REQUEST FOR INFORMATION
Centrifuge Pilot Plant Deployment Study

Request for Information regarding development of an engineering study leading to deployment of a centrifuge pilot plant for uranium enrichment, which will transition to highly enriched uranium (HEU) production.

This is not a request for proposal (RFP) and is not to be construed as a commitment by the Government to issue a solicitation or ultimately award a contract. Market Research is being conducted at this time for the sole purpose of determining interest and capability of potential sources to meet the needs of DOE/NNSA.

I. BACKGROUND / PROGRAM DESCRIPTION

The Domestic Uranium Enrichment (DUE) Program is part of the Tritium and DUE Program Office (NA-192) within the U.S. Department of Energy (DOE), National Nuclear Security Administration (NNSA). The DUE Program's mission is to ensure a reliable and economic supply of enriched uranium (EU) for national security missions.

The United States Government currently lacks the ability to enrich uranium to support defense missions. The last government-owned enrichment facility, the Paducah Gaseous Diffusion Plant, closed in 2013. The DUE Program is working to establish a new capability in time to meet national security needs. In 2017, the program released a Request for Information for Supply of Enriched Uranium and held an Industry Day. The DUE Program intends to meet its defense requirements using one or more centrifuge technologies, but first needs to develop and demonstrate candidate centrifuge technologies to better characterize performance, reliability, and life-cycle costs prior to selecting a path forward for a production-scale capability.

Since 2016, the DUE Program has funded the research and development of small centrifuge technology under the Domestic Uranium Enrichment Centrifuge Experiment (DUECE) project at Oak Ridge National Laboratory (ORNL). ORNL is planning to demonstrate the DUECE technology in an engineering-scale cascade located on their campus in Tennessee. Prior to potential deployment in a production-scale facility, NNSA requires that the DUECE technology be tested in a pilot plant to demonstrate centrifuge reliability, production-scale cascade operations, production-rate centrifuge manufacturing, and other supporting systems.

The DUE Program strategy seeks to ensure future national security production capability by leveraging the pilot plant for future HEU production use and partnering with commercial industry where appropriate. The Program is currently evaluating acquisition options to enrich LEU in a pilot plant, which can eventually be repurposed for HEU production once the LEU pilot plant demonstration is complete. The first step in that process is completing an engineering study of options for an HEU-capable uranium enrichment pilot plant.

The DUE Program envisions executing this work in four phases:

Phase 1: Engineering study(ies) to evaluate options

Phase 2: Facility design, licensing, long-lead procurements, site preparation

Phase 3: Facility construction, cascade manufacture/installation, pilot operations

Phase 4: Transition to HEU production

Parties responding to this RFI should only do so if they are willing and able to execute all four phases, i.e., deploying and operating an enrichment pilot plant and later producing HEU for defense purposes. However, the program would support industry partnerships to execute various aspects of the project.

II. NAICS CODE– 325180 Other Basic Inorganic Chemical Manufacturing

This industry comprises establishments primarily engaged in manufacturing basic inorganic chemicals (except industrial gases and synthetic dyes and pigments). The applicable NAICS code is 325180, Other Basic Inorganic Chemical Manufacturing. The small business size standard is 1,000 employees.

III. GENERAL PROJECT OBJECTIVES AND REQUIREMENTS

This section provides high-level objectives and requirements for the pilot plant to aid respondents in understanding the basic scope of the project.

1) The pilot plant has three primary objectives:
    a. Demonstrate the DUECE centrifuge in a production configuration cascade using production-scale feed and withdrawal and other necessary support systems. This includes demonstration of adequate machine reliability to support long-term production deployment and maintainability. The DUE Program requires the pilot plant to begin LEU pilot operations by approximately 2030.

    b. Demonstrate the ability to produce enriched uranium free of peaceful use obligations ("unobligated"). Enriched uranium is considered unobligated when neither the uranium nor the technology used to enrich it carries an "obligation" from a foreign country requiring that the material only be used for peaceful purposes. Enrichment technology, supporting equipment, and feed material must all be unobligated to be suitable to meet NNSA mission needs.

    c. Eventual production of HEU material in support of naval nuclear propulsion needs.

2) The pilot plant should initially be configured to produce LEU at a target assay of 4.95% U-235 and enable future production of HEU at an assay of 93% U-235 or greater.

3) The initial pilot plant demonstration (producing LEU) should operate for at least 24 months. Subsequent LEU demonstrations may be completed prior to changeover to HEU production.

4) The pilot plant should be able to support complete change-out of all centrifuge machines.

5) For planning purposes, the pilot plant facility can be assumed to be roughly 100,000 square feet.

6) For planning purposes, there is no specific enrichment capacity requirement for the pilot plant. However, upon conversion to HEU production, the capacity is expected to be roughly 50,000 SWU/yr.

7) The facility will be licensed as a Category 1 facility by the US Nuclear Regulatory Commission for HEU production. It may be possible to initially license as a Category 2 facility for the initial LEU demonstration as long as transitioning to Category 1 is feasible to meet the HEU production requirement.

8) The design of the centrifuges for the plant will be provided by the Government. Assistance from industry will be needed to facilitate manufacturing, assembly, and installation of the centrifuges in the pilot plant.

9) The pilot plant should be built either on private land or public land that is leasable to private industry.

10) The plant must provide space for centrifuge assembly and disassembly, inspection, and testing of subcomponents.

11) The plant must include a laboratory to analyze process gases and byproducts for assay and chemistry.

12) The plant must provide space for storage of natural uranium feed, depleted uranium tails, and enriched uranium product. Storage quantities are not yet defined. Upon conversion to HEU production, the plant must provide space for storage of high assay low-enriched uranium feed and natural or low-enriched uranium tails.

IV. GENERAL QUESTIONS

1) Would your company be interested in designing, licensing, building, and operating a domestic uranium enrichment pilot plant for the DUECE small centrifuge, as described in Section III?

2) Would your company be able to construct this plant on an existing site controlled by your company? If so, describe the characteristics of the site that would make it suitable for this plant.

3) Would your company be interested in conducting an engineering study for this project, including estimates of the cost, schedule, and risks associated with the project?

a. Is your company a small business?
b. What capabilities does your company have that would enable you to complete this study?
c. Please describe any history your company has with uranium enrichment or related work
d. Please provide acknowledgement of required licenses and permits to house a domestic uranium enrichment pilot plant such as an NRC Category 1 license or an NRC Category 2 license that could be converted to Category 1.
e. Please describe your company's relevant human capital capabilities, expertise, and experience, including management experience. If you anticipate your company would need to increase staffing to carry out this work, please describe your ability to do so.

4) What other information beyond those listed in Section III and information associated with the DUECE centrifuge, would be needed to complete the engineering study?

5) What additional information do you require from NNSA that may be pertinent to the pilot plant strategy?

V. CAPABILITY STATEMENT FORMAT

Interested parties that have experience in uranium enrichment or other related services are requested to submit a capability statement and the following company information.

a. Number of years' experience and description of experience in uranium enrichment or related services including human capital capabilities, expertise, and management experience.
b. Business size under NAICS 325180
c. Current Federal Government contracts (if any)
d. Name, address, and UEI number
e. Point of contact email address and phone number
f. Response to the questions outlined in Section IV.

Capability statements shall be no more than 5 pages in length. Any and all cost associated with the preparation of the capability statement is the sole responsibility of the respondents.

VI. SUBMISSION INSTRUCTIONS

DOE invites all interested parties to submit in writing by August 16, 2023, comments and information on matters addressed in this RFI in the capability statement. Any information that may be business proprietary and exempt by law from public discourse should be submitted as described in Section VII. Business Proprietary Information. Interested vendors shall submit capability statements to sang.han@nnsa.doe.gov by August 16, 2023 at 1:00PM EDT.

FOR FURTHER INFORMATION CONTACT: Requests for further information should be sent to: Sang Han at sang.han@nnsa.doe.gov with "Question on Centrifuge Pilot Plant Deployment Study" in the subject line.

VII. BUSINESS PROPRIETARY INFORMATION

Pursuant to 10 CFR 1004.11, any person submitting information he or she believes to be business proprietary and exempt by law from public disclosure should submit via email, or postal mail two well-marked copies: One copy of the document marked "Business Proprietary" including all the information believed to be proprietary, and one copy of the document marked "non-Proprietary" with the information believed to be business proprietary deleted. DOE will make its own determination about the business proprietary status of the information and treat it according to its determination. Factors of interest to DOE when evaluating requests to treat submitted information as business proprietary include: (1) a description of the items; (2) whether and why such items are customarily treated as business proprietary within the industry; (3) whether the information is generally known by or available from other sources; (4) whether the information has previously been made available to others without obligation concerning its business proprietary nature; (5) an explanation of the competitive injury to the submitting person which would result from public disclosure; (6) when such information might lose its business proprietary character due to the passage of time; and (7) why disclosure of the information would be contrary to the public interest.

VIII. RFI DISCLAIMER

This is not a request for proposals (RFP) and is not to be construed as a commitment by the Government to issue a solicitation or ultimately award a contract. Market Research is being conducted at this time for the sole purpose of determining interest and capability of potential sources currently available to meet the needs of DOE/NNSA.

In accordance with Federal Acquisition Regulation 15.201 (e) RFIs may be used when the Government does not presently intend to award a contract, but wants to obtain price, delivery, or other market information or capabilities for planning purposes. Responses to these notices are not offers and cannot be accepted by the Government to form a binding contract.