How to Read and Respond to a Solicitation

https://science.osti.gov/officehours

U.S. DEPARTMENT OF **ENERGY** | Office of Science

Energy.gov/science

Office of Science Statement of Commitment & other Guidance

◆ **SC Statement of Commitment** – SC is fully and unconditionally committed to fostering safe, diverse, equitable, inclusive, and accessible work, research, and funding environments that value mutual respect and personal integrity. https://science.osti.gov/SW-DEI/SC-Statement-of-Commitment

◆ **Expectations for Professional Behaviors** –SC's expectations of all participants to positively contribute to a professional, inclusive meeting that fosters a safe and welcoming environment for conducting scientific business, as well as outlines behaviors that are unacceptable and potential ramifications for unprofessional behavior. https://science.osti.gov/SW-DEI/DOE-Diversity-Equity-and-Inclusion-Policies/Harassment

◆ **How to Address or Report Behaviors of Concern**– Process on how and who to report issues, including the distinction between reporting on unprofessional, disrespectful, or disruptive behaviors, and behaviors that constitute a violation of Federal civil rights statutes. https://science.osti.gov/SW-DEI/DOE-Diversity-Equity-and-Inclusion-Policies/How-to-Report-a-Complaint

◆ **Implicit Bias** – Everyone has implicit biases. If not recognized and mitigated, implicit bias can negatively impact the quality and inclusiveness of scientific discussions that contribute to a successful meeting. https://kirwaninstitute.osu.edu/article/understanding-implicit-bias

U.S. DEPARTMENT OF ENERGY | Office of Science

Over **29,000 r**esearchers supported at more than **300** institutions and **16** DOE national laboratories

Our Mission:

Deliver scientific discoveries and major scientific tools to transform our understanding of nature and advance the energy, economic, and national security of the United States.

Steward **10** of the 17 DOE national laboratories

Nearly **40,000** users of **28** Office of Science scientific user facilities

$8.2B – FY 24 Enacted
$8.6B – FY 25 Request

U.S. DEPARTMENT OF ENERGY | Office of Science

Energy.gov/science

The Office of Science (SC) Research Portfolio

Advanced Scientific Computing Research	• Delivering world leading computational and networking capabilities to extend the frontiers of science and technology
Basic Energy Sciences	• Understanding, predicting, and ultimately controlling matter and energy flow at the electronic, atomic, and molecular levels
Biological and Environmental Research	• Understanding complex biological, earth, and environmental systems
Fusion Energy Sciences	• Supporting the development of a fusion energy source and supporting research in plasma science
High Energy Physics	• Understanding how the universe works at its most fundamental level
Nuclear Physics	• Discovering, exploring, and understanding all forms of nuclear matter
Isotope R&D and Production	• Supporting isotope research, development, production, processing and distribution to meet the needs of the Nation

Office of Science R&D Funding

Notice of Funding Opportunities (NOFOs)

- https://science.osti.gov/Funding-Opportunities
- Announced on grants.gov and via GovDelivery (sign up at https://energy.gov/science)
- Read each announcement carefully to understand who can apply and other restrictions/requirements
- Depending on the announcement, supports 2–5-year projects
- University researchers can apply directly (please coordinate with your organization's sponsored-research office)
- Subcontracting is often permitted, and sometimes collaborative applications are permitted

Early Career Research Program

- https://science.osti.gov/early-career
- Research grants for five years
- May move with PI to a new institution
- Eligible within 10 years of Ph.D. (can apply up to three times)
- University-based researchers receive about $175,000/year
- Solicitation generally released in the summer, pre-applications generally due in the fall

DOE National Laboratory Announcements

- https://science.osti.gov/Funding-Opportunities (bottom of the page)
- Open only to DOE Laboratories
- Often allow subcontracts to support collaborators at other organizations

Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)

- https://science.osti.gov/sbir
- Grants to for-profit US businesses with 500 or fewer employees (including affiliates)
- Phase I: ~$200k for 6-12 months, Phase II: ~$1M for 2 years
- Subcontracting is permitted, STTR: requires collaboration with a research institution
- Topics released in the summer, pre-applications due in the fall

Graduate Fellowships and More
See https://science.osti.gov/wdts/ and http://www.krellinst.org/csgf/ for SCGSR, CSGF, SULI, etc.

Office of Science User Facilities

FY 2025
28 scientific
user facilities
~40,000 users
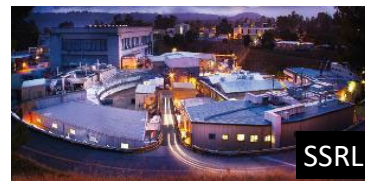
In addition to DOE/SC providing financial assistance, DOE/SC user facilities also provide research-enabling capabilities to the public, generally free of charge for non-proprietary work using peer-reviewed proposal processes. For more information, see https://science.osti.gov/User-Facilities.

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Additional Information on Each Program's Website

https://science.osti.gov/Funding-Opportunities/Find-Funding

Look for reports, etc. under "Community Resources" on each program's webpage.

Funding Opportunities

Look at past opportunity announcements

other non-profit organizations as we...
germane to the mission of DOE, and...
solicitations for each research progra...
selection of researchers to fund is ba...
solicitation. For the most current info...
shows the original posting dates, cha...

Office of Science Guidance 📄 on A...

Look at abstracts for current awards

Look at recent reports from sponsored workshops. These discuss priority research directions, as identified by the research community, along with relevant background information, in various areas.

ASCR Program Documents

Provided below is a listing of relevant articles, plans and ASCR-sponsored workshop reports.

ASCR@40 : Four Decades of Department Of Energy Leadership in Advanced Scientific Computing Research

A Quantum Path Forward

5G Enabled Energy Innovation Workshop (5GEEIW)

Data and Models: A Framework for Advancing AI in Science

Storage Systems and I/O: Organizing, Storing, and Accessing Data for Scientific Discovery

ASCR Workshop on In Situ Data Management

Reading a NOFO – Title Page

Notice of Funding Opportunity (NOFO) Number:
DE-FOA-0003432

FOA TYPE: INITIAL
CFDA NUMBER: 81.049

Pre-proposals (or Letters of Intent) may be <u>required</u>!

Note the deadlines, including times and <u>time zones</u>.

FOA Issue Date:	April 14, 2022
Submission Deadline for Pre-Applications:	May 5, 2022 at 5:00 PM ET A Pre-Application is required
Pre-Application Response Date:	May 16, 2022 at 5:00 PM ET
Submission Deadline for Applications:	June 13, 2022 at 11:59 PM ET

Reading a NOFO – Description

III. Program Description

GENERAL INQUIRIES ABOUT THIS FOA SHOULD BE DIRECTED TO:

Technical/Scientific Program Contacts:
>   Dr. Hal Finkel [Primary]
>   301-903-1304
>   hal.finkel@science.doe.gov

> The NOFO will list the program staff to contact with questions. Email is almost always more convenient than calling.

SUMMARY

The DOE SC program in Advanced Scientific Computing Research (ASCR) h[...] its interest in basic research in computer science exploring innovative approac[...] management and storage of scientific data.

SUPPLEMENTARY INFORMATION

> You must read the "Supplementary Information" section to understand the scope and requirements.

Modern scientific computing relies on processing a deluge of data coming from both experiments and simulations, with even relatively modest scientific activities generating

Reading a NOFO – Description (Out of Scope)

III. Program Description

Out of Scope

> Pay particular attention to the "Out of Scope" subsection, if present.

Out of scope for this FOA are pre-applications and applications that:
- Fail to address one or more of the priority search directions specified above;
- Propose approaches that do not generalize to problems in multiple scientific domains;
- Focus primarily on the development or application of data-reduction techniques

Reading a NOFO – Pre-Application / Letters of Intent

The pre-application attachment must include, at the top of the first page, the following information:

> Title of Pre-application
> Lead Principal Investigator Name, Job Title
> Lead Institution
> PI Phone Number, PI Email Address
> FOA Number: Include the FOA Number indicated on the cover of this FOA
> Priority research direction(s), specified in Section I, primarily motivating the proposed work

This information must be followed by a clear and concise description of the objectives and technical approach of the proposed research. The pre-application may not exceed two pages, when printed using standard letter-size (8.5 inch x 11 inch) paper with 1-inch margin

In addition, the pre-application must include a listing of individuals who should not ser merit reviewers of a subsequent application. Detailed instructions for how to craft such are provided in Section VIII of this FOA. This listing will not count toward the pre-app

Pay attention to the exact format requested. This is <u>not exactly the same</u> in every NOFO. Read the whole section carefully.

There is often a page limit (two or three pages is common, and unlike in the proposal, references may count toward the limit).

We often start arranging for merit reviewers based on the pre-proposals. Accordingly, we ask for a list of people who would have a conflict of interest – please <u>check the referenced section to see the criteria for who should be included</u>.

What Should a Pre-Application / Letter of Intent (LOI) Narrative Contain?

A pre-application / LOI narrative should summarize the answers to key merit-review criteria, for example:

SCIENTIFIC AND/OR TECHNICAL MERIT OF THE PROJECT

- What is the scientific innovation of the proposed research?
- What is the likelihood of achieving valuable results?
- How might the results of the proposed work impact the direction, progress, and thinking in relevant scientific fields of research?
- How does the proposed work compare with other efforts in its field, both in terms of scientific and/or technical merit and originality?

COMPETENCY OF APPLICANT'S PERSONNEL AND ADEQUACY OF PROPOSED RESOURCES

- What is the past performance and potential of the research team?
- How well qualified is the research team to carry out the proposed research?
- Are the research environment and facilities adequate for performing the research?
- Does the proposed work take advantage of unique facilities and capabilities?

APPROPRIATENESS OF THE PROPOSED METHOD OR APPROACH

- How logical and feasible are the research approaches?
- Does the proposed research employ innovative concepts or methods?
- Can the approach proposed concretely contribute to our understanding of the validity of the specified scientific hypothesis or hypotheses?

- What is the scientific challenge being addressed and why is it important *now*?
- What is the scientific hypothesis and why will investigating it be valuable?
  - Why is it reasonable to believe that the scientific hypothesis is true?
  - Why is it plausible that the scientific hypothesis is wrong?
- What are the best alternative approaches and what is unique about the proposed approach?
  - Why is the approach likely to succeed in the proposed timeframe?
- Who comprises the proposing team and what skills and experience (and, if relevant, facilities) do they bring?

Pre-Application / Letter of Intent (LOI) Review

- For many NOFOs, pre-applications or letters of intent may be reviewed, not only for responsiveness, but also for competitiveness.
    - Competitiveness reviews are generally conducted by at least three Federal program managers chosen for their topical knowledge and diversity of perspective.
    - The intent in discouraging submission of certain applications is to save the time and effort of applicants in preparing and submitting applications with a low likelihood of success.
    - Written feedback about pre-applications will be provided upon request after award selections have been announced.

- Many Office of Science NOFOs are highly competitive, and as a result, most submitted pre-applications are discouraged on competitiveness grounds.
- Regardless of the reason for discouragement, only a boilerplate emails will be sent saying that the program, "has determined that the proposed work does not satisfy the criteria for encouragement specified in the solicitation."

On the Scientific Hypothesis or Hypotheses

A scientific hypothesis should be scientifically interesting (i.e., for ASCR, regarding some unknown aspect of computer science or applied mathematics), it should be reasonable to believe that it is true, and it should be plausible for it to be wrong. Some examples of *BAD scientific hypotheses*:

- We will make a (tool / software package / …) and it will be (better / faster / enhance productivity more / …) than other (tools / software packages / …).

This hypothesis focuses on the skill or capabilities of the researchers, not on underlying unknown system properties or aspects of science.

This hypothesis is not quantitative or otherwise concrete, and given such ambiguous goals, it is likely not plausibly wrong.

- Given the success of technique X in other domains, we hypothesize that technique X can (rewrite scientific applications / enhance structural properties / …) to achieve 10000x better (performance / …).

The set of "scientific applications" is very broad. Which classes of applications specifically? And why?

10000x – is this the result of a considered estimate, or just a guess? Is this plausible? And performance on what?

Reading a NOFO – Teams

III. Program Description

Multi-Institutional Teams

SC uses two different mechanisms to support teams of multiple institutions.

COLLABORATIVE APPLICATIONS

Teams of multiple institutions may submit collaborative applications. Each submitted appl[...] in such a team must indicate that it is part of a collaborative project/group. Every partner institution must submit an application through its own sponsored research office. Each mu[...] institutional team can have only one lead institution. Each application within the multi-institutional team, including the narrative, starting with the title page, and all required appendices and attachments, must be identical with the following exceptions:

SUBAWARDS[2]

Multi-institutional teams may submit one application from a designated lead institution with all other team members proposed as subrecipients.

There are two methods for multiple institutions to partner: collaborative applications and subawards. Not all NOFOs allow both methods!

All institutions submit separate proposals: same narrative, different budgets.

DOE has a relationship with, and provides money to, one institution and that institution has subcontracts to the others.

Reading a NOFO – Funding Limits

C. MAXIMUM AND MINIMUM AWARD SIZE

Ceiling

- DOE National Laboratories: $750,000 per year
- All other applicants: $300,000 per year

Applications requesting more than this amount of support may be declined without further review.

Floor

- DOE National Laboratories: $250,000 per year
- All other applicants: $100,000 per year

A multi-institutional team, whether applied for as a prime applicant with subawards or as collaborative applications, is limited to a request of no more than $900,000 per year.

> Pay attention to the ceiling and floor for each application. If you have subawards, their cost is included in the award size to the lead institution.

> Violating the limits will likely result in your proposal being declined without review.

> In addition to limits on each applicant's request, there might be a limit on the overall award to a team.

Reading a NOFO – Submission Limits

D. LIMITATIONS ON SUBMISSIONS

Applicant institutions are limited to both:

- No more than *two* pre-applications or applications as the lead institution in a multi-institution team
- No more than one pre-application or application for each PI.

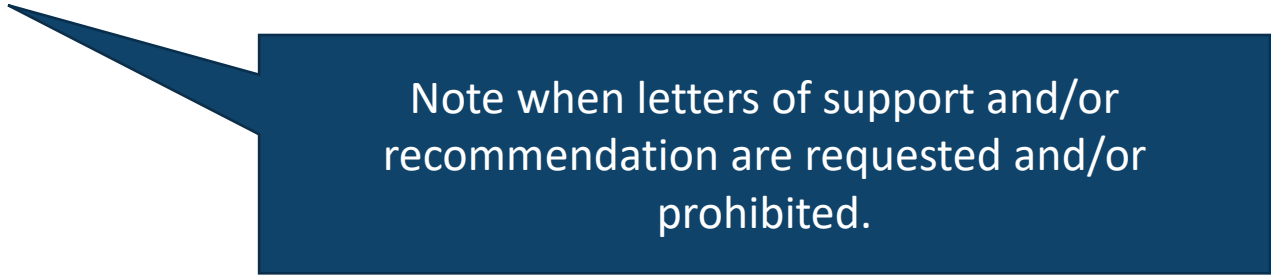Note that, as the lead PI, the number of pre-proposals (and proposals) you submit may be limited.

Your institution might also be limited in the number of pre-proposals (and proposals) it can submit. This may sometimes require coordination within and between departments. Please plan accordingly.

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Reading a NOFO – Letters

D. CONTENT AND APPLICATION FORMS

LETTERS

Letters from unfunded collaborators or from institutions providing access to data, models, software, equipment, and/or facilities may be appended to your research narrative and are not considered part of the research narrative's page limit. Please ensure that letters from unfunded collaborators or from institutions providing access to data, models, software, equipment, and/or facilities only describe the nature of the collaboration or the access to the aforementioned resources: Letters of support or recommendation are not allowed in applications under this FOA.

> Note when letters of support and/or recommendation are requested and/or prohibited.

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Reading a NOFO – Use Your Sponsored Research Office

Important Instructions to the Sponsored Research Office of Submitting Institutions: SC requires that you create one single machine-readable PDF file that contains a DOE Title Page, project narrative, all required appendices, and other attachments. This single PDF file may not be scanned from a printed document and must be attached in Field 8 on the Grants.gov form. This

While in some cases an individual PI may submit a pre-proposal directly in DOE/SC's Portfolio Analysis And Management System (PAMS), a PI will almost never directly submit a proposal – please contact your institution's sponsored research office (SRO)! The SRO will submit the proposal in response to the NOFO in grants.gov.

Please note that your sponsored research office may have its own deadlines ahead of DOE's deadlines.

Reading a NOFO – Project Narrative

Remember to explain why your area of research is important!

The following organization of the Project Narrative is suggested:

- **Background/Introduction**: Explanation of the importance and relevance of the proposed work as well as a review of the relevant literature.
- **Project Objectives:** This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.
- **Proposed Research and Methods**: Identify the hypotheses to be tested and details of the methods to be used including the integration of experiments with theoretical and computational research efforts.

The background should include numerous citations so that it is clear that you understand the literature and state of the art. The background should also be sufficiently self contained so that a reasonably-informed reviewer can understand your proposal without consulting external sources.

Explain your scientific hypotheses and your unique insights! Explain what you are planning to do and why that will provide insight on the validity of the hypotheses.

2. A well-thought-out research plan and its associated budget(s) should leave no confusion about which institution will do which parts of the research.

Reading a NOFO – Project Narrative (Where Appropriate, Use Examples)

The following organization of the Project Narrative is suggested:

- **Background/Introduction**: Explanation of the importance and relevance of the proposed work as well as a review of the relevant literature.
- **Project Objectives:** This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.
- **Proposed Research and Methods**: Identify the hypotheses to be tested and details of the methods to be used including the integration of experiments with theoretical and computational research efforts.

Where appropriate, when motivating your approach, consider using examples of how you approach will work with different kinds of useful and/or interesting systems. These examples should illustrate how your approach might work and should be:
- Representative (the proposal should explain why the example is representative of an interesting class of cases)
- Non-trivial and distinguishing (the example must be simple enough to explain succinctly but complex enough to demonstrate the superiority of your approach)

Reading a NOFO – Other Sections

APPENDIX 1: BIOGRAPHICAL SKETCH

APPENDIX 2: CURRENT AND PENDING SUPPORT

APPENDIX 3: BIBLIOGRAPHY & REFERENCES CITED

APPENDIX 4: FACILITIES & OTHER RESOURCES

APPENDIX 5: EQUIPMENT

APPENDIX 6: DATA MANAGEMENT PLAN

APPENDIX : PLAN FOR PROMOTING INCLUSIVE AND EQUITABLE RESEARCH

> There are many other sections required, many with their own page limits and/or other requirements.

> Note that some sections, certainly the DMP, should be customized for each proposal.

> For more information on PIER plans, see https://science.osti.gov/grants/Applicant-and-Awardee-Resources/PIER-Plans

2. Merit Review Criteria

- Scientific and/or Technical Merit of the Project;
- Appropriateness of the Proposed Method or Approach;
- Competency of Applicant's Personnel and Adequacy of Proposed Resources; and
- Reasonableness and Appropriateness of the Proposed Budget.

SCIENTIFIC AND/OR TECHNICAL MERIT OF THE PROJECT

- What is the scientific innovation of the proposed research?
- What is the likelihood of achieving valuable results?
- How might the results of the proposed work impact the direction, progress, and thinking in relevant scientific fields of research?
- How does the proposed work compare with other efforts in its field, both in terms of scientific and/or technical merit and originality?
- Is the Data Management Plan suitable for the proposed research? To what extent does it support the validation of research results? To what extent will research products, including data, be made available and reusable to advance the field of research?
- Does the Data Management Plan address the specific requirements in the topic description?

> Note the questions that the reviewers are asked to answer and make the answers easy to find in the proposal.

Reading a NOFO – Review Criteria

2. Merit Review Criteria

APPROPRIATENESS OF THE PROPOSED METHOD OR APPROACH

- How logical and feasible are the research approaches?
- Does the proposed research employ innovative concepts or methods?
- Can the approach proposed concretely contribute to our understanding of the validity of the specified scientific hypothesis or hypotheses?
- Are the conceptual framework, methods, and analyses well justified, adequately developed, and likely to lead to scientifically valid conclusions?
- Does the applicant recognize significant potential problems and consider alternative strategies?
- Is the proposed research aligned with the priority research directions identified in Section I of this FOA?

In many cases you will have both scientific and execution risks to address:
- Scientific risk: Risk that the world does not work the way you hypothesize.
- Execution risk: Risk that you cannot perform the research to investigate the hypothesis.

Reading a NOFO – Review Criteria

2. Merit Review Criteria

COMPETENCY OF APPLICANT'S PERSONNEL AND ADEQUACY OF PROPOSED RESOURCES

- What is the past performance and potential of the research team?
- How well qualified is the research team to carry out the proposed research?
- Are the research environment and facilities adequate for performing the research?
- Does the proposed work take advantage of unique facilities and capabilities?

REASONABLENESS AND APPROPRIATENESS OF THE PROPOSED BUDGET

- Are the proposed budget and staffing levels adequate to carry out the proposed research?
- Is the budget reasonable and appropriate for the scope?

QUALITY AND EFFICACY OF THE PLAN FOR PROMOTING INCLUSIVE AND EQUITABLE RESEARCH

> Why is your proposed team staffed, resourced, and positioned for success?

Serving as a Reviewer

◆ To volunteer to be a reviewer: Reach out to a relevant program manager with a brief overview of your background and interests.

◆ Reviews are generally conducted by "mail-in" or virtual panel and are managed through DOE's Portfolio Analysis And Management System (PAMS).

◆ While review panels are useful for surfacing notable aspects of proposals and clarification, review panels do not seek consensus and do not compare different proposals. SC seeks only the individual assessments of each reviewer.

◆ Reviewers will be asked to provide written assessments for each merit-review criterion – guided by the list of questions under each criterion. Reviewers are asked to avoid providing "yes or no" answers and to maximize constructive feedback.

◆ Reviewers are asked to focus their comments on the areas that they feel most comfortable reviewing and comment on other aspects of the proposals more broadly.

◆ Since budgets are limited, reviewers are asked to identify the most important parts of the proposed work.

Award Lists – A New Website Location
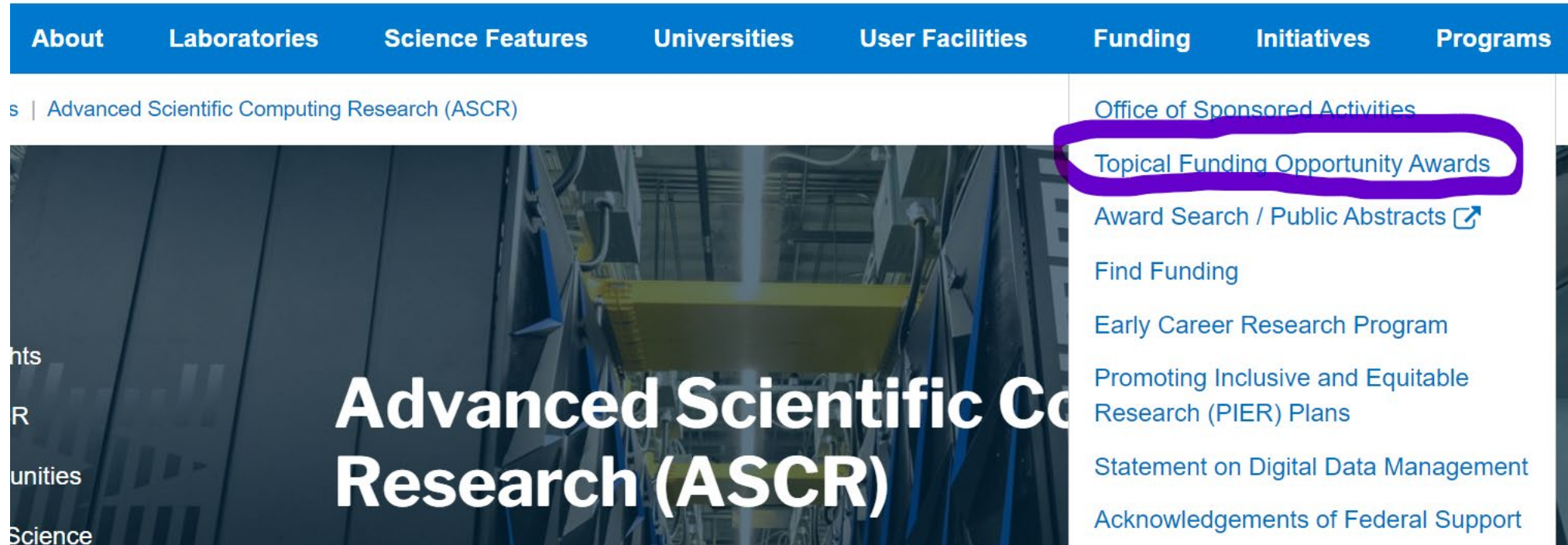
Award lists are now posted to https://science.osti.gov/Funding-Opportunities/Award along with other awards from the Office of Science. To receive award and solicitation announcements, and other news, signup for the Office of Science's GovDelivery email service, and check the box for the program or topic of interest in your subscriber preferences:

Energy.gov/science