

August 3, 2021

The Honorable Dianne Feinstein
Chair
Subcommittee on Energy and Water
Development
U.S. Senate
Washington, D.C. 20510

The Honorable John Kennedy
Ranking Member
Subcommittee on Energy and Water
Development
U.S. Senate
Washington, D.C. 20510

**Building the Domestic High-Assay Low Enriched Uranium Supply Chain:
A National Imperative**

Dear Chair Feinstein and Ranking Member Kennedy:

High Assay Low Enriched Uranium (HALEU) is uranium enriched between 5% and 20% and is required for most U.S. advanced reactors designs. Currently, there is no commercial production capability for HALEU in the United States or Europe. A domestic HALEU supply chain is essential to support the commercial deployment of American-made advanced nuclear reactors.

The Nuclear Energy Institute strongly recommends that \$200 million be made available for HALEU Infrastructure in FY22 appropriations to jumpstart this essential HALEU production capacity.

Advanced reactor deployment is a national priority

Nuclear energy provides more than 50% of the carbon free energy in the U.S. Both the existing nuclear fleet and new advanced reactors will be essential for the U.S. and utilities to meet their carbon reduction commitments. Congress recognized the urgency to deploy advanced reactors and established the Advanced Reactor Demonstration Program (ARDP) in FY20 Appropriations. In 2020, the Department of Energy (DOE) made two awards under the ARDP demonstration pathway, five awards under the risk reduction pathway, and three under the ARC-20 program. The majority of these designs will require HALEU based fuels, including the only ongoing combined license application review at the Nuclear Regulatory Commission.

Why does the U.S. need a HALEU enrichment capability?

Companies in the U.S. and Canada are developing, licensing, and planning to deploy advanced reactors that require HALEU. Currently the only commercial supplier of HALEU is the Russian state-owned enterprise. Small quantities of HALEU can be made available through U.S. government downblending programs, but this supply is finite, costly to process, and cannot scale to meet commercial HALEU demand.

In the near term, some of the advanced reactor companies in the U.S. and Canada expect to purchase HALEU from the Russian state-owned enterprise to meet deployment timelines. In the

longer-term, the desire is the establishment of HALEU enrichment capability within the U.S. This could be achieved by a current enricher adding HALEU capacity (e.g., Urenco, Centrus) or a new enricher (e.g., Global Laser Enrichment, ORANO) entering the market.

Current status of HALEU enrichment in the U.S.

If current deployment schedules are met, it is estimated that both companies selected for the ARDP demonstration pathway will require HALEU for their reactors in 2024 and 2025 for the first cores and additional HALEU in subsequent years for reloads. In addition, other companies are working to deploy HALEU fueled microreactors by the mid-2020s in the U.S. and Canada.

Centrus is on schedule to complete a pilot demonstration of HALEU enrichment capability in 2022. The resulting facility will be able to produce less than 1 metric ton of HALEU per year. This capacity can only supply a small percentage of the ARDP demonstration awardee needs by 2024 and 2025.

The U.S. cannot rely on Russia to supply our long-term HALEU needs

Long term reliance on a Russian state-owned enterprise is an unacceptable business and political risk. While the Russian enricher may supply near-term HALEU needs for initial cores, imports from Russia are limited by the Russian Suspension Agreement (RSA) as codified in the Energy Act of 2020, and encompass imports of HALEU. Since the existing reactor fleet typically purchases enriched uranium years ahead of reloading fuel in the reactor, it will be challenging, if even possible, for advanced reactor companies to purchase HALEU within the quota. Companies deploying a first-of-a-kind advanced reactors are typically not in a position to establish long-term contracts for enriched uranium before the reactor is operational. The RSA does authorize exemptions for uranium for first cores and does provide a pathway for exemptions to the quota for subsequent cores requiring DOE Secretarial approval. However, this increases deployment risk for the companies and their utility customers.

Congress and DOE must jumpstart HALEU enrichment capability in the U.S.

The main challenge with developing the domestic HALEU supply chain is market risk. The commercial industry cannot finance the enrichment capacity without firm customers with substantial long-term demand and that customer base does not currently exist. Additionally, customer demand for advanced reactors is often constrained due to the lack of HALEU availability. In all cases, investment will be necessary to build out HALEU infrastructure and Western enrichers will not make that investment without long-term orders or other financial assistance, either from the commercial or the public sector. Government support for expanding enrichment capacity is crucial to help jumpstart the industry.

NEI estimates that a 10+MTU capability in the U.S. could become available by 2026 at the earliest, assuming appropriate private sector and government investment occurs immediately. The Energy Act of 2020 provided the framework for a DOE Advanced Nuclear Fuel Availability program that could help establish a U.S. based HALEU supply chain and eliminate reliance on a single HALEU supplier. The funding level authorized in the Energy Act of 2020 (between \$33

million and \$39 million annually) is insufficient to support the rapid development of a HALEU enrichment capability in the U.S.

NEI requests a \$200 million annual budget to help develop HALEU infrastructure in the U.S. through a fair and open competitive process. Without this level of funding beginning in FY22, the private sector would have no reason to believe that the DOE is serious about supporting the deployment of HALEU enrichment in the U.S. in a timely manner. In addition, the taxpayer and private investment that has been made in HALEU enrichment to date may be lost if the private sector does not view the DOE as being a serious potential partner.

Now is the time to encourage multiple companies to prepare to compete for future DOE funding to build out the HALEU infrastructure in the U.S. The first step, however, is to demonstrate that the U.S. is seriously committed to this effort with an appropriate level of funding in FY22, i.e., \$200 million. Once the funding is secured, DOE can work rapidly to establish funding opportunities or contracts within the same fiscal year.

In addition to supporting the establishment of HALEU enrichment capability in the U.S., the processing of EBR-II fuel must continue and a funding level of \$17.5 million is necessary for FY22 to support advanced reactor deployment schedules.

Thank you for your consideration.

Yours sincerely,

James A. Dobchuk, President and Chief Commercial Officer, Global Laser Enrichment
Peter Hastings, Vice President, Regulatory Affairs & Quality, Kairos Power
Jackie Kempfer, Director, Government Affairs, Oklo, Inc.
Maria Korsnick, President and CEO, Nuclear Energy Institute
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Amir Vexler, President and CEO, Orano USA