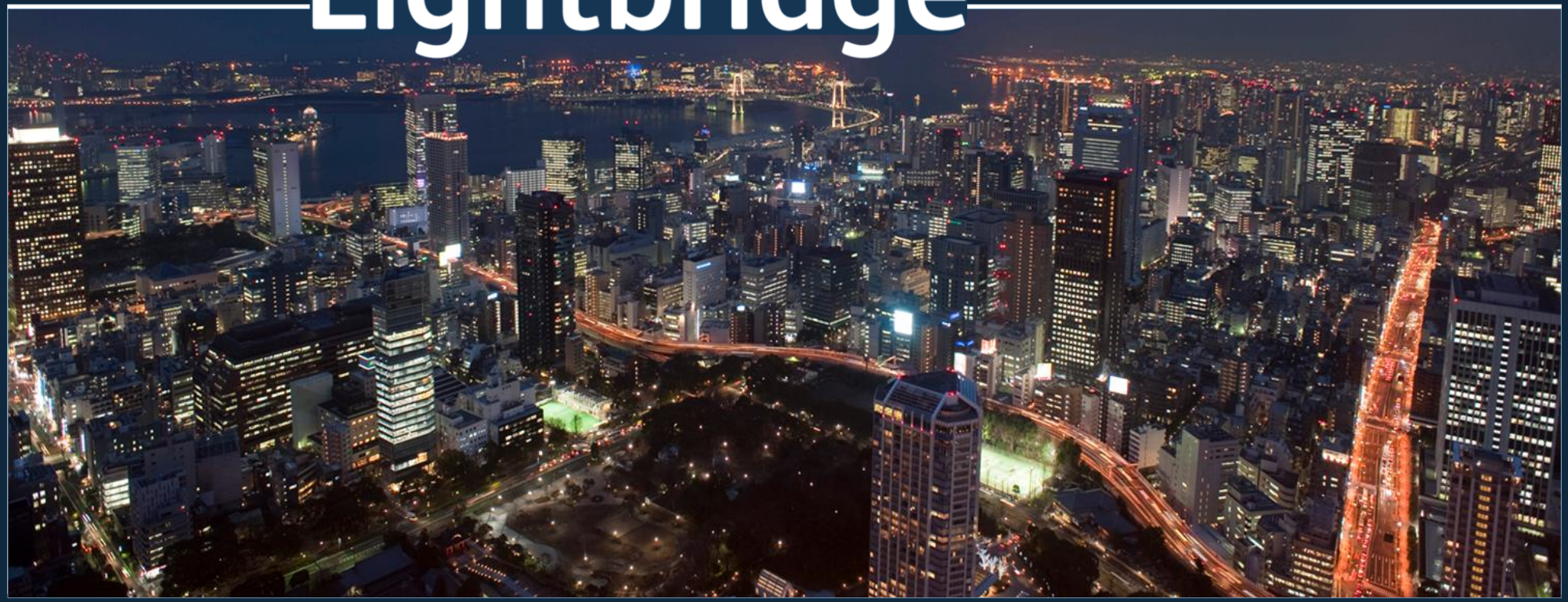
Lightbridge®



ADVANCED NUCLEAR FUEL TECHNOLOGIES

to impact the world's ***climate and energy security***

NASDAQ: LTBR

January 2024

Safe Harbor Statement

With the exception of historical matters, the matters discussed in this presentation are forward-looking statements, including statements regarding the anticipated benefits and results of the FEED study, the completion of the LPFFF, and Lightbridge Fuel's™ ability to utilize HALEU in existing and future reactors, including SMRs. These statements are based on current expectations on the date of this news release 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: Lightbridge's ability to commercialize its nuclear fuel technology; the degree of market adoption of Lightbridge's product and service offerings; Lightbridge's ability to fund general corporate overhead and outside research and development costs; market competition; our ability to attract and retain qualified employees; dependence on strategic partners; demand for fuel for nuclear reactors; Lightbridge's ability to manage its business effectively in a rapidly evolving market; the availability of nuclear test reactors and the risks associated with unexpected changes in Lightbridge's fuel development timeline; the increased costs associated with metallization of Lightbridge's nuclear fuel; public perception of nuclear energy generally; changes in the political environment; risks associated with war in Europe; changes in the laws, rules and regulations governing Lightbridge's business; development and utilization of, and challenges to, Lightbridge's intellectual property; risks associated with potential shareholder activism; potential and contingent liabilities; as well as other factors described in Lightbridge's filings with the Securities and Exchange Commission (the "SEC"). Lightbridge does not assume any obligation to update or revise any such forward-looking statements, whether as the result of new developments or otherwise, except as required by law. Readers are cautioned not to put undue reliance on forward-looking statements.

WHAT IS LIGHTBRIDGE?

Click to Play Video

LIGHTBRIDGE - PIONEERING ADVANCED NUCLEAR FUEL

Leading developer of nuclear fuel technology for current and future reactors, expected to enhance the safety, economics, and proliferation resistance of nuclear fuel by operating about 1000 °C cooler than standard fuel, enabling power uprates and extended cycle lengths, and producing less plutonium than standard fuel

Lightbridge surrogate rods used for a thermal-hydraulic flow experiment

Positioned to safely increase the energy output and efficiency of **carbon-free nuclear power reactors.**

Incorporating Lightbridge Fuel™ in current and future nuclear power plants **enables more flexible operation, accommodating increasing renewable energy sources on the electrical grid.**

Key Drivers for Growth

Using Lightbridge Fuel will improve safety, economics, and proliferation resistance for current and future nuclear power plants.

Lightbridge Fuel is a robust technology that further enhances the ability of nuclear power to deliver clean, reliable energy.

Lightbridge Fuel is expected to increase safety and capacity, thus reducing carbon emissions and operator costs.

The world's energy and climate demands will only be met as nuclear energy becomes a bigger part of the energy-generating mix.

Lightbridge has built a significant portfolio of patents in numerous countries, reflecting years of research and development.

The extensive patent portfolio will help safeguard the Company's intellectual property, which is an integral element of the Company's plans to monetize Lightbridge Fuel.

Bipartisan U.S. government support through legislation, financial investment, and policy change has spurred a race for nuclear innovation.

DOE has provided four funding awards for studies of Lightbridge fuel, with additional funding opportunities available.

COP28 saw a major international nuclear agreement signed by over 20 countries with a declaration to commit to triple global nuclear capacity by 2050.

Implies nuclear capacity to reach over 1,110 GWe by 2050, higher than the IEA's most optimistic 2050 Net-Zero Scenario of 916 GWe nuclear capacity and higher than the IAEA's 2050 458 GWe - 890 GWe nuclear capacity range.

$20+ billion and growing addressable market for current worldwide nuclear reactor fleet.

Lightbridge Fuel is designed to operate with nearly every reactor in the world, including those under construction and planned. Lightbridge Fuel is also usable in coming water-cooled small modular reactors.

Fuel

Our Vision: Lightbridge Fuel as the Global Standard for Nuclear Power Plants

Lightbridge Fuel will offer step-change improvements in **safety**, **fuel performance**, **power plant economics**, **waste reduction**, **and proliferation resistance** compared to the current industry standard nuclear fuel

Lightbridge test assembly mockup used for a thermal-hydraulic experiment

Large Market

Lightbridge Fuel is designed to work in both new and existing ($20+ billion market) reactors.

Anticipated Waste Reduction Benefits

There is less spent fuel created per plant power output when using Lightbridge Fuel and the spent fuel is useless for weapons purposes.

Expected Safety Benefits

Lightbridge Fuel is expected to meet or exceed the performance of conventional fuel in many accident scenarios.

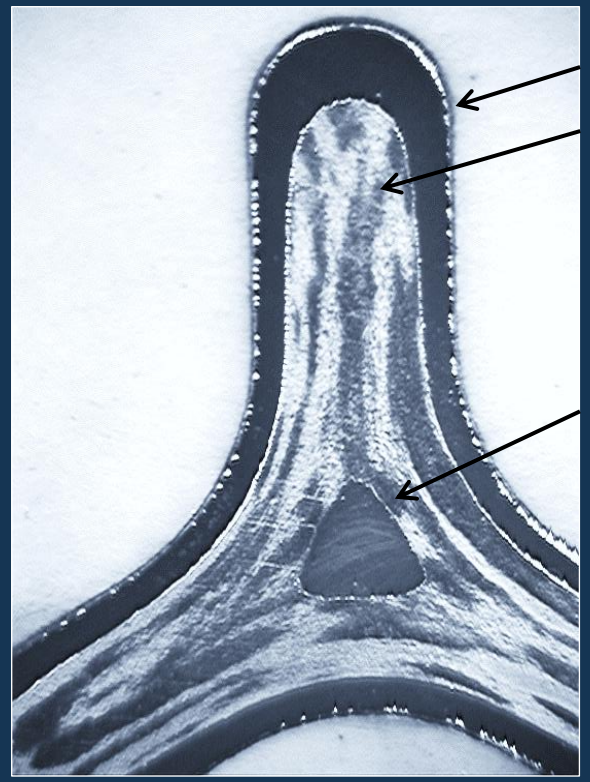
Anticipated Economic Benefits

Lightbridge Fuel may be able to increase power output and extend the length of the fuel cycle. Lightbridge Fuel also may be able to offer the lowest cost to add reliable zero-carbon electricity to the grid in existing reactors.

Anticipated Quicker Ramp-Rate May Enable Load Following

Lightbridge Fuel is expected to offer nuclear plants a better solution for load-follow operations on a grid with renewables, potentially replacing natural gas plants and coal plants at their existing locations, with zero carbon emissions.

LIGHTBRIDGE FUEL FEATURES



Cross-section of tri-lobe fuel rod sample

Absence of spacer grids...

may reduce core pressure drop by up to 50%, which contributes to enabling power uprates and improves the natural circulation of the water coolant.

Metallurgical bond...

between fuel components significantly reduces radiological consequences of cladding breach due to fuel-cladding mechanical interactions, and provides a very robust mechanical design.

Increased cladding thickness...

at lobes increases the durability of the fuel at the contact points.

Absence of fuel-clad gap...

eliminates the mechanism for widespread coolant-cladding interaction on the inner cladding surface in case of cladding breach and improves heat transfer from fuel to coolant

Coextrusion fabrication process...

eliminates several possible sources of manufacturing defects (e.g., pellet chipping).

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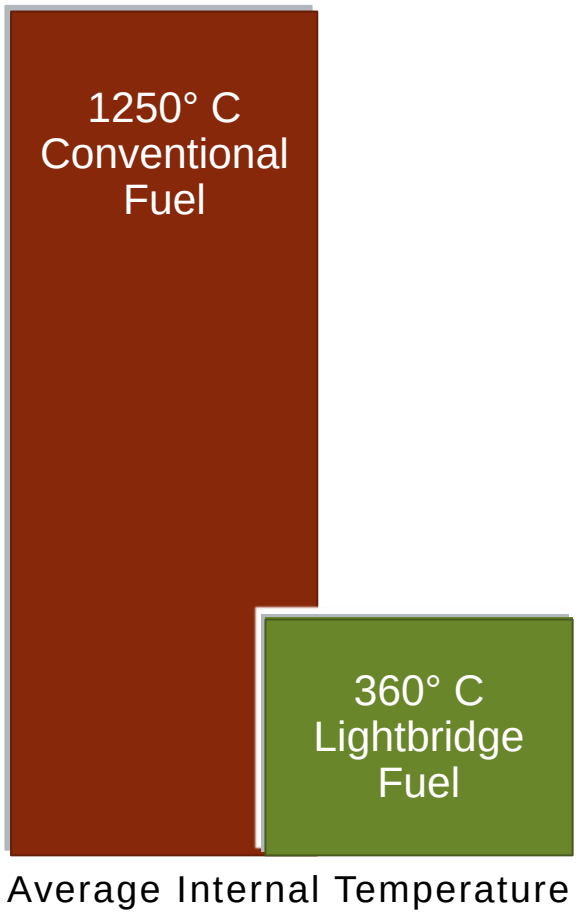
Lightbridge Fuel is Designed for Safety

The average temperature of Lightbridge Fuel is designed to operate nearly 1000° C cooler than that of conventional nuclear fuel.



Anticipated Safety Benefits:

- 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

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Accident Tolerant Fuel Regulatory Activities

"The company Lightbridge is developing a new fuel design that incorporates an extruded metallic bar composed of a zirconium-uranium matrix within a zirconium alloy cladding."

The potential benefits of extruded metallic fuel are:

- Significant increase in fuel thermal conductivity (compared to ceramics) promotes lower operating temperatures
- Complete retention of fission products means no burst release of those products upon cladding failure
- Supports higher power and longer fuel cycles

https://www.nrc.gov/reactors/power/atf/technologies/longer-term.html

Jan. 12, 2021

Lightbridge

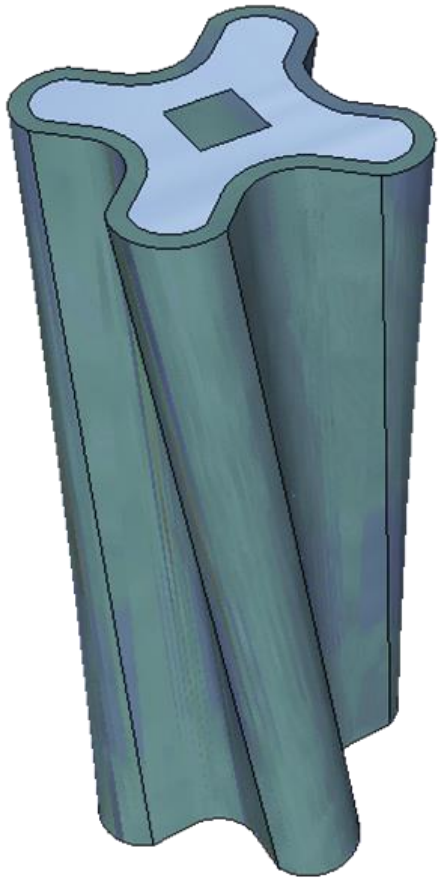
How We Design Safer Fuel

Fabrication

The three components of Lightbridge Fuel are **metallurgically bonded** during the fabrication process. This bonding **improves the structural integrity** of the fuel rod and may **reduce a potential radiation exposure to plant workers.**

Operations

At lower fuel operating temperatures, fission products are expected to behave like solids (versus gases) and remain where they are created. No fission product release is anticipated during design-based events.



Shape

Helically-twisted multi-lobe fuel rod – increased coolant mixing, increased fuel surface area, and shorter distance for heat generated in the fuel rod to reach the water **may improve the coolability of the fuel.**

Swelling is expected to occur primarily in the valleys between the lobes and along the length of the rod.

Materials

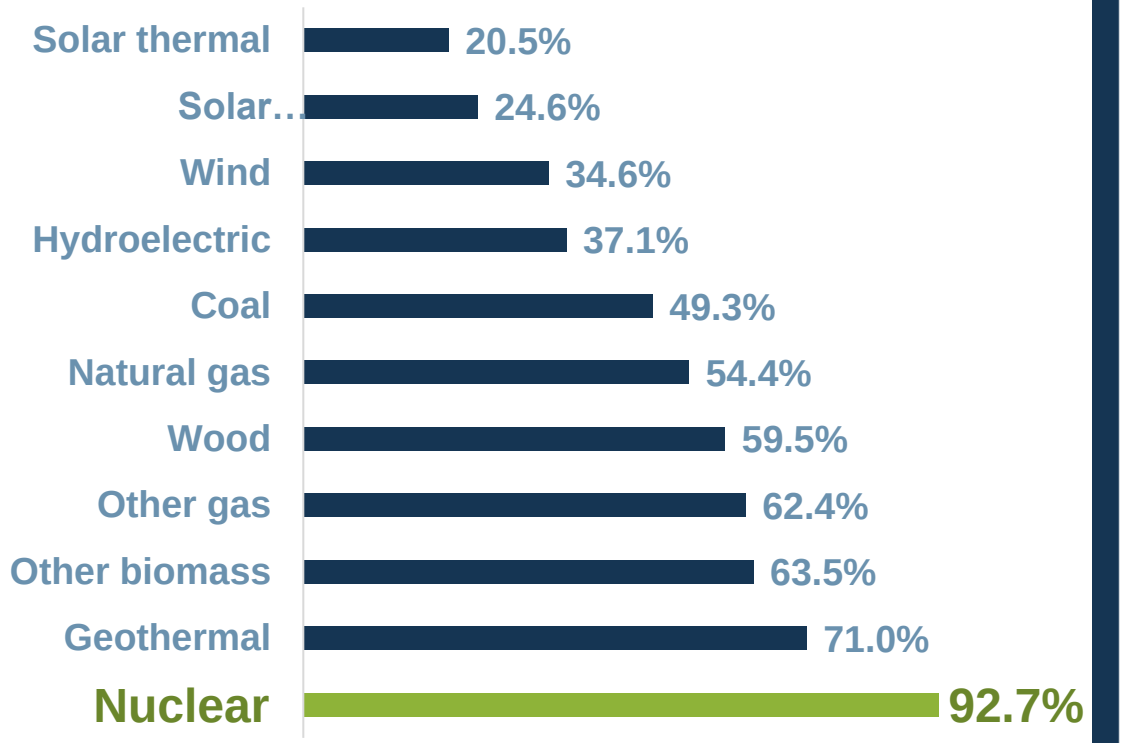
1. **Displacer** helps to reduce centerline temperature and may contain burnable poison material for reactor control.
2. **Fuel core** made out of a uranium-zirconium alloy, which has higher thermal conductivity.
3. **Metallurgically bonded** barrier made out of corrosion-resistant zirconium-niobium alloy that reduces the consequences of cladding breach due to fuel-cladding mechanical interactions.

Increasing Capacity Factor

Capacity factor measures how often a power plant runs for a specific period, indicating **how fully a unit's capacity is used.**

The U.S. nuclear fleetwide capacity factor is about 92.7%, **topping out at over 98% in 2014.**

Utilities would like to find ways to **increase capacity** factor but have struggled to do so **economically.**



Ways Lightbridge Fuel could increase capacity factor

- **Longer fuel cycles** (lengthening from 18 to 24 months eliminates the need for one refueling outage in every six-year period)
- **Quicker ramp-up** when adjusting power (the current fuel requires longer periods to ramp-up power level to prevent cladding breach, thus inhibiting load-follow operation). Lightbridge Fuel, like other metallic fuels, is expected to accommodate rapid power adjustments – enabling load-follow operation.

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Robust Patent Portfolio Protects Return on Investment

Lightbridge has invented and developed its **technology to meet the needs of the growing energy marketplace,** backed by a powerful worldwide patent portfolio.

Expanding our patent portfolio continues to be a strategic focus for Lightbridge.

These new patents will help safeguard the Company's intellectual property, which is an integral element of the Company's plans to monetize Lightbridge Fuel.

<u>Existing patents related to the following core areas:</u>

- **Fabrication** method using the **casting route**
- **Fabrication** method using the **powder metallurgic** route
- **All-metal fuel** assembly design
- **Multi-lobe** metallic fuel rod design

Lightbridge®

Recent Fuel Development Milestones

Lightbridge & Centrus Energy to Conduct FEED Study for a new Lightbridge Pilot Fuel Fabrication Facility (LPFFF)

Front-end engineering and design (FEED) study for a dedicated Lightbridge Pilot Fuel Fabrication Facility (LPFFF)

- **Location:** American Centrifuge Plant, Piketon, Ohio
- **Expected Completion:** Late 2024
- FEED study will identify infrastructure and licensing requirements and the estimated cost and construction schedule for the LPFFF

Centrus' American Centrifuge Plant Piketon, Ohio

Signing Ceremony on-site at COP28 in Dubai, UAE

From left to right: Daniel B. Poneman, Centrus President & CEO, Seth Grae, President & CEO of Lightbridge

Lightbridge Launches Engineering Study to Assess Lightbridge Fuel for Use in CANDU Reactors

Engineering feasibility study to assess Lightbridge Fuel for use in CANDU Reactors

- **Location:** Institutul de Cercetări Nucleare Pitești, a subsidiary of Regia Autonoma Tehnologii pentru Energia Nucleara (RATEN ICN) in Romania
- **Expected Completion:** Late 2024
- Study to assess the compatibility and suitability of Lightbridge Fuel™ for use in CANDU reactors
- Assessment will cover key areas, including mechanical design, neutronic analysis, and thermal and thermal-hydraulic evaluations
- The findings will be important in guiding future economic evaluations and navigating potential regulatory licensing-related issues

Signing Ceremony

From left to right: Dr. Constantin Paunoiu, Director of Institutul de Cercetări Nucleare Pitești, and Dr. Andrey Mushakov, Lightbridge Executive Vice President, Nuclear Operations

Breakthrough Long-Term Strategic Partnership Project with Idaho National Lab (INL)

Lightbridge

INL Idaho National Laboratory

- **Seven-year** agreement
- **INL to manufacture and irradiate** in the **Advanced Test Reactor** coupon material samples consisting of enriched uranium
- Data will **support fuel performance** modeling and **regulatory licensing** efforts for commercial deployment of **Lightbridge Fuel.**

Lightbridge Announces Long-Term Strategic Partnership with Idaho National Laboratory

December 12, 2022

RESTON, Va., Dec. 12, 2022 (GLOBE NEWSWIRE) -- Lightbridge Corporation (Nasdaq: LTBR), an advanced nuclear fuel technology company, has entered into landmark agreements with Idaho National Laboratory (INL), in collaboration with the U.S. Department of Energy (DOE), to support the development of Lightbridge Fuel™. The framework agreements use an innovative structure and consist of an "umbrella" **Strategic Partnership Project Agreement (SPP)** and an "umbrella" **Cooperative Research and Development Agreement (CRADA)**, each with Battelle Energy Alliance, LLC (BEA), DOE's operating contractor for INL, with an initial duration of seven years.

INL's Advanced Test Reactor (ATR)

Potential Commercial Pathways – From Research Reactors to Commercial Reactors

ATR Canal

Small Modular Reactors (SMRs)

PWRs and BWRs

- Uses fuel rods up to 6 feet in length
- Half the length of large PWRs and BWRs

Large Light Water Reactors (LWRs)

PWRs and BWRs

- Virtually all currently operating power reactors in the world other than PHWRs are large LWRs (PWRs include Russian-designed VVERs)

Pressurized Heavy-Water Reactors (PHWRs)

CANDU reactors

- ~40 PHWRs in the world
- Uses fuel with uranium enrichment levels below 10%
- Uses fuel rods up to 20 inches in length

Lightbridge Collaboration with MIT in DOE Funded Study of Accident Tolerant Fuels in SMRs

$800,000

Massachusetts Institute of Technology

Lightbridge

NUSCALE Power for all humankind

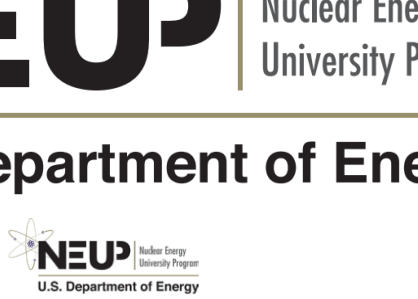
Total project is **$800,000 paid by DOE to MIT**

Objectives include:

- ✓ **Investigate** near term opportunities of **accident tolerant fuels** for light water cooled **small modular reactors (LWR-SMR)** design spaces
- ✓ **Simulate** the fuel and safety **performance of Lightbridge Fuel** for the NuScale SMR
- ✓ **Provide** scoping analysis of promising **longer term advanced fuel** forms to **improve the safety and economics** of LWR-SMRs

NEUP Nuclear Energy University Program

U.S. Department of Energy



ATF Solutions to Light Water-Cooled SMRs

PI: Koroush Shirvan, Massachusetts Institute of Technology

Program: Fuel Cycle 2.1

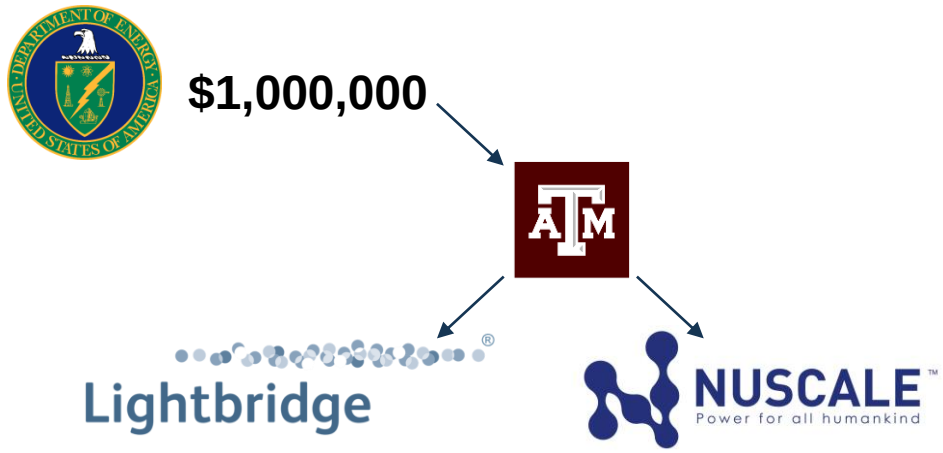
Collaborators: Michael Corradini, University of Wisconsin-Madison; Guillaume Giudicelli, Idaho National Laboratory; Kenny Anderson, NuScale Power; Faisal Odeh, Holtec; Russ Fawcett, Global Nuclear Fuel; Aaron Totemeier, Lightbridge Corporation; Eugene Shwageraus, University of Cambridge, UK; Michael Bluck, Imperial College, UK; Oliver Max Hannant, Rolls-Royce, UK;

ABSTRACT:

Fuel is the heart of all the nuclear reactor systems where the defense-in-depth principles and safety systems are designed around it. While traditionally treated as a low-cost item as part of the nuclear power plant total cost, nuclear fuel dictates the reactor power density and the nuclear island construction requirements (e.g. containment size to prevent radioactivity release from fuel). The increasing of the power density of SMRs could be critical to its economic viability to overcome the lack of economy of scale. Indeed, a logical area of economic opportunity for ATFs is increase in core power density (e.g. power uprates) given their high temperature capability.

The objective of the proposed work is to: (1) Investigate near term opportunities of accident tolerant fuels for light water cooled small modular reactors (LWR-SMR) design spaces with Holtec's SMR-160 as the reference plant for the US university partners and Rolls-Royce's UK-SMR as the reference plant for UK university partners (2) Simulate the fuel and safety performance of Lightbridge concept for the NuScale SMR (3) Provide scoping analysis of

Lightbridge Collaboration with Texas A&M University in DOE Funded Study of advanced nuclear fuels in SMRs



Total project is **$1,000,000** paid by **DOE to Texas A&M University**

Objectives include:

- ✓ **Develop pressure drop correlations** for Lightbridge fuel in NuScale LW-SMR conditions
- ✓ **Increase** the **understanding** of the overall **performance** of the fuel under simulated NuScale's SMR **normal and off-normal** conditions
- ✓ **Train** the **next generation** of engineering students to use advanced, multi-scale, multi-physics simulation tools
- ✓ **Identify** any critical **parameters** for further **evaluation** and design

NEUP Nuclear Energy University Program

U.S. Department of Energy

A Pathway for Implementation of Advanced Fuel Technologies in Light Water Small Modular Reactors

PI: Yassin Hassan (Texas A&M University)

Co-PI: Joseph Seo (Texas A&M University)

Program: Other Reactor Development and Plant Optimization (RDO-6)

Collaborators:
James Fornof – Lightbridge
William Lyon – Structural Integrity Associate Inc.
Deena Jaber – Structural Integrity Associate Inc.
Wenfeng Liu – Structural Integrity Associate Inc.
Steven Mirsky – NuScale Power

ABSTRACT: The success of Small Modular Reactors relies on their flexibility and adaptability to customers' needs while maintaining safer and reliable operations and cost efficiency when compared to other sources of energy. These goals can be achieved by employing well-established nuclear technologies, implement simpler designs and operational schemes, and include the use of passive systems. This is the approach of the Light Water SMR (LW-SMR) which benefit from well-established technologies and operational experience. In order to accelerate the deployment of their reactor design, most LW-SMR vendors have adopted existing LWR fuel technologies with minor adaptations in the assembly design. This is the case of the NuScale SMR core design, currently employing typical PWR fuel assemblies with minor modifications. However, the use of advanced fuel design developed with the introduction of innovative shapes and materials, such as the one proposed by Lightbridge, can provide enormous benefits to the operation of the LW-SMR. The use of such designs may allow power uprates, improved economics, longer fuel cycle lengths, and decreased fuel operating temperatures with subsequent increased margin to safety. By removing the need for spacer grids, the Lightbridge fuel design promotes lower core pressure drops, a very important parameter to consider for power upgrades especially when the core flow is based on natural circulation. NuScale Power is currently looking at the Lightbridge design as a valid alternative to the current fuel in order to increase operational flexibility, safety margins, and the overall competitiveness of their SMR design.

Project Objectives: We will perform a comprehensive thermal-hydraulic characterization of the Lightbridge Helical Cruciform advanced fuel design, creating unique sets of experimental data describing friction factor, velocity fields, and heat transfer behavior under NuScale's LW-SMR normal and off-normal conditions. A combination of isothermal (hydraulic) and non-isothermal (heat transfer) experimental tests, complemented by high-fidelity CFD simulations and fuel performance modeling will:

- Develop pressure drop correlations for Lightbridge fuel in NuScale LW-SMR conditions,
- Increase the understanding of the overall performance of the fuel under simulated NuScale's SMR normal and off-normal conditions,
- Train the next generation of engineering students to use advanced, multi-scale, multi-physics simulation tools, and
- Identify any critical parameters for further evaluation and design.

The project will benefit from the collaboration of NuScale and Lightbridge to accelerate the deployment of advanced fuels for LW-SMR applications. A collaboration with PEGASUS developer, Structural Integrity, will accelerate the future deployment of PEGASUS simulations as a fuel evaluation and design optimization tool for next generation reactors and advanced fuel designs.

Timeline of Events & Milestones for Lightbridge Fuel

2010 Lightbridge announced **initial concept of metallic fuel** as the optimal way for power up-rates and longer fuel cycles. Confirmatory design and calculations initiated.

2013 Lightbridge began developing fuel rod fabrication methods.

2021 Lightbridge awarded its second GAIN voucher with PNNL.

2021 Lightbridge demonstrates high-temperature coextrusion of surrogate fuel rods for commercial-scale SMRs.

2023 Lightbridge launches FEED study to add a dedicated **Lightbridge Pilot Fuel Fabrication Facility** in Piketon, Ohio.

2023 Lightbridge launches engineering study to assess **Lightbridge Fuel for use in CANDU reactors**.

2012 Siemens Industry completed an independent economic study confirming the economic benefits of Lightbridge Fuel for power uprates and longer fuel cycles.

2014 Lightbridge is granted first key U.S. patent for its metallic fuel rod design.

2019 Lightbridge awarded GAIN voucher with INL.

2022 Entered into SPP umbrella agreement to acquire HALEU samples for testing in a reactor.

2024-2025 Fabrication of fuel material samples for irradiation testing in the Advanced Test Reactor.

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Our Role in the Global Energy Transition

Existing Large Reactors and Small Modular Reactors

We expect the **significant government funding for nuclear energy** in the coming years may help **accelerate our fuel development** for existing nuclear power plants and future SMR applications.

Existing light water reactors

Our work today is applicable for fuel **in large reactors as well as shorter length** version of fuels for SMRs.

Lightbridge Fuel is expected to provide **significant safety and economic benefits** to utilities

Lightbridge Fuel is expected to provide SMRs the **same benefits** our technology brings to **large reactors,** but the benefits may be **more meaningful** to the economic case for **deploying SMRs**

Generate **more power, reducing the cost** per unit of electricity generated by the SMR

Enhance ability of SMRs to **ramp up and down in power quickly,** to pair with renewables on a zero-carbon electric grid

Our ongoing R&D initiatives are entirely compatible with Lightbridge Fuel powering SMRs for multiple purposes.

Small Modular Reactors – Nimble Nuclear

*Artist Rendering of an **SMR within an Industrial Hub**

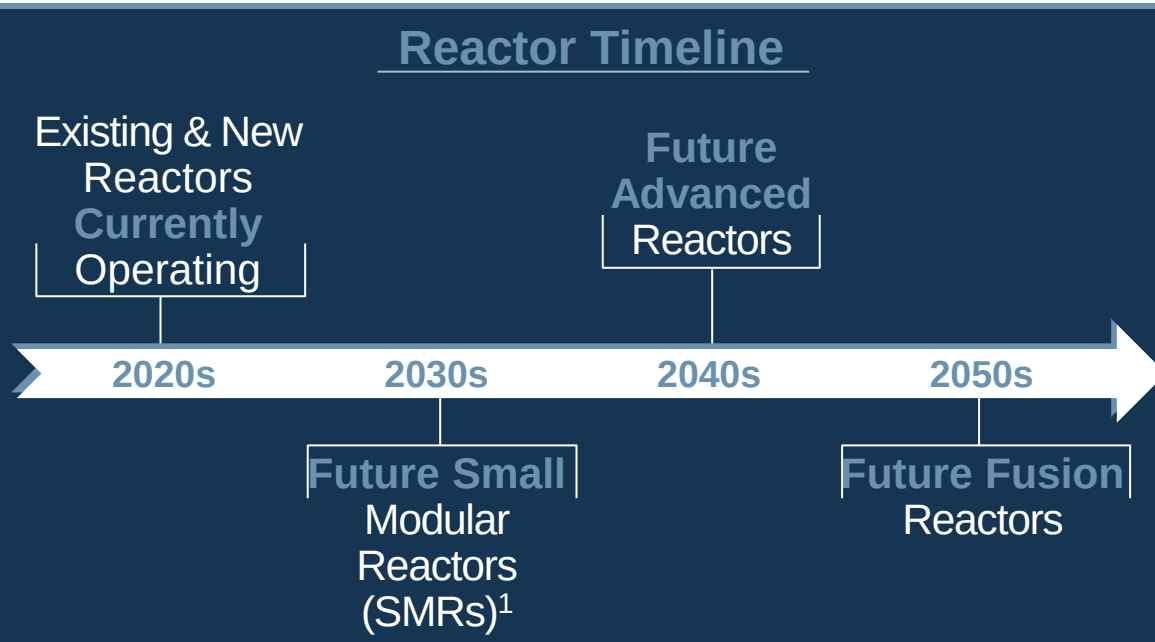
Strategic Advantages

- ✓ Relatively small physical footprints
- ✓ Reduced capital investment vs large reactors
- ✓ Ability to be sited in locations not possible for larger nuclear plants
- ✓ Provisions for incremental power additions
- ✓ Security and nonproliferation advantages.

	SMRs currently under development represent a variety of sizes, technology options, capabilities, and deployment scenarios.
	These advanced reactors vary in size from tens to hundreds of megawatts.
	Can be used for power generation, process heat, desalination, or other industrial uses.

*From Third Way Think Tank – Artwork by GENSLER

LIGHTBRIDGE FUEL IN SMALL MODULAR REACTORS OF THE FUTURE



SMRs have several potential benefits compared to existing large power plants

- ✓ Emergency planning zone limited to site boundary (rather than paying for emergency services for a much larger radius)
- ✓ Fewer personnel in control room
- ✓ Fewer security personnel

Lightbridge Fuel is expected to significantly improve the economics, safety, and operational flexibility for water-cooled SMRs. An SMR can **replace coal** power plants and utilize the **existing electrical** switchyard already on the site, supporting **employment** in the region. The **US can support** the manufacturing of **SMRs and fuel for domestic and export markets.**

[1] Pressurized water reactors and boiling water reactors

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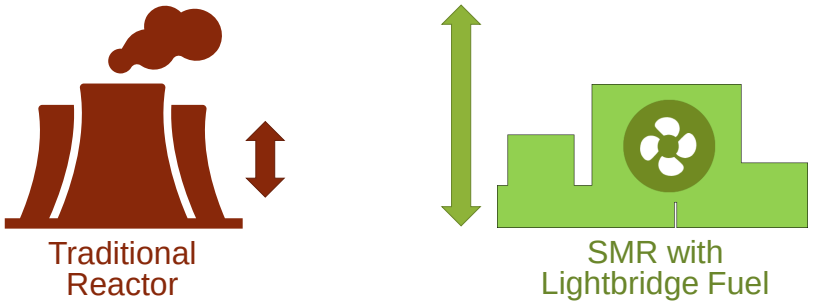
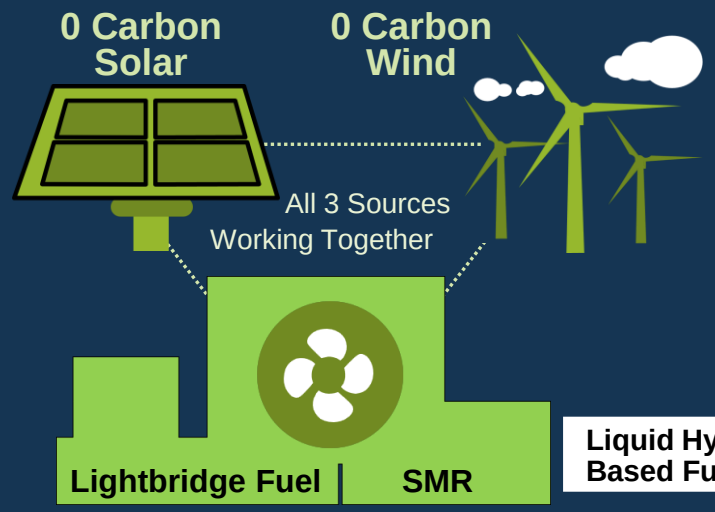
Lightbridge Fuel Is Being Designed to Offer Superior Ramp Rate for Load Following in SMRs – Facilitates Versatile and Efficient Use of Carbon-Free Energy at Greater Scale



- **SMRs** powered with **Lightbridge Fuel** are expected to have a **vastly improved l**oad following capability compared to traditional reactors.
- May allow **SMRs to work more efficiently** in different missions, including replacing natural gas plants to **back-up renewables.**

An SMR designed to produce 30% more power with Lightbridge Fuel may be used to produce liquid hydrogen-based fuels and utilize existing oilfield pipeline infrastructure to support the zero-carbon energy transition

Solar + Wind = 0 Carbon Energy Production



Can be used in hard-to-decarbonize sectors, including aviation, shipping, cement and steel production, heavy trucks, and trains.

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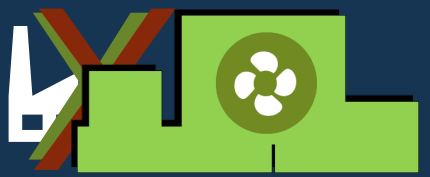
The Coal to Nuclear Transition

In September 2022, the DOE published a **study*** that explored converting retiring **coal plants into nuclear plants** throughout the United States:

- It is estimated that **80% of retired and operating coal power plant sites** have the basic characteristics to be considered amenable to host an **SMR.**
  - **190 sites** throughout the U.S.
  - **198.5 GWe** capacity potential (approximately double total current U.S. nuclear generation)
- Repurposing coal plant infrastructure may lead to **savings on capital costs** that range from **15% to 35%.**
- Depending on the nuclear design under consideration, **job growth could increase by over 650 new, permanent jobs,** leading to nearly **$270 million** in new economic activity, with GHG emissions in a community **falling by as much as 86%.**



A coal-to-nuclear transition means siting a **nuclear reactor at the site of a recently retired coal** power plant.

*U.S. DOE, "Investigating Benefits and Challenges of Converting Retiring Coal Plants into Nuclear Plants, 2022 H.R.5376 - 117th Congress (2021-2022): Inflation Reduction Act of 2022

Compelling Economics Surrounding Large Water-Cooled Reactor Market (PWR, BWR & PHWR)

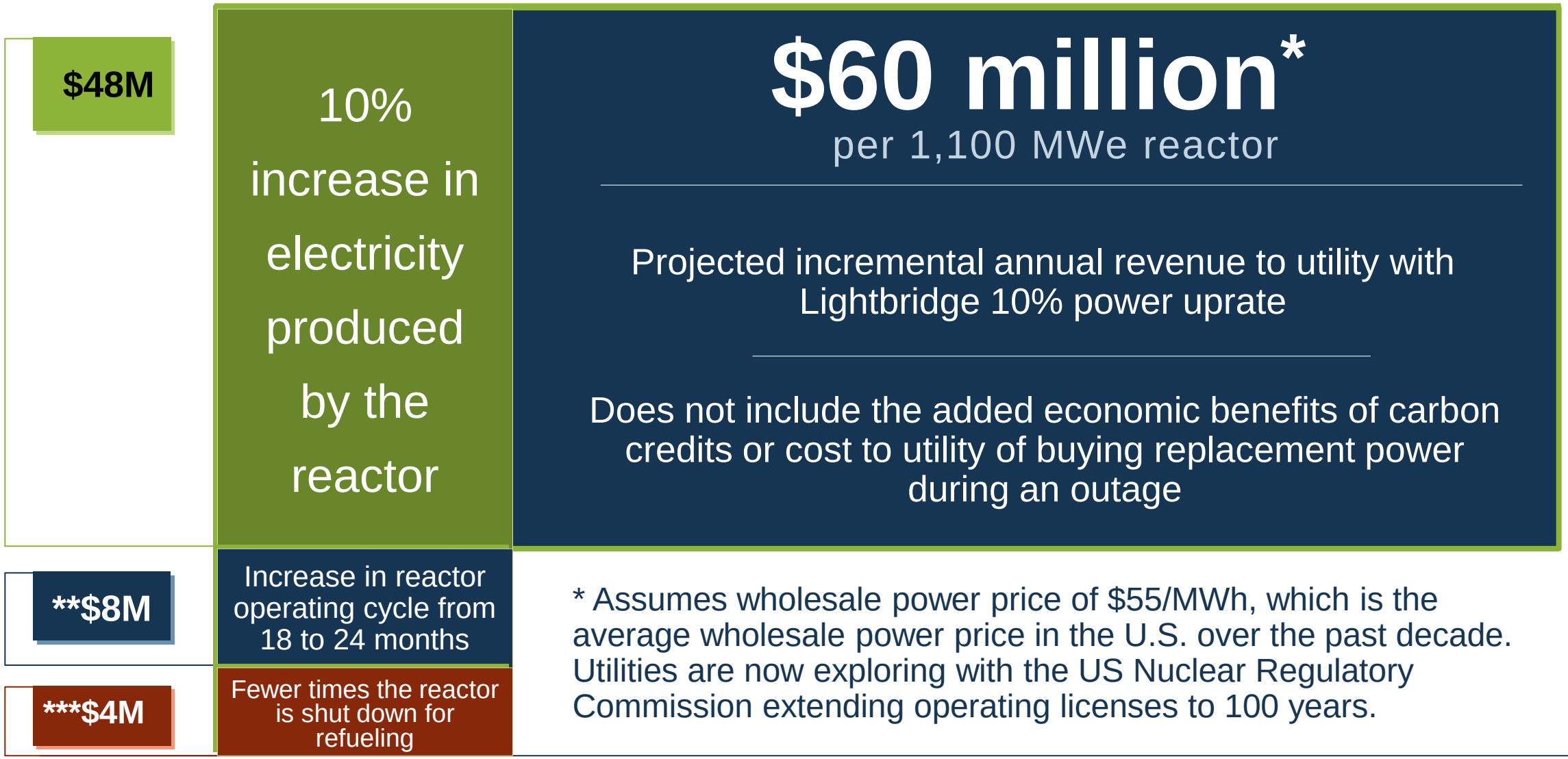
Nuclear fuel supply agreements are expected to generate long-term, high margin recurring revenue.

Water-cooled reactors: worldwide	**419**
Water-cooled reactors: U.S.	**100**
*Average annual fuel spend per reactor, per year:	**$40 Million**
Total current addressable market: U.S.	**$4 Billion**
Total current addressable market: worldwide	**$16.7 Billion**

Lightbridge Fuel™ is designed to power nearly every reactor in the world, including those under construction and planned.

*World Nuclear Association data based on fuel costs of $1,663 per kg of UO2, 35-40 metric tons of UO2 in an 18-month batch reload in a 1,100-Mwe, resulting in approx. $60-65M fuel costs per 18 months or $40-45M/year. https://world-nuclear.org/information-library/economic-aspects/economics-of-nuclear-power.aspx

$60 Million Projected Annual Gross Revenue Increase to Utility Per Large Pressurized Water Reactor



* Assumes wholesale power price of $55/MWh, which is the average wholesale power price in the U.S. over the past decade. Utilities are now exploring with the US Nuclear Regulatory Commission extending operating licenses to 100 years.

**The plant sells electricity on days it otherwise would have been shut down

***Avoid paying for as many outages, including temporary workers

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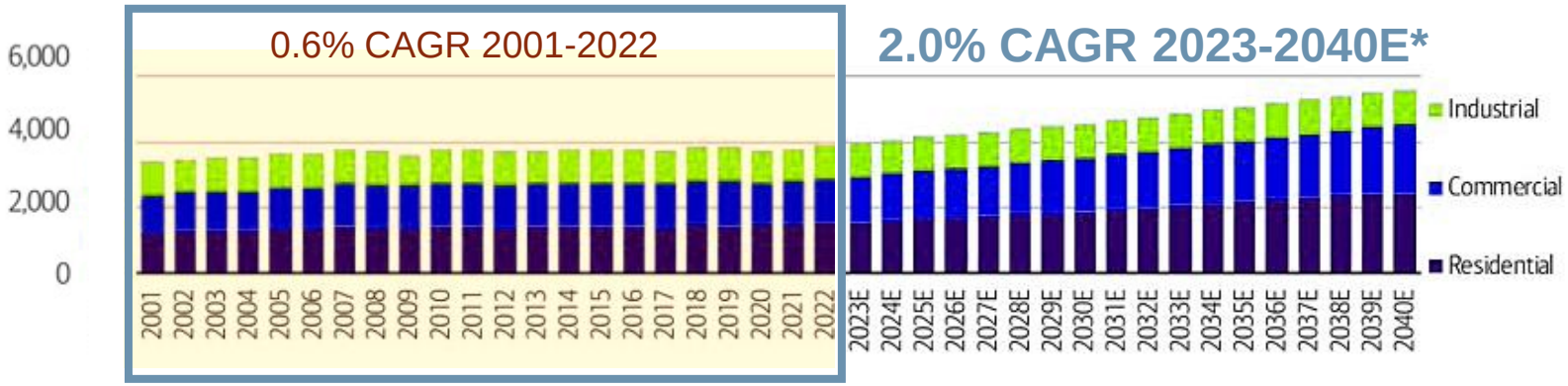
The World's Use of Energy is Growing

A Look at Rising Electricity Needs

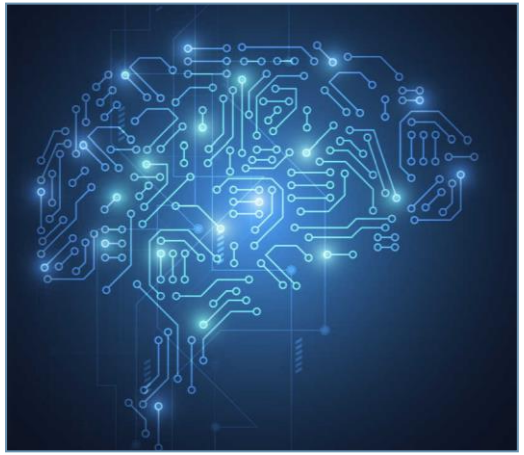
US Electrical Demand (in terawatts per year) 2001–2040E*



* Bank of America Research, EIA

Factors Contributing to Increased Demand:

- Electrified Transportation – personal and industrial electric vehicles (EVs)
- Digitization - digital technologies, IoT devices, artificial intelligence, cryptocurrencies, and data centers
- Government regulations and incentives – tax breaks for EVs, heat pumps



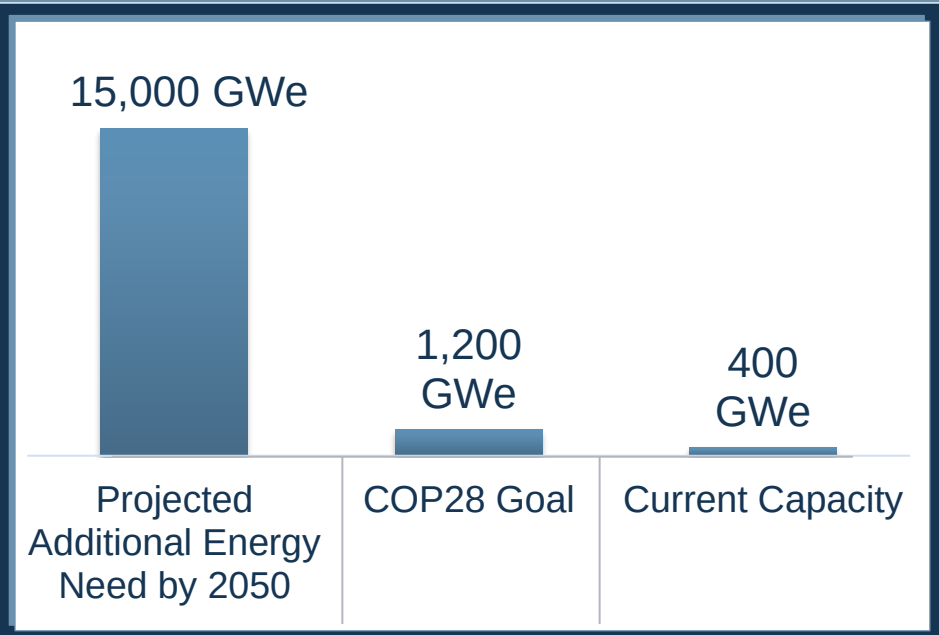
The Future of Nuclear Power: Ambition and Reality

Nuclear Power Today:

- Total Capacity: ~400 GWe
- Number of Reactors: ~420
- Average Reactor Size: 0.95 GWe

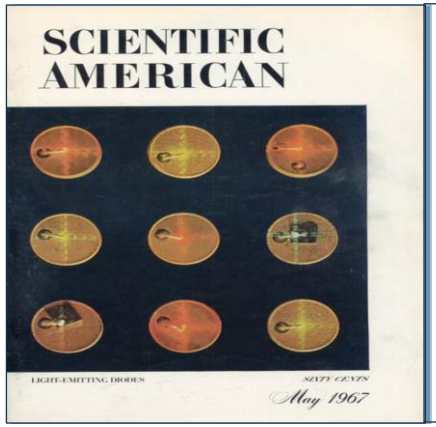
Industry Perspective:

- COP28 Goal: Tripling of nuclear to 1,200 GWe by 2050
- Impact on companies like Lightbridge: Positive



Our Perspective:

- 1,200 GWe from nuclear is beneficial but insufficient for global challenges.
  - Mass production potential similar to Boeing 737s & Airbus A320s
  - A balance between tripling nuclear power and unlocking much larger potentials



> **By the year 2030** the electric power requirement will be 10 times the present capacity. Because of the expected decline in fossil-fuel resources, and **in the absence of any other large source of energy at reasonable cost, fission power** would be counted on to **supply about 85 percent of this need."**
>
> - Scientific American magazine, May 1967[1]

[1] https://www.scientificamerican.com/article/nuclear-power-will-replace-oil-by-2030

Lightbridge

Mass Producing Nuclear?

In **1939,** the U.S. produced **fewer than 3,000** military aircraft. In 1944, total output was over 96,000. Total production **during WWII was over 300,000.**

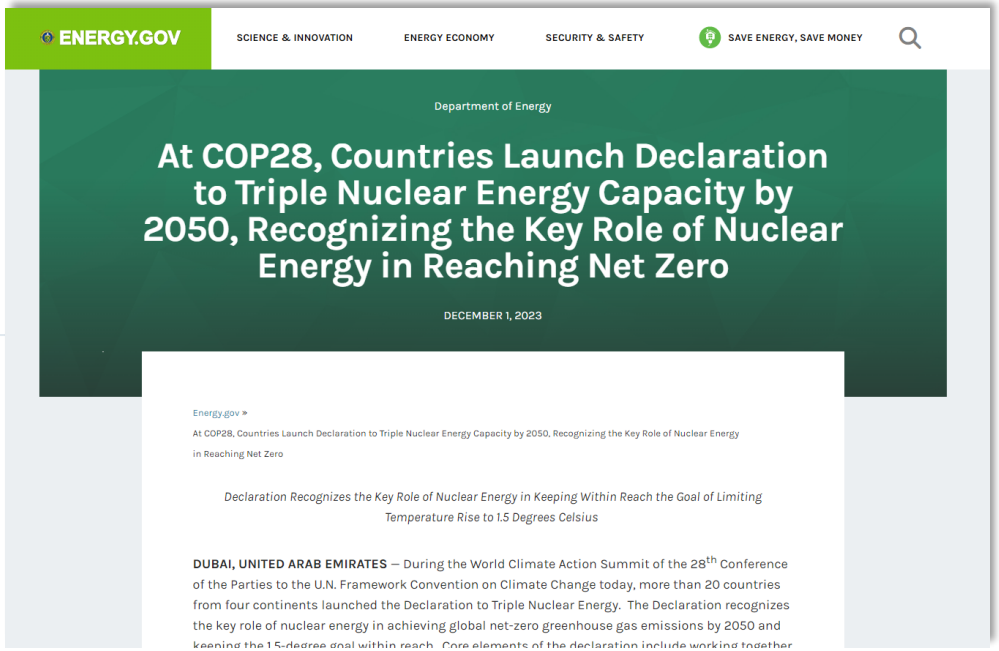
The **industry transformed** from craftsmen producing airplanes to assembly-line efficiency.

SMR designers are currently in the phase of developing **bespoke prototypes,** and some SMRs have the capacity to become mass-produced **solutions to the world's energy needs.**

Interestingly, an SMR nuclear reactor module is approximately the size of a WWII airplane.

Leveraging Global, Bipartisan Support for Advanced Nuclear Energy

The World Demands Tripling Nuclear Energy Capacity at COP28



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Department of Energy

At COP28, Countries Launch Declaration to Triple Nuclear Energy Capacity by 2050, Recognizing the Key Role of Nuclear Energy in Reaching Net Zero

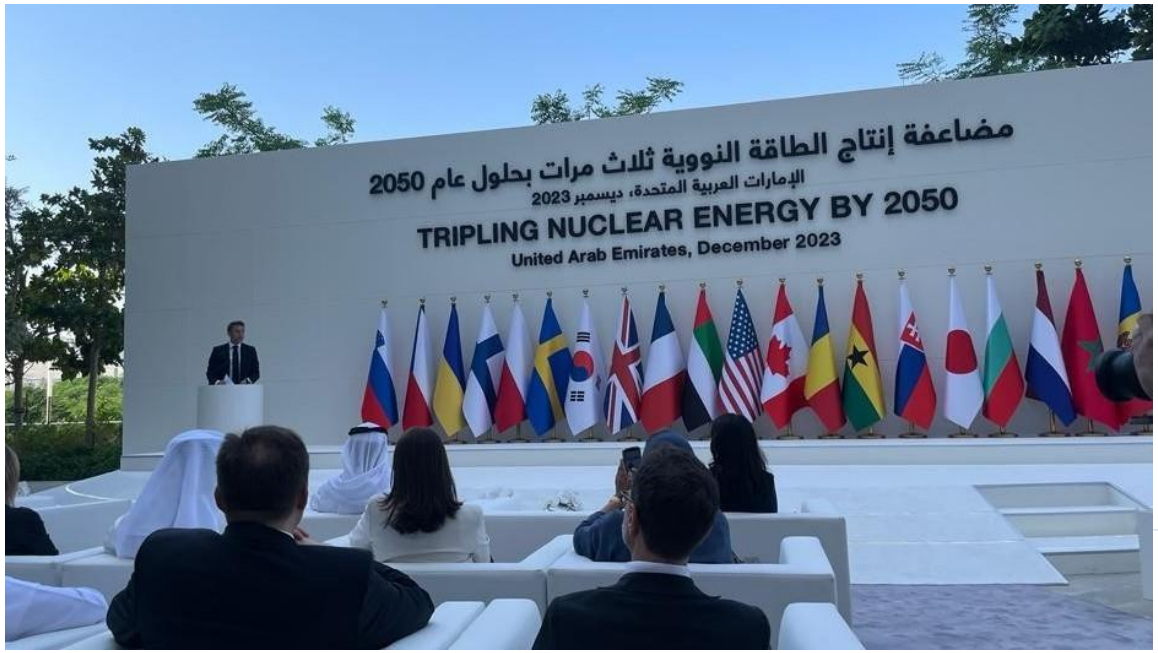
DECEMBER 1, 2023

Energy.gov »

At COP28, Countries Launch Declaration to Triple Nuclear Energy Capacity by 2050, Recognizing the Key Role of Nuclear Energy in Reaching Net Zero

Declaration Recognizes the Key Role of Nuclear Energy in Keeping Within Reach the Goal of Limiting Temperature Rise to 1.5 Degrees Celsius

DUBAI, UNITED ARAB EMIRATES – During the World Climate Action Summit of the 28th Conference of the Parties to the U.N. Framework Convention on Climate Change today, more than 20 countries from four continents launched the Declaration to Triple Nuclear Energy. The Declaration recognizes the key role of nuclear energy in achieving global net-zero greenhouse gas emissions by 2050 and keeping the 1.5-degree goal within reach. Core elements of the declaration include working together



For the first time, the 198 signatory countries to the UN Framework Convention on Climate Change (UNFCCC) officially called for accelerating the deployment of low-emission technologies, **including nuclear energy,** at the United Nations Climate Change Conference (COP28) in Dubai.

The Political Landscape Has Shifted in Favor of Nuclear Power

Russia's invasion of Ukraine has caused countries everywhere to seek to ensure their **energy security** from now on.

Countries that were moving away from nuclear, such as Japan, are now **reversing course.**

Nuclear power plants soon to be decommissioned are having their **operating licenses extended.**

The **European Union** has designated **nuclear as a "green" energy source.**

The U.S. Inflation Reduction Act provides **nuclear production tax credits** to help **preserve** the **existing** fleet of U.S. nuclear plants and **significant money for advanced nuclear technologies.**

Robust Bipartisan Federal Legislation for Nuclear

The Infrastructure Investment and Jobs Act of 2021 and the Inflation Reduction Act of 2022 included **key federal government commitments for the nuclear industry.**

Bipartisan Infrastructure Bill

Civil Nuclear Credit Program
$6B to support financially challenged plants

Advanced Reactor Demonstration Program (ARDP) Funding
$2.5B funding for two projects

Nuclear Hydrogen Hub
$8B total in the bill

Inflation Reduction Act

Production Tax Credit (PTC) for Operating Plants
Up to $15 per MWh

Technology-Inclusive PTC for Clean Electricity
$30 per MWh

Technology-Inclusive Investment Tax Credit (ITC) for Clean Electricity
30% + 10% in energy communities + 10% using U.S. components

Clean Hydrogen Credit
$3 per kilogram

Lightbridge's technology is aligned with US government goals, **enabling policies outlined in the report** because of the design of Lightbridge Fuel.

Advanced Nuclear Technology Race Poses Unique Opportunities for Lightbridge

Government support through legislation, financial investment and policy change has spurred ***A RACE FOR NUCLEAR INNOVATION!***

The reasons for this are **bipartisan, forward-thinking, and highly lucrative** for the winner.

STRATEGIC

- Critical infrastructure resilience enabled through nuclear energy
- 100-year relationship from planning the plant to decommissioning
- Workforce and supplier base

Advanced nuclear technology firms, including Lightbridge, poised to benefit

GLOBAL LEADERSHIP ON CLIMATE CHANGE

- Climate goals can only be met with an energy generating mix that includes growth in nuclear power
- US companies poised to be global suppliers of solutions to prevent climate change
- US manufacturing jobs

According to the **Nuclear Fuel Working Group report,** "The United States is missing out on a nuclear reactor market that the US Department of Commerce (DOC) estimates is valued at **$500-740 billion over the next 10 years.**"

Financial Overview

STRENGTHENED FINANCIAL POSITIONING

Cash position as of Sept 30, 2023:

$29.2 million

Projected two-year cash runway

No debt

Future Sources of Working Capital:

- **At-the-Market** (ATM) offering will be used for **fundraising** at **prevailing** market prices.
- Potential **future government support** following **two** US Department of Energy **GAIN vouchers** (non-dilutive funding awards).

UNAUDITED CONDENSED CONSOLIDATED BALANCE SHEETS

	September 30, 2023	December 31, 2022
ASSETS		
Current Assets		
Cash and cash equivalents	$ 29,235,892	$ 28,899,997
Prepaid expenses and other current assets	252,403	115,264
Total Current Assets	29,488,295	29,015,261
Other Assets		
Prepaid project costs	486,375	345,000
Trademarks	108,865	108,225
Total Assets	$ 30,083,535	$ 29,468,486
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Accounts payable and accrued liabilities	$ 875,639	$ 350,331
Total Current Liabilities	875,639	350,331
Stockholders' Equity		
Preferred stock	—	—
Common stock	12,934	11,900
Additional paid-in capital	179,222,724	173,595,385
Accumulated deficit	(150,027,762)	(144,489,130)
Total Stockholders' Equity	29,207,896	29,118,155
Total Liabilities and Stockholders' Equity	$ 30,083,535	$ 29,468,486

SEASONED LEADERSHIP TEAM

Darla M. Bond - Human Resources Manager

Senior International Human Resources Professional with over 30 years of diverse international human resources experience and leadership in both large corporate environments and small business entities. Since 2011, has provided HR consulting services in all aspects of human resource operations. Over two decades of human resource service in Insurance and Call Center Operations. National member of the Society for Human Resource Management (SHRM) and holds a Professional in Human Resources Certification, (PHR) from the HR Certification Institute

James Fornof - Vice President, Program Management

Provides leadership, management, and oversight of all projects and assists the company with the implementation of corporate goals and strategic initiatives. Prior to joining the company in 2018, held several senior roles in nuclear projects and operations and power services, including as Director of International Nuclear Operations at Fluor Power Group, a global Fortune 500 firm, where he was responsible for nuclear projects globally, including new build EPC, operating plant capital improvements and decommissioning.

Larry Goldman, C.P.A. - Chief Financial Officer

Seasoned executive with over 40 years of experience in financial, assurance, tax and advisory services, working with Lightbridge since 2006, serving as Chief Accounting Officer since 2008 and Chief Financial Officer since 2018, serves on the Chief Financial Officers Committee of the New York State Society of CPAs and is a member of the American Institute of Certified Public Accountants, where he has served on the SEC Practice Committee and on the Management Consulting Committee.

Seth Grae - President and Chief Executive Officer

Member of Civil Nuclear Trade Advisory Committee (CINTAC) to the U.S. Secretary of Commerce, Nuclear Energy Institute's Board of Directors, Nuclear Energy and National Security Coalition, Working Group on Climate, Nuclear, and Security Affairs of the Council on Strategic Risks, Virginia Nuclear Energy Consortium Board of Directors.

Scott Holcombe, Ph.D. - Vice President of Engineering

Responsible for all research, development, and demonstration activities required to commercialize the company's proprietary nuclear fuel technologies. Has over 20 years' experience from industry and research laboratories, having worked at Tennessee Valley Authority, Westinghouse Electric Sweden AB, the Institute for Energy Technology in Norway, and at Idaho National Laboratory. He has extensive experience with nuclear fuel as an engineer and researcher, in areas of fuel performance, manufacturing surveillance, irradiated fuel inspections, and licensing. He has many year's management experience as department manager for the nuclear fuel and materials R&D department at the Halden Reactor, department manager of the nuclear fuel development department at INL and as Manager of the renowned OECD Halden Reactor Project.

Sherrie Holloway - Controller

Leads accounting professional with over 30 years of experience and leadership in a wide variety of corporate accounting functions for both public and private companies, including financial reporting, SEC reporting, monthly closing, external & internal audit, accounts payable, budgeting, reconciliations, restatements and post-merger acquisitions. Industry expertise spans 'Big 4' public accounting, energy and natural gas, transportation, and international companies. Member of the U.S. Women in Nuclear, an organization that aims to position the United States for the future of nuclear energy and technology through the advancement of women.

Andrey Mushakov, Ph.D. - Executive Vice President, Nuclear Operations

Provides leadership, management, and oversight of the Fuel Technology Division and leads, including leading a number of strategic initiatives for Lightbridge that have resulted in collaborative agreements and joint development projects, including relating to Lightbridge's metallic fuel technology that resulted in two separate voucher awards from the U.S. Department of Energy's GAIN program to support the development of Lightbridge fuel in collaboration with Idaho National Laboratory (INL) and Pacific Northwest National Laboratory and more recently two 7-year framework agreements with Battelle Energy Alliance, LLC, DOE's operating contractor for INL.

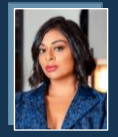
Independent Board of Directors

Ambassador Thomas Graham Jr. - Chairman of the Board of Directors

Former Special Representative of the President of the for Arms Control, Non-proliferation and Disarmament, current Co-Chairman of the Atlantic Council's Nuclear Energy and National Security Coalition.

Seth Grae - President and Chief Executive Officer

Member of Civil Nuclear Trade Advisory Committee (CINTAC) to the U.S. Secretary of Commerce, Nuclear Energy Institute's Board of Directors, Nuclear Energy and National Security Coalition, Working Group on Climate, Nuclear, and Security Affairs of the Council on Strategic Risks, Virginia Nuclear Energy Consortium Board of Directors.



Sweta Chakraborty, Ph.D. - Director

A globally recognized risk and behavioral scientist and expert on risks ranging from climate change to COVID-19. Advisor to government agencies on science and technology policy, specifically incorporating behavioral science in programmatic design and delivery, communication, and engagement activities. Designed and implemented internal and external communication strategies informed by behavioral science in collaboration with Fortune 100 global companies, such as Mars Inc., Novartis, and PVH Corp.

Jesse Funches - Director

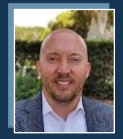
Former Chief Financial Officer of the U.S. Nuclear Regulatory Commission (NRC), served as Operations Research Analyst at the Office of the Secretary of Defense in the Pentagon. In addition to winning the 2004 Donald L. Scantlebury Memorial Award (the federal government's highest award for excellence in financial management), Mr. Funches is a three-time recipient of the Presidential Rank Award for Meritorious Senior Executives and a two-time winner of the NRC's Distinguished Service Award.

Sherri Goodman – Director

Vice-Chair of the U.S. Secretary of State's International Security Advisory Board (ISAB) and on the EXIM Bank's Council on Climate. Secretary General of the International Military Council on Climate & Security (IMCCS), representing over 40 military and national security organizations addressing the security risks of a changing climate. Chairs the Council on Strategic Risks Board and the External Advisory Board on Energy and Homeland Security for Sandia National Laboratories. Serves on the Climate Council of the US EXIM Bank and the National Academies Advisory Board of the U.S. Global Change Research Program.

Daniel Magraw Jr. – Director

President Emeritus of the Center for International Environmental Law, Senior Fellow at the Foreign Policy Institute at Johns Hopkins School of Advanced International Studies, former Director of the International Environmental Law Office of the U.S. Environmental Protection Agency, member of the Trade and Environment Policy Advisory Committee to the Office of the U.S. Trade Representative.



Mark Tobin - Director

Over 24 years of experience in international investment banking and public company leadership. Currently serves as Chief Financial Officer at infrastructure services provider National Underground Group and serves on the board of data storage solutions provider Qualstar Corporation. Previously served as chief financial officer of global industrial printer manufacturer Printronix, independent director & audit committee chairman of Innovation Pharmaceuticals, Inc., and as executive vice president and chief financial officer of Nanoflex Power Corporation. Served as Director of Research and as a Senior Research Analyst at Roth Capital Partners, where he oversaw equity research on hundreds off mall-cap public companies, publishing research on publicly-traded energy infrastructure companies, including nuclear power, wind power, solar power, and electric transmission & distribution.

Lightbridge®

ADVANCED NUCLEAR FUEL TECHNOLOGY FOR LARGE AND SMALL MODULAR REACTORS

Improving reactor safety and economics

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