

First Light Fusion submission to the Great British (GB) Energy Bill Public Bill Committee

September 2023

About First Light Fusion

1. First Light Fusion (FLF) is an Oxford-based fusion company founded in 2011 with a revolutionary, proven approach to fusion energy. Our mission is to generate fusion power through the simplest means possible and today, we stand as one of the global leaders in inertial fusion technology.
2. FLF's approach, called projectile fusion, is a new form of Inertial Fusion Energy (IFE) that promises a more efficient and accelerated pathway to commercially viable fusion energy. It has the potential to provide a reliable source of clean electricity before 2040, with the underlying physics already well-established.
3. We believe we have the technology to address energy security and back future innovation in the UK. Our rapid progress is fuelled by high-end precision manufacturing skills and the development of our own AI-driven simulation abilities. This not only brings us closer to commercial fusion but also holds promise for applications in critical UK sectors beyond energy, including technology, manufacturing, defence and security.
4. First Light welcomes the Great British (GB) Energy Bill as a significant step toward securing the UK's energy future. However, we are concerned that the Bill, in its current form, overlooks fusion – an energy source with the potential to be the world's last. This submission outlines the critical role fusion energy must play in meeting the UK's 2050 net-zero targets and argues for its inclusion as a core element of the Bill's remit.

Overview

5. The need for sustainable, clean, and efficient energy sources has never been more urgent. Fusion power, if successfully commercialised, is capable of providing an affordable and reliable power source that reduces carbon emissions and eliminates our dependence on foreign imports.
6. Fusion energy is finally within reach and there is now a very real race – between countries and technologies – to bring it to commercial reality. Around the world, nations are stepping up investment in fusion research with the goal of creating commercially viable power plants within the next two decades.
7. Britain's leadership on the default route for fusion – magnetic confinement – is set to continue. Meanwhile a newer concept – inertial confinement – is quickly gaining traction and offers us another path to becoming a world leader. This technology has the potential to solve fusion's two historic problems – generating 'net gain' of energy; and doing so in a sustained, repeatable way at an affordable price.
8. While renewables are essential to our energy mix, they alone cannot meet global energy demand. Unlike wind and solar, which are intermittent and dependent on geographical conditions, fusion energy offers a limitless, 24/7 supply. This reliability positions fusion as a potentially critical energy source that can fill this gap, providing a constant, large-scale supply of energy without carbon emissions.

Why fusion should be included in GB Energy's statement of strategic priorities

9. Including fusion in the Bill's statement of strategic priorities will establish a more structured and coordinated approach to advancing this transformative technology. By doing so, the Bill will drive targeted investment, implement appropriate regulatory frameworks, and foster innovation that accelerates fusion's path to commercial readiness – maintaining the UK's position as a leader in this critical field.
10. Fusion will deliver significant benefits to the UK. It offers the potential for an abundant, clean energy source that can sustainably and securely power our economy, providing reliable energy to businesses, households, and public services. In addition, advancing fusion technology positions the UK as a global leader, enabling the export of cutting-edge energy solutions and reducing reliance on foreign energy sources.
11. Moreover, fusion's potential extends beyond energy production. Our rapid progress in fusion has been powered by high-end precision manufacturing and the development of AI-driven simulation capabilities. These advances not only support the fusion industry but also have applications in critical UK sectors, including defence and security. This work, along with others in the sector, will also create a new home for scientists, mechanical and electrical engineers and AI experts at every level from apprenticeships through to PhD recipients.

Proposed amendments to the bill

- 12. Section 5(1): The statement of strategic priorities for GB Energy should explicitly incorporate fusion technology to ensure a comprehensive and well-rounded clean energy mix.**

Conclusion

13. Incorporating fusion energy into the UK's energy strategy should not just be an ambition but a necessary step toward a sustainable and secure energy future. Fusion holds the potential to provide a nearly limitless supply of clean energy, positioning the UK at the forefront of global technological innovation and climate leadership.
14. By amending the GB Energy Bill to overtly include fusion, the UK can create the necessary frameworks to drive targeted investment, accelerate commercial readiness, and meet our 2050 net-zero targets. This will also foster economic growth and strengthen energy independence by reducing reliance on foreign sources.
15. First Light Fusion is eager to work with the Department for Energy Security and Net Zero, Great British Energy, and Parliamentarians to advance the Bill and ensure fusion energy's inclusion in the nation's strategic priorities.