Informational Webinar:

The Genesis Mission: Transforming Science and Energy with AI

Request for Applications (RFA) – High Energy Physics (HEP) and Nuclear Physics (NP)

DE-FOA-0003612

Genesis Mission HEP & NP RFA Team
March 30, 2026

RFA Issue Date	March 17, 2026 (An amended RFA to provide more information on FY 2026 Phase II applications will be released soon)
Submission Deadline for FY 2026 Phase I Applications	April 28, 2026, at 11:59 PM Eastern Time | A Pre-Application is not required
Submission Application for FY 2026 Phase II Letter of Intent	April 28, 2026, at 5:00 PM Eastern Time | A Letter of Intent is strongly encouraged
Submission Deadline for FY 2026 Phase II Applications	May 19, 2026, at 11:59PM Eastern Time
Submission Deadline for Phase II Applications Resulting from FY 2026 Phase I Awards	December 17, 2026, at 11:59 PM Eastern Time

U.S. DEPARTMENT of ENERGY

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

Questions & Answers

- Please submit questions using the Zoom Q&A window, which is accessible at the bottom of your Zoom window
- If your question is not answered today, or you have additional questions, please submit via GenesisMissionNOFO@science.doe.gov
- A Frequently Asked Questions is available on the Funding Opportunities website. It will be updated periodically.
- Video and slides will be available on the Funding Opportunities website (https://science.osti.gov/grants/FOAs/Open)

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

The Genesis Mission

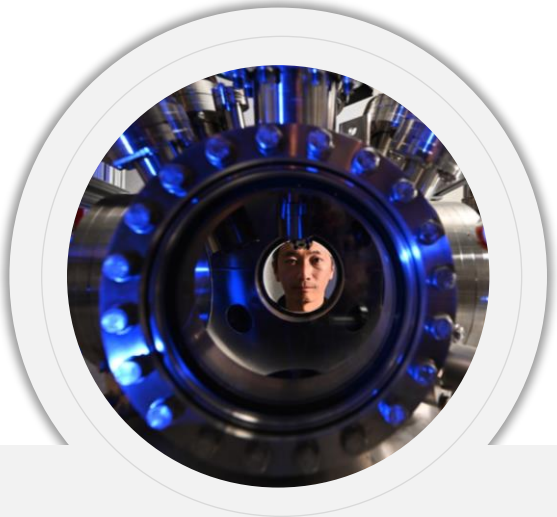
The **Genesis Mission** is a historic national effort to catalyze new industries, create high-skill jobs, and usher a new golden era of American discovery by fully embracing AI and the ongoing computing revolution.

The Genesis Mission's **American Science and Security Platform** will connect the world's best supercomputers, AI systems, and next-generation quantum computers with the most exquisite scientific instruments in the nation, and its intelligence layer will be trained with the singular scientific datasets and expertise housed in the National Laboratories. Once complete, it will be the world's most complex and powerful scientific instrument ever built.

Through the Genesis Mission's **National Science and Technology Challenges**, the scientific community will develop and deploy the technologies necessary to demonstrate true AI advantage for science and energy.

Genesis Mission: Transforming Science and Technology through AI

AI will be used to address grand challenges, ignite innovations, and drive unprecedented progress for national and global impact.

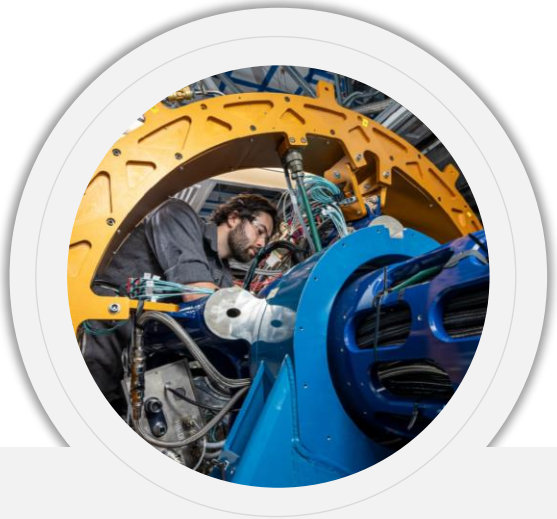


Energy Dominance

AI will be used to accelerate sustainable fusion power, optimize advanced nuclear reactor design and operation, and enable a more intelligent and resilient electrical grid.

Discovery Science

AI will be used to illuminate molecular dynamics, unify data to understand the universe from quarks to cosmos, and generate new quantum algorithms.



National Security

AI will be used to secure critical materials, accelerate advanced manufacturing, and discover mission-ready materials for defense and industry.

Bringing Together World-Class Innovators Across Sectors

Under the leadership of DOE and the White House Office of Science and Technology Policy, the Genesis Mission brings together **DOE's National Laboratories** with America's **leading universities**, **non-profits**, and **industry**, including pioneers in artificial intelligence, computing, materials, and energy.

Executive Order: Launching the Genesis Mission for U.S. Leadership in AI

- Dedicated, coordinated national effort to unleash a new age of AI-accelerated innovation and discovery that can solve the most challenging problems of this century
- Synergistic effort to bring together U.S. research and development resources to achieve dramatic acceleration in AI development and utilization
- Development and operation of the American Science and Security Platform to serve as the infrastructure of the mission integrating high-performance computing, AI modeling and agents, computational and simulation tools, secure data access, and experimental and production tools
- Identification and prioritization of national science and technology challenges where AI will make the most significant impact (i.e., demonstrate AI advantage) on national security, economic competitiveness, and technological leadership

Participating Offices

The RFA "The Genesis Mission: Transforming Science and Energy with AI" is a cross-Departmental solicitation. The following offices are accepting proposals:

- The Office of Science (SC)
- The Office of Critical Minerals and Energy Innovation (CMEI)
- The Office of Environmental Management (EM)
- The Office of Nuclear Energy (NE)
- The Office of Electricity (OE)
- The Hydrocarbons and Geothermal Office (HGEO)

The National Nuclear Security Administration will be addressing the security-focused National Science and Technology Challenges through a separate mechanism.

Scientific and Engineering Scope

See Section III. Program Description

- Applications from multi-disciplinary, multi-institutional teams are required to propose projects that address the Genesis Mission National Science and Technology Challenges to accelerate scientific discovery and R&D workflows
- Teams are encouraged to leverage AI models and frameworks and the extensive scientific and data resources of the DOE, its National Laboratories, U.S. Industry, and academia
- Applications submitted under this RFA are expected to address challenges identified in Topics 1-17 of the National Science and Technology Challenges and cross-cutting needs of the American Science and Security Platform (Topics 18-21)
- Successful AI models and workflows developed under this effort may be integrated into the American Science Cloud, Transformational Models Consortium, and/or other key components of the Genesis Mission platform

Scientific and Engineering Scope – Topics, Focus Areas
See Section III. Program Description

The RFA identifies 21 topics and 99 focus areas against which DOE is soliciting applications. Each applicant must address a primary topic and focus area.

National Science and Technology Challenges for Application Information

1. Reenvisioning Advanced Manufacturing and Industrial Productivity (SC, CMEI)
2. Scaling the Biotechnology Revolution (SC, CMEI)
3. Securing America's Critical Minerals Supply (CMEI, SC)
4. Delivering Nuclear Energy that is Faster, Safer, Cheaper (NE, SC)
5. Accelerating Delivery of Fusion Energy (SC, NE)
6. Transforming Nuclear Restoration and Revitalization (EM, SC)
7. Discovering Quantum Algorithms with AI (SC)
8. Realizing Quantum Systems for Discovery (SC)
9. Recentering Microelectronics in America (SC, CMEI)
10. Securing U.S. Leadership in Data Centers (CMEI, SC)
11. Achieving AI-Driven Autonomous Laboratories (SC)
12. Designing Materials with Predictable Functionality (SC, CMEI)
13. Enhancing Particle Accelerators for Discovery (SC)
14. Unifying Physics from Quarks to the Cosmos (SC)
15. Predicting U.S. Water for Energy (SC, CMEI)
16. Scaling the Grid to Power the American Economy (OE, CMEI, SC)
17. Unleashing Subsurface Strategic Energy Assets (HGEO, SC)

Crosscutting Needs for the American Science and Security Platform

18. HPC Code Curation, Translation, and Development for Accelerated Scientific Discoveries (SC, CMEI)
19. AI for Scientific Reasoning (SC)
20. Cybersecurity for AI-driven Science Workflows (SC)
21. AI in Fluid Flow for Energy Components and Technologies (SC, CMEI)

Key Elements

- The FY 2026 RFA is soliciting new applications for both Phase I proposals and Phase II proposals
- **Phase I proposals**
  - Scope: Small team projects to design and demonstrate a clear, tangible research workflow that incorporates AI with concrete evaluation of the potential for AI advantage. Limited to one focus area.
  - Goals: Provide a quantitative assessment of whether the proposed approach to demonstrating AI advantage in the scientific and/or technical research workflow is on a trajectory to yield a transformative scientific capability or transformative approach to an energy application, thereby justifying increased investment in a Phase II project
  - A go/no go decision to determine eligibility to advance to phase II will occur at 6 months (9 months with a requested extension)
- **Phase II proposals**
  - Scope: Larger team projects that build on Phase I projects. New Phase II projects that meet the objectives of a Phase I project may be submitted. Must identify a primary focus area but can address secondary focus areas.
  - Goals: Pursue the promising directions identified during a successful Phase I project, or a new Phase II project that has met the goals expected of Phase I projects
  - Phase II projects will be 3-5 times the level of effort of a Phase I project. Phase II projects following a Phase I award in future fiscal years may include multiple Phase I teams.

Key Elements

- **Eligible Applicants**:
  - U.S. Universities, DOE/NNSA National Laboratories, for-profit institutions, and not-for-profit institutions are eligible to serve as lead institutions.
  - Non-DOE/NNSA Federally Funded Research and Development Centers, Other Federal Agencies, and international entities may submit applications as a member of a team but **may not** be a lead institution.
- **Teaming Requirements**:
  - Phase I: Proposals must include partner institutions from at least two of the following categories: (1) DOE/NNSA National Laboratories or Scientific User Facilities, (2) Industry, and (3) Institutions of Higher Education/non-profits/other. The lead institution is considered as one of the required partner institutions.
  - Phase II: Proposals must propose larger teams (by number of institutions and/or number of performers) and include at least one partner from categories (1) and (2). A lead or partner from category (3) is strongly encouraged but not required.

Key Elements

- **Limitations on Submissions**:
  - A PI may be the lead on only one Phase I or Phase II application but may be a senior investigator on an unlimited number of applications.
  - Senior investigators (not the PI) can be on an unlimited number of applications
  - Institutions may submit only one Phase I or Phase II application per focus area but may be a partner on an unlimited number of applications.
- **Cost Sharing**:
  - Unless otherwise stated, cost share is not required for basic and applied R&D except for for-profit entities, which are required to provide not less than 20% for basic and applied R&D and not less than 50% for demonstration and commercial application tasks.
  - Additional cost sharing requirements may be included with specific focus areas.
  - The total funding to all industrial partners on a Phase I or Phase II award is expected to be up to 20% of the total requested budget for specific project-relevant research efforts

Genesis Mission Consortium

- The Genesis Mission Consortium, announced February 6, 2026, is a public-private partnership supporting the strategic direction of the Genesis Mission, working collaboratively to rapidly advance progress in science, energy and other emerging technologies, and national security
- Consortium members intend to contribute computing power, AI tokens, technical expertise, and/or in-kind support to advance Mission goals and build community
- The Consortium will connect leading industry and academic organizations with DOE and the National Laboratories and their resources, identifying high value partnerships among members to catalyze data flows and promote novel data applications
- For this RFA, the Consortium is providing an optional partnership initiative to help members and non-members collaborate on applications. See the Consortium website for additional information (https://genesismissionconsortium.org/).
- Applicants interested in leveraging the Consortium's partnership service are encouraged to do so as soon as possible
- Membership in the consortium **is not** a pre-requisite for eligibility under this RFA, and receipt of an award does not grant membership in the Consortium

Award Information

See Section I. Basic Information

- Estimated Funding: Total Funding for FY 2026 is anticipated to be $**293.76 million** in current and prior fiscal year funds.
- Period of Performance:
  - Phase I: Nine (9) months
  - Phase II: Three (3) years
- Maximum/minimum award size:
  - Phase I: $500,000 to $750,000 per award
  - Phase II: DOE anticipates Phase II awards will be approximately 3 to 5 times the size of Phase I awards on a funding per time basis, leading to a total estimated award range of $2,000,000 to $5,000,000 per year. Total awards are estimated to be $6,000,000 to $15,000,000 pending out year appropriations. The lower and upper bounds of the awards are not strict limits and subject to change during award negotiation.

Funding Mechanism

- DOE's Other Transaction Authority will provide funding and be used to negotiate intellectual property rights
- A single other transaction agreement is intended to be issued to a lead member of the applicant team. Interagency agreements will be used when required. DOE/NNSA National Laboratories will be funded using field work proposals.
- Non-negotiable Genesis Mission Fast-track OT agreements for rapid award and early start date will be provided. A milestone-based OT agreement and a cost reimbursement OT agreement are expected.
- The RFA uses two different mechanisms to support teams of multiple institutions: Collaborative Applications and Subawards. Collaborative Applications are strongly encouraged.

Application Information

- Pre-applications are not required for Phase I awards
- A Letter of Intent for Phase II awards is strongly encouraged but not required
- A Letter of Commitment from all partner institutions must be provided
- Following an initial review for compliance, all applications will be subject to a merit review and evaluated against the following criteria in descending order of importance:
  - Scientific and/or Technical Merit and Impact
  - Technical Approach, Methods, and Feasibility
  - Team, Resources, and Management
  - Commercialization Potential for Energy Applications (applied technology development applications only)
  - Budget and Cost-Effectiveness
- Both Federal and Non-Federal Reviewers may be used.
- Please see Sec. VI. Application Review Information for details on the questions provided to reviewers, and distinctions for fundamental research and applied technology development applications
- **An amended RFA will be provided soon with details on Phase II LOIs and applications**

Compute Resources

- **Appendix 2 & Provided Excel Template**
  - Applicants will include information about the resources they intend to use, or require, to conduct the proposed work, including computing, networking, and/or data resources
  - **This information is not intended to serve as an application for a computing resource allocation**
  - This information will be used by DOE to assess the capability of the organizational resources and for the planning of available DOE compute resources
- **Computing and data storage resources will not be allocated at the time of funding awards**
  - DOE will utilize a subsequent distinct process to determine the allocation of appropriate and available DOE compute resources after funding awards have been made
  - DOE foresees that computing resources may be available from the DOE/NNSA National Laboratories and/or private-sector Genesis Mission partners in support of applications under this call
  - DOE is motivated to empower funded projects to be successful
- **DOE expects its computing and data storage resources to be oversubscribed (i.e., for demand to exceed supply).**

Data Management and Sharing Plans

See Section IX. Other Information

- Data Management and Sharing Plans (DMSP) are not required as an appendix when submitting Phase I applications but will be required during award negotiation. DMSP requirements for Phase II applications will be provided in the RFA amendment.
- The DMSP should address the following requirements:
  - Validation and replication of results
  - Timely and fair access
  - Data repository selection
  - Data management and sharing resources
  - Data sharing limitations
- DOE encourages the citation of publicly available datasets within publications, including use of persistent identifiers associated with the data sets
- Scientific data made publicly available through DMSP implementation must be reported under any applicable reporting requirements to DOE's Office of Scientific and Technical Information.
- See **DOE DMSP Guidance**  and **SC DMSP Guidance** for details. 

Key Dates For Consideration for FY26 Funding

- Phase I proposal due date: April 28, 2026, at 11:59 PM Eastern
  - No pre-application or letter of intent is required
- Phase II Letter of Intent (LOI) due date: April 28, 2026, at 5:00 PM Eastern
  - LOIs are not required but strongly encouraged. DOE may hold any subsequent Phase II application until FY 2027 if a LOI is not submitted by the deadline.
- Phase II proposal due date: May 19, 2026, at 11:59 PM Eastern
- Phase II proposal resulting from a FY 2026 Phase I award due date: December 17, 2026, at 11:59 PM Eastern (subject to change pending award starts)
- Additional Phase I and Phase II applications may be submitted after the corresponding deadlines; however, DOE reserves the right to decline such applications without review

Links to Information

- **DOE Funding Opportunities Website**: https://science.osti.gov/Funding-Opportunities (Includes RFA; Templates; Frequently Asked Questions; Webinar Registration, Slides, and Recordings)
- **Genesis Mission Consortium - Partnership Exchange**: https://partnerships.genesismissionconsortium.org/user/login
- **Office of Science Updates:** https://public.govdelivery.com/accounts/USDOEOS/subscriber/new (including announcements about RFA updates)
- **Information about participating DOE offices:**
  - The Office of Science (SC): https://www.energy.gov/science/office-science
  - The Office of Critical Minerals and Energy Innovation (CMEI): https://www.energy.gov/cmei/office-critical-minerals-and-energy-innovation
  - The Office of Environmental Management (EM): https://www.energy.gov/em/office-environmental-management
  - The Office of Nuclear Energy (NE): https://www.energy.gov/ne/office-nuclear-energy
  - The Office of Electricity (OE): https://www.energy.gov/oe/office-electricity
  - The Hydrocarbons and Geothermal Office (HGEO): https://www.energy.gov/hgeo/about-hydrocarbons-and-geothermal-energy-office


Genesis Mission

HENP National Challenges and FY26 Focus Topics

7. Discovering Quantum Algorithms with AI

E. Quantum Advantage for Nuclear and Hadronic Systems (HEP, NP)

Use AI to determine the quantum computation advantage in nuclear and hadronic systems typically described through lattice quantum chromodynamics. Enable solutions using quantum algorithms that demand AI to tackle the challenges of chiral symmetry breaking, confinement, relativistic kinematics, and infinite degrees of freedom.

8. Realizing Quantum Systems for Discovery

B. AI for Control of Quantum Systems (HEP, NP)

Implement AI-based methods in control systems to dramatically improve the real-time control of practical quantum systems, including automating and optimizing calibration, tuning, noise mitigation, error correction, and readout processes, providing accurate, practical, and scalable quantum control to a wide variety of potential users.

C. AI for Quantum Imaging and Sensing (HEP, NP)

Integrate AI into multi-qubit quantum sensing applications for extreme sensitivity in both the laboratory and field environments to enhance and optimize the design, fabrication, and operation of sensors based on the quantum properties of superconductors, semiconductors, atoms, or other physical substrates.

HENP National Challenges and FY26 Focus Topics

9. Recentering Microelectronics in America

G. Microelectronics in Harsh Environments (HEP)

Integrate AI into the design and validation of robust devices and facilitate the efficient operation of devices that process high data volumes in harsh environments where there is no possibility of replacement or service.

J. Low-temperature Electronics for Sensors and Computation (ASCR, HEP)

Low-temperature (mK up to 120K) electronics, including cryogenic CMOS and superconducting logic, promises efficient, high-speed, and low-cost computing to address Genesis Mission needs in edge computing and AI accelerators, but bottlenecks in design, density, scaling, fabrication, and integration have prevented practical realization of these benefits. Research proposals may focus on EDA for superconducting digital logic, analog and digital superconducting electronics for sensors or for classical control of quantum computers, superconducting neuromorphic, AI, and control circuits, distributed superconducting computing architectures, or cryogenic CMOS.

HENP National Challenges and FY26 Focus Topics

13. Enhancing Particle Accelerators for Discovery

A. AI-driven Accelerator Facilities (BES, HEP, IRP, NP)

Enable and deploy AI systems that provide real-time operational advice, automate control functions, enhance beam stability, reduce beam tuning time, predict equipment failure, detect faults, and optimize performance for both large and small-scale accelerator facilities currently operating or under construction. Scope includes the development and deployment of high-fidelity AI-driven "digital twins" of these particle accelerators to enable a sophisticated simulation and design environment and AI systems that can mitigate cost and risk of accelerator facilities under construction.

HENP National Challenges and FY26 Focus Topics

14. Unifying Physics from Quarks to the Cosmos

A. Foundation Models of Particle Interactions and Cosmic Physics (HEP,NP)

Develop and curate the essential data of nuclear and particle experimental efforts, critical to train foundation models of particle interactions and cosmology to accelerate new breakthroughs in our understanding of the universe. Data and models may include the future Electron-Ion Collider, cosmic observations, underground and accelerator-based experiments as well as synthesizing different modalities of data from across multiple large-scale sky surveys to understand nuclear astrophysics, dark energy, dark matter, and the physics of the early Universe. Successful scope will seamlessly span experimental and theoretical inputs across the pinch points of analysis pipelines from detector-level through to final scientific artifacts, along with the output of advanced theoretical calculations. Discovery science potential will be maximized by addressing such technical challenges as sparse-data domains and real-time data acquisition of high-dimensional petabyte-scale datasets with associated scalability challenges and interpreting the experimental signals using theoretical knowledge.

HENP National Challenges and FY26 Focus Topics

14. Unifying Physics from Quarks to the Cosmos.

B. AI Accelerated DUNE Science (HEP)

Develop AI methods that significantly speed up and enhance the DUNE science program, reducing the time needed for the collaboration to publish neutrino oscillation measurements, significantly improving the sensitivity to neutrinos from core-collapse supernova, and developing new flagship measurements that will enhance the DUNE science goals.

C. Expedited Discovery from High Complexity and Petabyte-scale Datasets (HEP, NP)

Partner domain expertise with data science and industry to develop AI methods and techniques capable of drawing robust scientific insight from increasingly complex and/or petabyte-scale datasets. Enable deeper insights by directly connecting datasets with theoretical parameters for uncertainty-aware reasoning to leverage the high-dimensionality of particle physics datasets. Scope will address the critical slowdown problem in Lattice QCD, automate big-data analysis, achieve new levels of experimental precision and theoretical calculation, and significantly improve understanding of the universe and particle interactions. AI-assisted design to maximize experimental sensitivity to fundamental parameters of interest or that significantly reduces costs of proposed or current projects and can be implemented in the next three to five years, is also of interest.

Questions & Answers

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

If your question is not answered today
or in the Frequently Asked Questions document,
please submit via GenesisMissionNOFO@science.doe.gov

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