



# Lightbridge<sup>®</sup>

Advanced nuclear fuel designs

Improving reactor safety and economics to meet energy and climate needs

NASDAQ : LTBR

## Safe Harbor Statement

*With the exception of historical matters, the matters discussed in this presentation are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including statements regarding the Company's competitive position, the timing of demonstration testing and commercial production, future demand for nuclear energy, the Company's product and service offerings, and the expected market for and revenue from the Company's product and service offerings.*

*These statements are based on current expectations on the date of this presentation and involve a number of risks and uncertainties that may cause actual results to differ significantly from such estimates. The risks include, but are not limited to, the degree of market adoption of the Company's product and service offerings; market competition; dependence on strategic partners; demand for fuel for nuclear reactors; and the Company's ability to manage its business effectively in a rapidly evolving market, as well as other factors described in Lightbridge's filings with the U.S. Securities and Exchange Commission.*

*Lightbridge does not assume any obligation to update or revise any such forward-looking statements, whether as the result of new developments or otherwise. Readers are cautioned not to put undue reliance on forward-looking statements.*

At Lightbridge we are developing a way to  
impact the world's climate and energy  
problems soon enough to make a difference.



**Lightbridge** fuel works in existing and new reactors **improving their economics** by:

- increasing power output
- enabling longer fuel cycles
- earning carbon credits

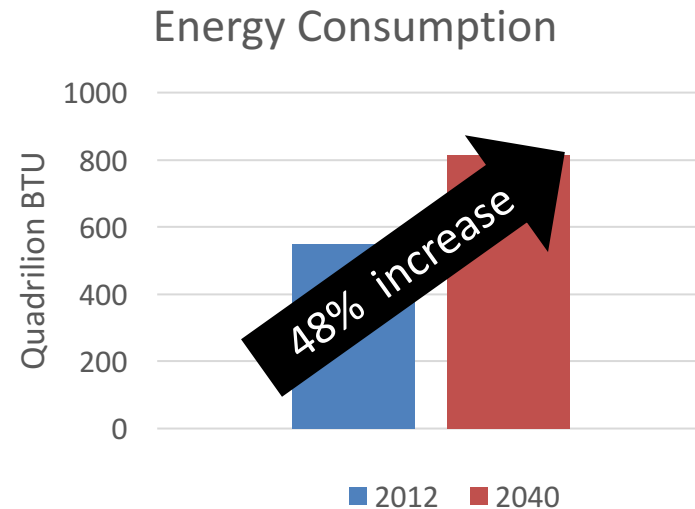
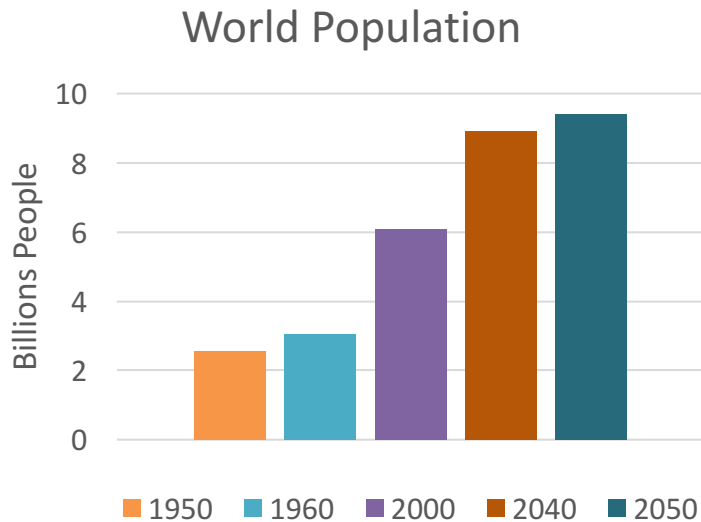
**Lightbridge** fuel adds non-emitting baseload electricity with **dramatically improved reactor safety**.



The world's energy and climate needs can only be met if nuclear power grows as a part of the energy-generating mix.

For nuclear energy to grow significantly, we must make it more economical while enhancing safety.

# The World's Energy Needs Are Rising



Annual energy consumption is equivalent to burning **3.7 cubic miles of oil.**

By 2050, global consumption projected to equal **7 - 9 cubic miles of oil.**

How can we produce this much energy without emitting lots more CO<sub>2</sub>?

Ref: 1 cubic mile = 4.168 cubic kilometers

Sources: US Census Bureau, International Data Base, July 2015  
US Energy Information Administration, International Energy Outlook 2016  
A Cubic Mile of Oil blog, Ribudaman Malhotra

# Energy Equivalent of 1 Cubic Mile of Oil<sup>1</sup>



- **Solar Roofs (PV): 4.2 billion**
  - 250,000 roofs per day for 50 years
  - 2.1 kW with 20% availability



- **Solar CSP: 7,700 solar parks**
  - 3 per week for 50 years
  - 900 MW with 25% availability



- **Hydro: 200 dams**
  - 1 every quarter for 50 years
  - 18 GW with 50% availability



- **Windmills: 3 million**
  - 1200 per week for 50 years
  - 1.65 MW with 35% availability

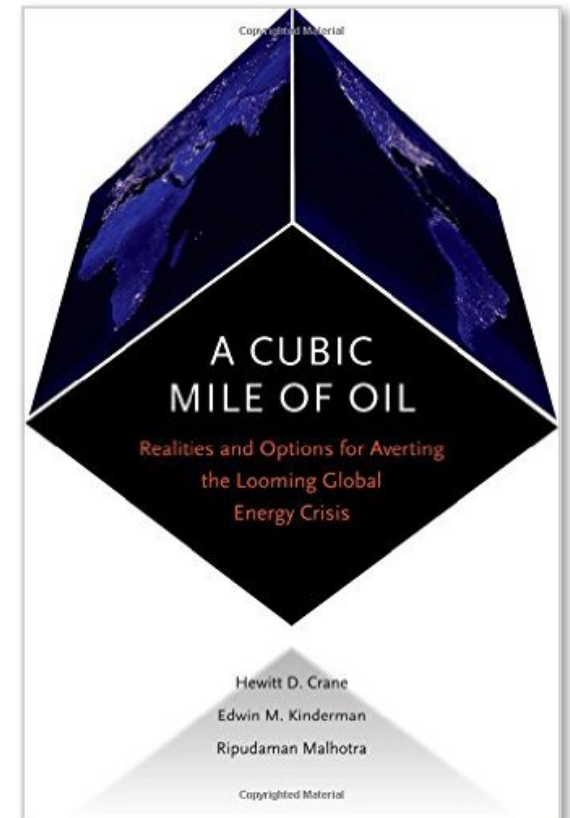


- **Nuclear: 2,500 plants<sup>2</sup>**
  - 1 per week for 50 years
  - 900 MW with 90% availability

Ref: 1 cubic mile = 4.168 cubic kilometers

1. Source: A Cubic Mile of Oil blog, Ripudaman Malhotra

2. Or 970 plants of 2,000 MWe each with 90% availability, which can be achieved with Lightbridge fuel. 1 per week for 19 years. **Lightbridge**



The world can only meet its growing energy & climate goals with nuclear power as a major part of the solution

# US Nuclear Energy R&D Programs

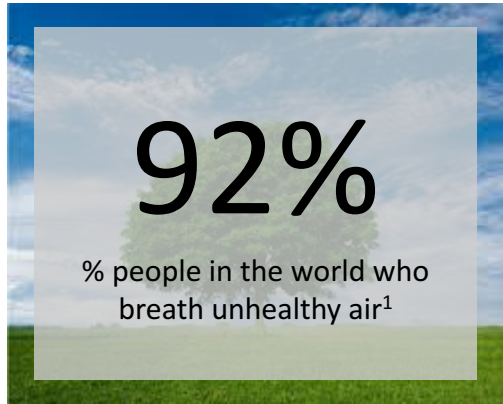
New types of reactors will not be commercialized soon enough at large enough scale to achieve climate change goals.

Lightbridge fuel can bridge this gap by using existing reactors to generate cheaper and safer zero-emission electricity.



Lightbridge

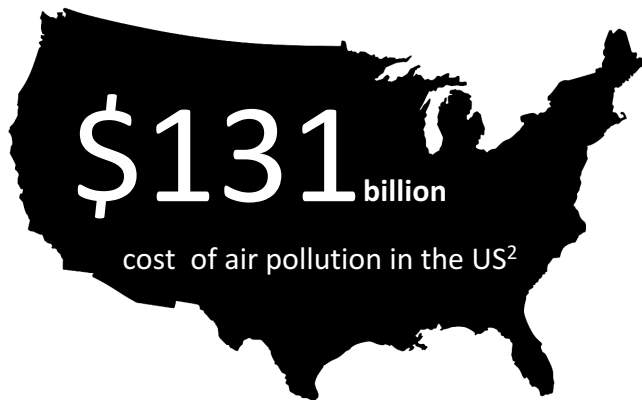
# The Human Cost of Energy Use



*4<sup>th</sup> largest cause of death in the world*



- 3 million premature deaths linked to outdoor air pollution.
- 3.5 million premature deaths linked to indoor air pollution due to use of biomass for cooking and heating and kerosene for lighting.



250,000 additional deaths per year expected to be caused by climate change worldwide between 2030 and 2050 due to malaria, malnutrition, diarrhea, and heat stress.

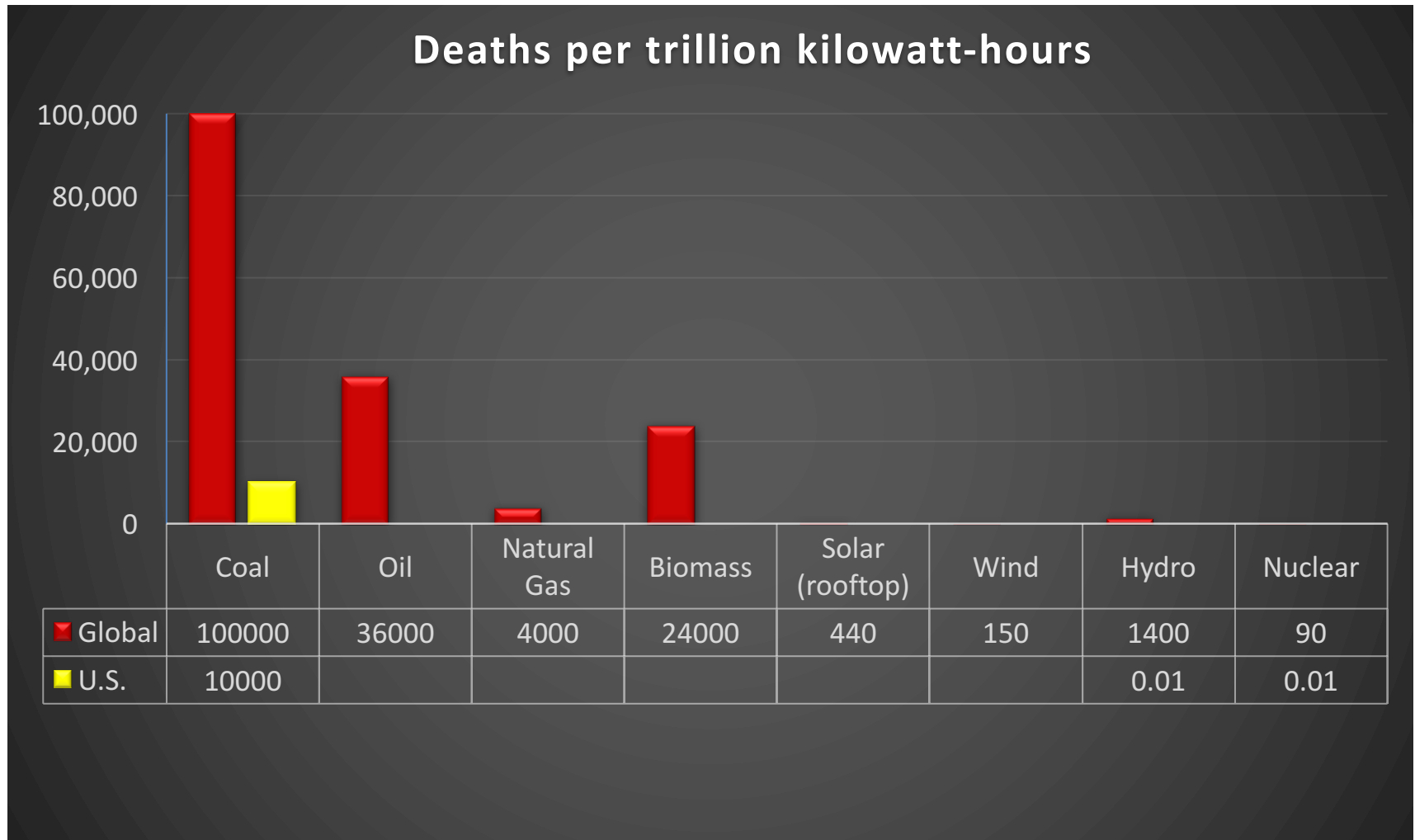
1. “Unhealthy air” is classified as having concentrations of fine particulate matter, PM 2.5, above 10 micrograms per m<sup>3</sup>

2. Cost in 2011 is primarily the result of illness and mortality caused by electric power generation, oil & gas extraction, coal mining, and oil refining.

Sources: International Energy Agency (IEA); World Health Organization (WHO);

Washington Post: “The Staggering Economic Cost of Air Pollution”, 2016

# Negative Health Impacts of Energy Sources



**Nuclear energy has lowest mortality rate of all energy sources.**

Sources: Forbes, "How Deadly is Your Kilowatt," 2012  
US Department of Labor

# Safety by design

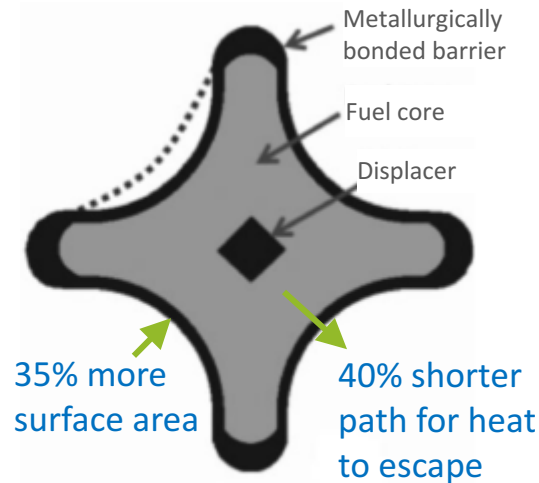
# How We Designed Safer Fuel

## Fabrication

The three components of Lightbridge fuel are metallurgically bonded during the fabrication process. This bonding **improves fuel rod integrity and thermal conductivity** and **eliminates a source of fission product release** in the event of a bonded barrier breach, reducing radiation exposure to plant workers.

## Shape

Helical cruciform fuel rod – 35% increased fuel surface area and 40% shorter distance for heat generated in the fuel rod to reach the water **improves coolability of the fuel**. Swelling occurs primarily in the valleys between the lobes, maintaining the fuel rod diameter.



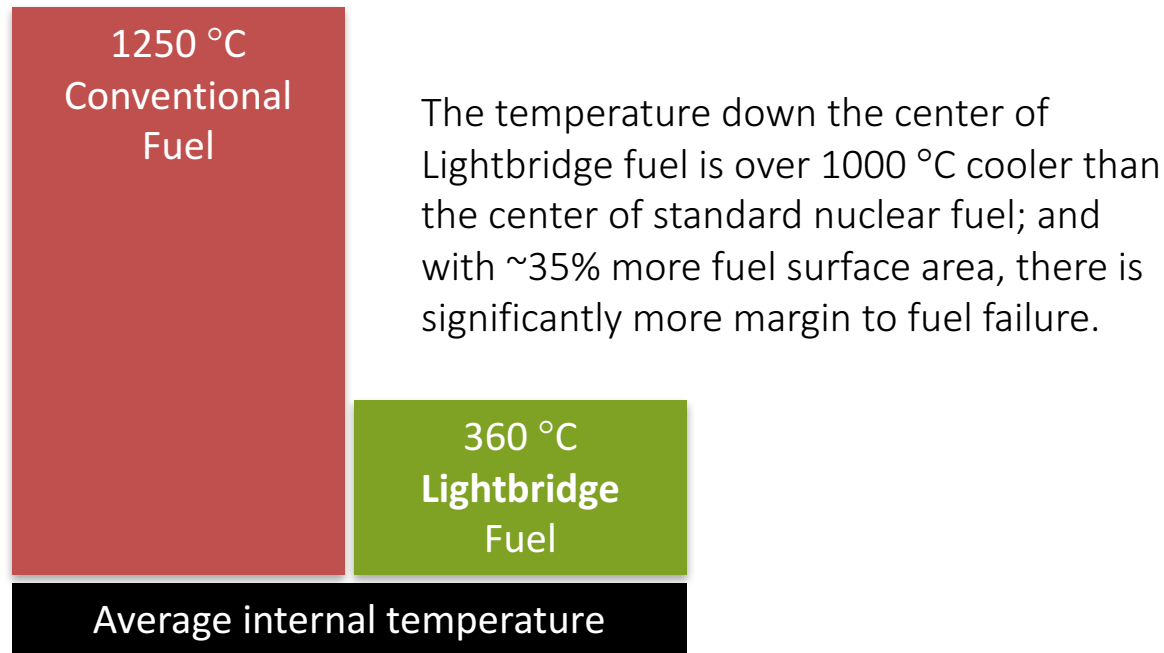
## Materials

1. Displacer: contains burnable poison alloys for neutronics control.
2. Fuel core: uranium-zirconium alloy, high thermal conductivity, low irradiation-induced swelling.
3. Metallurgically bonded barrier: corrosion-resistant zirconium-niobium alloy, variable thickness provides increased protection at lobe tips.

## Operations

**Low fuel operating temperature**, fission products behave like solids and remain where they are created. **No fission product release during design basis events.**

# Lightbridge Innovation: Designed for Safety



- ✓ Metal fuel has better heat transfer
- ✓ Reduces fuel operating temperature
- ✓ Does not generate hydrogen gas under design basis accidents
- ✓ Buys more time to restore active cooling during accidents
- ✓ Improves non-proliferation benefits of used fuel
- ✓ Enhances structural integrity of the fuel



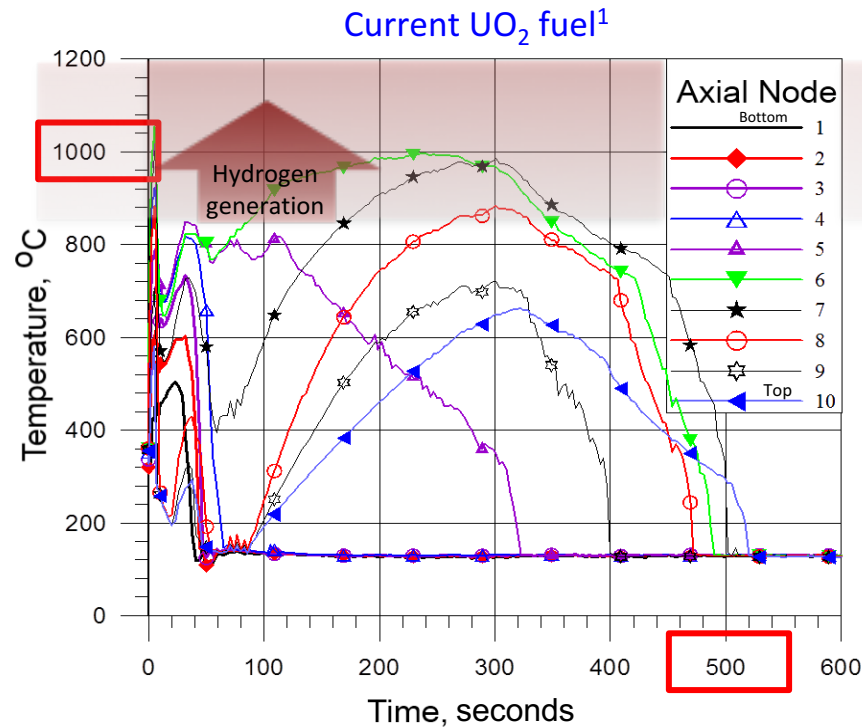
When approving planned irradiation of Lightbridge fuel at Halden, the Norwegian Radiation Protection Authority (NRPA) noted the safety advantages of Lightbridge metallic fuel, including much better thermal conductivity than oxide fuel, which contributes to significantly lower centerline temperatures in the fuel as compared to oxide fuel, and reduced likelihood for a release of fission products should a cladding breach occur.

Jan. 12, 2016

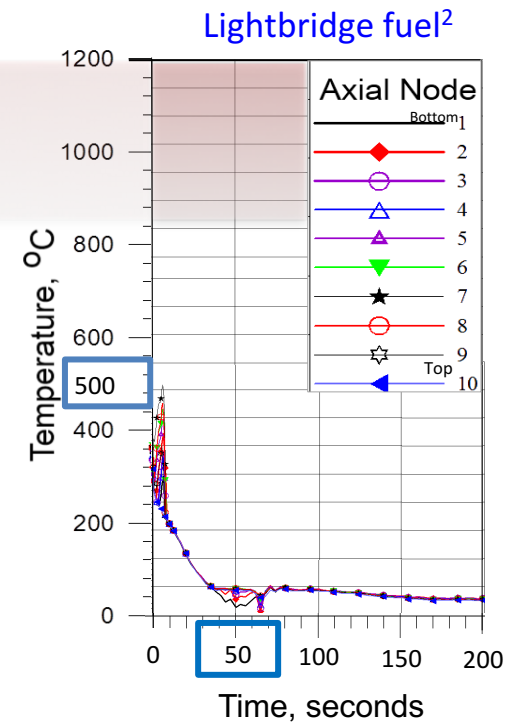


# What Happens in a Loss of Coolant Accident<sup>1</sup>

The graphs show the peak cladding temperature (PCT) at several points along the length of the fuel during the accident for both conventional uranium dioxide fuel and Lightbridge-designed metallic fuel operating at ~30% higher power density.



The uranium dioxide cladding heats up enough to allow for steam-zirconium reactions which can generate explosive hydrogen gas at approximately 850°C. It takes ~8 minutes for the cladding temperature to decrease to the coolant water temperature.



For Lightbridge fuel, due to its low temperature and high thermal conductivity, the cladding/bonded barrier temperature decreases to the coolant temperature in less than a minute and remains low even as the coolant leaks out of the core and the emergency core cooling systems restore cooling.

1. Simulated design basis large break loss of coolant accident (LBLOCA) in a VVER-1000. VVER-1000 fuel 448 W/cm (13.6 kW/ft). VVER-1000 is a Russian-designed type of pressurized water reactor.
2. Lightbridge tri-lobe fuel – 550 W/cm (16.7 kW/ft)

# How a Reactor Can Produce More Power with Fuel at a Lower Temperature

The answer relies on two unique features of the Lightbridge fuel:

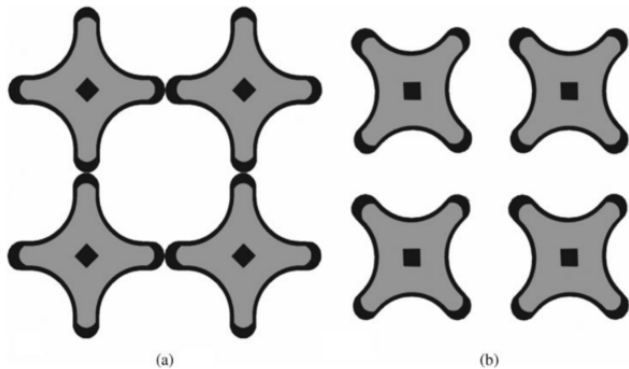
1) Increased coolant flow rate:  $Q_{core} = \dot{m}[h(T_{out}) - h(T_{in})]$

- Removing flow-restricting spacer grids increases the coolant flow rate, moving more water through the core without increasing pump power.
- The increase in coolant flow rate operating with the same difference in outlet and inlet temperature while extracting more heat from the core, results in increased electricity generation.

2) Increased fuel surface area:

- The increased fuel surface area allows the fuel to generate more heat while increasing safety margins.

Existing pressurized water reactors could utilize Lightbridge fuel designs to achieve a 10% power uprate and 24 month fuel cycle without replacing the coolant pumps.



Schematic cross section of the metallic fuel rod aligned in a square array showing:

- (a) self-spacing plane wherein rod-to-rod contact eliminates the need for spacer grids; and
- (b) halfway between axial self-spacing planes.

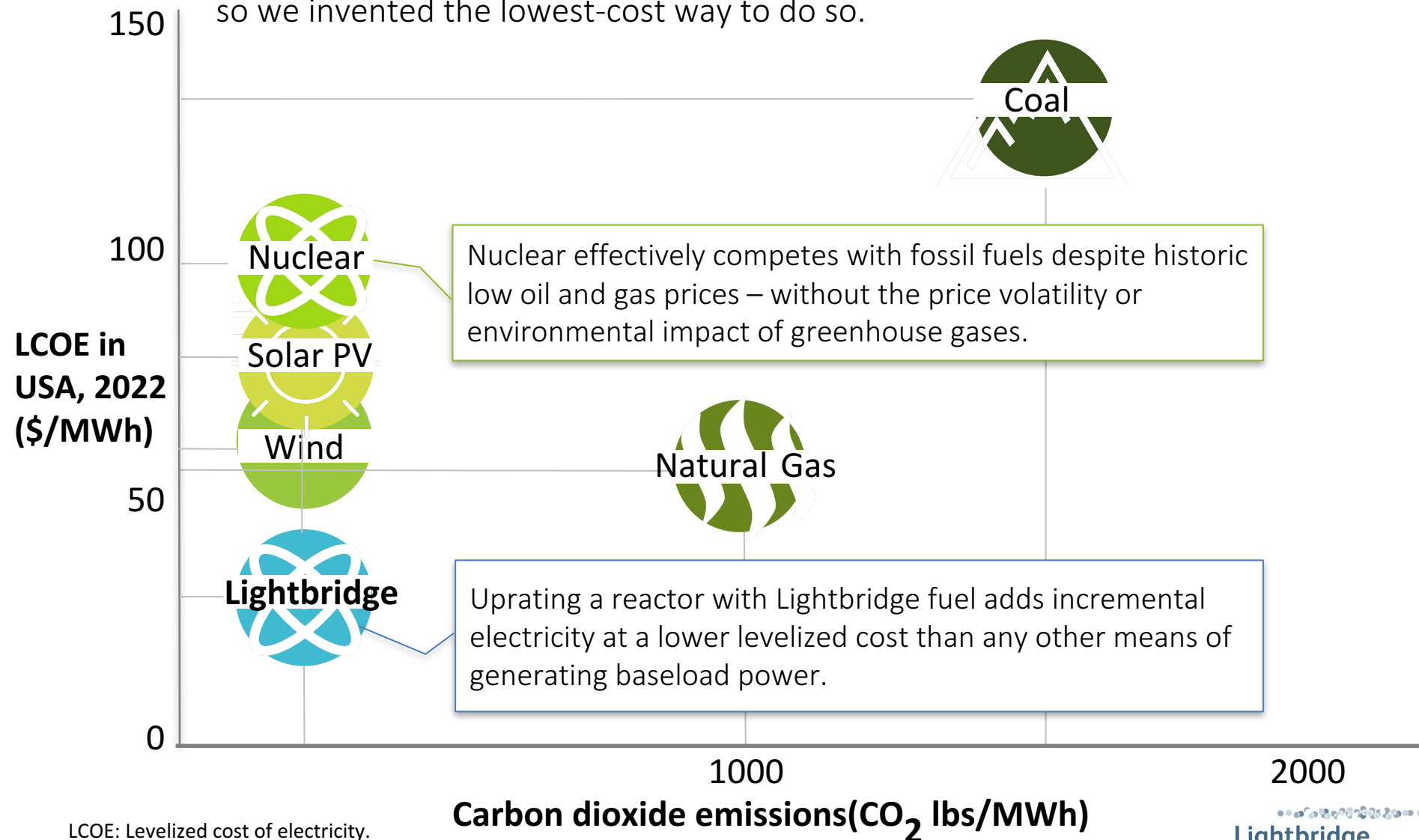
Note on equation:

Thermal power ( $Q$ ) = flow rate ( $\dot{m}$ ) times the enthalpy ( $h$ ) change in the coolant water through the core of the reactor

# Economic benefits

# Generating Sources: How Cost and CO2 Emissions Compare

We regard our competition to be every method of generating electricity, so we invented the lowest-cost way to do so.



LCOE: Levelized cost of electricity.

Sources: US Energy Information Administration, Annual Energy Outlook 2017

# Key Lightbridge Advantages

1

By listening to the Nuclear Utility Fuel Advisory Board (NUFAB) and other utilities, we designed new fuel compatible with existing and new reactors.

2

Lightbridge's fuel addresses two overarching issues confronting the nuclear industry: the fuel improves reactor economics and enhances safety.

3

Lightbridge also delivers:

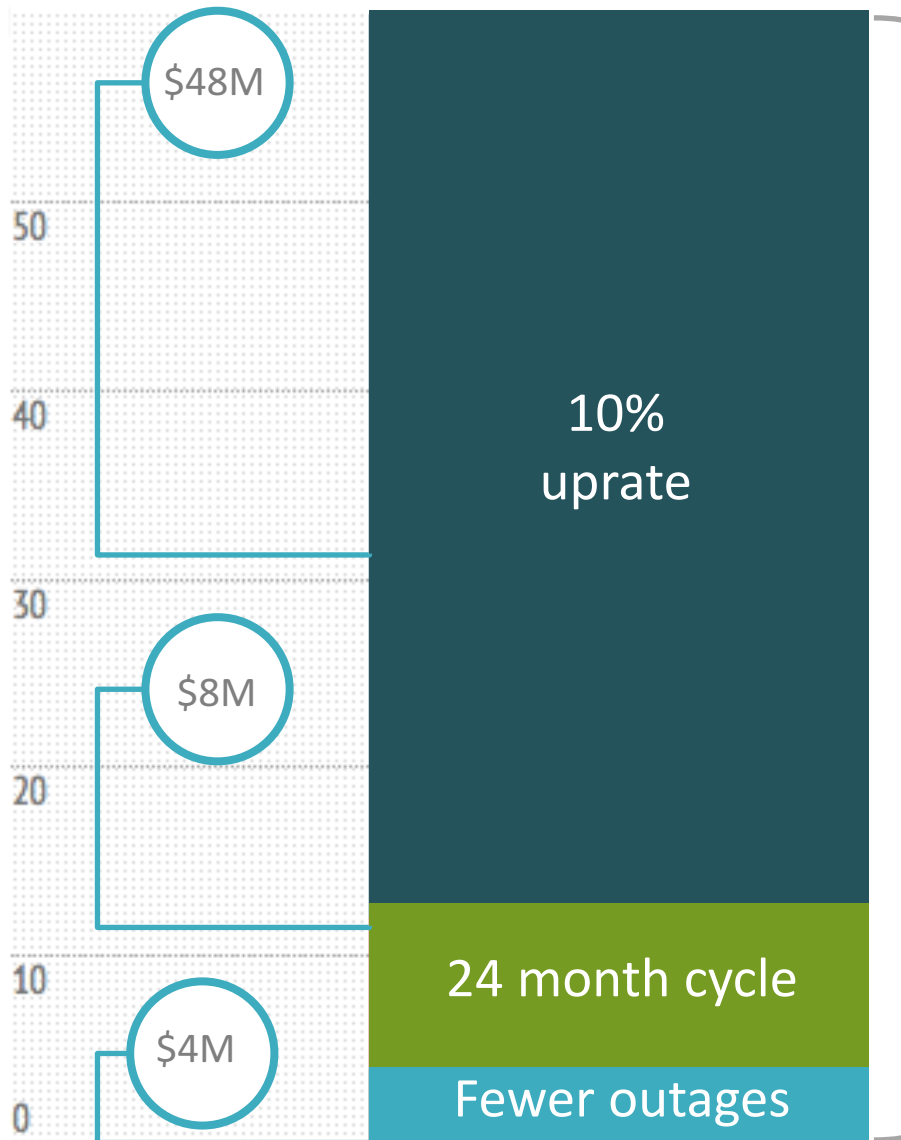
- Enhanced proliferation resistance of spent fuel
- Reduced spent fuel volume

Three variants of Lightbridge Fuel:

- **10% power uprate and** increase time between refueling outages by six months from 18 to 24 months for existing pressurized water reactors.
- **17% power uprate** without increasing time between refueling outages for existing pressurized water reactors.
- **30% power uprate** without increasing time between refueling outages for new build pressurized water reactors.

**10+ years ahead** of any potential competitor due to testing and regulatory requirements – and we own the patent rights.

# \$60 Million Annual Gross Revenue Per Customer Expected



## \$60 million\*

per 1,100 MWe reactor

incremental annual revenue to utility with Lightbridge 10% power uprate fuel

Does not include the added economic benefit of carbon credits.

\*Assumes wholesale power price of \$55/MWh, which is the average wholesale power price in the U.S. over the past decade. Based on our discussions with regulated utilities, we believe this the benchmark they would likely use in their long-term investment decisions as license extensions can add 20 years to the operating life of a nuclear power plant, while building new-plants have about a 60-year operating life.

# Nuclear Energy Plays Key Role in US Clean Power Plan

“The [US Environmental Protection Agency] EPA expects nuclear power to be a key partner in achieving the goals of the CPP. States can use new nuclear generation to help meet their Clean Power Plan goals. This includes new nuclear reactors that come on-line, including those under construction, and existing facilities that expand their capacity (uprates).”

“Nuclear, like renewable energy generation and energy efficiency programs, can compete well and play an important role in complying with rate-based plans through the creation of **emission rate credits (ERCs)** from new and uprated nuclear capacity. If a state chooses to meet a rate-based goal and allows the use of ERCs, then new and uprated nuclear capacity may be eligible to receive ERCs based on zero-emitting MWh of generation. Since an ERC is a tradable compliance instrument, it represents **an asset that can be sold in the market, resulting in a monetary payment to nuclear power plant owners.**” -

*Source: EPA*

- Lightbridge fuel can add meaningful amounts of new nuclear power without adding new reactors.
- Economic benefits of Lightbridge’s metallic fuel are consistent with the Clean Power Plan goals:
  - Power uprates to existing nuclear plants
  - Lengthening the fuel cycle at existing plants
  - Emission rate credits from increased electricity generation

## Lightbridge Fuel Can Bring High Returns

US nuclear plant operators could expect internal rate of return (IRR) using Lightbridge fuel, after incremental nuclear fuel cost and Lightbridge royalties:

Wholesale electricity price	Total incremental investment <sup>1</sup>	Incremental gross margin	Net real IRR
\$45/MWh	\$85M	\$26M	30%
\$55/MWh	\$85M	\$35M*	41%
\$65/MWh	\$85M	\$45M	52%

\*\$60M from slide 19 minus incremental nuclear fuel cost to enable a 10% power uprate and 24-month fuel cycle.

<sup>1</sup>Source: Siemens Industry Inc. Levelized Cost Model, December 2012

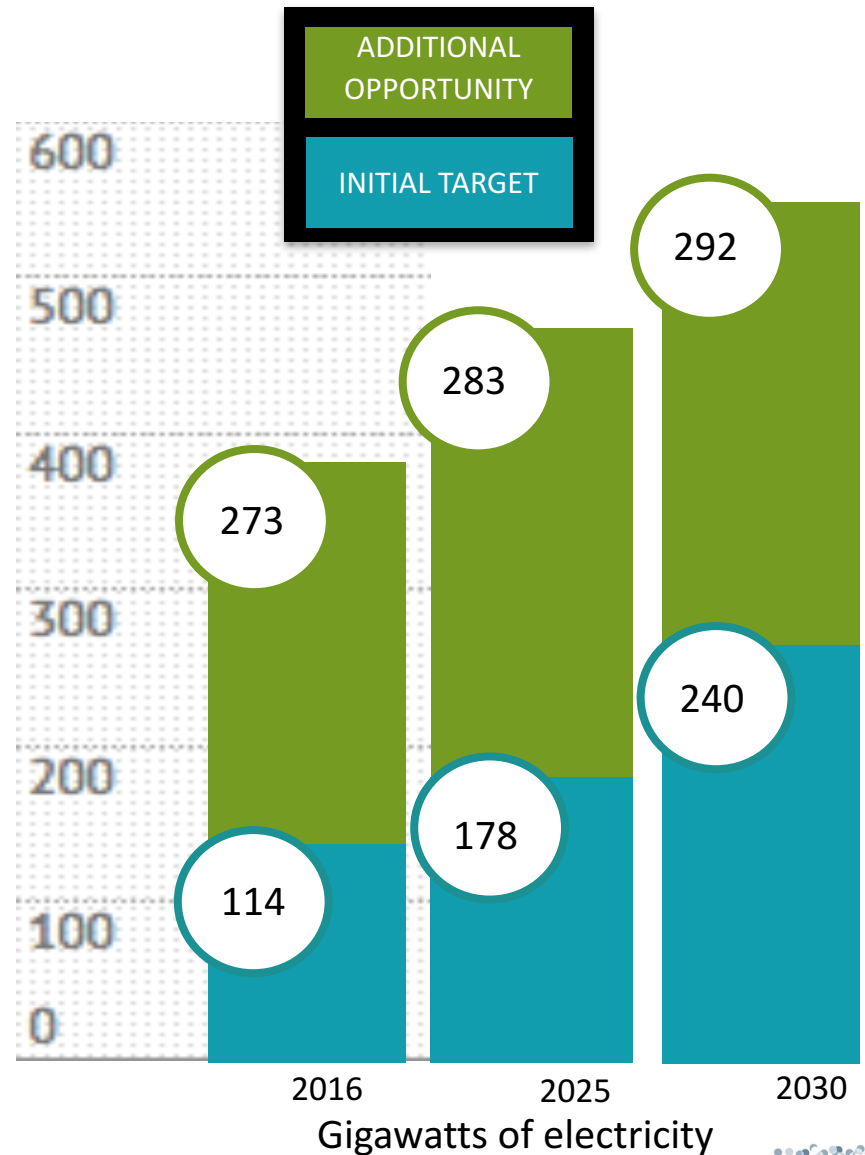
## Initial Target Market: Large Reactors

We are targeting pressurized water reactors of >900 MWe with >20 years licensed life at 2025.

We are initially focusing on deploying our fuel in large US reactors and gaining US Nuclear Regulatory Commission (NRC) approvals. NRC licensing will facilitate approvals in other countries.

Nearly every reactor in the world, including those under construction and planned, can use Lightbridge fuel.

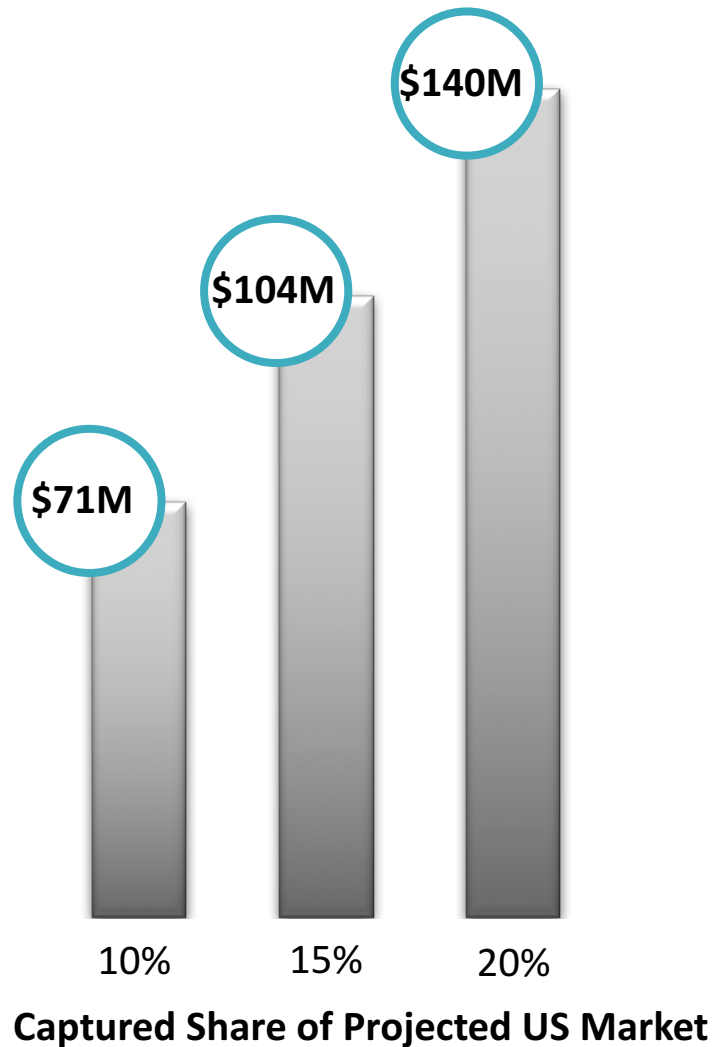
These include pressurized water reactors (including Russian-type VVERs), boiling water reactors, light-water based small modular reactors, heavy water reactors (such as CANDUs), and water-cooled research reactors.



# Annual Revenue Projections from Royalties

8%

Royalty Fee of  
Incremental Gross  
Revenue to Utility



## Notes:

1. Includes 10% fuel upgrade orders
2. Annual royalty revenue includes an escalation factor of 3% per year to 2030
3. Wholesale electricity price of \$55/MWh

# Lightbridge development

## Addressing Nuclear Industry Needs

The nuclear power industry changed following the accident at Fukushima Daiichi and the collapse of natural gas prices. Lightbridge recognized nuclear utilities' desire to improve the economics and safety of existing reactors.

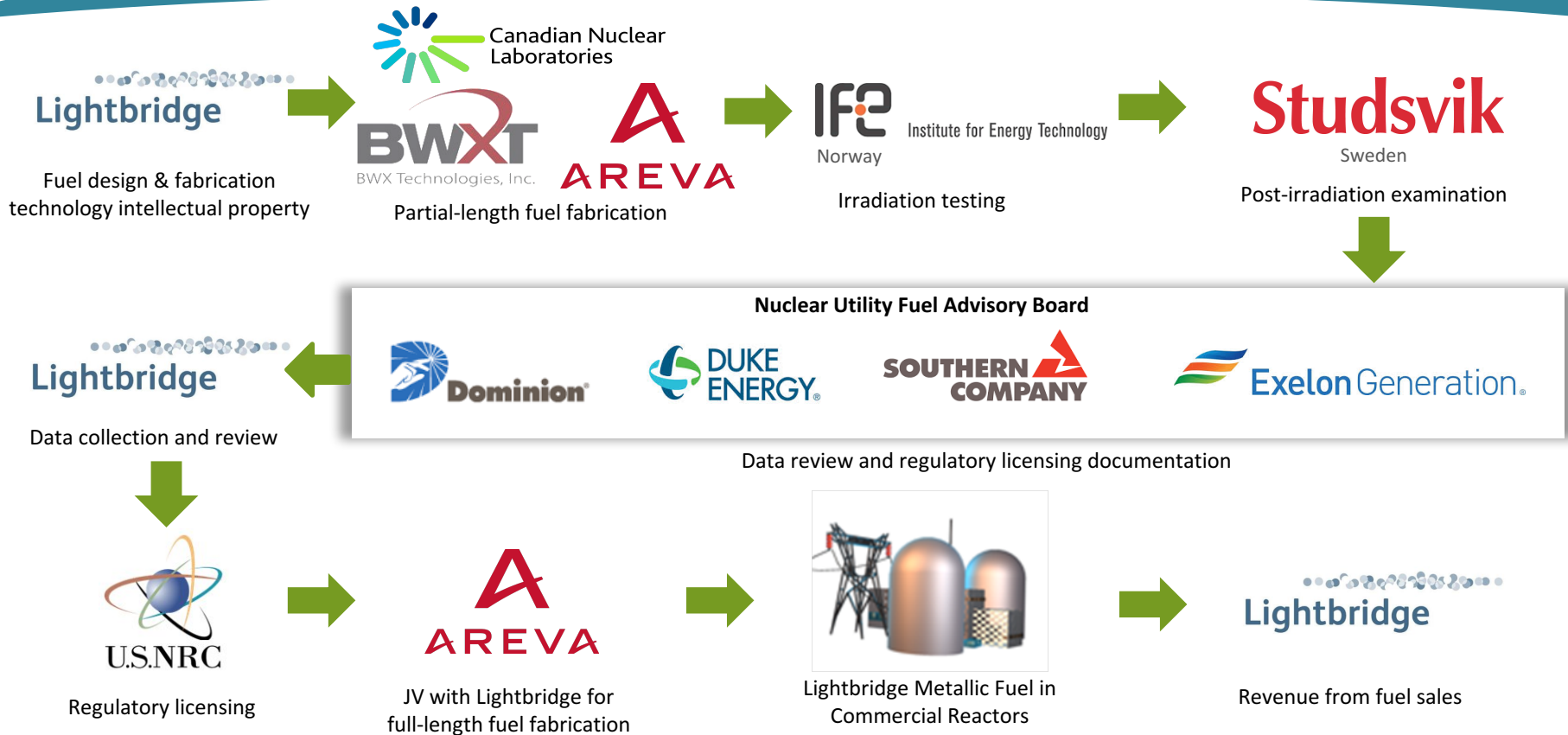
Lightbridge utilized years of R&D in metallic fuel to do just that.



We need to operate existing reactors and build new ones based on current designs, but their economics and safety must be improved.

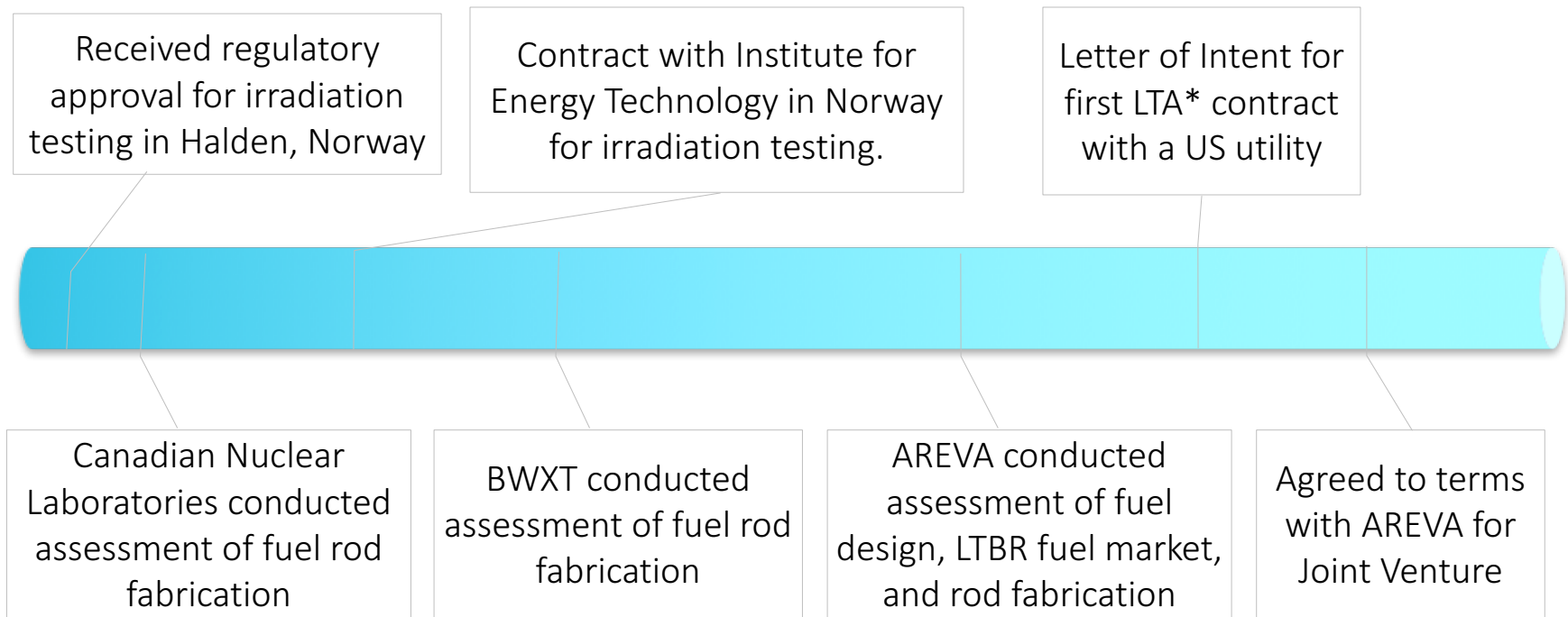
# Advancing Towards Commercialization

## Near-term Value Drivers



Initial contracts and government approvals are in place to accomplish all of the above steps.

# Fuel Developments in 2016



Near-term milestones are to:

- Select the entity to fabricate fuel samples for testing in the research reactor in Norway
- Formalize the joint venture agreement with AREVA
- Enter into a lead test assembly (LTA) agreement with a US electric utility

\* Lead test assembly (LTA) is a nuclear power industry term for the first assemblies (bundles of fuel rods) of a new type of fuel used in a commercial nuclear power plant. The LTAs may be preceded by lead test rods (LTRs) in the commercial reactor.

## Major Patents Issued in 2015 - 2017

Patents for metallic nuclear fuel for power uprates and longer fuel cycles.

Location	Patent Number	Year Issued
Australia	2014202305	2016
	2008365658	2015
Canada	2710432	2016
	2748367	2016
China	ZL2011800237859	2016
	102301430	2016
	201410042725.7*	2017
	201480036401.0*	2017
Eurasia <sup>2</sup>	023549	2016
	023017	2016
Europe <sup>1</sup>	2372717	2016
	2077560	2016
	2228801	2016
	2569776	2016
	14733408.0*	2017

Location	Patent Number	Year Issued
USA	9355747	2016
Japan	6001530	2016
	6000403	2016
	5755568	2015
	5921046	2016
Korea (South)	10/1515116	2015
	10/1546814	2015
Ukraine	109437	2015

1. Registered in: Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Hungary, Spain, Sweden, Turkey, United Kingdom

2. Eurasia countries include: Russia, Kazakhstan, and Belarus

\* Application number. Patent number forthcoming.

## Some of America's Largest Utilities Are Advising Us

Lightbridge's Nuclear Utility Fuel Advisory Board (NUFAB), formed in 2011, comprises senior fuel managers from electric utilities that account for **50% of installed US nuclear capacity**. NUFAB members represent the "voice of the customer" in Lightbridge's nuclear fuel development and commercialization activities.

The utilities [requested](#) in 2015 that the U.S. Nuclear Regulatory Commission (NRC) prepare to review Lightbridge's patented fuel design in advance of an expected [application in 2017](#) to use this fuel in a US commercial reactor.

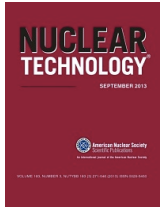
The utilities' letter to the NRC demonstrates strong interest in Lightbridge's fuel, which has helped drive interest from fuel fabricating companies.



A 25% penetration of the US market alone would generate **\$150-200M of royalty fees per year** to Lightbridge.

# Respected Organizations Have Independently Validated Our Technology

## SIEMENS



[Siemens Study Validates Economic Benefits of Lightbridge Metallic Fuel](#)

[Siemens Study Validates Non-Proliferation Benefits of Lightbridge Fuel](#)

[American Nuclear Society's Nuclear Technology Peer-Reviewed Article](#)

These studies confirm Lightbridge's:

1. Technology value proposition
2. Metallic fuel can be fabricated and used in commercial reactors utilizing industry supply chains
3. Non-proliferation properties

"The economics of Lightbridge's nominal 10% capacity uprate are attractive since the uprate's estimated levelized cost of generation should be below the expected market price for power in 2021 and that of most incremental power uprates on fossil-fueled units."  
*December 4, 2012*



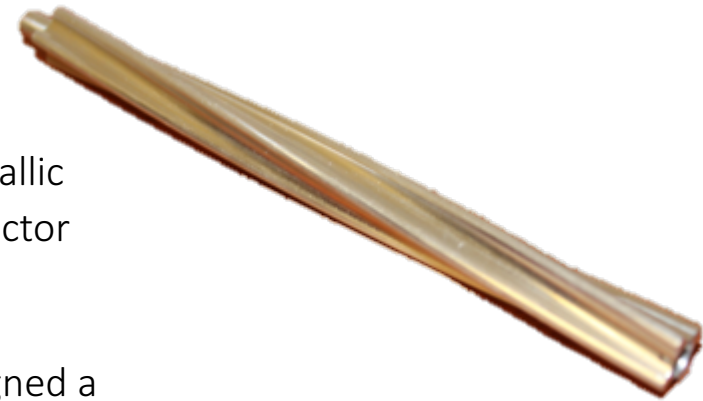
# Manufacturing Lightbridge Fuel

Lightbridge completed initial manufacturing and testing of metallic fuel in Russia, leading to planned testing under commercial reactor conditions in Norway.

On October 31, 2016, Lightbridge and AREVA (Paris: AREVA) signed a term sheet outlining key agreements for a U.S.-based joint venture to be equally owned by each company. The new joint venture will develop, manufacture and commercialize fuel assemblies based on Lightbridge's metallic fuel technology for most types of light water reactors.

## Quality Assurance

The Lightbridge Quality Assurance Program meets the requirements of 10 CFR Part 50 Appendix B, 10 CFR Part 21 and the applicable requirements of NQA-1: 2008 Edition, 2009 Addenda, in compliance with US and international quality standards for nuclear power suppliers. Complying with these standards allows the results of the testing programs to be used for nuclear regulatory licensing applications and with major companies in the global nuclear power industry.



"We look forward to advancing nuclear fuel performance through this relationship, combining AREVA's expertise in nuclear fuel design and fabrication with Lightbridge's innovative metallic nuclear fuel concept. Next-generation fuel technology has significant potential to help sustain existing nuclear energy assets, which will serve as the foundation for a clean energy portfolio worldwide."

*Lionel Gaiffe, Senior Executive Vice President of the Fuel Business Unit for AREVA NP*

*November 2, 2016*



# Criticality = self-sustaining nuclear chain reaction

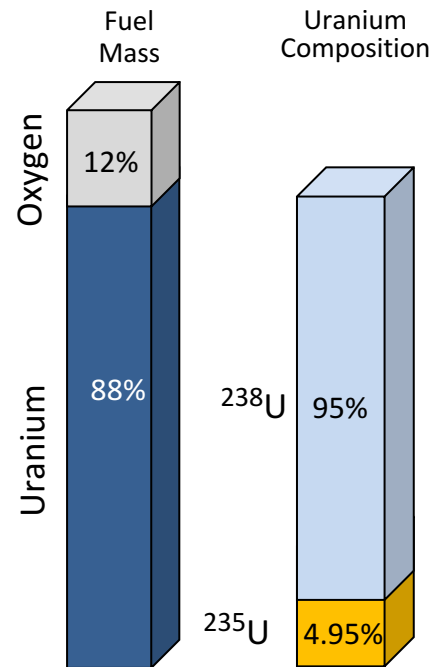
Criticality depends on the **quantity and composition** of materials in the reactor core, most importantly, **fissile material**.

Most commercial reactors use  $^{235}\text{U}$  as fissile material in fresh fuel. Lightbridge metallic fuel uses less enriched uranium, with a higher percentage of  $^{235}\text{U}$ .

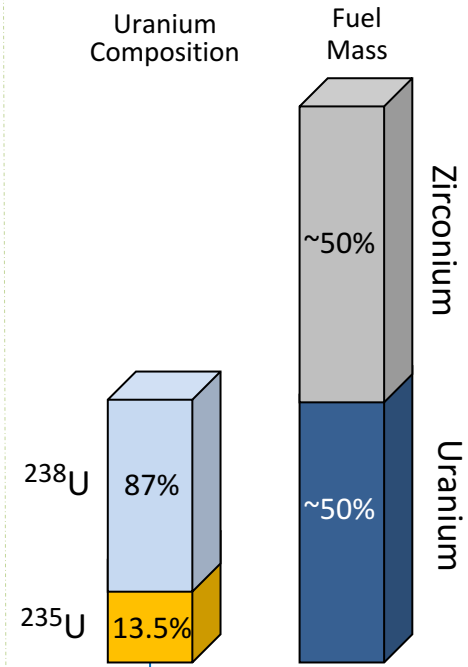
Lightbridge fuel with 13.5% enriched uranium has the **same mass of  $^{235}\text{U}$  atoms** as conventual  $\text{UO}_2$  fuel enriched to 4.95%.

Lightbridge fuel with 19.7% enriched uranium has the same mass of  $^{235}\text{U}$  atoms as  $\text{UO}_2$  fuel enriched to  $\sim 7.2\%$ .

Conventional  $\text{UO}_2$  fuel assembly



Lightbridge fuel assembly

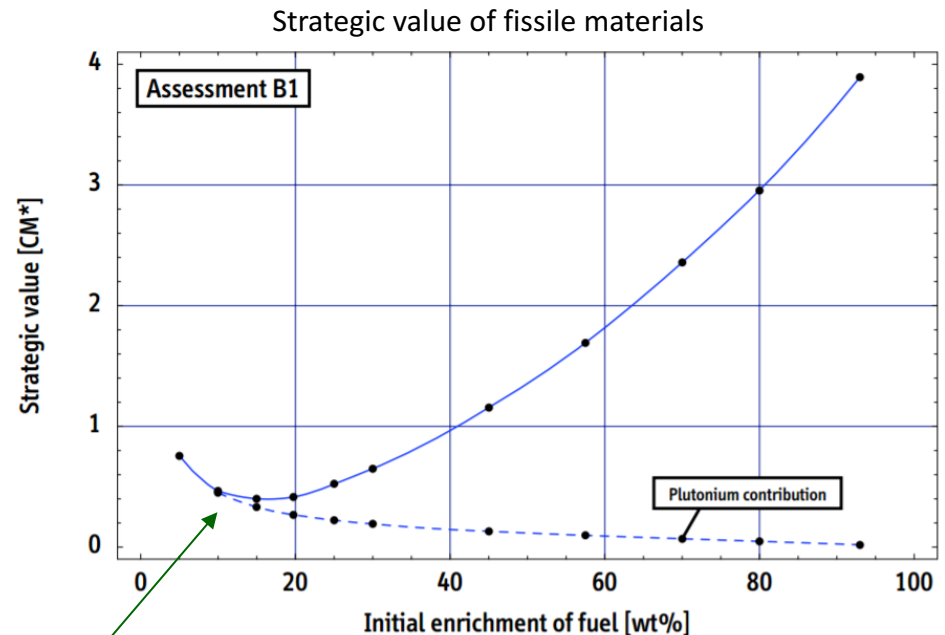


# Proliferation resistance of used nuclear fuel

Lightbridge's fuel enrichment is in the optimal range to curb proliferation of used nuclear fuel (UNF).

Proliferation resistance comparison of Lightbridge UNF:

- ✓ ~ ½ the amount of plutonium produced as conventional  $\text{UO}_2$  fuel
- ✓ lower  $^{239}\text{Pu}$  fraction than  $\text{UO}_2$  fuel; it is unattractive as a weapon source
- ✓ higher percentage of  $^{235}\text{U}$  has been consumed during its operating cycle



A. Glaser, "About the Enrichment Limit for Research Reactor Conversion: Why 20%?" 27<sup>th</sup> International Meeting on RERTR. Nov 6-10, 2005, Boston, MA

Initial fuel enrichment of 15-20% has the lowest strategic value for proliferation potential

## Key Milestones - Completed

Significant progress with modest investment since announcing in 2010 the concept of a metallic fuel for power uprates and safety enhancements:

- ✓ Initial design and testing of metallic fuel.
- ✓ Manufacture and test prototypes in Russia.
- ✓ Independent validation.
- ✓ Main US patent issued in 2014; patents granted in Canada, China, European Union member countries, Japan, Russia, and major international markets, and additional patents are pending.
- ✓ Written expression of interest from four major US utilities to Nuclear Regulatory Commission (NRC) in 2015 requesting that the NRC prepare to receive a license application in 2017.
- ✓ Contracts with Canadian Nuclear Laboratories and BWXT Nuclear Energy to prepare a plan for manufacturing fuel samples for testing under commercial reactor conditions.
- ✓ Granted regulatory approval from Norwegian Radiation Protection Authority for all planned irradiation of Lightbridge metallic fuel at the Halden Research Reactor in Norway.
- ✓ Contract with Institute for Energy Technology in Norway for demonstration of the Lightbridge fuel in Halden reactor under commercial reactor operating conditions and post-irradiation examination at Studsvik in Sweden.
- ✓ Signed term sheet with AREVA to form a joint venture to develop, manufacture and commercialize fuel based on Lightbridge's technology.
- ✓ Entered into a letter of intent for lead test assemblies with a US electric utility.

# Nuclear Consulting Services

World class team of industry leading experts generates positive cash flow with solid operating margins.

About 50% of R&D funded internally from \$55M of revenues to-date from consulting services

Creating industry relationships and strong credibility through successful projects around the world



Toshiba, IAC, Mitsubishi Nuclear Energy Systems



Korea Hydro & Nuclear Power



Kuwait National Nuclear Energy Committee



Cooperation Council for the Arab States of the Gulf



Emirates Nuclear Energy Corp., Executive Affairs Authority, Federal Authority for Nuclear Regulation



Lloyd's Register, Mott MacDonald Group



Booz Allen Hamilton, U.S. Department of Energy, The Employment Law Firm, Pillsbury Law, Southern California Edison

Lightbridge **wrote the Roadmap** for the nuclear power program for the United Arab Emirates.

# Corporate Governance

## Board of Directors

### Victor Alessi

- Former Director (head) of the U.S. Department of Energy's Office of Arms Control and Nonproliferation
- Ph.D. in Nuclear Physics

### Seth Grae

- President and CEO of Lightbridge Corporation
- Member of the Civil Nuclear Trade Advisory Committee to the U.S. Secretary of Commerce

### Ambassador Thomas Graham, Executive Chairman

- Successfully led worldwide negotiations for permanent Nuclear Non-Proliferation Treaty; advised five U.S. presidents on nuclear nonproliferation
- Former acting head and general counsel of the U.S. Arms Control and Disarmament Agency

### Xingping Hou, Honorary Co-Chairman

- Founder, Board Chairman, and CEO of General Agriculture Corporation in China
- Director of Hua Mei Investments Limited and Han Glory International Limited since April 2011

### Daniel Magraw

- Former Director (head) of the International Environmental Law Office of the U.S. Environmental Protection Agency
- Former CEO of the Center for International Environmental Law

### Kathleen Kennedy Townsend

- Former Deputy Assistant Attorney General of the United States and former Lieutenant Governor of the State of Maryland
- Managing Director at the Rock Creek Group, a leading global investment and advisory firm

# Corporate Governance

## Management

Seth Grae	President and CEO
Linda Zwobota	Chief Financial Officer
James Malone	Chief Nuclear Fuel Development Officer
Andrey Mushakov	Executive VP, International Nuclear Operations
Jon Johnson	Senior VP, Nuclear Regulatory Expert
Aaron Totemeier	VP, Fuel Cycle Technology and Fuel Fabrication
René Delaney	Quality Assurance Manager
Jonathan Baggett	VP, Program Management & Deputy Quality Assurance Manager

## Management's previous experience

- Nuclear fuel procurement
- Nuclear fuel cycle management
- Nuclear regulation & licensing
- Nuclear fuel research
- Quality assurance
- Economic analysis
- Financial compliance
- Export controls
- Corporate and securities law
- Product development
- Program management

# Corporate Governance

## Senior Advisors

### Hans Blix

- Former Director General (head) of the International Atomic Energy Agency
- Former Chief Weapons Inspector and Executive Chair of the U.N. Monitoring, Verification, and Inspection Commission (that did not find weapons of mass destruction in Iraq)

### Alexei Morozov

- Prominent nuclear fuel designer with decades of experience at Russia's leading nuclear development institutions
- Former head of physics and engineering research at FSUE Red Star (subsidiary of Rosatom)

### Simon Murray

- Former Chairman of Glencore and former Executive Chairman Asia/Pacific of Deutsche Bank
- Former Group Managing Director (CEO) of Hutchison Whampoa

### Norton Shapiro

- Former Chair of the Technical Review Committee at Westinghouse Electric Company
- Former head of Nuclear Engineering Department of ABB Combustion Engineering

### Sam Vaidyanathan, Ph.D.

- Former Senior Program Manager & Principal Engineer (head) of advanced nuclear fuel design for GE Nuclear
- Led studies and pioneered technical strategies on plutonium conversion and mixed oxide (MOX) fuel fabrication

# Data Sources

Slide 6, **The World's Energy Needs Are Rising**

<http://www.census.gov/population/international/data/idb/worldpopgraph.php>  
[http://www.eia.gov/forecasts/ieo/pdf/0484\(2016\).pdf](http://www.eia.gov/forecasts/ieo/pdf/0484(2016).pdf)  
<http://www.eia.gov/todayinenergy/detail.php?id=26212>  
<http://cmo-ripu.blogspot.com/2016/03/update-january-2016.html>

Slide 7, **Energy equivalent of one cubic mile of oil**

<http://cmo-ripu.blogspot.com/2015/02/getting-real-about-energy-in-cubic.html>  
<http://www.ourenergypolicy.org/do-we-have-the-raw-materials-for-the-world-to-become-80-renewable-by-2050/>

Slide 8, **US nuclear energy R&D programs**

<http://www.thirdway.org/report/the-advanced-nuclear-industry>

Slide 9, **The human cost of energy use**

<http://www.worldenergyoutlook.org/airpollution/>  
<http://www.who.int/mediacentre/factsheets/fs266/en/>  
[https://www.washingtonpost.com/news/energy-environment/wp/2016/01/29/the-staggering-economic-cost-of-air-pollution/?utm\\_term=.3b6205b4e8fe](https://www.washingtonpost.com/news/energy-environment/wp/2016/01/29/the-staggering-economic-cost-of-air-pollution/?utm_term=.3b6205b4e8fe)  
<https://www.imf.org/external/pubs/ft/survey/so/2015/new070215a.htm>  
<http://www.who.int/mediacentre/news/releases/2016/air-pollution-estimates/en/>

Slide 10, **Negative health impacts of energy sources**

<http://www.forbes.com/sites/jamesconca/2012/06/10/energys-deathprint-a-price-always-paid/#37e8c17f49d2>  
<http://arlweb.msha.gov/stats/charts/coaldaily.php>  
[http://www.bls.gov/iif/foi\\_revised14.htm](http://www.bls.gov/iif/foi_revised14.htm)  
<http://www.npr.org/2010/04/16/126021059/the-quiet-deaths-outside-the-coal-mines>  
<http://creofire.com/deadliest-killers-ground/>  
<http://www.world-nuclear.org/information-library.aspx>

Slide 17, **Generating Sources: How Cost and CO2 Emissions Compare**

[https://www.eia.gov/outlooks/aeo/pdf/electricity\\_generation.pdf](https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf)  
<https://www.eia.gov/tools/faqs/faq.cfm?id=74&t=11>

Slide 21, **Lightbridge fuel can bring high returns**

<http://ltbridge.com/assets/28.pdf>

Slide 22, **Initial Target Market**

<https://www.iaea.org/PRIS/WorldStatistics/UnderConstructionReactorsByCountry.aspx>  
[http://www.eia.gov/forecasts/ieo/pdf/0484\(2016\).pdf](http://www.eia.gov/forecasts/ieo/pdf/0484(2016).pdf)



# Lightbridge®

Lightbridge Corporation  
11710 Plaza America Drive  
Suite 2000  
Reston, Virginia 20190 USA

+1-571-730-1200  
[www.Ltbridge.com](http://www.Ltbridge.com)  
Twitter: @LightbridgeCorp

**Investor Relations:**  
+1-855-379-9900  
[ir@Ltbridge.com](mailto:ir@Ltbridge.com)

NASDAQ : LTBR