UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): **February 18, 2021**

LIGHTBRIDGE CORPORATION

(Exact name of registrant as specified in its charter)

Nevada	**001-34487**	**91-1975651**
(State or other jurisdiction of incorporation)	(Commission File Number)	(IRS Employer Identification No.)

11710 Plaza America Drive, Suite 2000
Reston, VA 20190
(Address of principal executive offices, including zip code)

(571) 730-1200
(Registrant's Telephone Number, Including Area Code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

o Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
o Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
o Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
o Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class:	Trading Symbol(s):	Name of Each Exchange on Which Registered:
Common Stock, $0.001 par value	**LTBR**	**The Nasdaq Capital Market**

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (17 CFR §230.405) or Rule 12b-2 of the Securities Exchange Act of 1934 (17 CFR §240.12b-2).

Emerging growth company o

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. o

Item 7.01 Regulation FD Disclosure.

On February 18, 2021, Lightbridge Corporation ("Lightbridge") issued a letter to its shareholders addressing, among other things, Lightbridge's settlement agreement with Framatome and certain business updates. In addition, on February 18, 2021, Lightbridge posted a new investor presentation on its investor relations website at https://www.ltbridge.com/investors. Copies of the letter to shareholders and investor presentation are being furnished herewith as Exhibits 99.1 and 99.2, respectively.

The information in this Item 7.01, including the exhibits hereto, shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, except as shall be expressly set forth by reference to such filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.	Description
99.1	Letter to Shareholders, dated February 18, 2021.
99.2	Investor Presentation.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

LIGHTBRIDGE CORPORATION

Dated: February 18, 2021

By: */s/ Seth Grae*
Name: Seth Grae
Title: President and Chief Executive Officer

EXHIBIT 99.1

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

February 18, 2021

To our Valued Shareholders,

I want to thank our shareholders for your continued support for Lightbridge.

We have reached a settlement agreement with Framatome, and I would like to discuss what it means for Lightbridge and convey what I believe are exciting opportunities ahead.

1. Our Settlement with Framatome:

After months of extensive negotiations, Lightbridge and Framatome reached a settlement agreement on February 11, 2021. Under the terms of the settlement agreement, Lightbridge will pay Framatome approximately $4.2 million for outstanding invoices for work performed by Framatome and other expenses incurred by Framatome. Framatome will destroy all documents and content related to Lightbridge's intellectual property. We expect both parties to work diligently over the next month to perform the actions required to complete the settlement. Our Board of Directors has concluded that the settlement agreement is in the best interest of Lightbridge and our shareholders. This settlement agreement allows Lightbridge to pursue various promising opportunities in the nuclear sector, now unencumbered by any constraints on our Lightbridge Fuel™ technology platform. Specifically, we see the following key benefits resulting from this settlement agreement:

- The settlement secures all our pre-existing intellectual property rights without any restrictions;
- The settlement results in a clean break where all joint venture agreements are terminated, and there are no restrictions on Lightbridge's ability to engage in research and development activities or commercial discussions with other entities going forward;
- We avoid significant monetary costs of ongoing arbitration proceedings in Switzerland and litigation in Delaware that our attorneys expected to continue for another year and eliminate any uncertainty of the outcome of international arbitration;
- Continuing the arbitration and litigation would cost Lightbridge in being unable to pursue the promising opportunities emerging in advanced nuclear. We can now focus our efforts on exploring these opportunities to the benefit of Lightbridge.

I believe this settlement agreement is the best result for all sides. For Lightbridge, we are better off having full control of all our intellectual property and not needing consent from another company to pursue emerging opportunities.

2. Lightbridge Seizing Opportunity towards Powering Small Modular Reactors (SMRs):

We initially focused on existing U.S. pressurized water reactors (PWRs) because they represent a large market segment for which Lightbridge Fuel™ could provide significant economic and safety benefits through a power uprate up to 10% along with an operating cycle extension from 18 to 24 months or a power uprate of 17% without extending the cycle length. All nuclear energy in the world today is generated by about 400 operating reactors. There are approximately 440 operable reactors, but some of them are shut down, mostly in Japan. These 400 reactors average about 1,000 megawatts of electricity generation each. We calculate that to produce with nuclear power all the clean energy that the world will need in 2050, the seminal year for climate change according to the IPCC, would take the equivalent of about an additional 20,000 reactors generating about 1,000 megawatts of electricity each. Realistically, the industry will not grow from 400 to over 20,000 of these reactors. We expect the net worldwide growth in the number of large reactors between now and 2050 to be fewer than 200, with most new plants built by China and Russia and hence difficult for Lightbridge Fuel™ to reach. And nuclear power will not generate all of the clean energy by itself. Existing large reactors can present an additional market opportunity for Lightbridge Fuel™, but that will not move the needle on climate change. ***We want to position Lightbridge as an essential company for the world to meet climate goals.***

Emerging nuclear technologies that many in the industry believe have the potential to generate massive amounts of power include the small modular reactors (SMRs) now in development and licensing. We expect that Lightbridge Fuel™ can provide SMRs all the benefits our technology brings to large reactors, but the benefits will be more meaningful to the economic case for deploying SMRs. Lightbridge Fuel™ is expected to generate more power that will help decarbonize sectors that are now powered by electricity. We also plan to explore using Lightbridge Fuel™ in new SMRs to produce hydrogen for liquid non-carbon fuels for use in other, hard-to-decarbonize sectors such as aviation and shipping. Our ongoing R&D initiatives are entirely compatible with Lightbridge Fuel™ powering SMRs for multiple purposes.

President Biden's energy platform includes advanced nuclear as part of "critical clean energy technologies." While the executive branch team is still being assembled, we understand that the new administration will prioritize advanced nuclear technologies, including advanced fuels and SMRs, as part of its nuclear energy policy. It's no coincidence that President Biden has brought the U.S. back into the Paris Agreement on climate change, with the goal that the U.S. electricity sector be carbon neutral by 2035, just 14 years from now. We believe Lightbridge Fuel's™ coupling with SMRs can enhance the already strong case for SMRs and attract more private and government investment.

a. Existing Large Reactors Present Limited Opportunities for Lightbridge over the Long-Term:

One of the limiting factors relating to existing reactors is their inability to load follow efficiently. Load following means going down and up in power as other electricity sources, mostly wind and solar power, come on and off the electric grid. Natural gas plants are used to back up wind and solar since these plants can phase down and up the energy they generate.

As mentioned above, we do not believe that large numbers of the older types of large reactors will be built, certainly not enough to meaningfully move the needle globally on climate change. In fact, we believe that unfortunately more will close. However, SMRs can be pivotal contributors to preventing climate change. Large reactors have considerable capital costs and must operate at full power 24/7 to be profitable. Due to their modular construction, SMRs are expected to have much lower capital costs per module making their deployment easier to finance by private and government sectors. Furthermore, SMR plants are expected to have the ability to reduce their power (i.e., by shutting down some modules while running the other modules at full power) or even shut down while the wind is blowing, or the sun is shining. We believe that Lightbridge Fuel™ will allow SMRs greater flexibility in power levels, making it easier for SMRs to replace natural gas to load follow with renewables, helping to expand markets for renewables and SMRs together as countries seek to decarbonize energy generation. Other components of the reactor would also need to be designed to handle the changes in power, and we believe that is feasible, with fuel being one of the current limiting factors to nuclear power plants balancing with wind and solar.

We expect that Lightbridge Fuel's™ most significant economic benefit will be to provide a 30% power uprate. However, the existing large reactors cannot realize that benefit because their systems can't handle that much of an increase in power. The most additional power the large PWRs could take from Lightbridge Fuel™ is estimated at 17%. Only newly designed large reactors could benefit from 30% greater power from Lightbridge Fuel™. While we believe that only a limited number of new, large reactors will be built, we expect that much larger numbers of SMRs will be deployed in the future.

As such, Lightbridge is going where the industry is heading. Prioritization of SMRs over existing large reactors, along with the significant government funding opportunities we expect to go toward SMRs in the coming years, may help accelerate our revised fuel development timelines by up to a few years for SMR applications by alleviating some of the bottlenecks and schedule constraints discussed in subsection (c) below.

b. Accident Tolerant Fuels (ATF) may Encroach on Lightbridge's Economic Value Proposition for Large Reactors

When the U.S. Department of Energy (DOE) launched the ATF program in response to the Fukushima accident that occurred in March 2011, the program was focused solely on achieving enhanced safety benefits, such as extra coping time during severe accidents. Over the past year, many ATF vendors concluded that the unexpectedly small accident tolerance benefits their ATF fuel concepts offered (such as several extra hours of coping time during severe accidents rather than their original goal of approximately 72 hours) were not enough of an incentive for nuclear utilities to adopt ATF designs, which cost more than conventional uranium dioxide fuels. As a result, ATF vendors have begun exploring opportunities for extending the operating cycle length from 18 to 24 months in existing PWRs by going to higher enrichments (i.e., from approximately 5% to 7-8% enrichments) with ATF designs. If they are successful in extending the cycle length to 24 months in a cost effective way, that could give sufficient economic incentive for nuclear utilities to switch to the ATF designs in the coming years. This recent shift in positioning by many ATF vendors represents a competitive threat to Lightbridge for the existing large PWRs as ATF vendors are now trying to cut into a critical element of Lightbridge's value proposition, i.e., an ability of Lightbridge Fuel™ to extend the cycle length from 18 to 24 months in existing large PWRs. While it is not certain that the ATF vendors will be successful in this approach, and given that ATF would not provide the other economic benefits of Lightbridge Fuel™, notably a 10% power uprate in addition to a cycle length extension, if ATF could provide for two-year cycles, it could weaken our economic value proposition in existing large PWRs. That said, Lightbridge Fuel™ remains the only advanced light-water reactor fuel in development that can provide power uprates, cycle length extensions, improved safety, and load following in a single product as desired by the utilities.

The above developments make prioritizing existing large PWRs not as attractive as we previously expected. Depending on the ultimate outcome of ATF technologies and government funding available to support advanced fuel technologies for existing large PWRs, this market segment could become more viable again in the future. However, in the near-term, we believe that a realignment of our corporate initiatives could lead to more beneficial, valuable, nearer-term opportunities for Lightbridge.

c. Extended Fuel Development Timelines resulting in Higher Projected Costs for Large Reactors

After the Halden research reactor was shut down in 2018, we embarked on a global search for an alternative for loop irradiation testing of our metallic fuel rods. Ultimately, we settled on the Advanced Test Reactor (ATR) at Idaho National Laboratory and applied to DOE for and won a GAIN Voucher in December 2019 to kick off our initial collaboration with the U.S. national laboratory. Our initial understanding was that we would have full access to a government-funded pressurized water reactor (PWR) water test loop in the ATR to generate sufficient data to support our lead test assembly (LTA) testing and eliminate the need for lead test rod (LTR) testing in a large commercial reactor.

However, while the ATR has enough space for four "loops" where fuel rods can be irradiated, the reactor currently has only one such loop, limiting how much fuel rod material we can get in the reactor and its duration in the reactor. Idaho National Laboratory has told us that it is willing to add up to all three additional loops, at a total design and construction cost of approximately $35 million, which we have determined to be an unmanageable cost for Lightbridge. We plan to work with the government and industry to have those loops added without Lightbridge paying for them. We believe we have strong arguments for the government to pay most of the cost for the loops.

If new loops are not added to the ATR, loop irradiation testing in the ATR may not provide sufficient data to justify regulatory approval for LTA testing in a large commercial PWR. This would likely necessitate an extra fuel development step of LTR testing in a large commercial PWR in addition to the ATR loop testing before LTA testing could commence. As a result, our fuel development timelines would be extended beyond 15 years before securing our first orders for batch reloads in large commercial PWRs. Consequently, the projected fuel development costs would increase substantially, making it unfeasible for Lightbridge to fund this fuel development effort on our own. We are currently evaluating whether our extended fuel development timelines and other triggering events will lead to an impairment expense of the carrying value of our patent costs at December 31, 2020. Our outside auditors have not yet concluded their audit of our December 31, 2020 financial statements.

d. The Opportunity in Small Modular Reactors

We expect that focusing more on SMRs would improve our fuel development timelines due to continuing and growing government funding support for SMRs. We believe the 30% power uprate our fuel could provide to a new SMR designed to accommodate the full power uprate could reduce CAPEX per kilowatt and generate positive incremental profit margin for SMR plants. At the same time, due to fuel design constraints, we do not expect ATF technologies to achieve the same power uprate capability in SMRs. This could give Lightbridge strong competitive advantages over ATF in this market segment.

The first SMRs that could use our fuel are expected to start operating about eight years from now. Their cores could even serve as testbeds for our fuel, without needing new loops in the ATR, while bringing more power and other benefits to the SMRs. More government funding expected for SMRs could reduce the amount of funding Lightbridge would have to raise for our fuel development efforts. We anticipate that the improved competitive position of Lightbridge Fuel™ versus ATF in the SMR market segment, with government support, would generate sustainable economic benefits. We believe that our fuel for SMRs is protected by our existing portfolio of patents and trade secrets.

As we shift our business model to focus more on what we believe are attractive opportunities with SMRs, we are placing a lesser focus on large existing reactors. We believe what we are seeing is part of an overall shift in focus in government and the private sector from large PWRs to SMRs and advanced technologies. This shift in focus is at least partly driven by the need to prevent catastrophic climate change.

e. Other Potential Opportunities for Lightbridge's Metallic Fuel Technology Platform

Recently, the presidents of the U.S. and Russia agreed to extend the New START treaty for an additional five years. The New START treaty will prevent an increase in the number of certain types of nuclear weapons in the U.S. and Russian arsenals. We understand that the Biden administration may seek to use this opportunity to enter into negotiations with Russia, and perhaps China, to reduce the number of weapons and eliminate plutonium from the weapons that would be dismantled, making it harder to replace the weapons in the future. While there would still be careful analysis ahead of us, we believe that a zirconium-plutonium version of Lightbridge Fuel™ could be an ideal solution in disposing of the plutonium from weapons, using it to generate energy.

The United Kingdom and Japan have large quantities of separated reactor-grade plutonium from reprocessing spent fuel from power reactors. Both countries are interested in exploring how best to dispose of that plutonium. We believe our technology can be used for this purpose. Our patent portfolio includes zirconium-plutonium fuel. We will explore these opportunities over the coming months for potential government interest and funding support.

We are also beginning to evaluate how intellectual property we have can help bridge the gap to advanced Gen-IV reactors. One area relates to technology that would improve the commercialization of High-Assay Low-Enriched Uranium (HALEU) first in our fuel in water-cooled reactors that can also be beneficial for HALEU use in advanced reactors.

3. Conclusion

We appreciate your continued support as we have come through this challenging year. We are positioning Lightbridge to thrive within the current industry and governmental environment. We believe our fuel will add much value, from generating electricity more efficiently to other developing missions. We see SMRs becoming more of a driver for investment and government support, and we need to increase our focus on opportunities where the money is and will be.

We continue to take steps to raise awareness of Lightbridge in the investment community. We have recently updated our investor presentation, which can be found on our website, www.ltbridge.com. Thank you for your interest in and support for Lightbridge. We look forward to keeping you apprised of our progress and key developments. I hope you and your family members stay safe and healthy.

Very truly yours,

Seth Grae
President and Chief Executive Officer
Lightbridge Corporation

Forward Looking Statements

With the exception of historical matters, the matters discussed in this communication are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including statements regarding the timing and outcome of research and development activities, future developments regarding SMRs and PWRs, demand for and relative benefits of accident tolerant fuels, other steps to commercialize Lightbridge Fuel™, and future governmental and industry support and funding for nuclear energy, additional loops at the ATR, and the Company's research. These statements are based on current expectations on the date of this communication 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 Company's ability to commercialize its nuclear fuel technology; the degree of market adoption of the Company's product and service offerings; market competition, including from accident tolerant fuels; dependence on strategic partners; demand for fuel for nuclear reactors; the Company's ability to manage its business effectively in a rapidly evolving market; changes in the political environment; risks associated with the further spread of COVID-19, including the ultimate impact of COVID-19 on people, economies, and the Company's ability to access capital markets; 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, except as required by law. Readers are cautioned not to put undue reliance on forward-looking statements.

A further description of risks and uncertainties can be found in Lightbridge's Annual Report on Form 10-K for the fiscal year ended December 31, 2019 and in its subsequent reports on Form 10-Q, including in the sections thereof captioned "Risk Factors" and "Forward-Looking Information and Factors That May Affect Future Results", as well as in its subsequent reports on Form 8-K, all of which are filed with the U.S. Securities and Exchange Commission and available at http://www.sec.gov/ and www.ltbridge.com.


Lightbridge
Advanced Nuclear Fuel Technology for New and Existing Reactors
Improving reactor safety and economics
NASDAQ : LTBR
February 2021

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 timing and outcome of research and development activities and other steps to commercialize Lightbridge Fuel™, future developments regarding SMRs, the future development and utilization of nuclear power, government support and funding for nuclear power, and the Company's anticipated financial resources and position, including the adequacy of the Company's current cash for operations to the end of 2021. 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 Company's ability to commercialize its nuclear fuel technology; 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; the Company's ability to manage its business effectively in a rapidly evolving market; changes in the political environment; risks associated with the further spread of COVID-19, including the ultimate impact of COVID-19 on people, economies, and the Company's ability to access capital markets; as well as other factors described in Lightbridge's filings with the 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, except as required by law. 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 - Pioneering Advanced Nuclear Fuel

Leading developer of nuclear fuel technology for current and future reactors that enhances economics, proliferation resistance, and safety of nuclear power, operating about 1000 °C cooler than standard fuel

Backed by a Well-Respected Patent Portfolio

We have built a significant portfolio of patents reflecting years of research and development, which continues to be a strategic focus. These patents and our trade secrets will help safeguard our intellectual property, which is an integral element of the Company's plans to monetize Lightbridge Fuel™.

Positioned to enable carbon-free energy applications that expand current use missions

Incorporating Lightbridge Fuel™ with other advanced nuclear technologies can fast-track nuclear-supported energy that meets future need and fulfills climate goals.

Ticker: LTBR (NASDAQ)
Corporate HQ: Reston, VA
Debt: None

Key Business Drivers

Bipartisan government support through legislation, financial investment and policy change has spurred a race for nuclear innovation.
Lightbridge was awarded its first DOE funding award in late 2019, with additional funding opportunities available.

$20+ billion 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 small modular reactors.

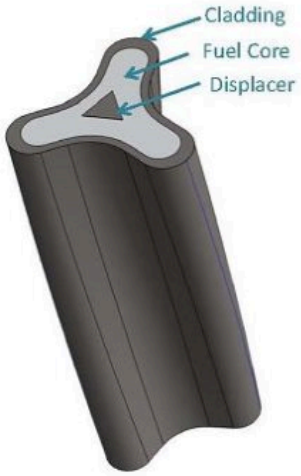
Lightbridge Fuel™ increases safety and capacity while reducing carbon emissions and operator costs.
The world's energy and climate demands will be met as nuclear energy becomes a bigger part of the energy-generating mix.

Lightbridge has built a significant portfolio of patents in numerous countries, reflecting years of research and development.
The new patents will help safeguard the Company's intellectual property, which is an integral element of the Company's plans to monetize Lightbridge Fuel™.

Lightbridge Fuel™ is well-positioned to enable advanced nuclear energy applications that expand its current use missions.
Lightbridge Fuel™ is a nimble technology that's reimagining applications of nuclear power to deliver clean, reliable energy.


Lightbridge Fuel™
6

Highlights of Lightbridge Fuel™



Metallic high-assay low-enriched uranium (HALEU) fuel for power uprates and longer fuel cycles; improves flexibility of fleet operations

Large Market
Lightbridge Fuel™ is designed to work in new and in existing reactors.

Waste Reduction
There is less spent fuel per plant output when using Lightbridge Fuel™. The spent fuel is useless for weapons purposes.

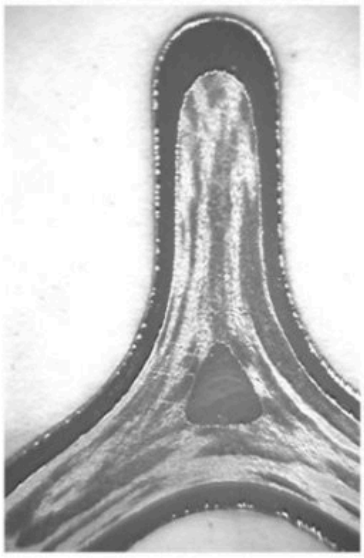
Improved Safety
A key safety feature of Lightbridge Fuel™ is that the internal temperature is 1,000°C cooler than current fuel. It does not reach the appropriate temperature needed to generate hydrogen gas in design basis accidents.

Improved Economics
Our fuel increases power output and extends the length of the fuel cycle. Lightbridge Fuel™ also offers the lowest cost to add reliable electricity to the grid.

Quicker Ramp-Rate for Load Following
Lightbridge Fuel™ offers a better solution for pairing on the electric grid with renewables, potentially replacing natural gas plants and coal plants on the same site, with zero carbon emissions.

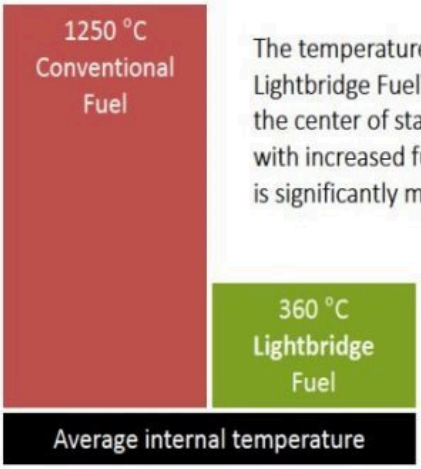
Lightbridge Fuel™ Features

- **Absence of spacer grids** reduces core pressure drop by ~50% which improves natural circulation of the water coolant
- **Metallurgical bond** between fuel components significantly reduces cladding breach due to fuel-cladding mechanical interactions
- **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
- **Coextrusion fabrication process** eliminates several possible sources of manufacturing defects (e.g., pellet chipping)



Cross-section of tri-lobe fuel sample for hexagonal fuel assembly

Lightbridge Innovation: Designed for Safety



The temperature down the center of Lightbridge Fuel™ is ~1000 °C cooler than the center of standard nuclear fuel; and with increased fuel rod surface area, there is significantly more margin to fuel failure.

- ✓ 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

Statens strålevern

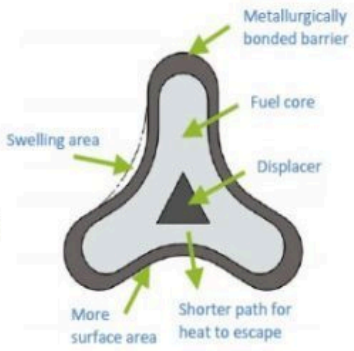
How We Design Safer Fuel

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 multi-lobe fuel rod – increased fuel surface area and 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 is anticipated during design basis events.**

Robust Patent Portfolio Protects Return on Investment

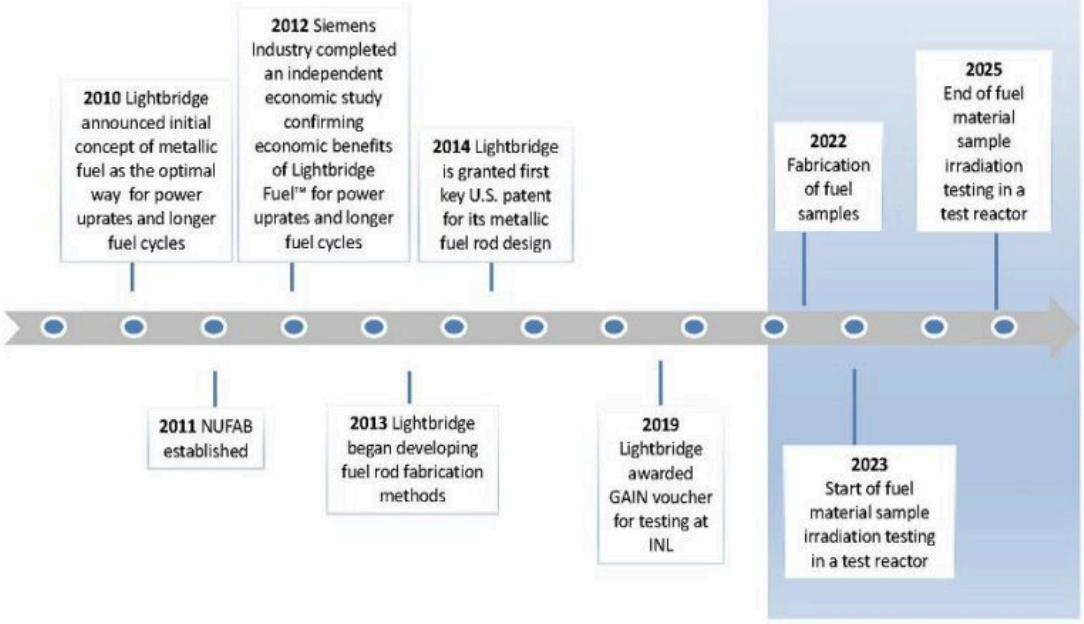
Lightbridge has invented and developed its technology to meet the needs of the growing energy marketplace, backed by a powerful worldwide patent portfolio of **197 issued and pending patents**

- Expanding our patent portfolio continues to be a strategic focus for Lightbridge
- In 2020, we successfully obtained **6 new patents worldwide**
- 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™

Patents related to the following core areas:

- *Fabrication Method Using the Casting Route*
- *Fabrication Method Using the Powder Metallurge Route*
- *All-Metal Fuel Assembly Design (i.e., No Oxide Rods in the Outer Row)*
- *Multi-Lobe Metallic Fuel Rod Design*

Timeline of Events & Milestones for Lightbridge Fuel™




The Opportunity for Lightbridge
(Today's Reactors)
13

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

$60 million*

per 1,100 MWe reactor
incremental annual revenue to utility with Lightbridge 10% power uprate fuel

Does not include the added economic benefits of carbon credits or cost to utility of buying replacement power during an outage

* 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 as 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. Utilities are now exploring with the NRC extending operating licenses to 100 years.

Nuclear Utility Fuel Advisory Board (NUFAB)

Nuclear Utility Fuel Advisory Board (NUFAB) has represented the voice of the customer in Lightbridge Corporation's development and commercialization activities. The NUFAB is made up of senior fuel managers from utility companies, representing about half of the installed U.S. nuclear capacity

Dominion

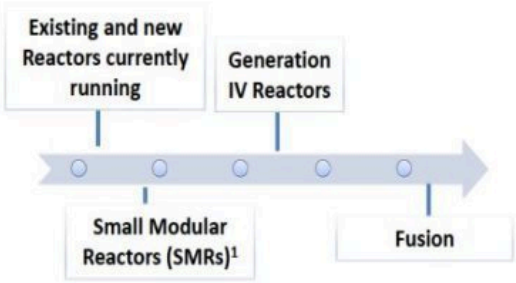
DUKE ENERGY.

Exelon Generation.

Southern Company

The Opportunities for Lightbridge (New Applications)

Lightbridge Fuel™ in Small Modular Reactors of the Future



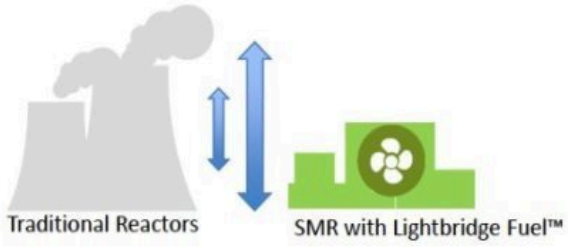
Lightbridge Fuel™ could help with licensing of:

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

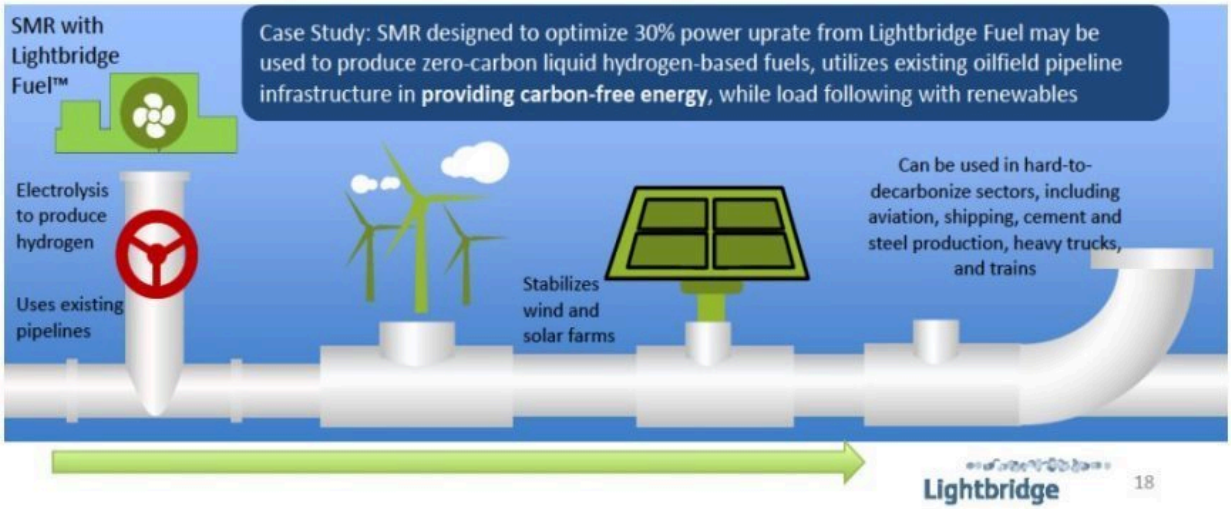
Lightbridge Fuel™ is expected to **significantly improve the economic case for Small Modular Reactors (SMRs)**. An SMR can be added to each site that had a coal power plant, given the electrical switchyard already on the site, bringing employment back to the site. There can be massive manufacturing of the SMRs in the US for domestic and export markets and then ongoing manufacturing in the US of fuel—for domestic and export markets. There will also need to be infrastructure development on each site to accommodate the SMRs that will be shipped from factories.

[1] Pressurized water reactors and boiling water reactors

Lightbridge Fuel™ Can 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 load following ramp rate compared to traditional reactors
- May allow SMRs to work more efficiently in different missions, including replacing natural gas plants to back-up renewables



Plutonium-Zirconium Fuel Opportunity

- START Treaty extended an additional five years
- Biden administration hopes for negotiations to reduce the numbers of nuclear weapons
- This could lead to a need to reduce excess weapons plutonium stockpiles in the U.S.

- Lightbridge is studying the potential for a variant of Lightbridge Fuel™ that would replace HALEU with plutonium zirconium material – which is already included in our patent portfolio

- Lightbridge Fuel™ already presents an improved safety profile compared to existing fuel; a plutonium variant can address the proper disposing of plutonium from weapons and current and future waste from reactors

- Possible alternative to failed U.S. Mixed Oxide (MOX) Program

Renewables will Provide a Small Portion of Global Energy Needs in 2050 - an Opportunity for Nuclear Power to Support Carbon-Free Initiatives

Total contribution of energy sources in 30 years at current pace:

Cubic Miles of Oil (CMO)	Renewables	Nuclear	Total Contribution
1 CMO	82%	28%	110% (or 1.1 CMO)
9 CMOs[1]	9%	3%	12%

88% from ???

- The world will need about 2.4 times as much the total amount of energy in 2050 than what is used today.[2]
- Nuclear generation today provides about 10% of the total world electricity and around 4.5% of the total world energy consumed.[3]
- Today, there are about 442 operable power reactors, of which about 400 are operating. The others are shut down, mostly in Japan.[4]

[1] Our estimate of total world energy needs in 2050, based on CMO model by SRI International.
[2] Based on projections from "Researchers predict global energy needs will increase 25% by 2050" (2019, July 29) retrieved 25 February 2020 from https://phys.org/news/2019-07-global-energy.html. ~25% just for climate warming; 1.4 to 4 times for socioeconomic development.
[3] Around 4.5% is from BP Statistical Review of World Energy 2019 | 68th edition, page 9
[4] IAEA by BNEF presentation "Nuclear in the Next Decade: It is Darkest Before the Dawn", Dec. 4, 2019, slide 6/59

Leveraging Bipartisan Support for Advanced Nuclear

Awarded GAIN Contract with US Department of Energy

- Won GAIN voucher, our first DOE funding award in December 2019
- Signed Cooperative Research and Development Agreement (CRADA) with Battelle Energy Alliance, LLC, the operating contractor of INL, in collaboration with DOE in April 2020
- Total project is $845,000, with 3/4 paid by DOE
- Remainder comprised of in-kind, non-cash contributions from Lightbridge

GAIN Gateway for Accelerated Innovation in Nuclear

In terms of the size of the GAIN voucher, the DOE states that it only allocates awards **over $500,000** "***in cases with a clear need and involving a truly exceptional technology or innovation***."

Scope of the project (12 months in duration)

- ✓ Experiment design for irradiation of metallic fuel material samples in the Advanced Test Reactor at Idaho National Lab
- ✓ Lightbridge will establish the test plan for the measurement of key thermo-physical properties of our fuel materials both before and after irradiation
- ✓ INL will perform the detailed design and establish the safety case for the experiment in the Advanced Test Reactor
- ✓ Expected to lead to the complete design and safety case needed for insertion of our fuel material samples into the Advanced Test Reactor

Robust Bipartisan Federal Legislation for Nuclear

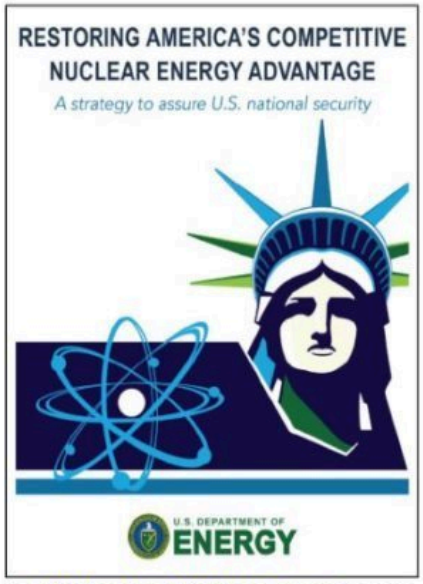
Nuclear energy benefits from strong bipartisan support in U.S. Congress.

- **Currently, there are 86 bills* related to nuclear power under consideration in the US Congress:**
  - Sponsored by Democrats: 53
  - Sponsored by Republicans: 32
- **Advanced Nuclear Fuel Availability Act** (passed in the House on September 9, 2019)
- **Nuclear Energy Renewal Act of 2019** (introduced into Congress on July 31, 2019)
- **Nuclear Energy Leadership Act** (introduced into Congress on June 18, 2019)

*GovTrack Data as of January 1, 2021

Nuclear Fuel Working Group Report

- Commitments towards federal funding of R&D for advanced fuels and HALEU
- Complete HALEU enrichment demonstration program, and fund advanced water treatment technology for uranium mining and in-situ recovery
- Fund the R&D for domestic origin commercial fuel replacements for international sale for use in foreign-origin reactors, including Accident Tolerant Fuel



The Nuclear Fuel Working Group report was issued on April 23, 2020.

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


Financial Overview
26

Strong Financial Positioning

- No debt
- Minimal trade payables
- Strategic cost-cutting was instituted in Q2 2020
- Projected quarterly cash burn $1 million, reduced 7% since cost cutting measures were instituted

Future Sources of Working Capital:

- Future anticipated government support following current GAIN voucher (non-dilutive)

Unaudited Condensed Consolidated Balance Sheets

	September 30, 2020	December 31, 2019
ASSETS		
Current Assets		
Cash and cash equivalents	$ 17,410,899	$ 17,958,989
Other receivable from joint venture	—	400,000
Prepaid expenses and other current assets	164,652	47,371
Total Current Assets	17,575,551	18,406,360
Other Assets		
Patent costs	1,825,326	1,798,484
Total Assets	$ 19,400,877	$ 20,204,844
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Accounts payable and accrued liabilities	$ 1,815,791	$ 350,299
Total Current Liabilities	1,815,791	350,299
Stockholders' Equity		
Preferred stock:		
Convertible Series A preferred shares	712	757
Convertible Series B preferred shares	2,667	2,667
Common stock	4,417	3,252
Additional paid-in capital	139,121,290	133,932,615
Accumulated deficit	(121,544,000)	(114,084,746)
Total Stockholders' Equity	17,585,086	19,854,545
Total Liabilities and Stockholders' Equity	$ 19,400,877	$ 20,204,844

Seasoned Nuclear Industry Leadership Team

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 - Director

Member of Civil Nuclear Trade Advisory Committee (CINTAC) to the U.S. Secretary of Commerce, Nuclear Energy Institute's Board of Directors, Nuclear Security Working Group, 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.

Victor Alessi, Ph.D. - Director

President Emeritus of the U.S. Industry Coalition, former director of the Office of Arms Control and Nonproliferation in the U.S. Department of Energy, *Governing Board of the International Science and Technology Center, Chairman of Science and Technology Center in Ukraine.*

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.

Kathleen Kennedy Townsend – Director

Managing Director and Senior Advisor at Rock Creek Group, Special Advisor at the U.S. State Department, Research Professor at the McCourt School of Public Policy at Georgetown University, former Deputy Assistant Attorney General of the United States, first woman Lt. Governor of Maryland.

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

Oversees Lightbridge's nuclear fuel technology development, including a successful effort that resulted in a voucher award from the U.S. Department of Energy's Gateway for Accelerated Innovation in Nuclear program to support development of Lightbridge fuel in collaboration with Idaho National Laboratory.

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

Former Audit Assurance Partner for Livingston Wachtell & Co., LLP with over 20 years of experience in assurance, tax and advisory services.

Why Invest in Lightbridge?

Lightbridge Fuel™ is well-positioned to enable advanced nuclear energy applications that expand its current use missions
Lightbridge Fuel™ is a nimble technology that's reimagining applications of nuclear power to deliver clean, reliable energy.

Bipartisan government support through legislation, financial investment and policy change has spurred a race for nuclear innovation
Lightbridge was awarded its first DOE funding award in late 2019, with additional funding opportunities available.

$20+ billion 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 small modular reactors.

Lightbridge Fuel™ increases safety and capacity while reducing carbon emissions and operator costs
The world's energy and climate demands will 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 new patents will help safeguard the Company's intellectual property, which is an integral element of the Company's plans to monetize Lightbridge Fuel™.

Lightbridge

Advanced Nuclear Fuel Technology for Current and Small Modular Reactors

Improving reactor safety and economics

Lightbridge Corporation
www.Ltbridge.com
Twitter: @LightbridgeCorp
www.Linkedin.com/company/Ltbridge
ir@Ltbridge.com

11710 Plaza America Drive
Suite 2000
Reston, Virginia 20190 USA

NASDAQ : LTBR

Appendix:
World-Class Consulting

New-Build Programs

Specialists in Initial Phases of New-Build Programs. In our experience, nuclear projects succeed or fail in the first five years and investment in program planning pays very large dividends in future success. Our primary services focus on:

Deciding to proceed with a nuclear power program

- Economic analysis with least-cost energy model of nuclear and alternatives
- Site suitability study: identification and ranking of potential sites

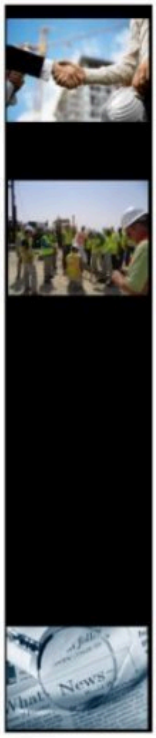
Program Planning

- Program strategy development
- National nuclear power program deployment workplan, schedule, and risk analysis
- Resource requirements, sourcing, and development plan

Political Advice

- National nuclear policy development support
- Advice and support relating to nuclear cooperation agreements

New-Build Programs



Procuring Nuclear Power Plants

- Develop commercial strategy
- Prepare technical bid specifications
- Support nuclear power plant procurement negotiations

Regulatory Development and International Obligations

- Required amendments to the nuclear law and regulatory framework
- Organization and administrative development
- Human resource staffing and development: requirements, recruiting, training and education, staff development plans
- Develop management systems, processes and procedures
- Develop regulations, guidance documents
- Assistance with international obligations reporting and management

Public Communications

- Prepare communications strategy and material to boost public support

Lightbridge Advisory Experience

Selected Examples:

Emirates Nuclear Energy Corporation (ENEC) Program Office Support

Lightbridge assisted ENEC from its inception to become an effective and efficient program delivery organization. We supported the nuclear power plant prime contractor selection, and provided corporate support in contract management, contractor oversight, program management, risk management, corporate business planning, performance measurement, IAEA compliance, knowledge management, localization and fuel cycle strategy.

UAE Federal Authority for Nuclear Regulation(FANR) Nuclear Regulatory Organization Support

Lightbridge provided strategic and technical support for the UAE's nuclear regulatory authority, helping to make it a capable body in a very short period of time. Our work included development of regulations, guides, plans, procedures, and training incorporating the best elements of many international regulatory regimes. We also provided strategic advice and assistance in the design, implementation and management of the regulatory authority and supported certain project management and execution activities related to the development of the organization including: organizational structure, management model, recruiting, and strategic decision making.

Lightbridge