



**Silex**  
Systems Limited

## **GLE Presentation to Advanced Nuclear Forum**

**25 May 2023**

Silex Systems Limited (Silex) (ASX: SLX) (OTCQX: SILXY) is pleased to provide the attached presentation that will be delivered by James Dobchuk, Global Laser Enrichment's (GLE) Chief Commercial Officer and President, at the Advanced Nuclear Forum being held in Nebraska, US this week.

The presentation provides a summary of nuclear power imperatives and recent industry developments, and provides an update on GLE's commercialisation program.

*Authorised for release by the Silex Board of Directors.*

Further information on the Company's activities can be found on the Silex website: [www.silex.com.au](http://www.silex.com.au) or by contacting:

**Michael Goldsworthy**

CEO/Managing Director

T +61 2 9704 8888

E [investor.relations@silex.com.au](mailto:investor.relations@silex.com.au)

**Julie Russell**

CFO/Company Secretary

T +61 2 9704 8888

E [investor.relations@silex.com.au](mailto:investor.relations@silex.com.au)

## **Forward Looking Statements and Risk Factors:**

### **About Silex Systems Limited (ASX: SLX) (OTCQX: SILXY)**

Silex Systems Limited ABN 69 003 372 067 (Silex) is a technology commercialisation company whose primary asset is the SILEX laser enrichment technology, originally developed at the Company's technology facility in Sydney, Australia. The SILEX technology has been under development for uranium enrichment jointly with US-based exclusive licensee Global Laser Enrichment LLC (GLE) for a number of years. Success of the SILEX uranium enrichment technology development program and the proposed Paducah commercial project remain subject to a number of factors including the satisfactory completion of the engineering scale-up program and nuclear fuel market conditions and therefore remains subject to associated risks.

Silex is also at various stages of development of additional commercial applications of the SILEX technology, including the production of 'Zero-Spin Silicon' for the emerging technology of silicon-based quantum computing. The 'Zero-Spin Silicon' project remains dependent on the outcomes of the project and the viability of silicon quantum computing and is therefore subject to various risks. The commercial future of the SILEX technology in application to uranium, silicon, medical and other isotopes is therefore uncertain and any plans for commercial deployment are speculative.

Additionally, Silex has an interest in a unique semiconductor technology known as 'cREO®' through its 100% ownership of subsidiary Translucent Inc. The cREO® technology developed by Translucent has been acquired by IQE Plc based in the UK. IQE has paused the development of the cREO® technology until a commercial opportunity arises. The future of IQE's development program for cREO® is very uncertain and remains subject to various technology and market risks.

### **Forward Looking Statements**

The commercial potential of these technologies is currently unknown. Accordingly, no guarantees as to the future performance of these technologies can be made. The nature of the statements in this announcement regarding the future of the SILEX technology as applied to uranium enrichment, Zero-Spin Silicon production, medical and other isotope separation projects, the cREO® technology and any associated commercial prospects are forward-looking and are subject to a number of variables, including but not limited to, unknown risks, contingencies and assumptions which may be beyond the control of Silex, its directors and management. You should not place reliance on any forward-looking statements as actual results could be materially different from those expressed or implied by such forward-looking statements as a result of various risk factors. Further, the forward-looking statements contained in this Report involve subjective judgement and analysis and are subject to change due to management's analysis of Silex's business, changes in industry trends, government policies and any new or unforeseen circumstances. The Company's management believes that there are reasonable grounds to make such statements as at the date of this Report. Silex does not intend, and is not obligated, to update the forward-looking statements except to the extent required by law or the ASX Listing Rules.

### **Risk Factors**

Risk factors that could affect future results and commercial prospects of Silex include, but are not limited to: ongoing economic and social uncertainty, including in relation to the impacts of the COVID-19 pandemic; geopolitical risks, in particular relating to Russia's invasion of Ukraine and tensions between China and Taiwan which may impact global supply chains among other risks; uncertainties related to the effects of climate change and mitigation efforts; the results of the GLE/SILEX uranium enrichment engineering development program; the market demand for natural uranium and enriched uranium; the outcome of the project for the production of 'Zero-Spin Silicon' for the emerging technology of silicon-based quantum computing; the outcome of the Medical Isotope Separation Technology program; the potential development of, or competition from alternative technologies the potential for third party claims against the Company's ownership of Intellectual Property; the potential impact of prevailing laws or government regulations or policies in the USA, Australia or elsewhere; whether IQE's commercialisation program for cREO® is resumed, the results from the program and the market opportunities for cREO® products; actions taken by the Company's commercialisation partners and other stakeholders that could adversely affect the technology development programs and commercialisation strategies; and the outcomes of various strategies and projects undertaken by the Company.



## **Nebraska Advanced Nuclear Forum**

**James Dobchuk**

*President & Chief Commercial Officer*

*May 24, 2023*

*Lincoln, NE*

# Overview

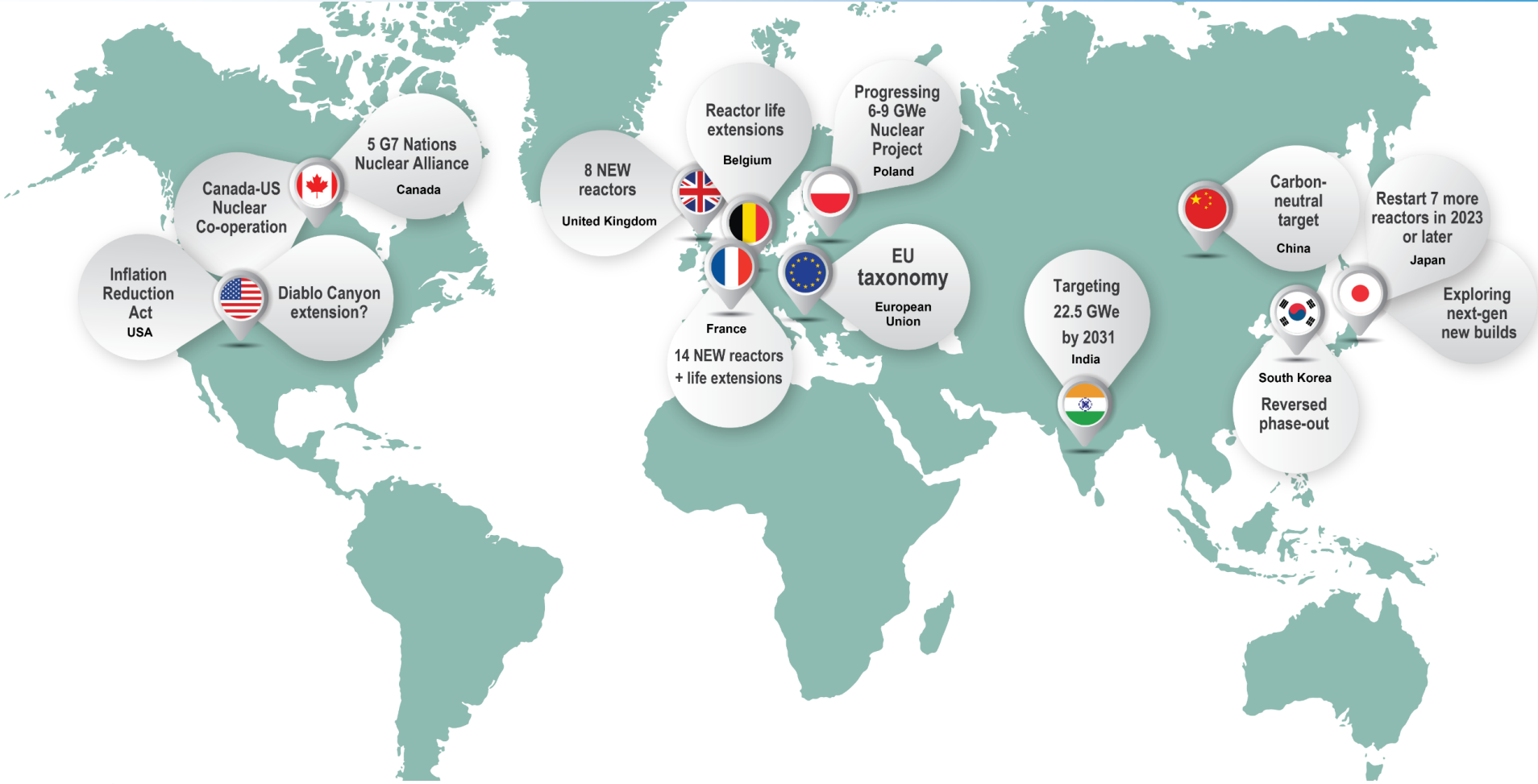
---

- Growing Support for Nuclear Power
- Factors Influencing the Nuclear Fuel Supply Chain
- Laser Enrichment Advantages
- GLE's Commercialization Pathways and Timelines



# Growing Support for Nuclear

## Full-cycle demand continues to improve



# Nuclear Power Imperatives

## Response to Climate Change:

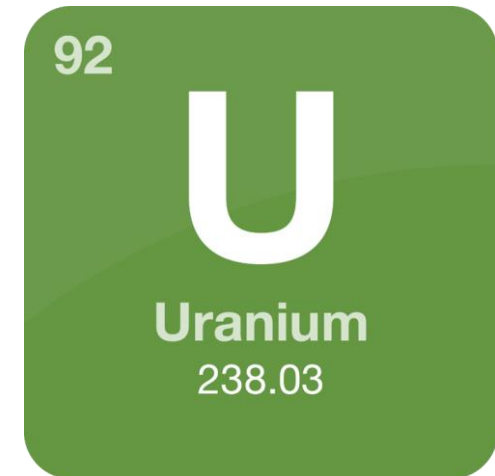
- Population growth and industrialization → surging increase in energy demand
- Urgent climate action (Net-Zero 2050) → driving rapid global energy transition
- De-carbonization and electrification → increasing importance of nuclear power

## Energy Security:

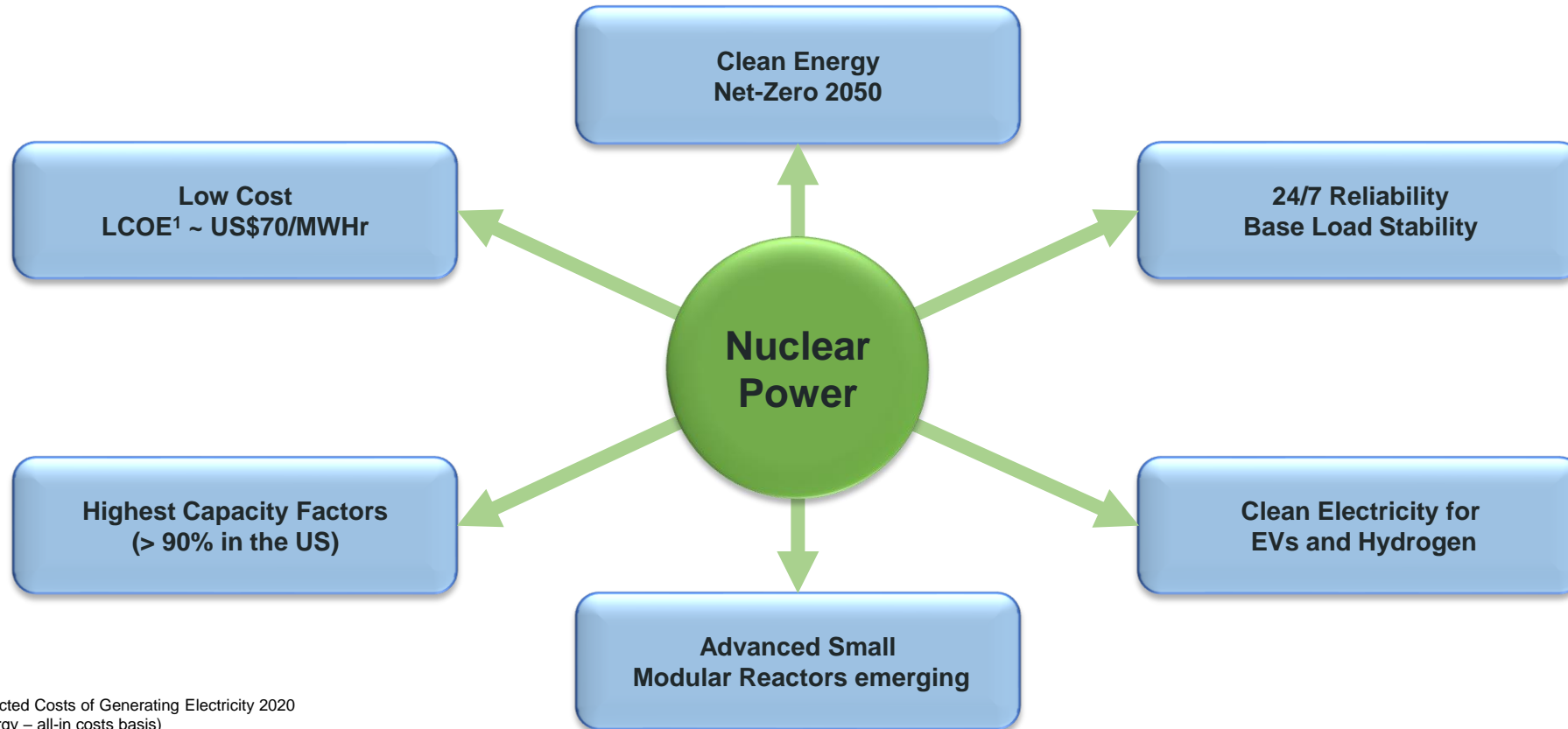
- Russian invasion of Ukraine → precipitating global energy supply disruptions
- Renewed focus on energy security → supply chains, stability, resilience
- New geopolitical landscape (Russia, China...) → nuclear offers path to energy independence

## Nuclear Power Renaissance:

- US moving to regain nuclear energy leadership → several USG funding initiatives
- European energy supply upheaval → driving renewed interest in nuclear power
- Asia (China, India, Japan, South Korea ...) → undertaking largest nuclear build in history



# Nuclear Power and Net-Zero

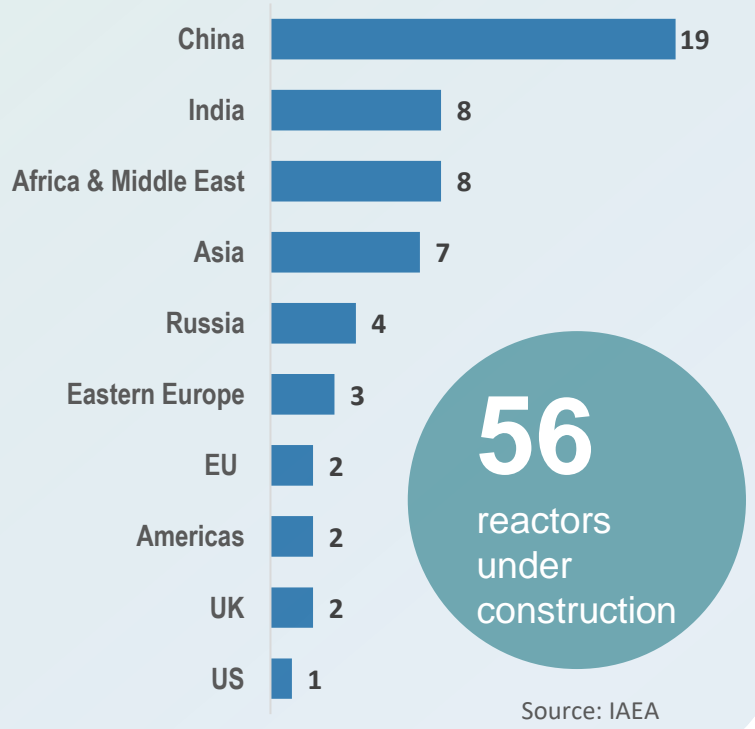


1. LCOE –US\$70/MWhr, IEA Projected Costs of Generating Electricity 2020  
(LCOE = Levelised Cost Of Energy – all-in costs basis)

# Improving Nuclear Power Outlook

Increased term contracting, improving market prices

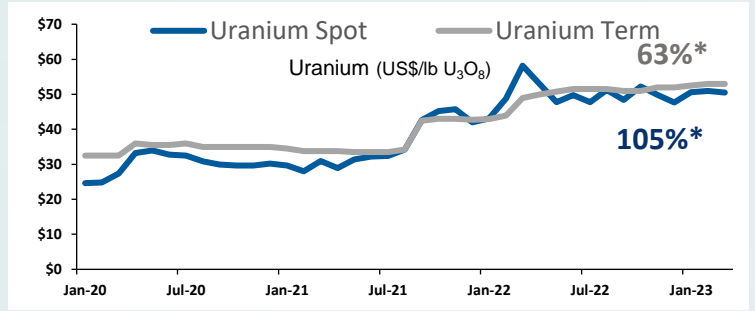
## Growth from New Reactors



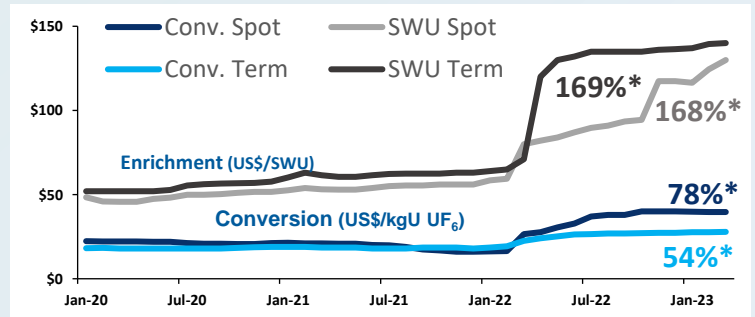
## Demand Increasing

- Near-Term**
  - Reversal of early retirement / closures
  - Geopolitical impacts
- Medium-Term**
  - Clean, secure energy focus, reactor life-extensions
- Long-Term**
  - Reactor new builds and development of small modular and micro reactors

## Price Increases Across the Fuel Cycle<sup>1</sup>



Source: <sup>1</sup>Average of monthly prices reported by TradeTech and UxC



\*Increase since January 2020





# Nuclear Fuel Supplied by Russia

	Russian Share of Global Production Capacity <sup>1</sup>	EU Nuclear Fuel Supplied by Russia <sup>2</sup>	US Nuclear Fuel Supplied by Russia <sup>1,3</sup>
Uranium (U <sub>3</sub> O <sub>8</sub> )	~14%	~20%	~14%
Conversion	~27%	~24%	~18%
Enrichment (SWU)	~45%	~31%	~20%

1. WNA and UxC various sources 2022
2. Euratom Supply Agency Annual Report 2021
3. EIA, 2021 Uranium Marketing Annual Report, May 2022

- Major concerns regarding Western reliance on Russia for supply of nuclear fuel
- US is the largest market for nuclear fuel with ~25% of world's nuclear reactor fleet
- US currently imports the vast majority of its nuclear fuel:
  - 95% of its uranium requirements (including ~14% from Russia)
  - 100% of its conversion requirements (including ~18% from Russia)
  - 70% of its enriched uranium requirements (including ~20% from Russia)

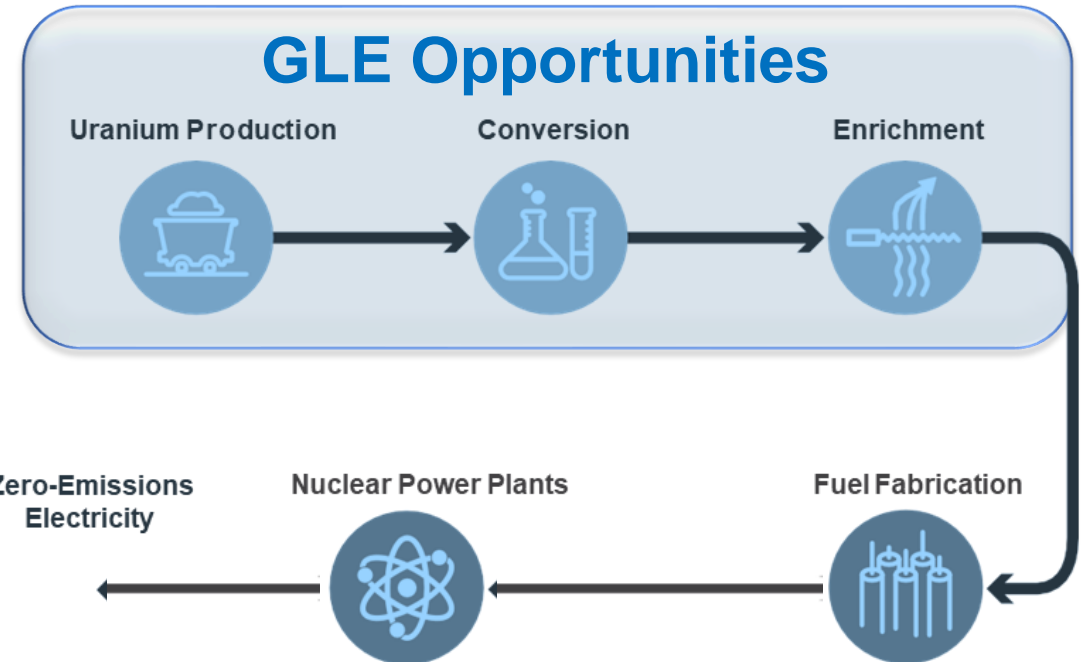


[This Photo](#) by Unknown Author is licensed under [CC BY-SA](#)

# The Nuclear Fuel Supply Chain

## Emerging Threats to the Global Nuclear Fuel Supply Chain:

- Supply chain risks exposed by over-dependence on Russian-sourced nuclear fuel
- Western supply – curtailments and under-investment in resources and production capability
- Conversion services – only 3 Western suppliers (Cameco, Orano, Converdyn) excluding Russia
- Enrichment services – only 2 Western suppliers (Urenco, Orano) excluding Russia
- HALEU fuel for SMRs – no Western-based suppliers – developers were relying on Russian HALEU



# North American Nuclear Fuel Cycle

## Government and industry call to action

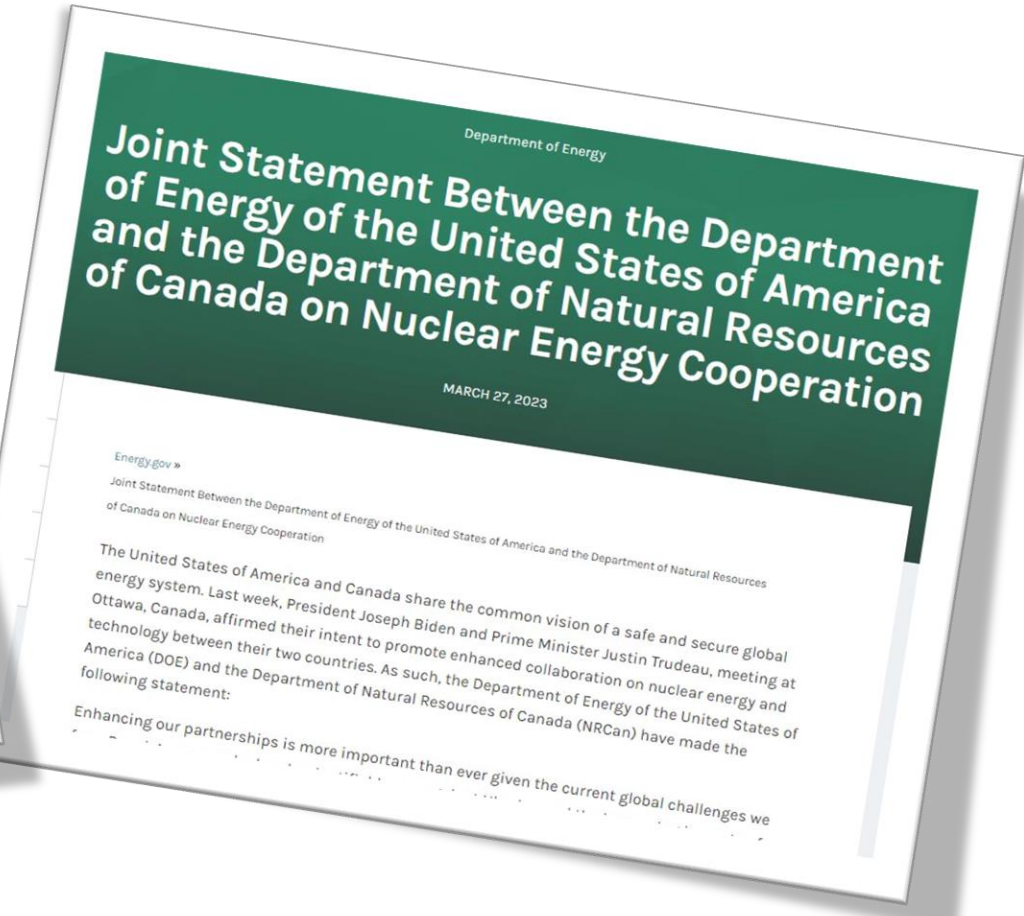
---

- Create a more unified North American nuclear fuel cycle
- Enact, support and sustain favorable government policies
- Streamline regulatory environment
- Re-establish the combined reliability of the North American nuclear fuel cycle from the mine to the reactor



# Joint Statement

March 27, 2023






# GLE History & Key Milestones

- 2007 →** GE and GE-Hitachi Nuclear Energy (GEH) form subsidiary GLE (exclusive licensee of SILEX technology) to develop uranium enrichment services capability; Cameco acquires 24% equity interest in GLE (2008)
- 2012 →** GLE receives first and only US NRC license for construction and operation of commercial scale laser enrichment facility planned for Wilmington, NC (SNM-2019)
- 2013 →** GLE completes “Phase 1” (technology validation at prototype scale) of its multi-phase technology development and commercialization plan
- 2016 →** GLE secures landmark agreement to re-enrich significant stockpiles of DOE DUF<sub>6</sub> inventories
- 2019 →** Silex Systems and Cameco execute binding purchase agreement to acquire GE/GEH 76% interest in GLE
- 2021 →** Transaction receives USG approval; Silex Systems and Cameco acquire 51% and 49% interests in GLE, respectively
- 2022 →** First full year with new executive management team and restructured ownership
- 2023 →** Acceleration of GLE’s CY2023 pilot scale demonstration program, preserving the option of commencing commercial operations at the planned PLEF as early as 2027/28 (up to 3 years earlier than originally planned)

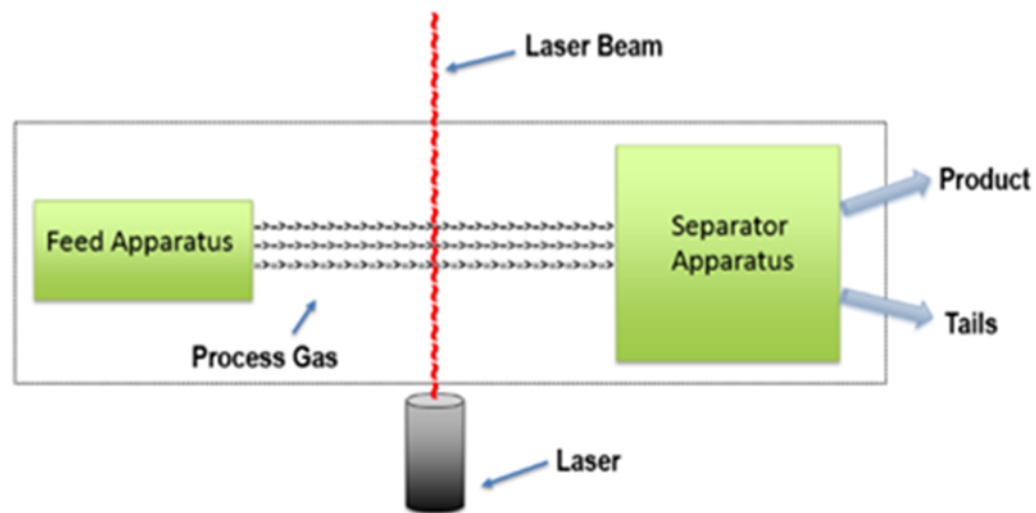


# Evolution of Enrichment Technology

	1 <sup>st</sup> Generation Gaseous Diffusion	2 <sup>nd</sup> Generation Gas Centrifuge	3 <sup>rd</sup> Generation GLE/SILEX
			
<i>Separation efficiency</i>	<i>Very low</i>	<i>Moderate</i>	<i>High</i>
<i>Throughput</i>	<i>Moderate</i>	<i>Very low</i>	<i>High</i>
<i>Capital costs</i>	<i>High</i>	<i>High</i>	<i>Lower</i>

# GLE/SILEX Technology Advantages

Basic SILEX Process Diagram

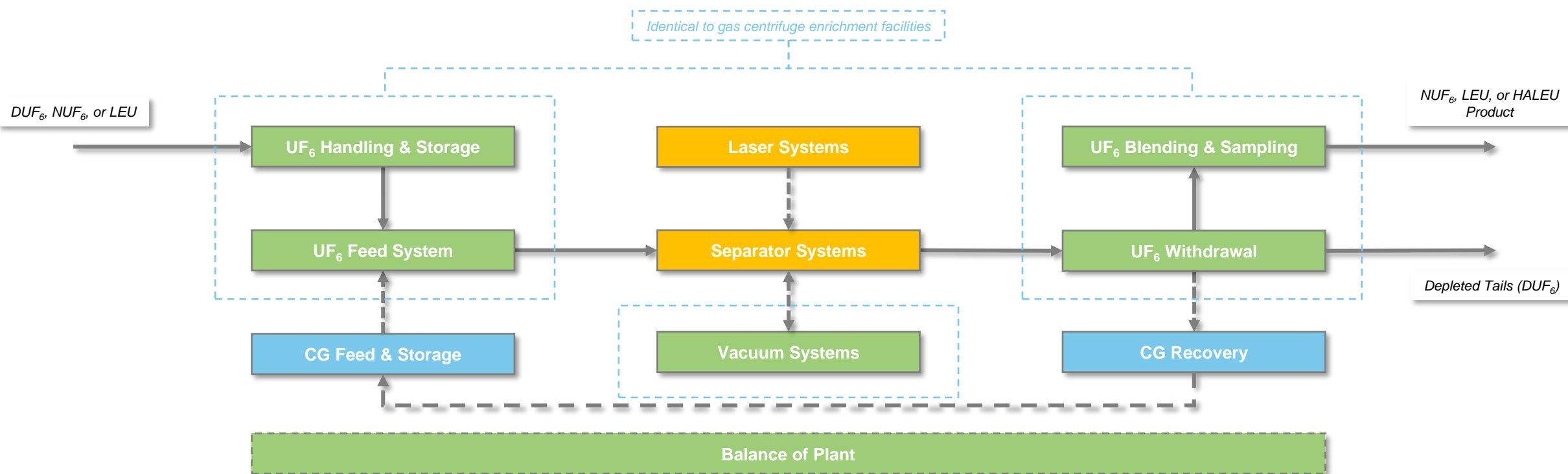


- Higher separation efficiency
- Greater throughput
- Lower capital costs
- Modularity and flexibility
- Diversity of supply

*Utilizes  $UF_6$  throughout the enrichment process ... compatible with existing fuel cycle*



# GLE Enrichment Facility Overview

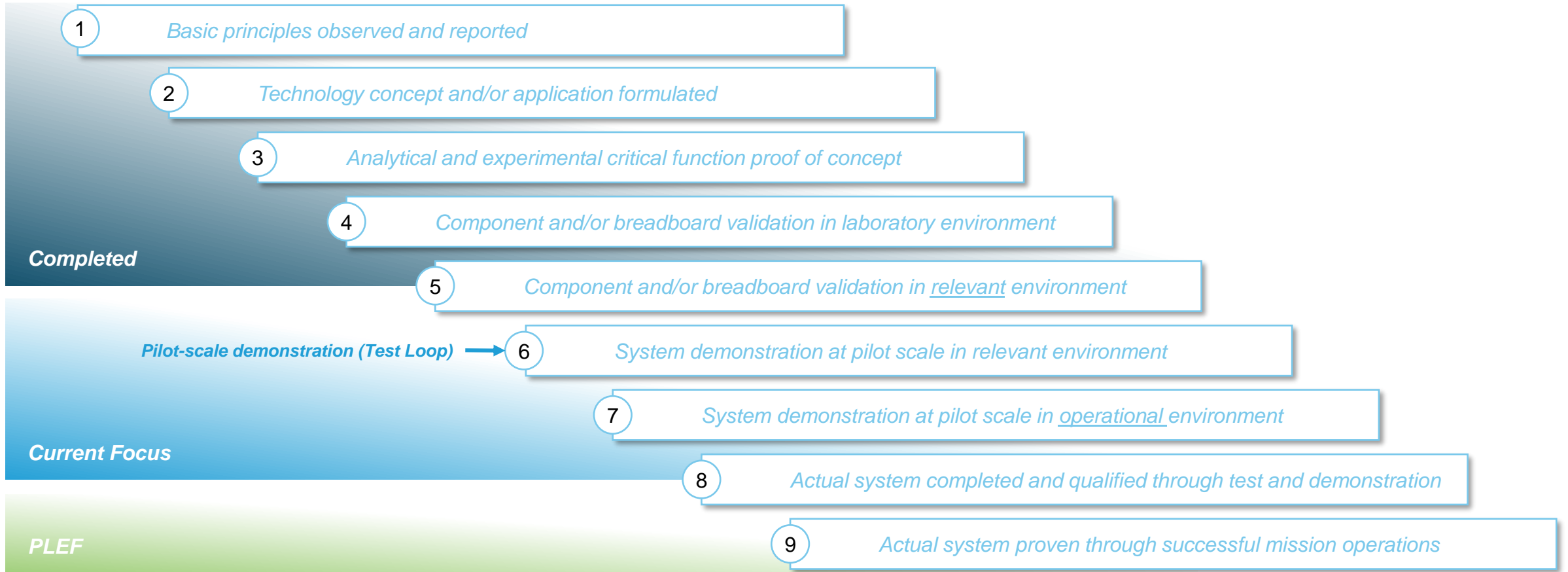


- Existing technology
- Existing technology, adapted
- New technology





# Technology Readiness Levels



# Potential Pathways: Multi-Purpose PLEF

## ***Pivoting to a Triple Opportunity approach ...***

- *Unlock uranium, conversion, and potential LEU value of DOE DUF<sub>6</sub> Agreement*
- *Address geopolitical risk and diversity of supply concerns*
- *Support deployment and adoption of advanced reactors requiring HALEU*

### **Natural Grade Uranium (as UF<sub>6</sub>)**

*Enrich depleted tails (~0.3 %) to natural (~0.7%) for feed*

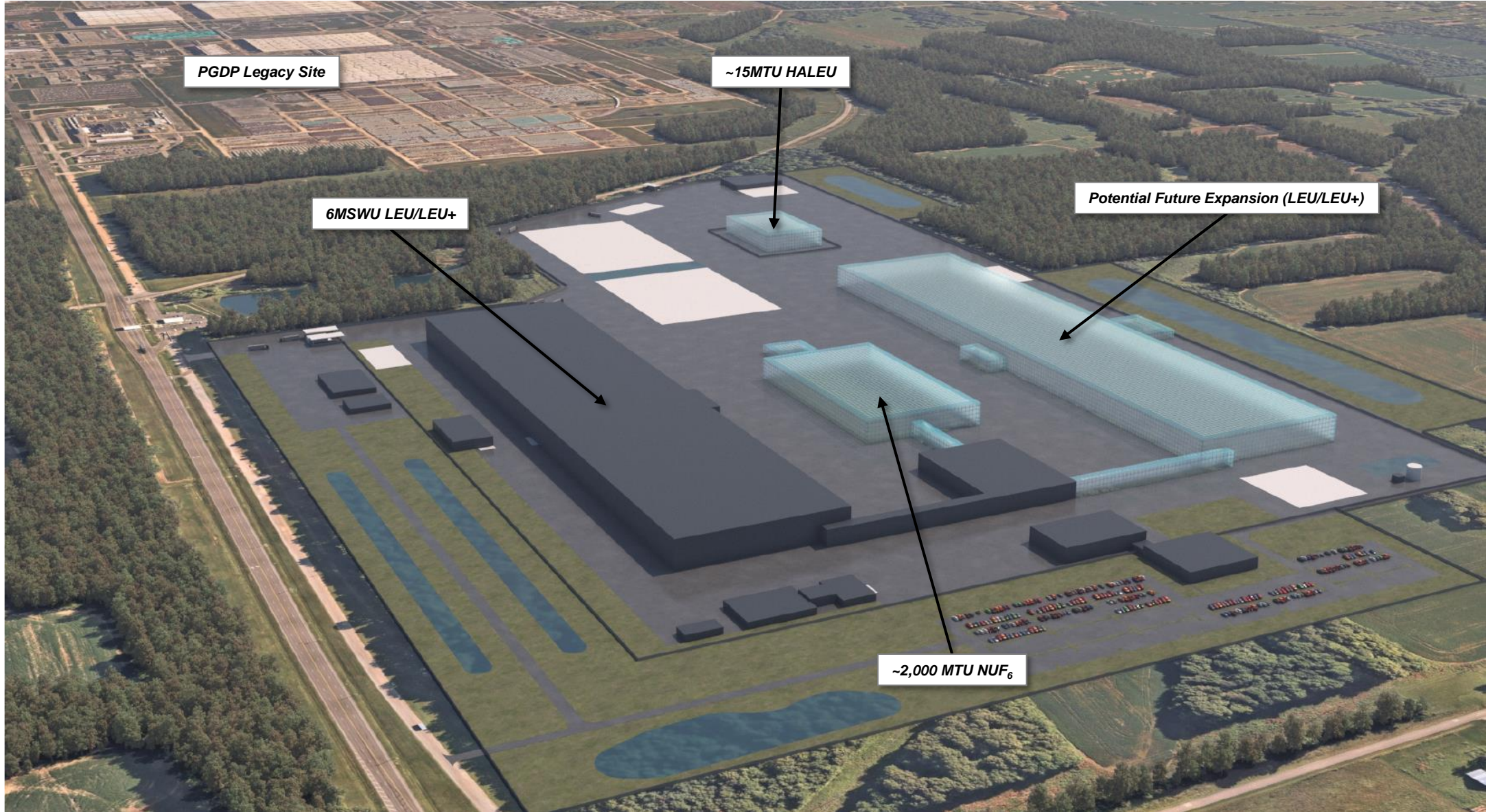
### **Low-Enriched Uranium (LEU/LEU+)**

*Enrich natural uranium to low-enriched (~5-10%) for LWRs*

### **High-Assay LEU (HALEU)**

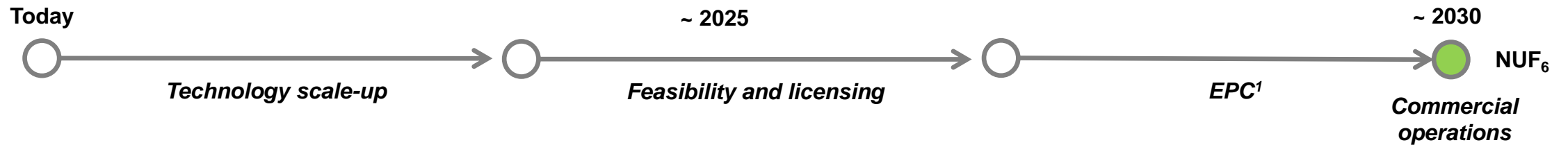
*Enrich LEU (or natural) to HALEU (10-20%) for SMRs*



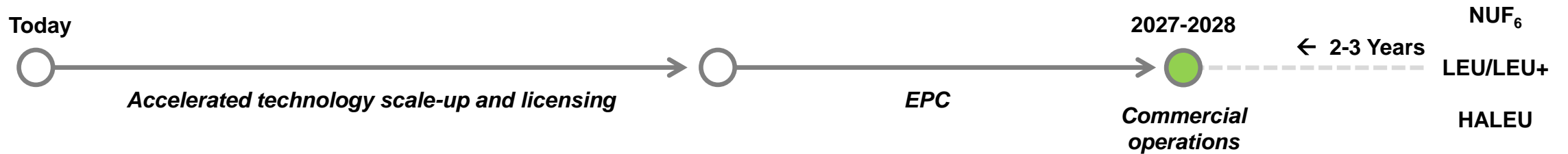


# Potential Timelines for Deployment

*Baseline – market-driven pace, minimized risk*



*Continued acceleration plan to be underpinned by key market drivers, government and industry support*



*Evaluating potential acceleration in light of fuel market developments*



# 2023 Commercialization Landscape

---

- *Nuclear industry tailwinds continue and enjoys bi-partisan political support*
- *Working to secure Government support*
- *Russian invasion has shifted markets for HALEU, LEU, conversion, and U<sub>3</sub>O<sub>8</sub>*
- *Explore value-added industry partnerships*

## FINANCIAL TIMES

US nuclear enjoys revival as public and private funding pours in

### 5 Keys to Acceleration

- Long-term clarity regarding any restrictions of Russian fuel supplies
- Government policies that encourage investment in nuclear fuel cycle
- Partnerships that mitigate risk of rapid capital deployment in nascent market(s)
- Timely and efficient regulatory approval processes
- Appropriate market signals and commercial support



# **GLO** **BAL** **Laser Enrichment**

---

**Thank you!**