Informational Webinar:
Energy Frontier Research Centers (EFRCs) Funding Opportunity Announcement (FOA)
DE-FOA-0003258

Energy Frontier Leadership Team
Office of Basic Energy Sciences
Feb 1, 2024

FOA Issue Date	January 22, 2024
Submission Deadline for Pre-Applications	February 28, 2024 at 5:00PM Eastern Time A Pre-Application is required
Pre-Application Response Date	March 27, 2024
Submission Deadline for Applications	May 8, 2024 at 11:59PM Eastern Time

Disclaimer: This presentation summarizes the contents of the FOA. Nothing in this webinar is intended to add to, take away from, or contradict any of the requirements of the FOA. If there are any inconsistencies between the FOA and this presentation or statements from DOE personnel, the FOA is the controlling document.

U.S. DEPARTMENT OF ENERGY | Office of Science

Questions & Answers

Please submit questions using Zoom Q&A window, which should be accessible at the bottom of your zoom window

If your question is not answered today, or you have additional questions, please submit via www.FedConnect.net

We will post video and slides on the web

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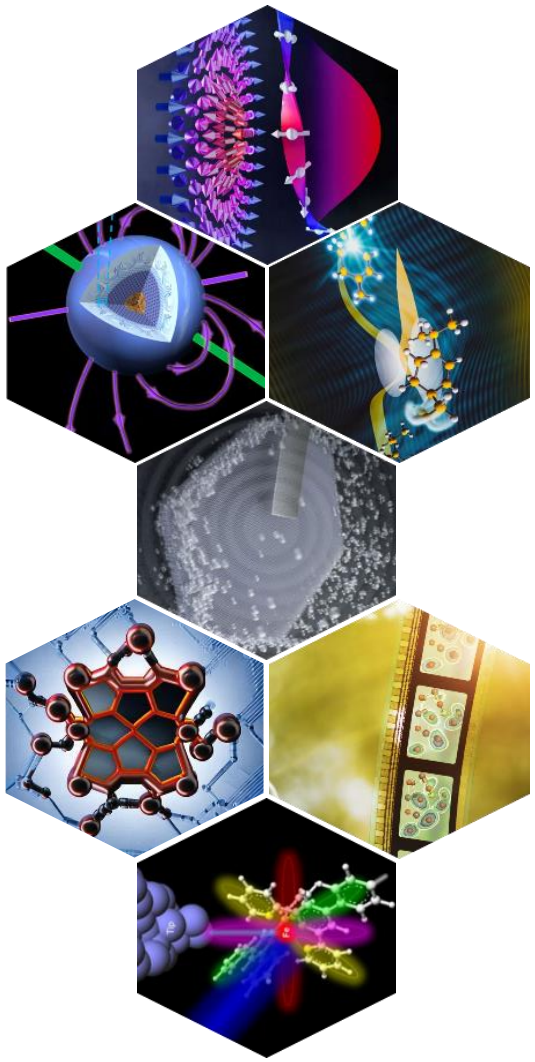
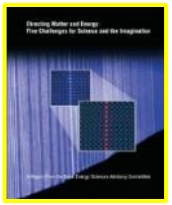
Basic Energy Sciences: Understanding Matter and Energy at Electronic, Atomic, and Molecular Levels

BES fulfills its mission through:

- Supporting **basic research**
  - "Grand Challenge" science
  - Discovery and design of materials and chemical processes that underpin a broad range of energy technologies
- Operating **world-class scientific user facilities** in X-ray, neutron, and nanoscale science
- Managing **construction and upgrade projects** to maintain **world-leading** scientific user facilities
- Ensuring **broad participation** in the research portfolio and user communities



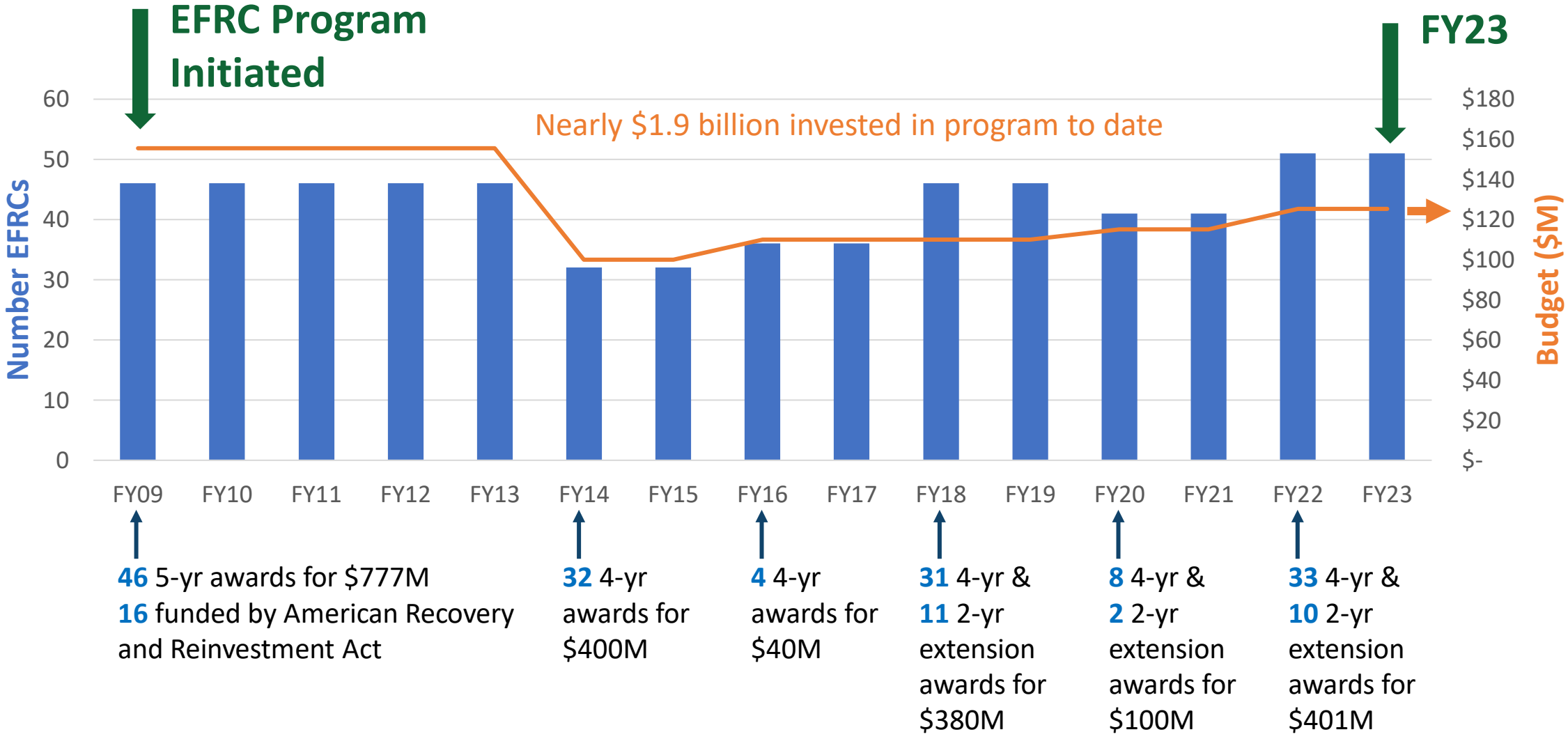
Energy Frontier Research Centers (EFRCs)



- **HISTORY**: Based on strategic planning workshops since early-2000s with over 2,000 participants
  EFRC Program was proposed in 2008; funding started in 2009
- **ATTRIBUTES**:
  - Couples "**basic research needs**" for energy applications and "**grand-challenge science**"
  - Brings the academic community and national labs together to enable transformative **team science** with relevance to energy science and technology
  - Demonstrates **scientific productivity and world leadership**, and makes progress in ways that would not have been likely through individual efforts
  - Develops a diverse and inclusive **next generation of scientists** with a passion for energy science.

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

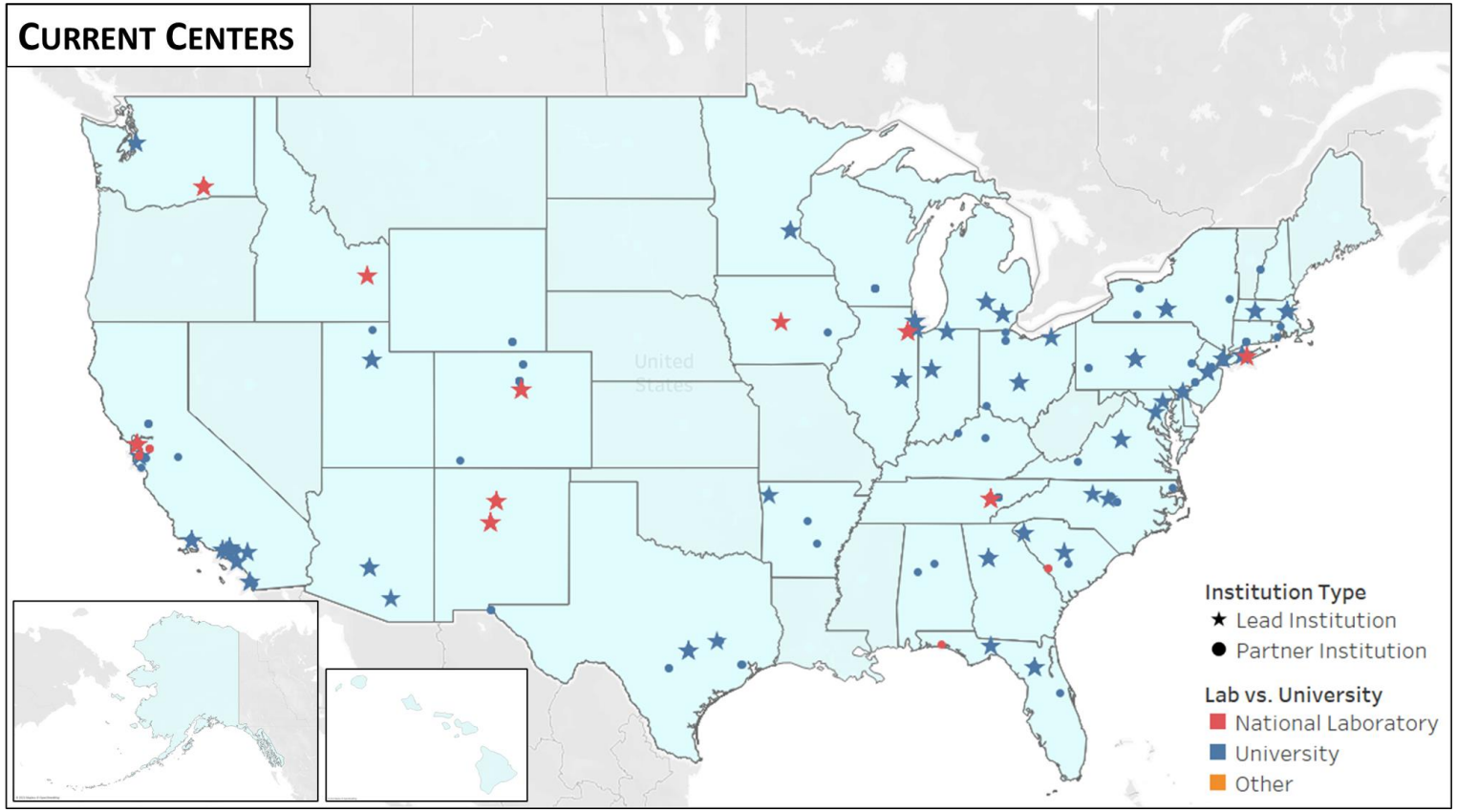
EFRC Awards History



Current EFRC Awards (2023)

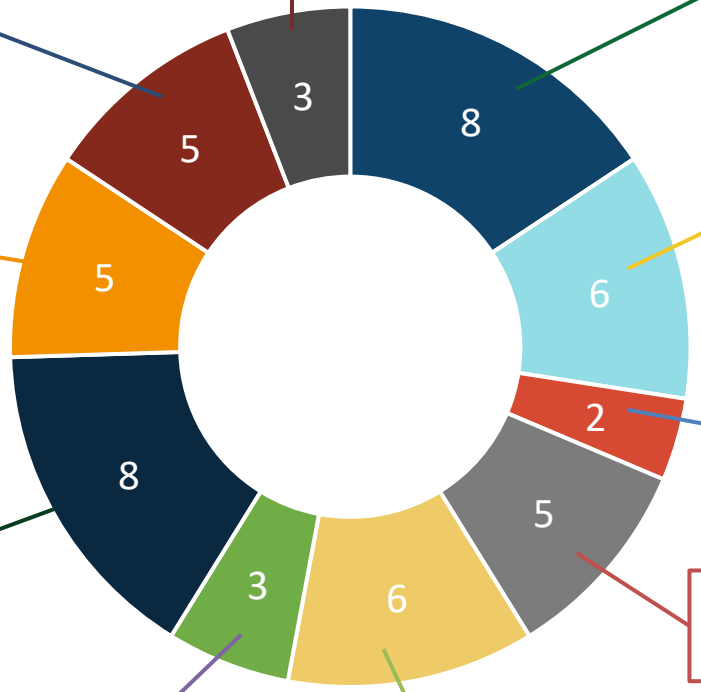
Current EFRC Members

- ~820 senior investigators
- ~1,560 postdoctoral researchers, graduate students, undergraduate students, & technical staff
- 122 institutions in 34 states + D.C.



Currently, there are 51 active Energy Frontier Research Centers (EFRCs).

Topical Distribution of 51 Current EFRC Awards



Subsurface – New geophysics and geochemistry for enhanced geothermal and oil/gas applications.

Advanced Manufacturing – Foundational science underpinning materials and chemical synthesis for broad energy applications.

Solar – Cutting-edge innovation for the capture of solar energy and conversion into electricity and fuels.

Energy Storage – New materials and chemistries for next-generation electrical energy storage.

Separations – Advances to enhance carbon dioxide removal and address energy-water issues.

Environmental Management – Scientific understanding to improve the cleanup and long-term storage of nuclear waste.

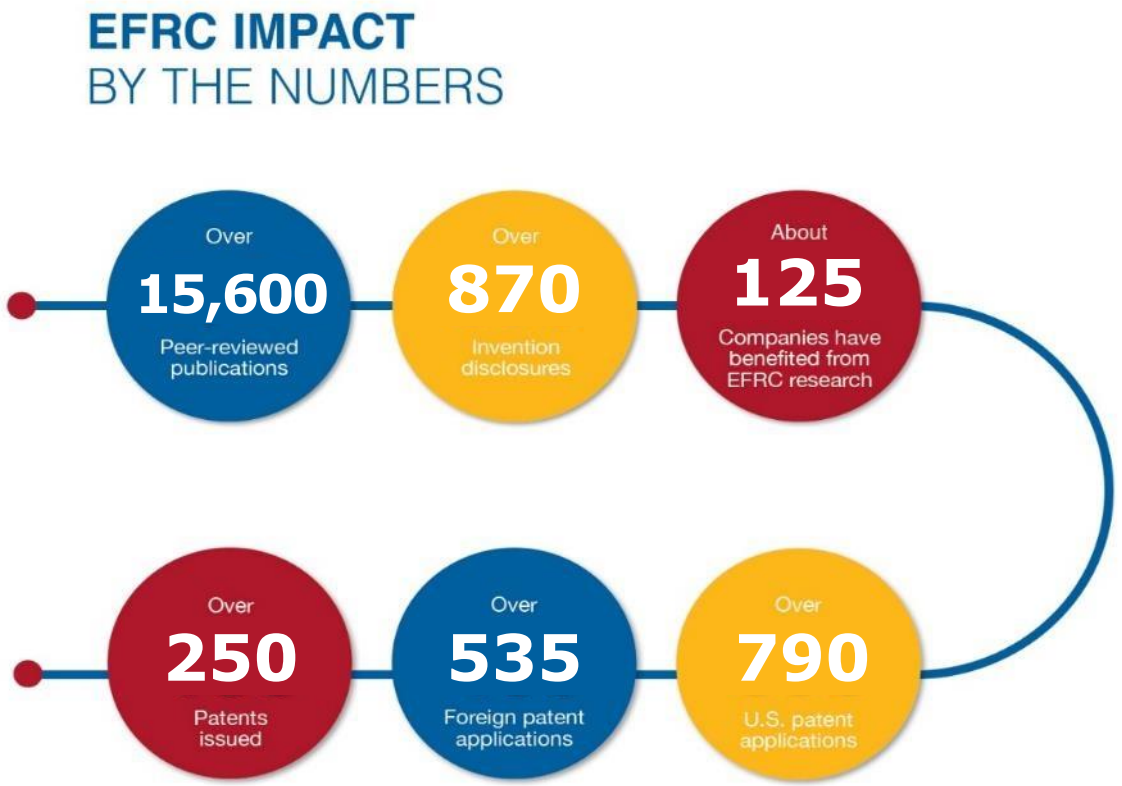
Quantum Information Science – Novel materials and phenomena for innovative electronics, sensors, and communications.

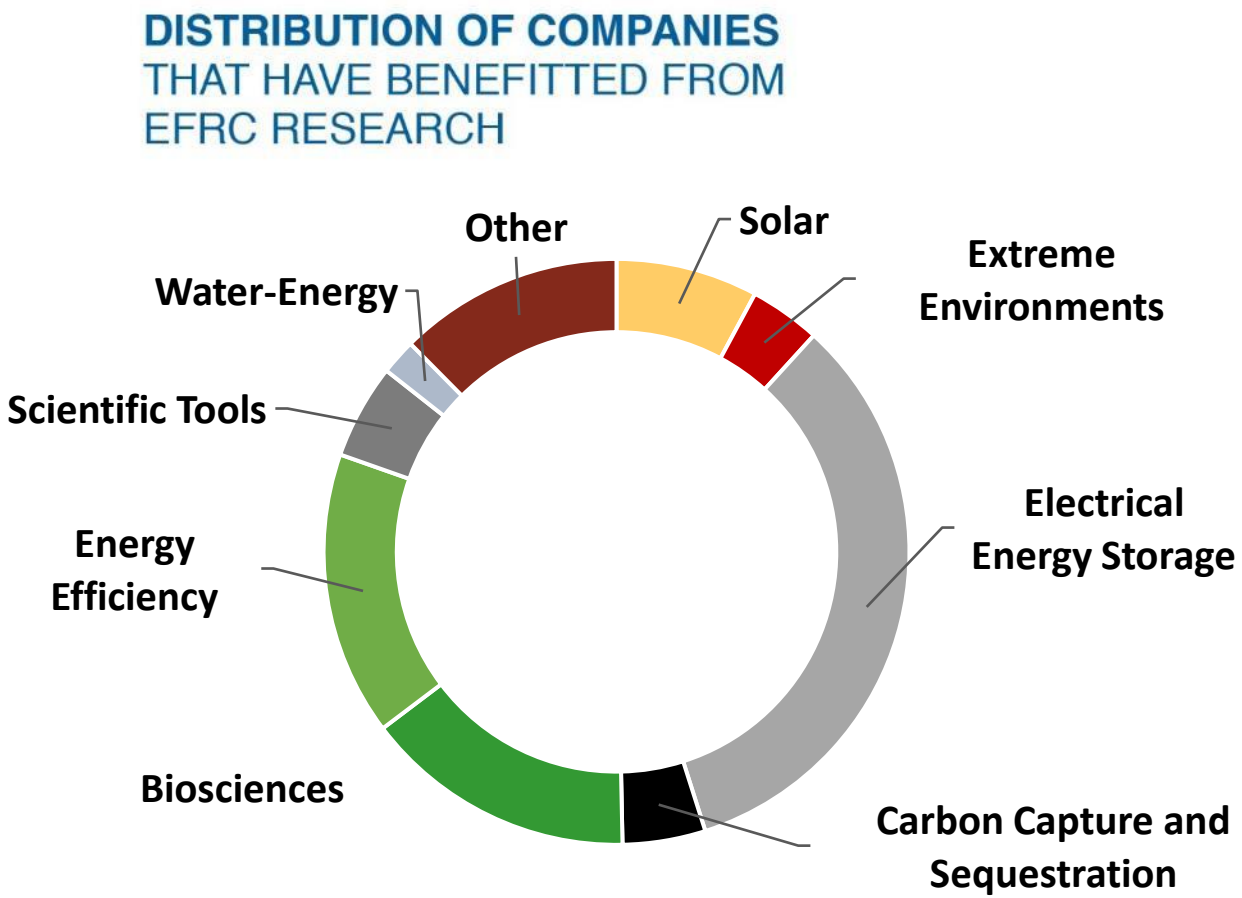
Hydrogen – Foundational science for hydrogen applications.

Nuclear – Advanced fuels and radiation-tolerant materials for future nuclear energy.

Microelectronics – Foundational science to reimagine the future of microelectronics.

EFRC Impact – Publications, IP, Interactions





~32% Start-ups
~17% Mid-sized companies
~51% Large companies

Publications and Companies Updated May 2023; IP updated January 2024

“Good Practices” for a Successful EFRC

A compelling mission
that everyone understands and embraces

Adaptive management
to evaluate progress and redirect resources in response to promising new opportunities

High-risk research
that would not be attempted by individual investigators

Synergy
among researchers working toward collectively developed objectives

Accelerated success and failure
enabling adjustments and key decisions that lead to the most impactful science

Training the next generation of scientists
in collaborative research, including students, postdocs and other early-career scientists

EFRC Good Practices: https://science.osti.gov/-/media/bes/efrc/pdf/history/other/EFRC-Ref---Good-Practices-2017-12-v2.pdf

Energy Frontier Research Center FY 2024 FOA: Scientific Scope (See Sec. I of the FOA)

- Applications from multi-disciplinary teams will 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
- See Sec. I of the FOA for links to the workshop and roundtable reports and which Priority Research Directions (PRD) or Priority Research Opportunities (PRO) should be addressed.
- The FOA emphasizes the following Science Focus Areas for <u>New</u> Proposals:
  - Co-design of materials and processes to revolutionize microelectronics and/or QIS fabrication
    - PRD 5 from the Advanced Manufacturing report (Co-Design Materials, Processes, and Products to Revolutionize Manufacturing) with a focus on either Microelectronics, and Quantum Information Systems
    - Additional information about basic science challenges in these two areas can be found in the Microelectronics and QIS reports
  - Environmental Management (PRD 1: Complex Speciation and Reactivity)

Energy Frontier Research Center FY 2024 FOA: Scientific Scope (See Sec. I of the FOA)

- For existing EFRCs eligible for renewal in FY 2024, the FOA specifies the following Science Focus Areas:
  - Advanced Manufacturing
  - Quantum Information Systems
    - PRO 3: Discover Novel Approaches for Quantum-to-Quantum Transduction
    - PRO 4: Implement New Quantum Methods for Advanced Sensing and Process Control
  - Environmental Management
    - PRD 1: Elucidating and exploiting complex speciation and reactivity far from equilibrium

Energy Frontier Research Center FY 2024 FOA: Key Elements

- FOA solicits both new and renewal applications
- Eligible Applicants: All types of domestic entities, including for example, universities/colleges, non-profit organizations, for profit organizations, DOE National Laboratories (see Sec. III of the FOA)
  - Other Federal agencies or FFRDCs may participate as partners (not lead institution)
- All applications are expected to involve multi-disciplinary research teams; multi-institutional applications are encouraged
- SC encourages applications led by Emerging Research Institutions (ERIs) and Minority Serving Institutions (MSIs), which include Historically Black Colleges and Universities (HBCUs) that are underrepresented in the SC portfolio and applications led by individuals from groups historically underrepresented in STEM. In addition, applications are encouraged from teams that include the participation of MSIs and ERIs, as well as researchers from groups historically underrepresented in STEM.

Energy Frontier Research Center FY 2024 FOA: Award Information (See Sec. II of the FOA)

- **Estimated funding**: DOE anticipates that, subject to the availability of future year appropriations, a total of up to $100 million in current and future fiscal year funds will be used to support awards under this FOA
- **Period of performance**: DOE anticipates making awards with a project period of up to four years
- **Maximum/minimum award size**: DOE anticipates that award sizes will range from $2 million per year to $4 million per year. For new awards DOE will likely award less funding in Year 1 of the four-year project period than in subsequent years.
- **Expected number of awards and award size**: The number of awards and award sizes will depend on the number of meritorious applications and the availability of appropriated funds
- **Types of award instruments**: DOE anticipates awarding grants, interagency agreements, and National Laboratory authorizations under this FOA

Energy Frontier Research Center FY 2024 FOA: Pre-applications (See Sec. IV.B of the FOA)

- Pre-applications are **required**, with a limit of **2 per lead institution**
- Pre-applications may only be submitted by a user at the PI's institution with the "Submit to DOE" privilege in PAMS. A PI may draft a pre-application but will only be able to submit the pre-application for institutional countersignature.
- Program Managers may evaluate all or some portion of pre-applications to determine their competitiveness within a scientific topic. Any such review will be conducted by no fewer than three federal program managers based on the following criteria:
  - Responsiveness to the objectives and requirements of the FOA
  - Scientific and technical merit
  - Appropriateness of the proposed research approaches
  - Likelihood of scientific impact
- Reviews within a topical field will be a comparative review with priority given to scientifically innovative and forward-looking basic research with the highest likelihood of success as an application
- Applicants with the highest rated pre-applications will be encouraged to submit applications; others will be discouraged from submitting applications

Energy Frontier Research Center FY 2024 FOA: Key Dates

- Pre-application due date: February 28, 2024, by 5:00PM Eastern Time
  - Pre-applications must be submitted via the DOE Portfolio Analysis and Management System (PAMS)
- Pre-application response date: March 27, 2024
  - DOE will notify all pre-applicants about whether or not they are encouraged to submit an application
  - DOE expects to encourage approximately 40 applications, with the exact number based on the pre-application review
- Application due date: May 8, 2024, by 11:59PM Eastern Time
  - Applications that have not been encouraged by DOE may be declined without merit review
  - Applications must be submitted via www.grants.gov
- DOE anticipates that award selection will be completed by the 4th quarter of Fiscal Year 2024 (July – Sept) and that awards will be made in Fiscal Year 2024

Checklist for avoiding common errors: Pre-applications

(not a comprehensive list of all FOA requirements)

- **Scope**: Address **priority research directions/opportunities** in reports referenced in Section I of the FOA; no applied research or technology development
- **Table**: FOA requires a table of "individuals who should not serve as reviewers" with the pre-application (guidance and template link are in Section VIII.A.10 of the FOA). You must submit the table as a separate file, preferably in Excel format. Pre-applications without this table will be discouraged without review.
- **Science**: Pre-application should contain a clear and concise statement of the scientific mission and at least one scientific hypothesis
- Pre-applications are limited to **five pages**
- Each pre-application must designate a **single EFRC Director**
- Submit pre-application **via PAMS**, not via www.grants.gov (due Feb. 28 by 5pm ET)
- **Late submissions** of pre-applications are rarely accepted (see Sec. IV.F.4 of the FOA)

Checklist for avoiding common errors: Applications

(not a comprehensive list of all FOA requirements)

- **Tables**: FOA requires two tables with application attached to field 12 of the SF-424 Research and Related Other Project Information form. Applications without these two tables may be declined without review:
  1. List of Individuals Who Should Not Serve as Reviewers (FOA p. 33)
  2. Summary budget (FOA p. 23)
- **Budget**: The lead institution requests more funding from DOE than any other team member for the life of the award. Note that we make awards to institutions, not Directors.
- **Biographical sketch** and list of **current/pending support**
  - Required for each senior/key personnel; follow instructions in FOA, including the use of the NSF format; do not attach a list of individuals who should not be used as merit reviewers as part of the biographical sketch; ensure complete list of activities regardless of source of funding
- EFRC Director must be the same as on the pre-application
- PIER Plan and Data Management Plan
- Submit application via www.grants.gov, not via PAMS (due May. 8 by 11:59pm ET)
- **Late submissions** of applications are rarely accepted (see Sec. IV.F.4 of the FOA)

Promoting Inclusive and Equitable Research Plan

- A requirement started last year for all SC proposals is the submission of a **Promoting Inclusive and Equitable Research (PIER)** plan.
- The PIER plan reflects the SC commitment to Diversity, Equity, Inclusion, and Accessibility (DEIA).
- Reviewers will have to answer an additional merit review criterion on the "Quality and Efficacy of the Plan for Promoting Inclusive and Equitable Research."
- Additional information on the PIER plan is included in the FOA and in https://science.osti.gov/grants/Applicant-and-Awardee-Resources/PIER-Plans

Where to find more information

- **EFRC webpage**: http://science.osti.gov/bes/efrc/
- **FOA**: https://science.osti.gov/bes/Funding-Opportunities
- **EFRC good practices document**: https://science.osti.gov/-/media/bes/efrc/pdf/history/other/EFRC-Ref---Good-Practices-2017-12-v2.pdf
- This **webinar** is being recorded; slides and the recording will be posted on the FOA page above
- **Questions about the FOA** must be submitted via the FedConnect portal: https://www.fedconnect.net/
  - Register with FedConnect and respond as an interested party to submit questions, and to view responses to questions

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