



Silex Systems Limited **2019 Annual General Meeting**

(ASX: SLX) (OTCQX: SILXY)

Dr Michael Goldsworthy
CEO/Managing Director
27 November 2019

Silex Systems Limited (Silex) is a research and development company whose primary asset is the SILEX laser uranium enrichment technology, originally developed at the Company's technology facility in Sydney, Australia. The SILEX technology was licensed exclusively in 2006 to GE-Hitachi Global Laser Enrichment LLC (GLE) in the USA. GLE has been undergoing a restructure for a number of years after GE-Hitachi disclosed it was seeking to exit the venture. In view of the continuing uncertainty surrounding the GLE restructure and the continuing depressed nuclear fuel market conditions, plans for commercial deployment of the SILEX technology have been significantly delayed, and remain at risk.

The future of the SILEX technology is therefore highly uncertain and any plans for commercial deployment are speculative.

Silex also has an interest in a unique semiconductor technology known as 'cREO™' through its ownership of subsidiary Translucent Inc. The cREO™ technology developed by Translucent has been acquired by IQE Plc based in the UK. IQE is progressing the cREO™ technology towards commercial deployment in various advanced semiconductor products. The outcome of IQE's commercialisation program is highly uncertain and remains subject to various technology and market risks.

The commercial potential of these two technologies is currently unknown. Accordingly, the statements in this presentation regarding the future of the SILEX technology, the cREO™ technology and any associated commercial prospects are forward looking and actual results could be materially different from those expressed or implied by such forward looking statements as a result of various risk factors.

Risk factors that could affect future results and commercial prospects include, but are not limited to: the outcome of the GLE restructure; the results of the SILEX uranium enrichment engineering development program; the market demand for natural uranium and enriched uranium; the potential development of competing 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; results from IQE's commercialisation program and the market demand for cREO™ products; and the outcomes of various strategies undertaken by the Company.

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The views and opinions expressed herein are solely those of Silex and do not reflect the view of GE-Hitachi Global Laser Enrichment LLC, or its owners or subsidiaries.



Silex is an advanced technology company focused on the commercialisation of our innovative SILEX laser enrichment technology

- ❑ Secure the path for commercialisation of our core asset, the SILEX technology in the key application of uranium enrichment
- ❑ Strengthen our presence in the US, the primary target market for deployment of the SILEX technology
- ❑ Preserve the Paducah commercial plant opportunity and the underpinning 2016 GLE-DOE Sales Agreement in order to participate in the recovery of the nuclear fuel markets
- ❑ Increase our involvement in the SILEX technology commercialisation program through the GLE restructure – both as licensor and shareholder
- ❑ Build on our relationship with GLE shareholder, Cameco - one of the world's largest uranium producers and nuclear fuel suppliers
- ❑ Explore alternative uses of our proprietary laser isotope separation technology – involving assessment of potentially attractive applications for the production of enriched materials
- ❑ Retain our core expertise and maintain our Sydney facility as a centre of innovation
- ❑ Focus on effective cost management to ensure the most efficient use of cash reserves

- ❑ Silex and Cameco signed a new term sheet in February 2019 outlining key terms for the restructure of SILEX technology Licensee, Global Laser Enrichment (GLE) involving the joint purchase of GE-Hitachi's 76% interest in GLE
- ❑ The restructure of GLE is advancing towards finalisation of binding transaction documents
- ❑ Subject to obtaining US government approvals, completion of the restructure will result in Silex holding 51% interest in GLE and Cameco increasing its interest from 24% to 49%
- ❑ A focused effort continues on the technology commercialisation program at both the Silex, Sydney and GLE, Wilmington project sites
- ❑ Silex is undertaking an assessment of alternative uses of our laser isotope technology, identifying potentially attractive applications for advanced semiconductors and medical isotopes
- ❑ Payment of US\$5 million was received from UK-based IQE Plc in September 2018 (in IQE shares) after IQE elected to purchase Translucent's 'cREO™' technology



SILEX Laser Uranium Enrichment Technology

SILEX - third generation enrichment technology

- SILEX - **S**eparation of **I**sotopes by **L**aser **EX**citation
- Highly selective laser excitation of $^{235}\text{UF}_6$ to separate isotopes
- High enrichment efficiency – expect relatively low SWU* costs
- Only known 3rd generation enrichment commercialisation project in the world today

* SWU: Separative Work Unit – the marketable unit of enrichment

Uranium Enrichment Technology

1ST GENERATION TECHNOLOGY

GASEOUS DIFFUSION



$\beta = 1,004$

High cost

Obsolete

2ND GENERATION TECHNOLOGY

CENTRIFUGE



$\beta = 1.25$

Lower cost

Current technology

3RD GENERATION TECHNOLOGY

LASER EXCITATION

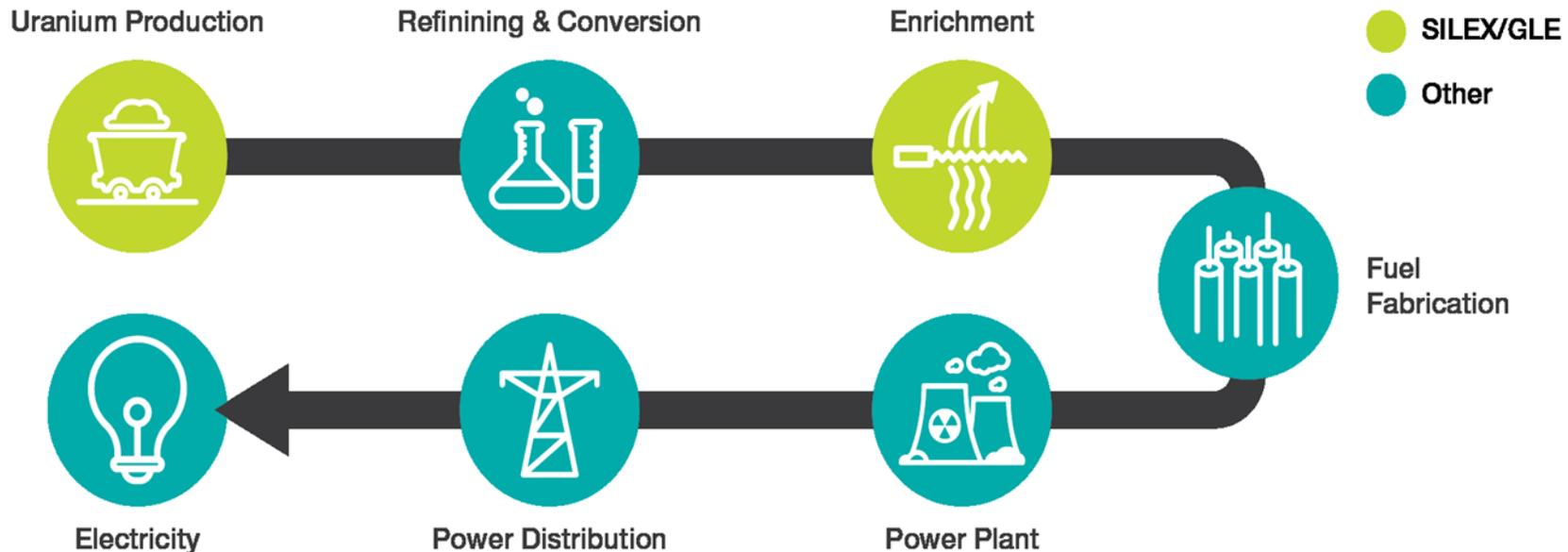


$\beta = 2 - 20^1$

Most cost effective

In commercialisation phase

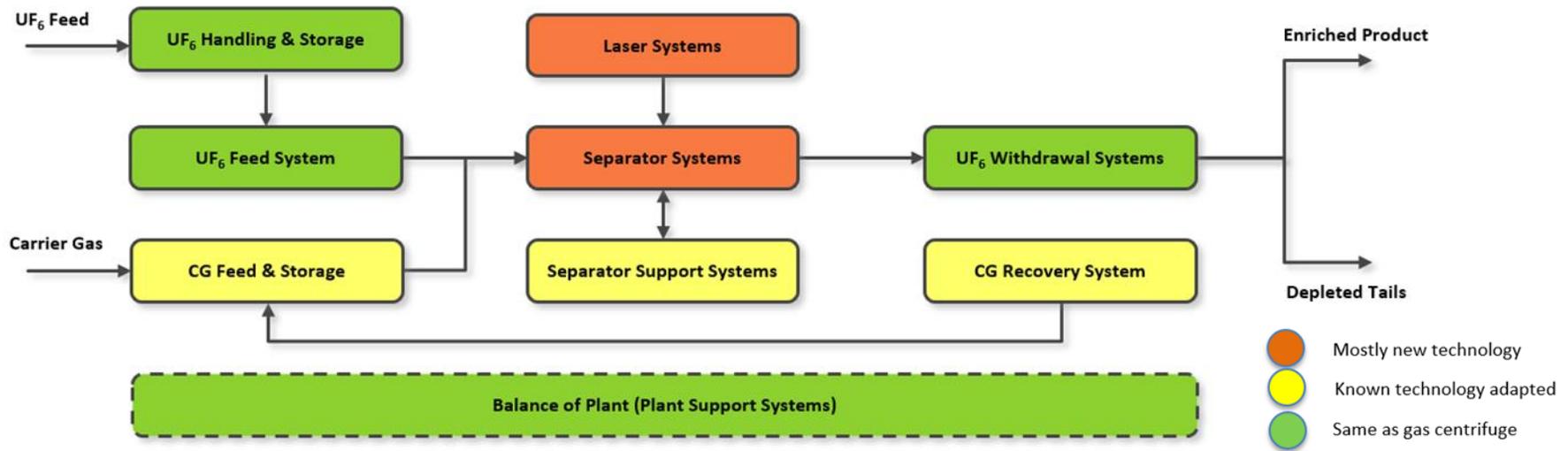
1. β is the process efficiency (Classified number)



- The SILEX technology can be utilized to produce:
 - i) natural grade uranium via re-enrichment of tails inventories (Paducah project)
 - ii) enriched uranium for use as fuel in nuclear power reactors (including HALEU*)
- Uranium production (~45%) and enrichment (~25%) comprise ~70% of the value in a fuel bundle (based on recent market pricing)

(* Refer to slide 19)

- Commercialisation program has had over US\$400 million invested to date
- Phase I - Technology Validation: completed in 2013 at GLE's Test Loop Facility in the US
- Phase II - Engineering and Economic Validation: will include demonstration of full-scale commercial production capability and preparation for commencement of the Paducah project
 - *Phase II activities continue with good progress being made at GLE's Wilmington Test Loop facility in the US and at Silex's Lucas Heights facility, albeit with reduced resources*





The GLE Restructure

- Silex to acquire a 51% interest in GLE – Cameco to increase their interest from 24% to 49%
- No upfront consideration – deferred annual purchase payments triggered after 1st year GLE generates US\$50 million in revenues
- A Site Lease will support GLE’s activities at the Wilmington Test Loop facility for an initial term of 3 years with options to extend
- A Transition Services Agreement will provide various site support services from GEH until GLE transitions these services to its own account
- The restructure of GLE has involved complicated multi-party negotiations and many discussions with various US government agencies – taking significant time and effort
- We can report that we are close to finalisation of binding transaction documents, but emphasise that the restructure is not yet finalised and remains subject to various risks
- Subject to execution of the transaction documents, Closing remains subject to US government approvals (expected to take up to 12 months)



The SILEX Technology License Agreement and the Paducah Opportunity

Technology License Agreement with GLE:

- Exclusive worldwide commercialisation and license agreement for the SILEX technology – signed in 2006
- Technology validation milestone May 2013 – triggered US\$15 million payment to Silex
- Agreement provides for a perpetual royalty and a further US\$20 million in milestones if the SILEX technology is commercialised by GLE
- Royalty streams payable upon use of SILEX technology for both normal enrichment and tails re-enrichment operations
- Perpetual royalty in range of 7% to 12% of future GLE revenues from commercial operations (based on calculation of cost per unit production installed)

- Sales Agreement between GLE and DOE signed in November 2016 – for the sale of DOE tails inventories to GLE - underpins the Paducah Laser Enrichment Project
- Re-enrichment of DOE tails stockpiles equivalent to a large, low cost uranium mine operating for several decades
- SILEX efficiency enables economic tails stripping capability and provides potentially attractive economics
- The Paducah opportunity represents an ideal path to market – smaller plant and lower capital cost
- Attractive commercial potential, depending primarily on the level of recovery in the uranium price
- Project plans and timing of commercial deployment are dependent on prevailing market conditions and ongoing discussions with various stakeholders, including the DOE



Paducah, KY Enrichment Plant Site

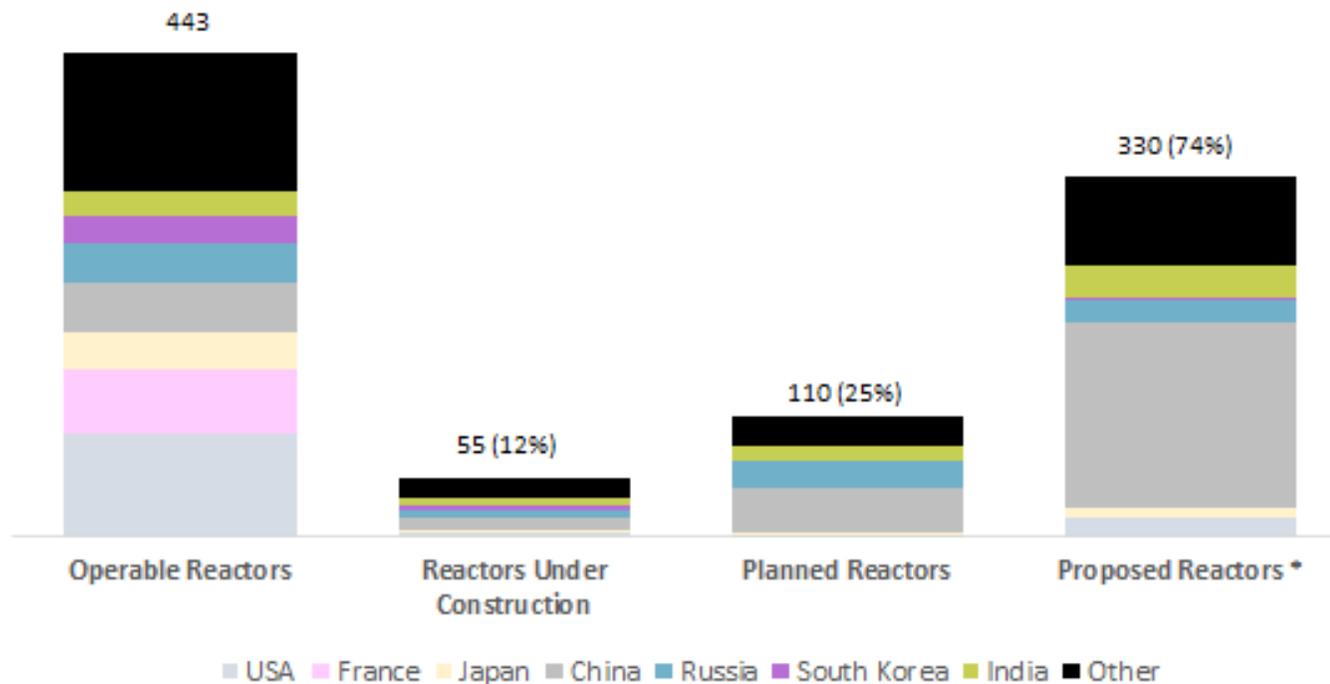


Nuclear Power Growth and Market Outlook

- ❑ Proven, robust and reliable base-load generation
- ❑ Largest source of carbon-free power in the US, EU and developing economies - key to climate change mitigation
- ❑ Affordable and reliable electricity to a growing global population - low generation cost per unit (LCOE of around \$100 /MWh or 10c /kWh – IEA World Energy Outlook 2018)
- ❑ Electricity generated is dispatchable on demand and able to be varied up or down with grid loading
- ❑ Power price stability – nuclear fuel is a low proportion of total power cost ~30% (coal fired plant ~80%, gas-fired plant ~90%)
- ❑ 6 nuclear reactors connected to the grid in the 12 months ended October 2019
- ❑ 55 nuclear reactors under construction globally today



World Nuclear Reactor Population



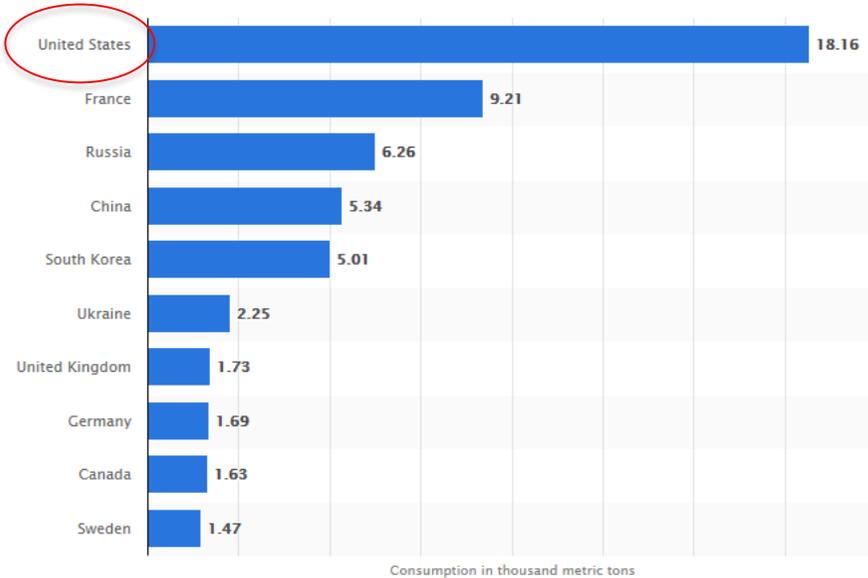
* Other Proposed Reactors include 16 proposed in Saudi Arabia, 8 in Turkey, 8 in South Africa and 8 in Japan

Source: World Nuclear Association November 2019

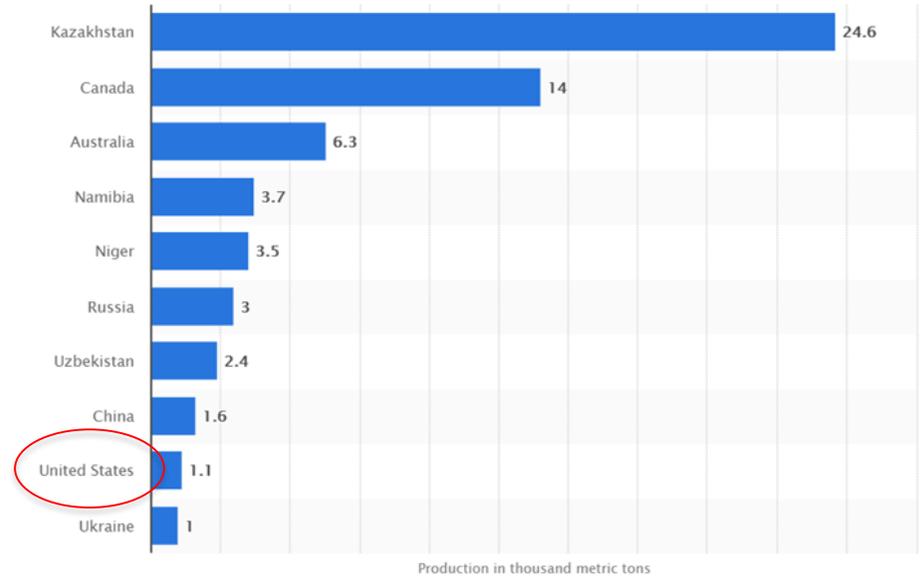
Next generation of nuclear reactors may offer significant advantages over large conventional reactors

- ❑ Modular, smaller size (< 300 MWe) allows flexibility and competition with distributed generation such as renewables
- ❑ Smaller upfront project investment – competitive in deregulated markets
- ❑ Designed for modular factory production rather than custom built capital projects – significant reduction in capital costs and shorter construction times
- ❑ Several can use High Assay Low Enriched Uranium (HALEU) - SILEX technology can provide a flexible low cost alternative to produce HALEU for SMRs
- ❑ Around 20 different designs being developed – expected to reduce to a few
- ❑ Leading contenders anticipated to be introduced commercially around 2030

Uranium consumption by country worldwide (in thousand metric tons)



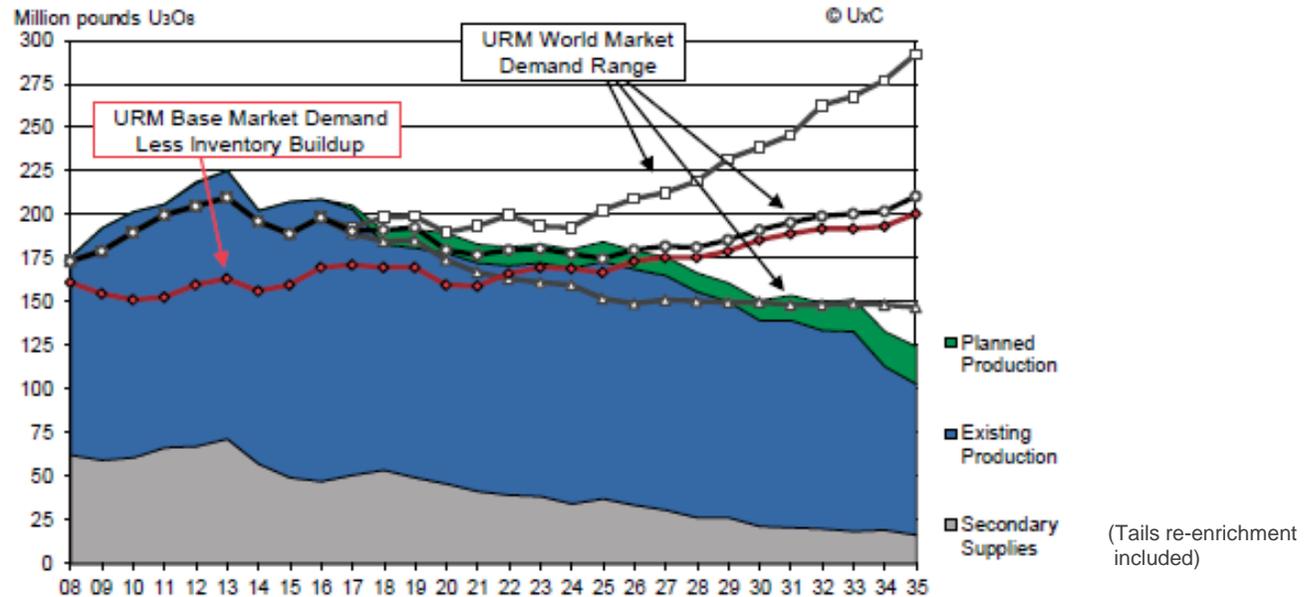
Uranium production by country worldwide (in thousand metric tons)



Source: Statista, November 2018, for year 2016

- US is the largest user of nuclear fuel with 96 reactors with uranium requirements met predominately by imports
- US is also leading the development efforts for next generation SMRs

Uranium Supply and Demand Forecast

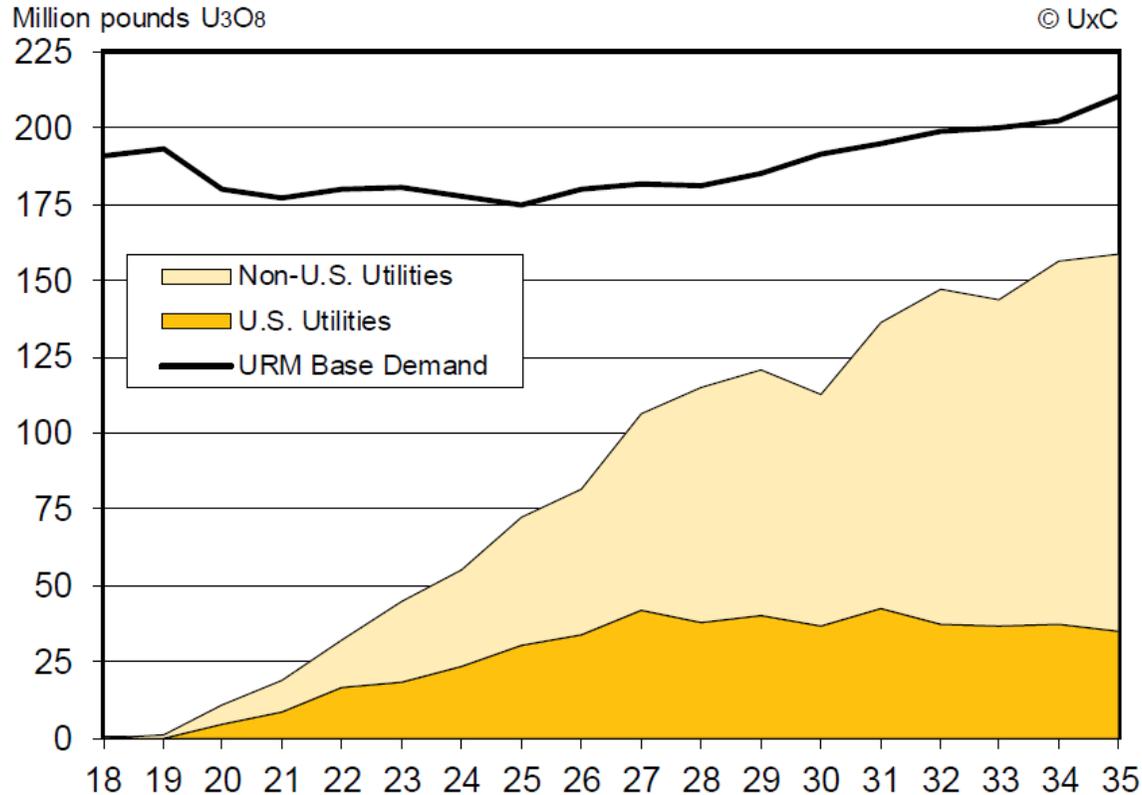


Source: UxC *Uranium Market Outlook*, Q3 2019

Year

- Uranium supplies will remain excess to demand, under the mid-case scenario, until around 2027
- Secondary uranium supplies include production from underfeeding and tails re-enrichment

Uranium Uncovered Demand Forecast

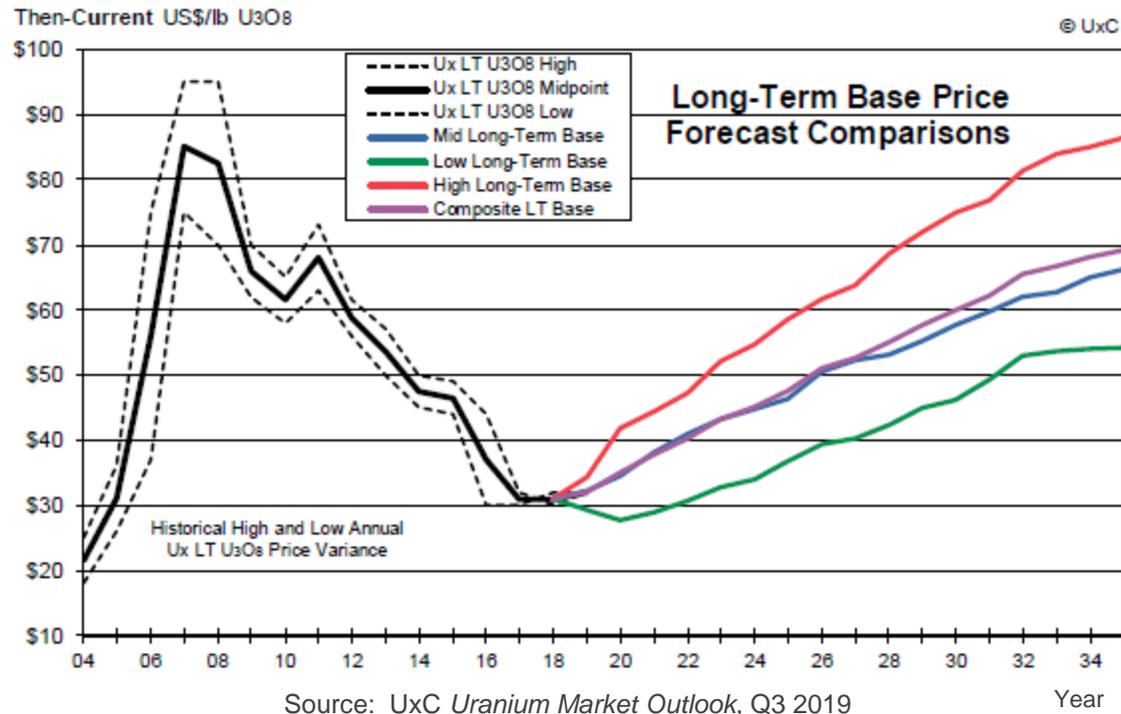


Source: UxC Uranium Market Outlook, Q3 2019

Year

- From 2025 onwards there is over 25 million pounds of uncovered annual uranium demand in the US

Uranium Mid Long-Term Base Price Forecast

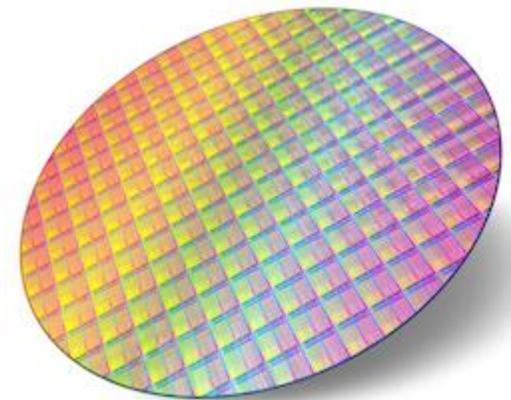
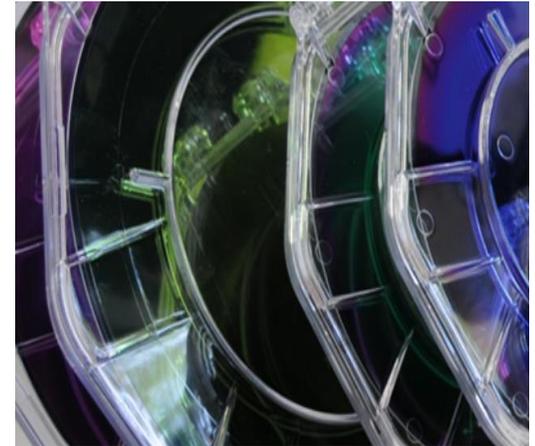


- UxC forecast the mid-case uranium price recovering to over US\$50/lb from around 2026
- Recovery of the uranium market price is key to the viability of the Paducah project



Translucent Inc cREO™ Technology

- ❑ Translucent’s innovative ‘Rare Earth Oxide’ (cREO™) technology purchased by UK-based IQE in 2018 – payment of US\$5 million received in IQE shares
- ❑ IQE is the global leader in the design and manufacture of advanced semiconductor wafer products used in many of today’s semiconductor devices
- ❑ A royalty of up to 6% of IQE’s revenues derived from use of the technology payable to Translucent, with commencement of royalty payments expected within the next few years
- ❑ Significant semiconductor sectors being targeted by IQE – including wireless communications and power electronics
- ❑ Trading updates from IQE during 2019 have reported difficult market conditions and geopolitical factors impacting revenues



 **REO™**

ENABLING NOVEL COMPOUND MATERIALS ON SILICON

- ❑ cREO™ technology commercialisation program being conducted at IQE's Greensboro, NC manufacturing facility
- ❑ Significant investment by IQE to progress development of cREO™ and complementary advanced semiconductor materials technologies
- ❑ Strong progress has been made in the development of IQE's unique 5G RF Filter Materials Portfolio based on patented cREO™ technology
- ❑ IQE remains actively engaged with several chip customers to bring the first cREO™ products (5G RF filters and switches) to market
- ❑ IQE continue to expand the IP portfolio acquired from Translucent



IQE's RF chips inside a smartphone

Source: IQE.com



Summary

- Current focus is on finalisation of the GLE restructure and continuation of the SILEX technology commercialisation project at GLE's facility in the US and Silex's facility in Sydney
- Successful completion of the GLE restructure (subject to US government approvals) will result in Silex acquiring a 51% interest in GLE and Cameco increasing its interest from 24% to 49%
- Long-term fundamentals for global growth in nuclear power remain positive despite the short term difficulties in nuclear fuel markets
- Translucent cREO™ technology being advanced by IQE and customers towards commercial deployment in emerging 5G wireless market – first products 5G RF filters and switches
- Assessment of alternative uses of our proprietary laser isotope separation technology ongoing, including evaluation of opportunities in semiconductor and medical isotope sectors
- Company's balance sheet remains solid with net assets of ~\$30m, including ~\$22m in cash and approximately ~\$7.5m in IQE shares (at time of writing)



Thank you