CASC | Coalition for Academic Scientific Computation

Response to DOE RFI: "Advancing AI for Science and Engineering Workforce Development and Genesis Mission Challenges"
AGENCY: Office of Science, Department of Energy.
RFI Number: DE-SC-26-016
Contact: Kathryn Kelley, Executive Director, Coalition for Academic Scientific Computation, kelley@casc.org, 202.670.5798

The Coalition for Academic Scientific Computation (CASC) represents more than 108 leading U.S. research universities and federal supercomputing centers operating advanced research computing and data (RCD) environments. CASC members collectively manage a substantial share of the nation's academic high-performance computing (HPC), advanced networking, data platforms, and AI-enabling cyberinfrastructure.

CASC strongly supports the vision articulated in Executive Order 14363, "Launching the Genesis Mission," and DOE's goal of doubling the productivity and impact of American science and engineering through AI-powered discovery. Achieving this vision will require coordinated investments in infrastructure, workforce development, and durable partnerships among DOE National Laboratories, universities, industry, and philanthropic organizations.

Below, CASC responds to each question posed in the RFI.

1. How can DOE catalyze research collaborations between DOE National Laboratories, universities, and industry to meet the goals of the Genesis program?

DOE can catalyze impactful collaborations by:

a. Funding Integrated Research + Infrastructure Awards

Programs should combine:

- AI-driven scientific research
- Shared computing and data infrastructure
- Workforce training components
- Explicit multi-sector participation

Infrastructure and research must be co-designed, not treated as separate investments.

b. Establishing Regional AI for Science Consortia

Regional consortia can:

- Expand access to advanced AI infrastructure
- Share technical staff expertise
- Reduce duplication
- Include under-resourced institutions

For efficiency and scalability, these regional consortia should have a broadly defined mission to serve workforce and economic development in the region and thus contribute to the Genesis mission. The funding mechanisms from DOE for these consortia can align with DOE mission areas (energy systems, materials discovery, advanced manufacturing, fusion, etc.) and integrate National Lab capabilities with distributed university-operated cyberinfrastructure.The regional consortia should be designed with funding from other partners, including state funding and funding from institutions in the region, and federal agencies that have established these regional mechanisms.

c. Supporting Co-Design and Applied Use-Inspired Research

Industry participation should extend beyond advisory roles to co-development of models, tools, and AI workflows relevant to national priorities.

2. How can DOE incentivize partnerships to establish dual competency training paths and prepare doctoral/postdoctoral trainees?

DOE can:

a. Require Embedded Infrastructure Experience

Dual-competency programs must include hands-on experience using:

- Production-scale HPC and AI clusters
- Secure data environments
- Reproducible research workflows

b. Fund Faculty + Research Computing Professional Partnerships

AI workforce training depends on research computing professionals (RCD staff). DOE should:

- Support joint appointments
- Fund instructional computing specialists
- Recognize RCD professionals as co-educators

c. Support Stackable Credentials

Programs should offer:

- AI + domain microcredentials
- Certificates for working professionals
- Professional master's tracks

3. What attributes might attract undergraduates to dual competency programs?

Not answered

4. Beyond funding, what other opportunities could DOE bring to these partnerships?

DOE can provide:

- Structured access to National Lab user facilities through virtual and on-site internships
- Organize mentoring and visitor lectureships of DOE laboratory staff scientists and technicians to teach at universities for a few months to a semester
- Shared curriculum frameworks and competency standards
- Co-mentorship and research rotations
- Cybersecurity and compliance best-practice guidance
- Exposure to large-scale, mission-driven AI applications

5. In addition to classroom and research training, what other contributions could universities make?

Universities can contribute:

- Production RCD environments for experiential learning
- Secure enclaves for controlled-access data to prepare students and researchers for working in restricted data in national labs
- Workforce coordination through campus research computing organizations
- Regional convening power to engage MSIs, R2s, and community colleges

Universities also play a key role in interdisciplinary curriculum governance and cross-departmental coordination, technology transfer and commercialization support.

6. Beyond funding, what contributions could industry and philanthropic organizations make?

Industry can provide:

- Real-world datasets and applied AI challenges
- Co-designed curriculum aligned with workforce demand
- Paid internships and apprenticeships
- Hardware partnerships and cloud credits
- Workforce forecasting to inform program design

Philanthropic organizations can:

- Support scalable models nationally
- Fund student scholarships
- Underwrite regional consortia development

Active participation—not only advisory input—is essential.

7. In addition to AI, which disciplines are well-suited for dual competency training?

Not answered

8. What components are needed for effective dual competency degree programs?

Not answered

9. What components are needed to prepare graduate students and postdoctoral associates?

Not answered

10. How could partnerships provide new training opportunities for public and private sector jobs?

Partnerships can provide:

- Joint appointments and industry sabbaticals
- Lab–University research residencies
- Shared testbeds and pilot facilities
- Industry-sponsored challenge competitions
- Applied translational research projects

These experiences ensure graduates understand both research rigor and operational deployment.

11. What experiential opportunities are needed to complement classroom instruction?

Not answered

12. How many students could be trained, and how could programs scale nationally?

Not answered

Overarching Recommendations

To realize the Genesis Mission workforce goals, CASC recommends that DOE:

1. Fund regional AI for Science consortia integrating Labs, universities, and industry.
2. Couple infrastructure investments with workforce training requirements.
3. Recognize research computing professionals as essential educators.
4. Establish structured Lab–University co-mentorship pathways.
5. Support stackable, scalable credentialing models.

Conclusion

The Genesis Mission presents a historic opportunity to align AI infrastructure, workforce development, and mission-driven science. CASC and its member institutions operate the distributed cyberinfrastructure backbone necessary to scale this effort nationally.

With coordinated investments in infrastructure, partnerships, and broad workforce pipelines, DOE can accelerate AI-enabled discovery while strengthening American scientific leadership and economic competitiveness.

CASC welcomes continued engagement with DOE and its National Laboratories to operationalize this vision.