FY 2024 HEP Comparative Review

FY 2024 Continuation of Solicitation for the

Office of Science Financial Assistance Program:

DE-FOA-0003177

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FY 2024 HEP Comparative Review in the SC Open Call

▸In FY 2024, High Energy Physics will continue to prioritize support for the university research program through the process of Comparative Review but will execute this process through the Office of Science Open Call, DE-FOA-0003177.

▸There will be no dedicated HEP Comparative Review FOA in FY 2024.

▸Fitting into the Open Call necessitates some changes to the structure of comparative review applications. I will describe our implementation in this talk, consistent with the published FOA.

The official FOA name is:

FY 2024 Continuation of Solicitation for the Office of Science Financial Assistance Program

This FOA, commonly referred to as the "General Solicitation" or the "Open Call", is released annually at the start of each Fiscal Year.

DEPARTMENT OF ENERGY (DOE)
OFFICE OF SCIENCE (SC)

FY 2024 CONTINUATION OF SOLICITATION FOR THE OFFICE OF SCIENCE FINANCIAL ASSISTANCE PROGRAM

FUNDING OPPORTUNITY ANNOUNCEMENT (FOA) NUMBER:
DE-FOA-0003177

FOA TYPE: INITIAL
CFDA NUMBER: 81.049

FOA Issue Date:	September 29, 2023
Submission Deadline for Pre-Applications:	A Pre-Application is optional/encouraged
Submission Deadline for Applications:	Not Applicable
	This FOA will remain open until September 30, 2024, or until replaced by a successor FOA. Applications may be submitted any time during that period. Individual topics in this FOA may have scheduled review panels. Applications submitted after the panel's acceptance date may be held until the next review panel.

HEP Comparative Reviews of University Research Proposals

▶ **Since FY 2012, DOE/HEP uses a process of comparative reviews for university research grants – both renewal proposals for existing grants and new proposals.**

    ▶ FY 2024 marks 13th round in the process

▶ **This process was recommended by several DOE advisory committees, including the 2010, 2013, 2016 and 2020 HEP Committee of Visitors (COV):**

    ▶ 2010 COV: *"In several of the cases … proposal reviewers expressed negative views of the grant, but only outside of their formal responses. Coupled with the trend in the data towards very little changes in the funding levels over time, this suggests that grants are being evaluated based on the historical strength of the group rather than the current strength or productivity of the group. This is of particular concern when considering whether new investigators, new science, or high-risk projects can be competitive. Comparative reviews can be a powerful tool for addressing these issues and keeping the program in peak form."*

        ▶ use comparative review panels on a regular basis

    ▶ 2013 COV: <u>Continue</u> comparative reviews. Augment with independent mail-in reviews

    ▶ 2016 *and* 2020 COV: <u>Continue</u> comparative reviews

        ▶ Continue communicating with PIs about program priorities at DOE-HEP PI meetings

        ▶ Provide guidance to reviewers on, e.g., more uniform scoring, DE&I, …

Goal: Improve the overall quality and efficacy of the HEP research program by identifying the best proposals with the highest scientific impact and potential.

Comparative Review: Subprogram Panels

- The Comparative Review process is very competitive and hard choices must be made based on the reviews and our available funding
  - As this is a comparative process, some proposals/PIs will be ranked at the top while others will be in the middle or at the bottom

- It is understood that the vast majority of people applying are working hard and their efforts are in support of the HEP program. Due to the rankings & comments by the reviewers and our constrained budgets, some people whose research activities and level of effort who are ranked lower in terms of priority and impact relative to others in the field will not be funded
  - This does not necessarily mean the person cannot continue working on the experiments; they are not being funded by the grant to do it. It could be that the person has a critical role in the program, but this did not come out in the proposal or review process.
  - This is why it is imperative to respond to the FOA and detail each person's effort.

- Members of subprogram review panels see all of the proposals and each member provides input and ranks proposals relative to the others. When panel members are faced with comparing efforts, impacts and limited budgets, rather than rank the whole proposal low, they may provide guidance regarding details of the proposals.
  - e.g., Section A looks good, but Section B looks weak and shouldn't be supported at the requested level.

Differences between a Dedicated FOA and the SC Open Call

▸ The SC Open Call serves all SC Programs and all types of proposals

  ▸ Section IV ("Application and Submission Information") of a FOA contains information about what must be included in an application for financial assistance. In the SC Open Call, this section is very general because it must server a wide variety of cases.

  ▸ Each program within the Office of Science has its own subsection of Section I ("Funding Opportunity Description") in which it describes the research scope and types of proposals it is willing to consider through the Open Call. Details of what must be included in (or excluded from) an application so that it is accepted into the HEP Comparative Review are specified in Section I, Subsection 5 ("High Energy Physics"). Read this subsection carefully!

    ▸ Research Proposals that are not accepted into Comparative Review will be reviewed if responsive to the HEP research scope specified in that same subsection but may have lower priority for funding.

Deadlines, etc.

For proposals intended for the 2024 HEP Comparative Review:

▸ Pre-applications are requested by November 1, 2023

    ▸ These are submitted through PAMS (where they are called preproposals) by the Principal Investigator.

    ▸ Late submissions will be accepted but their value to HEP diminishes as they get later.

▸ Proposals are due by December 1, 2023

    ▸ The FOA says proposals are due **before** December 1, but HEP will give full consideration to proposals submitted **on** December 1.

    ▸ Proposals must be submitted through grants.gov by your university Sponsored Research or Program Office. Please coordinate with your office to plan the submission.

    ▸ HEP is open to making reasonable accommodations for late or defective applications, but HEP is the arbiter of what is "reasonable". If your submission will be delayed, or you find a defect after submission, contact your program manager as soon as possible!

▸ Renewal Proposal Products (RPP)

    ▸ Proposals submitted to grants.gov are transferred to DOE and assigned to program managers. A PAMS request for Renewal Proposal Products is triggered on assignment of a renewal proposal. RPP cannot be submitted until it is requested.

    ▸ Renewal proposals cannot be sent out for review until RPP is submitted. If review of your proposal is significantly delayed, your proposal may be excluded from the Comparative Review. Submit RPP by December 16, 2023, to avoid delays.

FY 2024 HEP Comparative Review – Eligibility & Scope

▸ The Open Call DE-FOA-3177 is used by all offices within the Office of Science (SC).

▸ There are general rules on scope and eligibility that apply to all applications. In addition, each office describes its program and the types of proposals it will consider under this FOA and may place further restrictions on eligibility.

▸ HEP accepts proposals from all sources except (see FOA for details):
   ▸ Non-profit organizations that engage in lobbying activities.
   ▸ DOE/NNSA National Laboratories, which may not submit applications to this FOA but may be proposed as subrecipients under another organization's application.

▸ HEP accepts new and renewal proposals for HEP Research as well as proposals for activities *in support of* HEP research programs including but not limited to: supplemental support for research activities, conferences, experimental operations, conceptual research and development (R&D), or design or fabrication *directed towards a specific project* within the HEP scientific program.

▸ New and renewal proposals for HEP Research (within specified subprograms) will receive full consideration for the FY 2024 HEP Comparative Review if they are submitted by December 1, 2023.
   ▸ Other proposals will be considered for support but may not be part of the FY 2024 Comparative Review.

High Energy Physics Comparative Review Research Scope

▸ **HEP research is divided into 8 subprogram:**

✓ **Experimental Research at the Energy Frontier,** where powerful accelerators are used to create new particles, reveal their interactions, and investigate fundamental forces using highly sensitive experimental detectors;

✓ **Experimental Research at the Intensity Frontier,** where intense particle beams and highly sensitive detectors are used to pursue alternate pathways to investigate fundamental forces and particle interactions by studying events that occur rarely in nature, and to provide precision measurements of these phenomena;

✓ **Experimental Research at the Cosmic Frontier,** where data from the universe are used to probe fundamental physics questions and offer new insight about the nature of dark matter, cosmic acceleration in the forms of dark energy and inflation in the early universe, neutrino properties, and other phenomena

✓ **Theoretical High Energy Physics,** where the vision and mathematical framework for understanding and extending the knowledge of particles, forces, space-time, and the universe are developed;

✓ **Accelerator Science and Technology Research and Development,** where the technologies and basic science needed to design, build, and operate the accelerator facilities essential for making new discoveries are developed;

✓ **Detector Research and Development,** where the basic science and technologies needed to design and build the High Energy Physics instrumentation essential for making new discoveries are developed;

✖ **Computational High Energy Physics,** where computational tools, data management and analytics, and simulation techniques are developed for advancing the HEP mission; and

✖ **Quantum Information Science for High Energy Physics Research,** an interdisciplinary research area where innovative solutions for scientific discovery are developed through partnerships with the wider quantum information science community to advance the HEP science drivers, as identified by P5, the program mission of HEP, and the SC quantum information science initiative.

▸ **The FY 2024 HEP Comparative Review will consider research proposals from first 6 of these subprograms. Research proposals in Computational HEP and QIS for HEP may be submitted to DE-FOA-0003177 but will not be subjected to Comparative Review and should not be independent tasks within proposals that are intended for the HEP Comparative Review. If a research thrust within a proposal to one of the 6 subprograms uses techniques from Comp. HEP or QIS, you should discuss your plans with the relevant program manager(s), identified in the FOA.**

Key Items to Keep in Mind

▸ Proposed research will review best if closely aligned with the DOE/HEP mission and its program.

  ▸ **In this cycle HEP priorities are still aligned with the 2014 P5 Plan.**

▸ Investigators in experimental HEP research frontiers (Energy, Intensity, Cosmic) will review best if they are closely integrated into HEP-supported experimental collaborations in which they have key roles and responsibilities.

▸ "Generic" research that is not to be carried out as part of a specific HEP experimental collaboration should be directed to the HEP Theory or Detector R&D programs, as appropriate.

▸ **Read the FOA carefully** and follow the requirements on content, length, etc.

  ▸ **Some FOA requirements are set from outside the DOE/HEP office**, and there is little to no flexibility to modify.

    ▸ **Non-compliant proposals submitted to the FOA will not be reviewed.**

▸ **In recent years, ~5% of incoming proposals are declined without review.** The most often missed or overlooked requirements include: Page limits, separate budget sheets (if needed) for each research subprogram or thrust, Collaborator Lists, PIER Plans.

  ▸ Failures to include data management plans or to exclude Personally Identifiable Information (PII) also cause declinations without review.

  ▸ Most declinations occur for "new" proposals. Ask a mentor or experienced PI for help.

▸ **During and prior to submission, work with your university sponsored research office to make sure all FOA requirements are met.**

HEP Research Activities Supported

▶ **What DOE/HEP supports**
  ▶ Efforts that are in direct support of DOE/HEP programs
    ▶ support depends on merit review process, programmatic factors, and available funds
  ▶ Research efforts (mainly scientists) on R&D, exp. design, data-taking, analysis-related activities
  ▶ Some engineering support may be provided through the DOE/HEP Detector R&D subprogram
  ▶ Theory, simulations, phenomenology, computational studies

▶ **Faculty support**
  ▶ Based on merit reviews and/or optimizing the number of research personnel supported by financial assistance awards, support of up to 2-months faculty summer salary
  ▶ Summer support should be adjusted according to % time the faculty devotes to research effort

▶ **Research Scientists**
  ▶ Support may be provided, but due to long-term expectations, need to consider case-by-case on merits: whether the roles and responsibilities are well-matched with individual capabilities and cannot be fulfilled by a term position
  ▶ Efforts should be related towards research; not *long-term* operations and/or project activities

✖ **What's not supported by 'Research' grants**
  ▶ Any significant HEP operations and/or project-related activities:
    ▶ engineering, major items of equipment, consumables for prototyping or production
  ▶ Non-HEP related efforts —
    ▶ e.g.: experimental work on gravity waves (LIGO); heavy-ions (RHIC *or* at the LHC), …

Connecting the Narrative to Research Initiatives

- **Significant HEP funding comes through Initiatives (Congressional, Administration, Agency).**
- **Current Research Initiatives include Quantum Information Science (QIS), Artificial Intelligence and Machine Learning (AI/ML), Advanced Computing, and Microelectronics.**
- **AI/ML has significant impact across the entire HEP research program, QIS has become a common research tool for parts of the Theory and Detector Development programs, while Microelectronics primarily impacts the Detector Development program.**
- **Clearly identify those components of your proposed research that may connect to initiative funding:**
  - If applications and/or development of initiative-related techniques are a part of your research effort, call attention to them so that they can be properly reviewed. Consider adding a dedicated section to your narrative to describe the research group's efforts in these directions and their importance to completing the proposed research, explaining the associated methods to be used and their impact to advance the group's scientific results; highlight particular results which are expected to be significantly improved or enabled by the use of these methods. Identify the personnel (e.g., students, postdoctoral researchers, etc.), their training, and effort level for carrying out such activities in the proposed research plan.
- **Distinguish the initiative-related research scope being proposed from that supported by other Federal research grants (if any) through QuantISED, or dedicated AI/ML or Microelectronics FOAs.**

Quantum Information Science (QIS)

- Research that has been funded through the QuantISED program should remain associated with the QuantISED program and should not be included in your Comparative Review proposal.
  - A dedicated HEP-QIS FOA may (depending on appropriations) be released later in FY 2024.
  - Renewal proposals for QuantISED awards that do not have FY 2024 funding should be submitted to the Office of Science Open Call (DE-FOA-0003177) but will not be accepted into the Comparative Review.

- New research scope in QIS can be included in Comparative Review proposals to DE-FOA-0003177 in the HEP Theory and Detector R&D program areas:
  - Quantum Information Science to extend the reach of HEP theory;
  - The development of Quantum Information Science-derived detection techniques for HEP experiments.
  - Contact your program manager before proposing QIS-related research scope to DE-FOA-0003177.

Artificial Intelligence / Machine Learning

- **AI/ML continues to be a priority for the Administration and for the U.S. Congress.**
  - Appropriations since FY 2020 have provided dedicated funds in DOE/HEP Research Program to advance AI/ML initiatives.
- **The development and implementation of machine or deep learning tools, techniques, and algorithms are rapidly becoming part of many experimental analyses and theoretical work.**
- **There are typically two categories of AI/ML-based proposal narratives:**
  1. **Developer:** PIs and their research teams are explicitly leading efforts to develop ML-based tools and algorithms for the collaboration to enhance sensitivity in physics studies.
  2. **End-user:** PIs and their research teams are implementing ML-based algorithms , which were developed by others, in an analysis.
  - "Developers" usually draw better reviews in research proposals than "end-users".
- **The FY 2024 FOA encourages investigators to identify their research group's AI/ML efforts in the proposal narrative as they would for other key areas of expertise.**
  - If applications or development of AI/ML techniques are a part of your research effort, call attention to it so that it can be properly reviewed. Consider adding a dedicated section to your narrative to describe the research group's efforts in AI/ML and their importance to completing the proposed research, explaining the associated AI/ML methods used and their impact to advance the group's scientific results. Identify the personnel and effort level (e.g., graduate students, postdoctoral researchers, etc.) carrying out AI/ML activities in the proposed research plan.
- **AI/ML research that is an intrinsic element of research at the HEP experimental frontiers, in HEP theory, or in HEP technology development (accelerator or detector) may be included in Comparative Review proposals to those subprograms. Generic AI/ML research should be proposed to the Computation HEP subprogram will not be accepted into the FY 2024 HEP Comparative Review.**

Pre-Applications (Preproposals)

▸ The Open Call permits Pre-Applications but not Letters of Intent. This is largely a distinction without a difference.

▸ Though not required, we request those who plan to submit applications for Comparative Review to submit a Pre-Application to let us know who will be applying and permit us to arrange an appropriate slate of reviewers.

▸ PAMS allows you to attach additional documents to the preproposal. Please attach the Collaborator Template as an Excel Document.

▸ Note: The FOA calls them pre-applications, PAMS calls them preproposals.

Comparative Review Merit Criteria

MERIT REVIEW CRITERIA	REVIEW CRITERIA SUB-QUESTIONS FOR MERIT REVIEWER'S EVALUATIONS
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? • For renewal applications only: Is the proposed work an appropriate outgrowth of, continuation to, or successor of the currently supported research?
APPROPRIATENESS OF THE PROPOSED METHOD OR APPROACH	• How logical and feasible are the research approaches? • Does the proposed research employ innovative concepts and methods? • 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 published priorities identified or incorporated by reference in Section I of this FOA such as program strategic plans? [i.e., in the 2014 P5 strategic plan?]
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 PROMOTING INCLUSIVE AND EQUITABLE RESEARCH (PIER) PLAN	• Is the proposed Promoting Inclusive and Equitable Research (PIER) Plan suitable for the size and complexity of the proposed project and an integral component of the proposed project? • To what extent is the PIER plan likely to lead to participation of individuals from diverse backgrounds, including individuals historically underrepresented in the research community? • What aspects of the PIER plan are likely to contribute to the goal of creating and maintaining an equitable, inclusive, encouraging, and professional training and research environment and supporting a sense of belonging among project personnel? • How does the proposed plan include intentional mentorship and are the associated mentoring resources reasonable and appropriate?

New since FY 2023 FOAs: New Merit Criterion

▸A new merit criterion has been added for proposal evaluation:

Quality and Efficacy of Promoting Inclusive and Equitable Research (PIER) Plan

▸ Is the proposed Promoting Inclusive and Equitable Research (PIER) Plan suitable for the size and complexity of the proposed project and an integral component of the proposed project?

▸ To what extent is the PIER plan likely to lead to participation of individuals from diverse backgrounds, including individuals historically underrepresented in the research community?

▸ What aspects of the PIER plan are likely to contribute to the goal of creating and maintaining an equitable, inclusive, encouraging, and professional training and research environment and supporting a sense of belonging among project personnel?

▸ How does the proposed plan include intentional mentorship and are the associated mentoring resources reasonable and appropriate?

▸See https://science.osti.gov/grants/Applicant-and-Awardee-Resources/PIER-Plans for details including links to Frequently Asked Questions and a Recorded Public Webinar from October 17, 2022.

PIER Plans and HEP Research Proposals

▸ **PIER Plans:**

- ▸ Should describe the activities and strategies proposed by the Principal Investigator (PI)/project team to promote equity and inclusion integral to the research project;

- ▸ Are between 1-3 pages long, and included as an appendix to the research proposal narrative;

- ▸ Will be evaluated as part of the merit review process used to inform funding decisions;

- ▸ Are required for all research proposals submitted to SC through FOAs, Laboratory Announcements, and invitational proposals from DOE Labs;

▸ PIER is not meant to be a general-purpose exercise in Diversity, Equity, and Inclusion (DEI), nor does it ask for participation in unrelated outreach efforts. **PIER** is **P**romoting **I**nclusive and **E**quitable **R**esearch, and a PIER Plan should describe how inclusivity and equity are to be expressed in the research being proposed, and how senior investigators on the proposal are involved in the effort. A PIER Plan can leverage institutional DEI plans and resources, but it is not enough to simply describe those programs and resources; the PIER Plan must discuss how they are to be implemented in the proposed research. Please look at the information available at: https://science.osti.gov/grants/Applicant-and-Awardee-Resources/PIER-Plans.

New for FY 2024 FOAs: Appendix 5 on PIER Plans

Promoting Inclusive and Equitable Research (PIER) Plans

▸ Describe activities and strategies to promote equity and inclusion as an intrinsic element to advancing scientific excellence.

▸ Plans may include but are not limited to:

  ▸ Strategies for enhanced recruitment of undergraduate students, graduate students, and early-stage investigators, including individuals from diverse backgrounds and groups historically underrepresented in the research community;

  ▸ Strategies for creating and sustaining a positive, inclusive, safe, and professional research and training environment that fosters a sense of belonging among all research personnel;

  ▸ Training, mentoring, and professional development opportunities.

▸ Plans may build upon existing diversity, equity, accessibility, and inclusion efforts of the applicant institution(s) but should not be a re-statement of standard institutional policies or broad principles.

▸ The complexity and detail of a PIER is expected to increase with the size of the research team and the number of personnel to be supported.

  ▸ Plans can have a holistic base with specializations for individual tasks, but you should describe how each Senior Investigator will participate in some aspect of the plan.

New since FY 2023 FOAs: Research and Related Senior/Key Person Profile (Expanded)

A profile like this must be filled out for each Senior/Key person on the proposal.

Senior/Key Personnel include:
- The PI and all personnel identified by name in Section A of the budget;
- All others who contribute in a substantive, meaningful way to the scientific development or execution of the project (even if unpaid), including Research Scientists

Senior/Key Personnel must be aware that they are included in the application and must agree to perform the work if awarded.

New since FY 2023 FOAs: Changes to the Biosketch and Current & Pending

▸ The Office of Science (SC) requires use of the NSF format in the Science Experts Network Curriculum Vita (SciENcv) system (or a fillable PDF available from NSF) for Biosketches and for declarations of Current & Pending support.

  ▸ The NSF formats are not fully compatible with the FOA requirements. Pages containing non-compatible information can be printed on a separate sheet and appended to the required format without incurring page limit violations.

  ▸ The "Collaborator list" is no longer part of the biosketch.

  ▸ Both documents are to be attached to the Senior/Key Person Profile.

  ▸ HEP recommends using SciENcv over the fillable PDF:

    ▸ Software incompatibilities have occurred when merging fillable PDFs with other proposal documents.

    ▸ It is anticipated that the Office of Science will participate in a multi-agency effort to develop a common SciENcv Biosketch format for future FOAs and you will already be in the system.

    ▸ The fillable PDF for Current & Pending has pages for a **large** number of entries; please delete unused pages. There is no benefit to making Program Managers and Reviewers scroll through dozens of empty pages looking for content.

  ▸ All foreign government-sponsored talent recruitment programs must be identified in current and pending support. Details of any obligations, contractual or otherwise, to any program, entity, or organization sponsored by a foreign government must be provided on request to either the applicant institution or DOE.

▸ Refer to the FOA for full details.

▸ A list of Collaborators and other Individuals Who Should Not Serve as Reviewers must be provided for **each** Senior/Key Person.

  ▸ The Office of Science provides a Collaborator Template (see link in the FOA) as an Excel Spreadsheet. Submit one document containing all entries for all Senior/Key Persons.

  ▸ The file should **not** be part of the narrative document. The FOA identifies a specific field (Field 12) of the SF-424 Research and Related Other Project Information Form for the attachment. Your application is incomplete without this document, and subject to **declination without review**.

  ▸ This document will not be part of the package sent out for review; it is for the use of HEP Program Officers.

  ▸ It is **infinitely** preferred that you use the Template and attach it as an Excel file. Conversions to PDF, other Spreadsheet formats, or home-brewed formats are much harder to work with and are strongly discouraged.

  ▸ Instructions are included in the FOA and in the Collaborator Template. Provide all required information.

  ▸ The file should also be attached to the preproposal, to assist HEP Program Officers in reviewer selection and recruitment.

▸ Refer to the FOA for full details

Changes: Page Limits, Research Scientists

▸ The nature of the Open Call is not amenable to the complicated definition of "Senior Investigators" used in past Comparative Reviews. Instead, we will permit 9 pages of research narrative for each Senior/Key Person. (The limit is on the total narrative length, not the length of any individual's contribution.)

    ▸ Senior/Key Personnel encompasses anyone listed in Section A of the budget sheets. Research Scientists and research-active professors emeritus are considered Senior/Key Personnel and are therefore allotted an equal number of pages in the research narratives. Students and postdocs are listed in Section B of the budget sheets and are NOT considered Senior/Key Personnel. Since Research Scientist Biosketches and Current & Pending are attached to their Senior/Key Person Profiles, there is no longer any need for an appendix dedicated to Research Scientist activities.

    ▸ Warning: Do NOT enlist phantom research scientists to take advantage of the new rules to enhance your narrative page count. Including Senior/Key Persons whose narratives do not indicate key roles are an invitation to Declination Without Review!

Changes: Additional Budget Requirements

▸ If support is requested from two or more HEP research subprograms, you must provide a supplemental Title Page identifying each research thrust, the Senior/Key Persons involved in each subprogram, and the budget request for each year.

  ▸ This requirement does not apply to applications that request support from only a single research thrust, e.g., Accelerator Science and Technology R&D, Theory, CMS, ATLAS, LSST, DESI, DUNE, etc.

▸ The nature of the Open Call does not allow us to assign a special appendix for this information.

▸ We require use of the Research & Related Subaward Budget Attachment(s) Form, available in the grants.gov package. Mark the Budget Type as "Project" and complete a budget form for each task.

  ▸ These budget pages have the same format as the main budget pages including attachment points for subprogram budget justifications.

▸ If individual investigators request support from two or more HEP research subprograms and/or thrusts (including two or more thrusts in the same research subprogram), they must provide information on the distribution of their full-time effort (FTE) in a table included in the subprogram justifications.

▸ Refer to the FOA for full details.

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

Summary

▸ DOE High Energy Physics will be holding Comparative Review panels in selected subprograms to prioritize FY 2024 funding for research proposals submitted to the Office of Science Open Call DE-FOA-0003177.

▸ Research proposals submitted before December 1, 2023 will be considered for this Comparative Review process.

▸ Details and Instructions can be found in DE-FOA-0003177.

  ▸ Contact information can be found in the FOA.

  ▸ This DE-FOA-0003177 and other HEP funding opportunities are available at: https://science.osti.gov/hep/Funding-Opportunities

Proposal Project Narrative

- **The Project Narrative comprises the *research plan* for the project**
  - Should contain enough background material in the introduction to demonstrate sufficient knowledge of the research
  - Devote main portion to a description and justification of the proposed project, include details of the methods to be used and any relevant results
  - Indicate which project personnel will be responsible for which activities
  - Include timeline for the major activities of the proposed project

- **Must not exceed 9 pages per Senior/Key Person when printed on standard 8 ½" x 11" paper with 1-inch margins (top, bottom, left, and right). Font must not be smaller than 11 point.**
  - Faculty members at collaborating institutions listed on the proposal (if any) are <u>not</u> included in the count.

- **PIs are encouraged to refer to Section IV and Section I.5 (HEP) of the FOA**
  - Includes useful information to help PIs in preparing better narratives — for e.g.:
    - What to address for the Background/Introduction
    - Multiple Investigators and/or Multiple Research Subprograms or Thrusts
    - Common narrative with overview of each group's activities in different research areas
      - Discussion of any synergies and connections between areas
    - Proposed Project Objectives, Research Methods, Resources
    - Timetable and Level of Effort of different activities, …

Suggestions for the Project Narrative

▶ **Suggestions for the Project Narrative to provide reviewers with clearer picture of the research activities:**

  ▶ Progress Report (for Renewal Applications): The narrative should include a section describing:

    ▶ Work accomplished during the current (pre-renewal) project period and the connection to the work being proposed

    ▶ Identify graduate students and postdocs supported and whether they would continue to be supported in the next project period.

    ▶ Estimate unspent funds that will remain at the end of the current project period.

  ▶ For research being proposed: provide a brief review of background material: literature review, prior research by PI, …

  ▶ The bulk of the narrative should consist of a description and justification of the proposed project including details of the methods to be used.

  ▶ Include a timeline for major activities.

  ▶ For collaborative projects, provide a clear delineation of responsibilities.

  ▶ Research using AI or ML:

    ▶ Describe any efforts in AI/ML and their importance to completing the proposed research.

    ▶ Describe the methods to be used and expected impact on scientific results.

    ▶ Identify personnel (including postdocs and students) who would be involved and level of effort.

▶ **Refer to the FOA for full details**

Research Scientists (RS) …

- **Panels will evaluate RS efforts where support is requested in a comparative review proposal**

- **Common [past] reviewer comments that may result in unfavorable merit reviews:**
  - 'RS conducting scope of work typically commensurate at the postdoctoral-level…'
  - 'RS involved in long-term operation/project activities with minimum physics research efforts…'
    - such efforts may review well in a DOE review of the operation/project program but not as well in a review of the experimental research program

- **What are "physics research-related activities"?**
  - Object reconstruction/algorithm development, performance studies, data taking and analysis, and mentorship of students & postdocs in these areas
  - Scientific activities in support of detector/hardware design and development

- **From the research program, cases become an issue when operations/projects become the *dominant* activity 'long-term'**
  - A well-balanced portfolio that includes physics research-related activities is encouraged

Cross-cut, Multi-thrust, or Transitional Proposals

▶ **Applications where a PI is proposing to conduct research across multiple HEP research subprograms during the project period will be considered**

▶ **PIs are encouraged to submit only one application, describing:**
  - ▶ Overall research activity, including fractional time planned in each subprogram
  - ▶ In proposal's Budget Justification material (Appendix 7), include a level-of-effort table for any transitions of effort during project period

▶ **As part of their overview of the subprogram and review process, DOE PMs will provide the panel with details regarding such research plans across multiple HEP thrusts**

▶ **Reviewers with appropriate topical expertise in the research area(s) will assess the full scope, relevance, and impact of the proposed research in the merit review process — *e.g., merit review questions consider:***
  - ▶ Are plans for such cross-cutting efforts reasonably developed and balanced?
  - ▶ Does the scope of the full proposed program provide synergy or additional benefits to the HEP mission beyond the individual thrusts?
  - ▶ Will PI's overall efforts across multiple thrusts add value to HEP program goals and mission and have impact?

Proposal Budgets and Budget Justifications

▶ Applicants are encouraged to work with their SRO/SPO to develop their budgets and budget justifications with the same care that is devoted to the project narrative.

  ▶ Reviewers and panelists often express frustration and/or confusion about budget details leading to lengthy panel discussions about what is being requested.

  ▶ Points for consideration:

    ▶ Funds are awarded to the institution. Understand direct and indirect rates, benefits, and restrictions

    ▶ Establish a relationship with your budget office and/or sponsored research/program office; Remember they submit the proposal for you!

    ▶ Reviewers will notice and call out:

      ▶ Excessive or inappropriate requests

      ▶ Arithmetic errors

      ▶ Poorly justified expenses

      ▶ Discrepancies between the project narrative and budgeted expenses

  ▶ Worst case: Reviewers will start guessing if items are not adequately explained.

Data Management Plan

▶ **Data management involves all stages of the digital data life cycle: capture, analysis, sharing, and preservation. The SC Digital Data Management Statement focuses on sharing and preserving digital research data.**
  - ▶ See Dr. Laura Biven's presentation on SC Digital Data Management, Sept. 2014 HEPAP meeting: *https://science.osti.gov/hep/hepap/Meetings/201409*.
  - ▶ FOAs issued after October 1, 2014 require a DMP and compliance with the SC Statement.
    - ▶ **SC statement on DMP available at: *https://science.osti.gov/Funding-Opportunities/Digital-Data-Management*.**
    - ▶ **DMPs are included as an appendix of the proposal.**
    - ▶ **See also Section IV of the comparative review FOA, the subsection for Appendix on 'Data Management Plan', for requirements pertaining to DMPs that must be included in an application .**

▶ **Most International collaborations have developed DMPs for their collaborations**
  - ▶ Those seeking financial assistance grants [universities] or submitting FWPs [labs] for 'research' support can cite the DMPs for the respective experiment with the appropriate links.
    - ▶ **If an experiment's DMP is cited, the PIs must briefly describe how proposed research relates to that experiment.**
  - ▶ Theorists need DMPs: explain how theoretical/simulated data can be accessed/validated.
  - ▶ If there are no data of any sort generated by the proposed research, the DMP must state this. A DMP that is blank or states "not applicable" is not acceptable.

> **Each research thrust in a proposal requesting DOE research support, including the FY 2023 Comparative Review FOA, must address the DMP requirements to be reviewed and considered for funding**

Further Guidance on Review Criteria and Policy Factors

For Principal Investigators

- Merit review criteria and corresponding questions are given in Section V of the FOA
- Program Policy Factors, which are also used in selections for an award – including those pertaining to the availability of funds – are given in Section V of the FOA
- These serve as additional guides for PIs to address in their proposal's project narratives
  - Provide a plan! Do not just write paragraphs explicitly addressing each merit review criterion and program policy factor. Instead, integrate and adapt these (as appropriate) when narrating the group's activities and research plans.

For Reviewers/Panelists

- The same merit review criteria and corresponding sub-questions are given to all reviewers to input their reviews in DOE's Portfolio Analysis and Management System (PAMS)
  - Serves as a guide for reviewers to address each review criteria for written reviews
- These are highlighted by DOE Program Managers at the beginning of panel deliberations
- These are presented and discussed by individual panelists for each proposal
- Other Program Policy Factors are also discussed with panelists
  - For e.g., program alignment with respect to the P5 strategic plan, fostering development of diverse cadre of supported researchers, and opportunity for early-stage investigators and/or junior scientific personnel