

U. S. Department of Energy Office of Nuclear Energy Notice of Opportunity: NE Voucher Program Request for Assistance

A. Overview

The Office of Nuclear Energy (NE) within the Department of Energy (DOE) provides annual fiscal year (FY) funds for vouchers to assist applicants, working to develop advanced nuclear energy technologies. The Gateway for Accelerated Innovation in Nuclear (GAIN) is a DOE initiative that connects the nuclear industrial community with the technical, regulatory, and financial support necessary to move new or advanced nuclear technologies toward commercialization and ensure the continued reliable and economic operation of the existing fleet. The NE Voucher Program fulfills GAIN's objective of accelerated and cost-effective commercialization of innovative nuclear energy technologies by facilitating access to world class expertise and capabilities available across the United States (U.S.) DOE Laboratory Complex.

Vouchers are not financial awards made directly to applicants. Vouchers provide funding to a facility within the DOE complex to help eligible businesses overcome critical technological and commercialization challenges.

It is strongly suggested that prospective voucher applicants contact the GAIN Office (<https://gain.inl.gov/SitePages/Contact%20GAIN.aspx>) or known contacts at DOE laboratories to establish the feasibility of the intended work scope and a focused cost estimate, both of which are essential in the creation of a successful application.

The Nuclear Energy Infrastructure Database (NEID) provides a list and description of many nuclear energy R&D capabilities and can be accessed after an initial registration via the GAIN website, gain.inl.gov, or directly at nsuf-infrastructure.inl.gov.

DOE-NE will accept applications focused on innovation that support production and utilization of nuclear energy produced from fission (e.g., for generation of electricity, supply of process heat, etc.) in the following general topic areas:

- Analysis and evaluation of, and for, advanced reactor concepts and associated designs, including development of R&D-based licensing, technical requirements, or regulatory strategies
- Structural material and component development, testing, and qualification
- Advanced nuclear fuel development, fabrication, and testing (includes fuel materials and cladding)
- Development, testing, and qualification of instrumentation, controls, and sensor technologies that are hardened for harsh environments and secured against cyber intrusion
- Modeling and simulation, high-performance computing, codes, and methods
- Technical assistance from subject matter experts and/or data/information to support technology development and/or assess key technical or licensing issues.

Generally speaking, proposed work should be of an applied nature for an identified technology or system, i.e., beyond the stage of establishing the fundamental scientific principles. Proving out a fundamental scientific hypothesis or development of a new constitutive model for a physical phenomenon is not aligned with the voucher program (there are other DOE programs such as the Consolidated Innovative Nuclear Research [CINR] FOA or Advanced Research Projects Agency–Energy [ARPA-E] opportunities that are focused on fundamental science or research and development). Data generation intended to be utilized in an established constitutive model in support of technology development or evaluation of system

behavior (i.e., practical use) is more appropriately aligned.

Applications requesting neutron irradiation (test reactor) capability will only be considered for award if the nature of the proposed work utilizes a previously designed irradiation capsule or no capsule (i.e., pool access for gamma exposure, etc.) and adheres to the principles described in the preceding paragraph. In general, the DOE Nuclear Science User Facilities (nsf.inl.gov) are the preferred pathway for irradiation experiments.

Note that applications applicable to isotope production will not be considered for award unless there is a clear indication that the focus of the underlying technology supports the production of nuclear fission energy. Fusion energy has its own program, please refer to: <https://infuse.ornl.gov/>.

B. Eligibility Requirements and Certifications

Eligible Requester – An eligible requester is a business that (1) is majority (51%) owned by a U.S. citizen or lawfully admitted permanent resident alien, or a U.S.-based corporation; (2) is organized according to the laws of any of the 50 states, the District of Columbia, or any U.S. territory or possession; and (3) operates primarily within the United States of America.

Small Businesses – Extra consideration (see Section E.4) during the review process will be given to those companies who qualify as a small business [in addition to those qualities listed previously, means a small business concern as defined in Section 2 of Public Law 85–536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration].

Foreign Affiliation – Requesters who are owned, controlled, or influenced by a foreign government, agency, firm, or corporation, as per DOE Policy 485.1 will be required to sign the DOE Standard CRADA as described in Section C. The transfer of technology and data resulting from the work done under an NE Voucher award by any recipient to a foreign entity will be subject to U.S. Government export control laws and regulations.

Company Certifications – Requesters must certify that they will accept one of the NE Voucher Program Agreements (CRADAs) and will provide the required 20 percent or more cost-share upon selection for a voucher. Details on NE Voucher Agreements can be found in Section C of this document. Further details on cost-share requirements can be found in Section F.

Eligible Types of Assistance – Assistance can provide access to unique capabilities and facilities within the DOE complex. Vouchers cannot be used to obtain a service or use equipment that is available in the private sector.

National Laboratory Staff – National Laboratory staff are not eligible to apply to the NE Voucher Program and should not be listed as co-applicants or co-PIs. Application materials must be prepared by the applicant but assistance from the laboratory contact should be sought to vet feasibility and create a focused cost estimate.

Universities – Since vouchers are intended to utilize DOE laboratory infrastructure and capability, university professors or students are not eligible for award under the NE Voucher program and cannot

receive funds from DOE under a voucher award. University staff or students may participate in a voucher on a voluntary, no-cost basis or if funded through the awardee's cost share.

C. Voucher Details

Funding – Vouchers are not financial awards made directly to applicants. Vouchers provide funding to a facility within the DOE complex to help eligible businesses overcome critical technology and commercialization challenges. DOE anticipates a funding level for vouchers of approximately \$4M - \$5M each fiscal year. Each award is valued at approximately \$50K - \$500K contingent upon Congressional appropriation in the areas described in Section A. Requests for awards larger than \$500K may be considered in cases where there is a clear need involving a truly exceptional innovation or technology. A 20 percent cost share calculated based on the full project cost (the sum of the government share and the voucher recipient share equals the full project cost) is required.

Period of Performance – It is DOE's intent that the voucher activities be completed within 12 months from the date the agreement is executed.

Terms and Conditions – In most cases, voucher recipients will sign one of two, non-negotiable Cooperative Research and Development Agreements (CRADAs). DOE-NE is committed to reducing the burden and processing time needed for vouchers; therefore, terms and conditions in the CRADAs will not be negotiated apart from exceptional cases requiring alternate provisions as determined solely by DOE.

- GAIN Small Business Voucher CRADA: Small Business/Non-Profit voucher requesters with NO foreign ownership/control/influence. The GAIN Small Business Voucher CRADA will be the agreement mechanism for requesters that qualify as small or non-profit entities as defined in Section B and are not determined to be owned, controlled, or influenced by a foreign government, agency, firm, or corporation.
- DOE-Standard CRADA: Large Business and all eligible voucher requesters with foreign ownership/control/influence. The DOE-Standard CRADA will be the agreement mechanism for requesters that do not meet the requirements for small/non-profit businesses and/or are determined by DOE to be owned, controlled, or influenced by a foreign government, agency, firm, or corporation.

Products embodying intellectual property developed with NE-Voucher Program assistance must be substantially manufactured in the U.S. Please refer to the specific agreements referenced previously for further details.

Voucher awardees will be the sole recipient of technology transferred to them as a result of this voucher work. Any transfer of technology to foreign entities requires specific authorization under federal export control laws and regulations including 10 CFR Part 810.

D. Key Dates – The following notional schedule is provided to help understand general time frames expected. (starting from each quarterly due date):

- 0 weeks – 5:00 PM Eastern Time Due Date for quarter application submissions for review

- 6 weeks – Expected notification of selections
- 12 weeks – Planned finalization of statement of work, budget, and cost share
- 18 weeks – Expected finalization of agreements
- 19 weeks – Voucher work expected to begin

Quarterly voucher application due dates are January 31, April 30, July 31, and October 31 on an annual basis. If one of these dates falls on a weekend (Saturday or Sunday), the due date is the following Monday. The voucher Request for Assistance (RFA) will remain open at all times for submission of applications, but review cycles will only be conducted according to the aforementioned notional schedule and associated due dates. **Note:** The schedule is dependent upon the Department receiving annual appropriations.

E. Merit Review Criteria

Requests for assistance will be evaluated in accordance with the following criteria:

1. Technical Merit (50 Points)

- Extent to which the requester has clearly identified the problem or challenges the company is facing in developing innovative nuclear energy systems and how the assistance from the host institution can assist in overcoming these challenges. (15 points)
- Extent to which the applicant’s approach is realistic and feasible with respect to technical considerations and is appropriately aligned with the host institution’s capabilities. (15 points)
- Extent to which the innovation/concept/technology will contribute in a significant manner in one or more of the following areas toward the deployment of advanced nuclear energy systems or components. Examples of improvements could include but are not limited to: (20 points)
 - Economic competitiveness (capital cost, operations cost, enhanced performance)
 - Capability to penetrate non-electricity market
 - Enhanced safety
 - Reduced environmental impact
 - Improved management of used nuclear fuel
 - Reduced proliferation risk
 - Increased regulatory acceptance

2. Business and Market Impact (40 Points)

- Quality of the requester’s plan to utilize the results to advance their nuclear energy innovation/concept/technology. Applicants must clearly state how the results of a successful voucher will enable them to overcome the stated technical hurdle and how it will contribute to their overall ability to be successful. This should include a description of the specific impact and outcome that is anticipated as a result of the voucher. (20 points)
- Extent to which the innovation/concept/technology will contribute to the overall nuclear energy marketplace or state of technology development. (10 points)
- Extent to which the requester has a feasible plan for deploying the innovation/concept/technology to the market. (10 points)

3. Qualifications and Experience (10 Points)

- Extent to which the requester is capable of leading a successful project and subsequent implementation or deployment with respect to qualifications and resources. (10 points)

4. Small Business Consideration

- Requesters who qualify as a small business (see eligibility requirements in Section B) will receive an additional five points of consideration that will be added to their overall score.

F. Cost-Share

Cost-share of no less than 20% is required. Requesters may provide cost share in the form of monetary or in-kind contributions. Allowable in-kind contributions include, but are not limited to, personnel costs; indirect costs; facilities and administrative costs; rental value of buildings or equipment; and the value of a service, other resource, or third-party, in-kind contribution.

Cost-share contribution must be reasonable, allowable, and allocable under the applicable Federal Cost Principles. In addition, cost share must be verifiable upon submission of the full application.

Requesters may use funding or property received from state or local governments to meet the cost-share requirement, as long as the funding was not provided to the state or local government by the Federal Government.

Sources that may NOT be used by the requester to meet their cost-share obligations include revenues or royalties from the prospective operation of an activity beyond the project period; proceeds from the prospective sale of an asset of an activity; federal funding or property (e.g., federal grants, equipment owned by the Federal Government); or expenditures that were reimbursed under a separate Federal Technology Office. For example, Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) funding cannot be used to provide in-kind or direct cost-share. Small businesses with SBIR/STTR funding can make a request for assistance under the NE Voucher Program, however, SBIR/STTR awarded funds cannot be used to meet the voucher recipient's cost-share requirements.

Requesters may not use the same cash or in-kind contributions to meet cost-share requirements for more than one project or program.

G. Submitting the RFA

The NE Voucher Program RFA and submission instructions may be found on the GAIN Website at gain.inl.gov.

Please do not provide any proprietary information in the request or in supporting documentation or resumes.

The anticipated host institution, capability, and host institution point of contact should be

selected or identified within the electronic NE Voucher application form at the time of application. Host institution staff should not be listed as co-PIs or co-applicants; DOE laboratory staff are not eligible for voucher awards.

Each eligible entity may submit only one application to this RFA per quarterly review cycle. It is the intent of DOE-NE to leave this funding opportunity open continuously for applications, and these applications will be reviewed for selection on the nominal quarterly dates identified in Section D. An applicant is allowed no more than \$975,000 (not including cost share) in active voucher funding awards resulting from this RFA. Once a current awarded project is complete, the applicant is eligible to receive additional voucher funding, if selected. Applications for additional voucher funding will be considered if an active voucher(s) for the applicant is anticipated to be completed within three months of submission of the new application, as long as the total voucher funding will remain below \$975,000 with the new award. Any current active vouchers will be transitioned to this current threshold limit for new voucher applications.

Example 1 – Entity has no current active vouchers. Entity can apply for one voucher per cycle and awards may be made until the funding (not including cost share) reaches the \$975,000 active voucher limit. The limit on each voucher of approximately \$500,000 (Section C) is still applicable.

Example 2 – Entity has three active vouchers each worth \$300,000 for a total of \$900,000. Option 1 – Entity would be eligible to apply for a \$75,000 voucher. Option 2 – If one of the \$300,000 vouchers is anticipated to be complete within three months of submission of the new application, then entity could apply for a voucher up to \$375,000 (not including cost share).

H. RFA Template

The RFA template is provided in Appendix A. Once completed, this document must be uploaded into the electronic NE Voucher Application available on gain.inl.gov per the schedule provided in Section D. This also applies to the maximum of three, two-page resumes, which are optional.

I. Consideration of Vouchers where Companies have ARDP or iFOA Projects

Entities that have ongoing Advanced Reactor Demonstration Program (ARDP) or Industry Funding Opportunity Announcement (iFOA) (DE-FOA-0001817) projects may still apply for a voucher. Additional justification will be required to note how the voucher work is distinct from the ARDP/iFOA award. Please add an appendix and explain how the voucher work scope is separate and not covered under the ongoing ARDP/iFOA cooperative agreement. This appendix does not count against the voucher application length and should total no more than one page.

advancing nuclear energy deployment in one or more of the following areas:

- a. Energy generation economics
- b. Economic competitiveness (capital cost, operations cost, enhanced performance)
- c. Capability to penetrate non-electricity market
- d. Enhanced safety
- e. Reduced regulatory uncertainty
- f. Reduced environmental impact
- g. Improved management of used nuclear fuel
- h. Reduced proliferation risk
- i. New processes or materials
- j. New products or markets.

Section II: Business & Market Impact

1. Use of Project Results: Describe how the results of the proposed assistance will enable technical advancement of your company's innovation, concept, or technology. Provide specific information on the degree of impact the project, if successful, will have on your company's products or services.
2. Market Analysis: Describe the expected impact on the broader market if the project is successful.
3. Deployment Approach: When and how will these new or improved products or services be introduced to the market or otherwise benefit your company?

Section III. Qualifications & Experience

List the key members of your company's leadership and technical team. Briefly describe their qualifications and experience. Respondents may include up to three resumes.