

## Global Laser Enrichment (GLE) Frequently Asked Questions (FAQs)

### What is Global Laser Enrichment (GLE)?

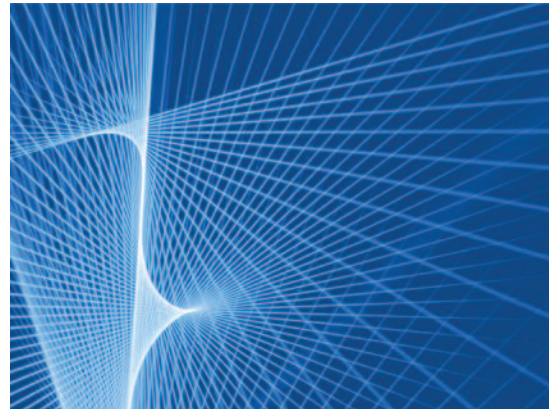
- GLE is a subsidiary of GE Hitachi Nuclear Energy (GEH), formed to commercialize laser technology to enrich uranium for commercial use in nuclear power plants.

### Did GEH develop this technology?

- In early 2006, GE completed a technology licensing agreement for the laser isotope separation technology with technology developer Silex Systems Limited of Australia. Under this agreement, GEH's GLE business has exclusive rights to commercially develop this third-generation uranium enrichment technology on a global basis. GLE is building a test loop as part of the commercial adaptation of the technology.

### Why would GEH commercialize this technology?

- Current sources of enriched uranium are beginning to go off-line, while at the same time, the U.S. and other nations are moving toward constructing new civilian nuclear power plants. As a result, there is a growing demand for a consistent and secure supply of low enriched uranium.
- GLE would play a vital role in assuring the U.S.'s ability to maintain a reliable source of enriched uranium to fulfill the national requirements for nuclear power generation, national energy security, and advanced uranium enrichment technology. The proposed GLE facility would contribute to the attainment of national energy security policy objectives by providing an additional reliable domestic source of enriched uranium.



### What is the purpose of enriching uranium?

- $^{235}\text{U}$  is the isotope of uranium required to sustain the nuclear reaction necessary to power a commercial nuclear power plant.
- Natural uranium ore is comprised primarily of  $^{238}\text{U}$ , with  $^{235}\text{U}$  totaling only a very small 0.71 percent.
- For light water reactor fuel, uranium is "enriched" to between three and five percent  $^{235}\text{U}$ .

### How is uranium currently enriched?

Currently, there are three processes capable of enriching uranium:

- Gaseous Diffusion - Gaseous uranium hexafluoride is separated by traveling through semi-permeable membranes. This approach is scheduled to be phased out because of the high energy input required.
- Centrifuge - Uranium is separated by centrifugal force in rotating cylinders. This is the primary source of enriched uranium today.
- Lasers - Lasers selectively excite  $^{235}\text{U}$  allowing isotopes to be separated. Uranium enriched in this manner is being commercialized by GLE.



# Frequently Asked Questions

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## What is laser enrichment?

- Lasers are the most advanced method of enriching uranium.
- GE Hitachi Nuclear Energy is pursuing uranium enrichment technology through its subsidiary, Global Laser Enrichment (GLE). The product of this process is low enriched Uranium Hexafluoride (UF<sub>6</sub>).
- Uranium Hexafluoride is vaporized into a gaseous form and exposed to a laser beam that preferentially excites the <sup>235</sup>U, which enables separation of relatively enriched product from relatively depleted “tails” material.

## What is low enriched uranium and how is it used?

- Low enriched uranium (LEU) is uranium enriched to less than 20% <sup>235</sup>U. LEU is used to make fuel pellets that are placed in fuel bundles, which are then used by nuclear utilities to generate power in their nuclear power plants.

## Would the Global Laser Enrichment program create jobs in our community?

- Yes, if the decision is made to build the GLE commercial facility, hundreds of jobs will be created in our community. These jobs will be created between now and 2012 and will include technical, operational, and support job functions.

## What benefit would the GLE facility add to the nuclear fuel cycle?

- GLE would add additional U.S. supply of LEU into the fuel cycle and provide security of supply to U.S. nuclear utilities. GLE would also provide diversity of supply to the global marketplace.

## How large would the GLE facility be?

- If a commercial facility is built, it will utilize about 200 of the approximately 1700 acres at GEH's site in Castle Hayne, NC.

## What is a test loop?

- A test loop is a closed process loop intended to scale-up process equipment, gather process information, and validate efficiencies of the process.

## What is the environmental impact of the GLE facility?

- A full environmental report will be submitted to the NRC for assessment of any potential environmental impacts. It is a mandatory process under the National Environmental Policy Act (NEPA) of 1969. No new types of hazardous materials will be added to the GEH plant site.

## How long will it take to obtain the NRC license to operate the GLE facility?

- Approval is anticipated within 24-30 months after the application is accepted for review and docketed.



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GEA-17018A (07/08)