



Nuclear Fusion's (Non-Scientific) Pathway to Commercialization

Harnessing the power of the stars on Earth through nuclear fusion has long been theoretically possible, but until now out of reach. Key scientific breakthroughs, billions of dollars in private and public investment, and rapid technological acceleration are bringing nuclear fusion closer to reality. In this article, our energy public affairs experts share their views on a non-scientific pathway to commercialize nuclear fusion.

The Big Deal

Should the three dozen private companies, host of governments and university labs crack the fusion code and reach commercialization by the early 2030s, society would unlock virtually limitless, carbon-free energy with applications extending beyond power generation to industrial heat, medical uses, or other energy intensive processes.

- Private capital sees the opportunity, as more than USD5 billion has been invested through 2022, according to a report published by the Fusion Industry Association.¹ Notable players including Sam Altman, Bill Gates, Jeff Bezos, Peter Thiel and Marc Benioff have jumped in the fusion race alongside key companies like Eni, Chevron, Temasek, Equinor and Sumitomo.
- For Microsoft, fusion's moment could be "just around the corner,"² as the technology giant reached an electricity purchase agreement with Helion Energy beginning in 2028.

- Public sector support is expanding beyond U.S. ITER-backing to including tens of millions of dollars available for public-private partnerships aimed at commercialization. President Biden's budget request, too, includes more than USD1 billion for fusion research & development.

Is this Fusion's Moment?

Fusion science achieved a breakthrough³ late last year when the National Ignition Facility ("NIF"), operated by the U.S. Department of Energy, reached net energy gain through the laser confinement approach. We're also seeing breakthroughs in achieving necessary high heat conditions (100 million degrees Celsius) and superconductor materials in facility design.

- While the world races with outpouring support and investment in lower-carbon energy sources and technologies, including hydrogen, nuclear fission, and carbon capture, fusion scientific advancements are

happening to realize its potential to be a dispatchable zero-carbon energy source to increase the flexibility and reliability of a decarbonized grid and economy.

Favorable Perceptions Today

Generally, the fusion sector enjoys positive media attention and bipartisan congressional interest, which could shift as the sector moves from lab to reality. An increasing number of critics are skeptical of aggressive commercialization goals, radioactivity claims, and materials inputs, to name a few.

Reality Check

Perceptions toward fusion are relatively unknown and without in-depth quantitative and qualitative baselines, understanding voter and investor motivations and concerns is still challenging. We'd expect these stakeholders to share in the excitement, but it won't happen without a healthy dose of skepticism.

- How to succinctly differentiate fusion from fission?
- How deep is the concern of the unknown?
- What education is necessary if a project was announced in their community?
- What's keeping capital on the sidelines?

While NIF's achievement was significant, *Bloomberg*⁴ was quick to highlight the "failed" five experiments that have followed.

Navigating the "Non-Scientific" Commercialization Pathway

Reaching commercialization is complex and we'll leave that pathway to the engineers and physicists. But, alongside the scientific breakthroughs still necessary, it's not too early to start navigating public affairs considerations to ensure fusion can materialize in time to be part of the decarbonization plans:

1. **Beware of Media Hype:** Fusion has the momentum, with outlets eagerly awaiting the next iterative scientific announcement. But don't let the media pull the industry ahead of the science. Measured, cautious optimism is the play to smartly navigating a highly interested media landscape that can quickly turn with setbacks and slipped timelines.

2. **Workable Federal Regulatory Framework:** The industry secured a critical win in the U.S. when the Nuclear Regulatory Commission ("NRC") decided to regulate fusion separately from fission. It's commonsense – while sharing the "nuclear" name, the technologies are different and therefore should have separate regulatory frameworks. Continued NRC engagement is important as is working with congressional and administration leaders on developing and executing predictable, common sense regulations that encourage responsible development.
3. **Don't Forget the States:** Securing supportive federal policy is mission-critical – states come a close second. As companies move from lab-based experiments to build full-scale pilots and ultimately power plants, state governments will play an enormous role in regulating and deciding where facilities are built. Making sure state regulatory agencies are educated and well-equipped will be key to establishing workable frameworks. And the states that are aggressive in welcoming the sector will reap the first-mover benefits.
4. **Public-Private Partnerships + Patient Capital:** The sector needs patient investors who are willing to take a risk now for the enormous long-term reward. While private investment has accelerated sector growth, commercialization won't be achieved alone. Public and private investment, together, will secure the financing needed to enable technological advancements and break new barriers.
5. **Stakeholder Education:** The American public likely knows little about nuclear fusion or how it's uniquely different to the familiar fission technologies. Establishing a strong social understanding and acceptance by defining the sector and individual company narratives is directly tied to commercial success. Without a focused stakeholder education and engagement effort, doubt emerges, fear can take hold, and NIMBYism wins the day.

Learn more about our [Nuclear offering at FTI Consulting](#). Contact us to go deeper on strategies to successfully navigate the non-scientific commercialization pathway.

Endnotes

- 1 "The global fusion industry in 2022," Fusion Industry Association (last accessed May 12, 2023), <https://www.fusionindustryassociation.org/about/>.
- 2 Jennifer Hiller, "Microsoft Bets That Fusion Power Is Closer Than Many Think," The Wall Street Journal (May 10, 2023), https://www.wsj.com/articles/microsoft-bets-that-fusion-power-is-closer-than-many-think-cb1b09dc?mod=djem_EnergyJournal. (Subscription required)
- 3 Aylin Woodward and Jennifer Hiller, "Nuclear-Fusion Breakthrough Accelerates Quest to Unlock Limitless Energy Source," The Wall Street Journal (December 13, 2022), <https://www.wsj.com/articles/nuclear-fusion-energy-breakthrough-reported-by-scientists-at-u-s-lab-11670944595>. (Subscription required)
- 4 David R Baker, "Fusion Breakthrough Hits Hurdles as Five Experiments Fail," Bloomberg (May 8, 2023), <https://www.bloomberg.com/news/articles/2023-05-08/fusion-breakthrough-hits-hurdles-as-five-experiments-fail?leadSource=uverify%20wall#xj4y7vzkg>. (Subscription required)

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