerce, Science, and Transportation of the Senate
    - Committee on Health, Education, Labor, and Pensions of the Senate

# AAAC Membership

AAAC has 13 members: 4 nominated by NSF, 4 by NASA, 3 by DOE, 2 by OSTP;

- Members serve 3-year terms which start in September
- One DOE member rolls off and one is nominated/appointed each year (may change due to extensions)

## **Process:**

- HEP program managers involved in the AAAC consider potential members and agree on a short list.
- The AAAC agency POC's meet and discuss their potential members & develop overall plan for nominations
- DOE, NASA and OSTP nominate the members (via a letter to the NSF Director)
- As the responsible federal agency, NSF makes the official appointments.

## **Membership considerations:**

- Ensure overall balance (diversity, equity, inclusion), geographic distribution, and expertise of all members.
- Ensure the DOE members have expertise in areas we have interests in, which is a subset of the full Astronomy & Astrophysics fields → dark energy, cosmic microwave background + indirect detection of dark matter, dark ages, cosmic/gamma rays.

# Recent AAAC Subpanels

Not all subpanels report to DOE

2024: Lab Astrophysics Task Force (charged by NSF and NASA)

2019: Gemini Blanco Soar - Multi-messenger Astrophysics Assessment Group (NSF, DOE)

2017: Cosmic Microwave Background Stage IV - Concept Definition Task Force (NSF, DOE)

2008: Exo-Planet Task Force (NASA, NSF)

2007: Dark Matter Science Assessment Group (NSF, DOE) - joint with HEPAP

2006: Dark Energy Task Force (NSF, DOE) - joint with HEPAP

2005 Task Force for CMB Research (NSF, DOE) - joint with HEPAP

2005: Giant Segmented Mirror Telescope (GSMT) and James Webb Space Telescope (JWST) Synergy (NASA, NSF)

# Annual Reports

The AAAC is required to do an annual report. The March 2024 report had 7 major recommendations, which were similar to those in previous years. HEP responded to these in the talk at the September 2024 meeting.

- **Building and Sustaining a Technologically Innovative Workforce Recommendation**
  - DOE: Workforce development opportunities and efforts were described, including RENEW, FAIR, graduate student fellowships, visits to HBCU's and attendance at conferences.
- **Prioritizing Laboratory Astrophysics to Advance Discovery (primarily to NSF, NASA)**
  - DOE: Presented efforts and opportunities carried out by DOE/NP and DOE/FES.
- **Time Domain And Multi-Messenger (TDAMM) Astrophysics Recommendation**
  - DOE: Not our science goals but we partner on projects that produce data that can be used for these studies. Data are made public after an appropriate proprietary period.
- **Establish Consistent Demographic Standards: 4th year recommending consistent data collection and reporting to improve DEI; see successful examples from NIH and STScI; agencies should get help from OSTP if needed:**
  - DOE: Described the many efforts going on at WH, OSTP and in cross-agency groups. Details will be provided when available. Pointed them to the Snowmass and laboratory study results that are posted online.

# Annual Reports

- Progress on Astro2020 Decadal Recommendations - CMB-S4: Coordinate between NSF-OPP, NSF-AST, DOE-HEP and CMB-S4; continue to explore and implement renewable energy at the sites
  - DOE: The agencies continue to meet regularly to discuss status and plans. After the May 2023 announcement by NSF-OPP that there can be no new significant instrumentation or efforts at the South Pole before the end of the decade, the agencies have jointly charged CMB-S4 to develop a revised project concept and this is in process.
- Astronomical Data Infrastructure: Form a steering committee to establish a model for data and software infrastructure and review the 2014 Principles of Access
  - DOE will provide support to NSF and NASA, who are leading this effort; described the DOE/HEP Center for Computational Excellence group to address these issues and efforts across all our project, with help from ASCR.
- Energy Sustainability: NSF should share their NOIRLab experiences and strategies on energy sustainability with DOE; pursue green energy capabilities
  - DOE: Described the overall DOE efforts and programs in energy efficiency and sustainability - overall and within SC; pointed to some specific DOE/SC lab www sites describing their efforts.

# Recent and Upcoming Meetings

- Last Meeting
  - Sept. 19-20, 20214
  - National Science Foundation, Alexandria, VA + teleconference
- Next Meeting
  - November 19, 2024
  - National Science Foundation, Alexandria, VA + teleconference

# Nuclear Physics

Nuclear Science Advisory Committee (NSAC)



Office of Science

[Energy.gov/science](https://energy.gov/science)

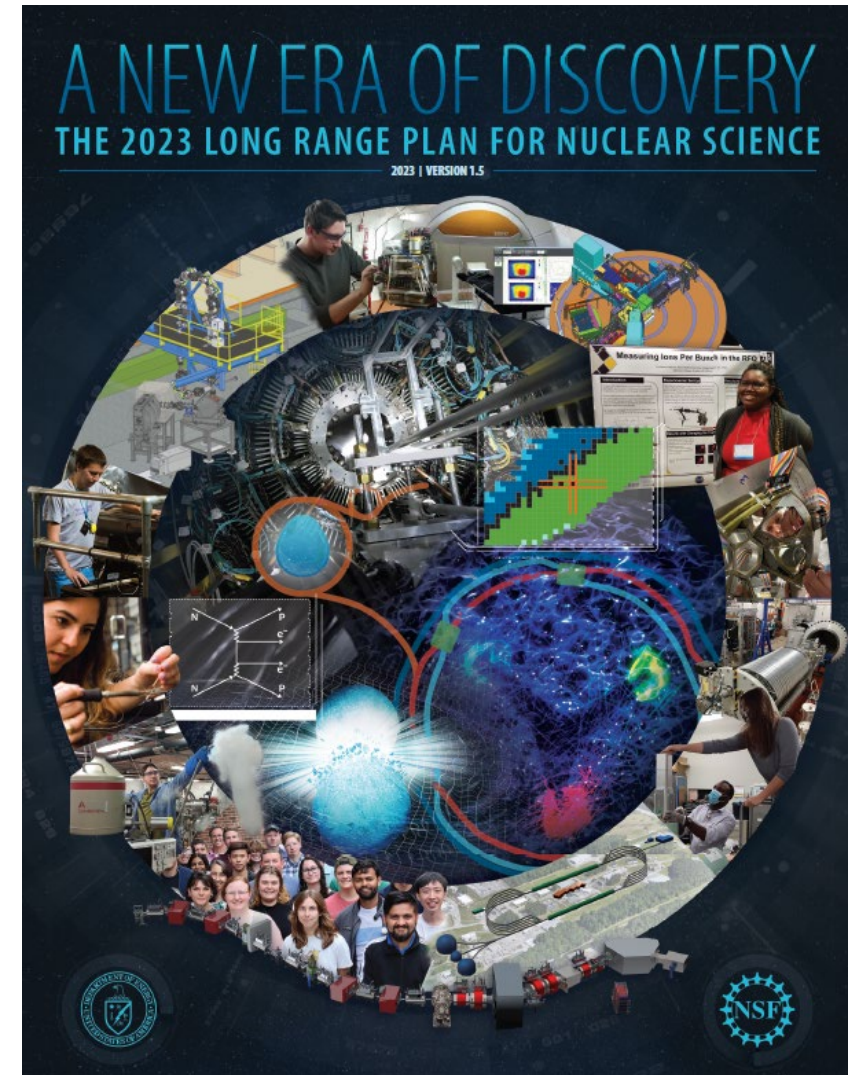


# How NP uses the Nuclear Science Advisory Committee (NSAC)

- NSAC helps NP ensure that federal investments in nuclear science reflect the national interest and maintain U.S. leadership.
- This federal advisory committee responds to charges from DOE-SC and NSF, the primary funders of the major programs, accelerators, instruments, and experiments that enable nuclear science research in the U.S.
- NSAC has used subcommittees, Committees of Visitors (COV), to assess the efficacy and quality of the processes used to solicit, review, recommend, monitor, and document funding actions and to assess the quality of the resulting NP portfolio.
- NSAC provides information from the community for NP to consider for research funding plans and future priorities.

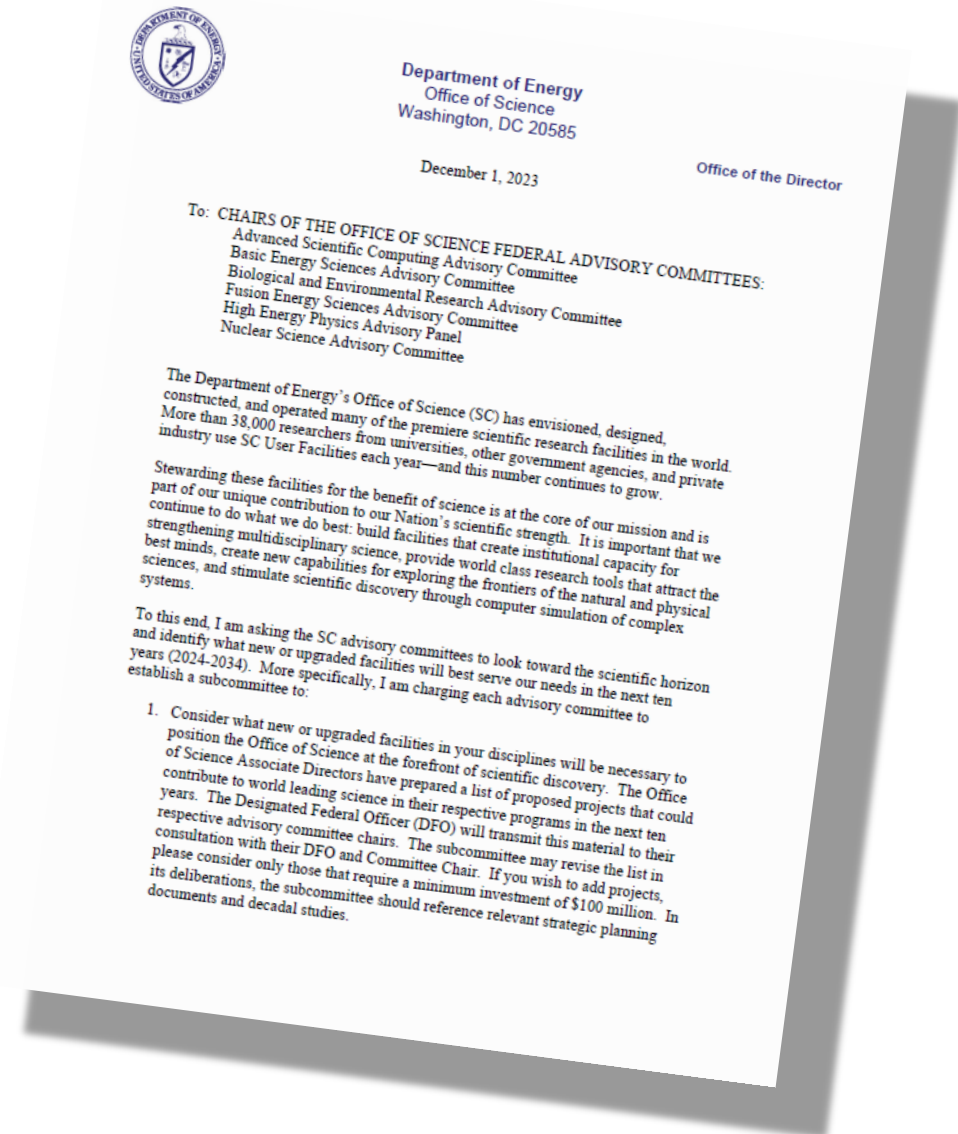
# The 2023 NSAC LRP: A New Era of Discovery

- Charge to NSAC July 22, 2022, to “conduct a new study of the opportunities and priorities for US nuclear physics research and recommend a long-range plan (LRP).”
- The resulting LRP was produced by a panel of nuclear scientists who gathered community input and decided priorities for research, facility construction, and workforce development.
- 21 sites hosted events for the October 6, 2023 release.
- [NSAC Long Range Plan](#)



# Charge to Office of Science Advisory Committees – Facilities Construction Projects

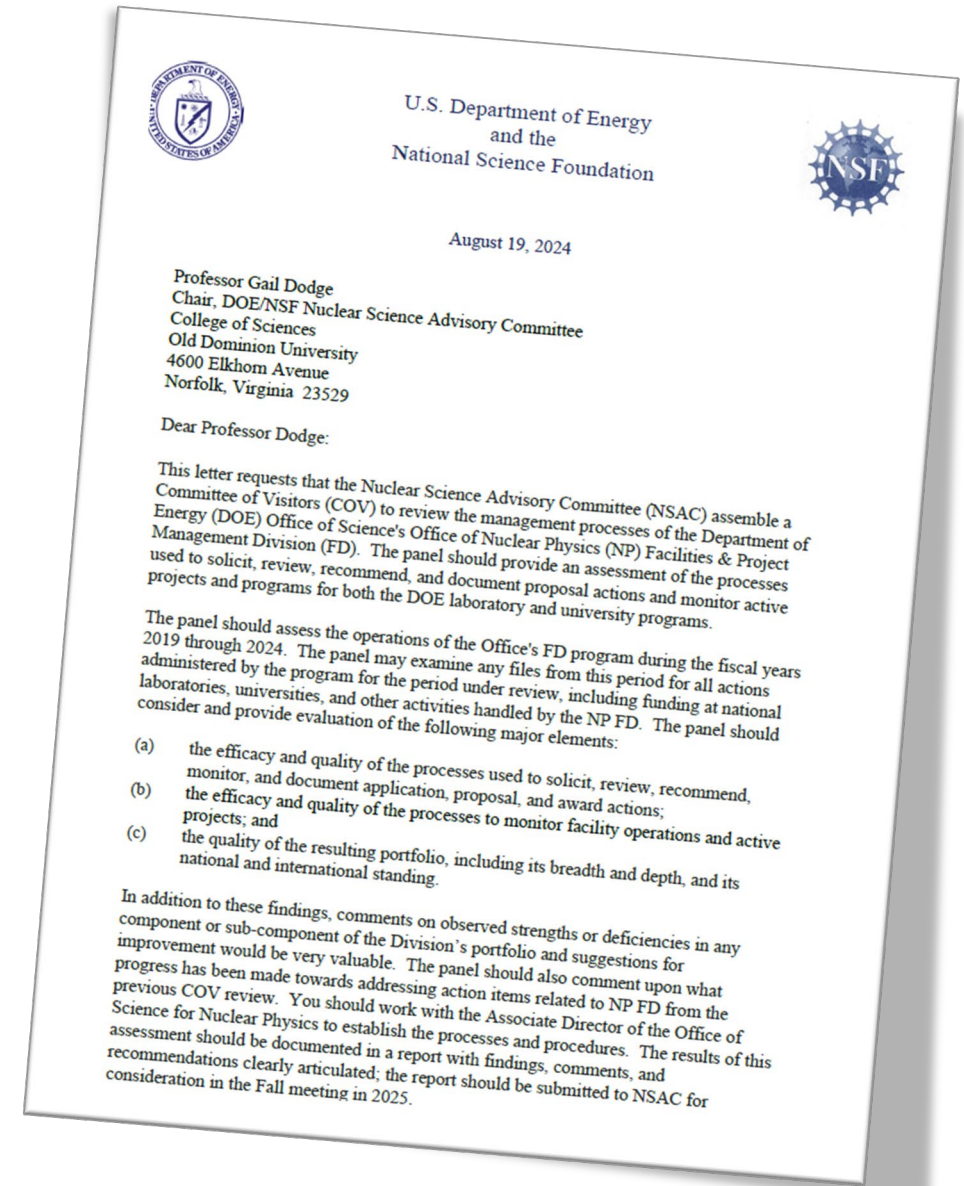
- Charge to NSAC, December 1, 2023 to “look toward the scientific horizon and identify what new or upgraded facilities will best serve our needs in the next ten years (2024-2034).... Consider what new or upgraded facilities in your disciplines will be necessary to position the Office of Science at the forefront of scientific discovery...”
- Report submitted to DOE-SC May 15, 2024.
- [Major NP Facilities for the Next Decade](#)



# Current Charge

## Charge to NSAC, August 19, 2024:

“assemble a ...COV to review the management processes of the...DOE-NP Facilities & Project Management Division (FD)... The panel should assess the operations of the FD program during the fiscal years 2019 through 2024... The results of this assessment should be documented in a report with findings, comments, and recommendations clearly articulated; the report should be submitted to NSAC for consideration in the Fall meeting in 2025.”



# Disciplines Represented on NSAC

Artificial Intelligence/Machine Learning for NP

Accelerator Research and Development

Computational Nuclear Physics

Fundamental Symmetries

Heavy Ions

Medium Energy

Nuclear Data

Nuclear Structure and Nuclear Astrophysics

Quantum Information Science

Theoretical Nuclear Physics

# Membership Details

- NSAC Chair – [Gail Dodge](#), Old Dominion University
- Proposing for 2025:
  - 18-20 full members
  - 2 ex-officio (American Physical Society, American Chemical Society)
- New Members appointed to 3-year terms
- Typically, NSAC members serve a single 3-year term (Chair is an exception)
- Designated Federal Officer – [Linda Horton](#)
- Committee Manager – [Brenda May](#)

# Recent and Upcoming Meetings

- April 6, 2024
- September 12, 2024
- Spring 2025 TBA

[NSAC meeting schedule and minutes](#)