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U.S. Senate Committee on Energy and Natural Resources

Full Committee Hearing to Examine Fusion Energy Technology Development

Thursday, September 19, 2024, 10:00 a.m.

Chairman Manchin, Ranking Member Barrasso, and distinguished members of the committee, thank you for the opportunity to testify today. I am here to identify key steps that the U.S. government can take to position the United States as the leader in a global fusion marketplace that is rapidly approaching.[1] It is an honor to speak before you, especially at such an inflection point for fusion technology.

At Helion, our mission is to provide the world with clean, reliable, and abundant energy through commercial fusion technology.[2] Over the past decade, we have developed six fusion prototypes, each advancing critical aspects of our approach and bringing us closer to commercial deployment. Today, we are building Polaris, our seventh prototype, which we expect to be the first machine to demonstrate electricity production from fusion.[3] This will mark a pivotal step towards the future of fusion energy.

Following Polaris, we will construct the world's first commercial fusion power plant, backed by a power purchase agreement with Microsoft.[4] We also have a customer agreement with Nucor to develop a 500-Megawatt plant to power one of their steel mills.[5] These developments signal that fusion energy is no longer a distant vision—it is becoming a reality.

But as exciting as this moment may be, it is important to understand that proving the technology and building the first fusion power plant is just the beginning. Deployment at scale is where the real race is. To meet projected energy demand growth and to secure U.S. leadership, we must prepare to deploy, not just one, but many fusion power plants across the U.S. and the globe.[6]

We need a clear policy framework now, so when we demonstrate electricity from fusion, we can move forward without delay. As energy demand skyrockets, the market is hungry for a clean, firm power source that can be mass-produced and deployed quickly—fusion can deliver. The nation that builds fastest will lead the global market and gain the geopolitical power that comes with it.

To that end, we cannot let competitors, especially China, seize the advantage from our success. As discussed more below, the Chinese government is outpacing us on fusion investment 2 to 1, with a larger focus on commercialization.[7] It has already created state-owned companies to lead fusion deployment

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[1] White House Office of Science and Technology Policy, *Fact Sheet: Biden-Harris Administration Announces More Than $180 Million to Advance Implementation of its Bold Decadal Vision for Commercial Fusion Energy* (June 6, 2024).
[2] Helion Energy, Inc., *Team* (as of Sept. 16, 2024).
[3] Helion Energy, Inc., *Polaris* (as of Sept. 16, 2024).
[4] Helion Energy, Inc., *Announcing Helion's Fusion Power Purchase Agreement with Microsoft* (May 10, 2023).
[5] Nucor Corporation, *Nucor and Helion to Develop Historic 500 MW Fusion Power Plant* (Sept. 27, 2023).
[6] International Energy Agency, *World Energy Outlook 2024 - Executive Summary* (Oct. 24, 2023).
[7] *The Wall Street Journal, China Outspends the U.S. on Fusion in the Race for Energy's Holy Grail* (July 8, 2024).

and dominates key aspects of the supply chain.[8] However, the US can build faster and deploy faster than China—if the right policies are in place when we need them.

Mass Manufacturing Fusion to Meet Global Demand

As global electricity demand rapidly rises, fusion energy presents an unprecedented opportunity to meet this growth with clean, reliable power. In the U.S. alone, electricity demand is projected to increase by nearly 30% by 2050, driven by electrification in transportation, industrial sectors, and the digital economy.[9] And yet this is likely an underestimate given recent advances in AI and our push to onshore critical industries.[10] Globally, electricity consumption is expected to more than double during the same period, especially as developing nations industrialize and urbanize at a rapid pace. This surge in demand underscores the urgency of scaling up energy production, and fusion is poised to play a transformative role.

We are already on the cusp of fusion deployment, and now is the time to think beyond just a single fusion power plant. The U.S. can establish a leadership position with a bold but achievable goal: deploying hundreds of American-manufactured fusion power plants to the grid each year by the 2030s.

Fusion concepts, like Helion's, are built for mass production. Each device we create lays the groundwork for manufacturing tens or even hundreds more. With modular designs and mostly electronic components—such as power semiconductors, capacitors, and segmented magnets—fusion systems can be factory-built, shipped in parts, and quickly assembled on-site with minimal groundwork.[11] Unlike traditional nuclear power plants, fusion requires no massive pressure vessels, large and complex active safety systems, or upfront radioactive materials and licensing, making deployment faster and more scalable.

For example, our manufacturing space in Everett, WA is nearly 10 times the size of our Polaris prototype facility, which is under 30,000 sq. ft. and smaller than a football field. As we look toward our first commercial deployment in 2028 and beyond, we envision a future where fusion power plants roll off assembly lines daily, much like airplanes are produced today. With complexity akin to a 150-seat aircraft, a 50 MW fusion power plant can be built at scale.

Helion facility in Everett, WA housing our 7th prototype, Polaris

After delivering electricity to our first customers, we anticipate that over the following decade, Helion could meet rising demand and develop the capacity to manufacture one or more 500 MW fusion power plants per day. Achieving this vision could transform the U.S. power grid by the 2030s, enabling an era of energy abundance that fuels everything from steel production to AI deployment.

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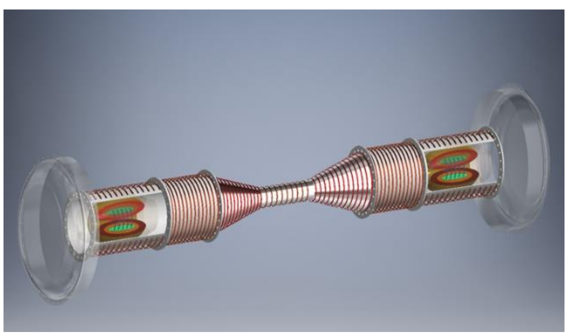
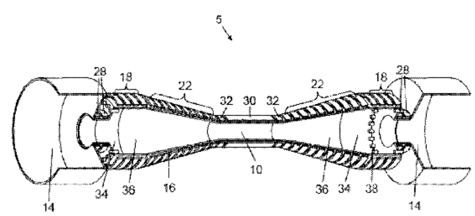
[8] American Nuclear Society, *China Launches Fusion Consortium to Build "Artificial Sun"* (Jan. 3, 2024) (describing the creation of China Fusion Energy Inc., to be led by the state-owned entity China National Nuclear Corporation).
[9] Statista, Projected Electricity Use in the U.S. 2022-2050 (June 28, 2024)
[10] Washington Post, *Amid Explosive Demand, America is Running out of Power* (Mar. 7, 2024)
[11] House Science, Space, and Technology Subcommittee on Energy, "From Theory to Reality: The Limitless Potential of Fusion Energy," *Helion CEO David Kirtley Testimony* (June 13, 2023).

However, this vision can only be realized if the right policies are in place to fast-track fusion deployment once the technology proves it can produce electricity. And the U.S. is not the only country with this ambition. China, in particular, is positioning itself as a formidable competitor, investing heavily in its own fusion research and manufacturing capabilities.[12] Their strategy is clear: dominate the fusion manufacturing supply chain and lead the global energy transition.[13] To win the fusion energy race of the 21st century, the U.S. must not only make fusion a reality but be ready with policies that allow us to outpace China in manufacturing and deployment.

The Strategic Challenge: U.S. Fusion Leadership vs. China's Ambitions

While the U.S. stands at the forefront of fusion innovation, we must recognize that global competition, particularly from China, is accelerating rapidly. China has made fusion a cornerstone of its national innovation strategy, aggressively investing in research, development, and manufacturing capabilities. This effort is not just aimed at civilian energy solutions but also has broader implications tied to its military-civilian fusion policy, where technological advancements in the civilian sector directly support military applications.

A notable example of China's ambition can be seen in ENN Energy Research Institute's HeLong Experiment (EHL Experiment). We understand that this program was initiated closely following our announcement of reaching 100-million-degree Celsius with Trenta, our 6th generation prototype.[14] The pictures below show a schematic published by ENN as compared to a publicly available diagram of Helion's technology. As you can see, the concepts are nearly identical.

Side by Side – ENN's HeLong concept (left) and Helion's fusion generator depicted in early patents (right)

Another example is China's HHMAX, a company based in Chengdu City, which recently acknowledged that Helion's approach to fusion is the fastest path to commercial power.[15] HHMAX has publicly stated its intent to replicate key aspects of Helion's design.[16] In fact, they appear to be utilizing technology from a Chinese university that has been attempting to copy key elements of Helion's fusion prototypes. This is a

[12] *Supra* n. 7.
[13] *See, e.g.,* Canary Media, *China Owns the Solar Supply Chain, Jeopardizing the Energy Transition* (July 25, 2022); NPR, *How China Dominates the Electric Vehicle Supply Chain* (Feb. 21, 2022).
[14] Helion Energy, Inc., *Helion Energy Achieves 100 Million Degrees Celsius Fusion Fuel Temperature and Confirms 16-Month Continuous Operation of Its Fusion Generator Prototype* (June 22, 2021).
[15] HHMAX, HHMAX – Exploring Clean Energy (as of Sept. 16, 2024).
[16] iNEWS, *Hanhai Juneng Completed an Angel Round of Financing of Tens of Millions of Yuan, led by Huaying Capital* (Sept. 17, 2024).

clear signal that China is positioning itself not only as a fast follower but as a potential leader in the fusion market.

This pattern is familiar. We've seen it before in industries like solar and batteries, where the U.S. pioneered breakthrough technologies, only to lose out to China in the race to mass deployment.[17] China leveraged its state-backed manufacturing capacity and low production costs to dominate those sectors, leaving the U.S. struggling to maintain a competitive foothold. If we allow history to repeat itself in the fusion industry, the U.S. risks falling behind once again—this time in a technology that is critical to our energy independence and national security.[18]

China's fusion efforts are backed by substantial government support, including the recruitment of top U.S. scientists and engineers to lead their programs. Meanwhile, the Chinese government is pouring resources into scaling up its manufacturing infrastructure, giving it a potential stranglehold on the global supply chain for fusion power plants. It is estimated China spends $1.5 billion per year on fusion and has 10 times as many PhDs in the field as America.[19] Without a bold and comprehensive U.S. response, we risk being outpaced by China's state-sponsored, rapid deployment strategy.

The stakes could not be higher. Fusion energy promises to be a game-changer—not just for decarbonizing the grid but for economic growth, national security, and maintaining technological leadership on the global stage. If China succeeds in building and deploying fusion power plants faster than the U.S., it could dictate global energy markets and secure long-term strategic advantages, much like it has in other key sectors.

This is why it is imperative for the U.S. to act now. We need a national fusion energy policy that not only supports applied research and development but also accelerates domestic manufacturing and deployment at scale. Such a policy must provide incentives for private-sector supply chain investment, update our regulatory pathways with bold new ideas, and create public-private partnerships to ensure that U.S. companies like Helion can lead production as well as innovation.

Fusion is the last great frontier in energy for this century—and likely the next thousand years. The U.S. must win this race, not just to stay competitive, but to secure our national interests and energy leadership for generations. Failing to act now means forfeiting a technology that will redefine the global energy landscape, potentially locking in China's dominance for centuries. After fusion, there are no more major energy breakthroughs on the horizon. We cannot afford to lose.

Policy Foundations for U.S. Leadership

Achieving our vision of large-scale deployment requires a strategic, two-pronged approach: (1) building resilient supply chains and (2) establishing bold new regulatory pathways. Both are critical to moving beyond the demonstration of a single fusion power plant to the mass deployment of hundreds across the U.S. and the world. These efforts must be pursued in tandem to secure the U.S.'s position as a global leader in fusion energy.

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[17] *Supra* n. 13.
[18] The Diplomat, *China and the Race for Nuclear Fusion* (June 11, 2024).
[19] *Supra* n. 7.

Helion understands that U.S. government investment requires industry progress, and we are ready to tie many of these proposals to key fusion milestones, particularly electricity production. But when that milestone is reached, we must be ready to hit the ground running on day one.

The stakes are high—our ability to scale fusion quickly and efficiently will determine whether we maintain energy leadership or risk being outpaced by China. To dominate this emerging industry, the U.S. must act decisively, leveraging our technological innovation to build and deploy fusion faster than our competitors.

1. **Build Resilient Supply Chains**

Fusion power plants, particularly those utilizing pulsed approaches like Helion's, rely on complex supply chains for critical components such as power semiconductors, high-voltage capacitors, and materials like high-quality metals for magnets and cabling. Helion, for example, has built some of the largest quartz tubes in the world for key sections of its fusion generator because no other facility in the world could produce them. These components not only represent a significant portion of fusion's production costs but also pose a substantial risk to U.S. energy security if these supply chains are not secured.

Much of the global supply of key components is concentrated in a few countries, particularly China, which already dominates industries like power semiconductors and is seeking to expand its influence in other critical areas of manufacturing. This represents an existential threat to U.S. fusion deployment. The risk is clear: even if the U.S. cracks the technical challenge of producing electricity from fusion, without a robust domestic supply chain, we will be unable to scale the technology quickly enough to compete globally.[20]

For fusion to drive key U.S. policy goals—like economic growth, job creation, and energy security—building a domestic fusion supply chain must be a top priority. As we've seen with solar and batteries, innovation alone isn't enough; without a strong manufacturing base, the U.S. risks losing its edge. We need immediate action to harness existing resources and launch bold new programs to compete with China on a global scale. Once we demonstrate electricity production, these programs must be ready to go.


Helion has built one of the largest high-voltage capacitor manufacturing facilities in the U.S. to meet our needs for Polaris and future generators

[20] Helion Energy, Inc., *Response to Request for Information: Implementation of the CHIPS Incentives Program (Regulations.Gov Docket DOC-2022-0001)* (Nov. 14, 2022) (discussing China's influence on power semiconductor supply).

A. Activate Existing Government Programs

The U.S. government already has several programs in place that can be leveraged to support the development of a fusion supply chain. For instance:

- **The Department of Energy's Loan Programs Office (LPO):** With $40 billion in available loan capacity,[21] the LPO can be a key source of funding to establish fusion manufacturing facilities. By making debt financing available to fusion earlier than traditional markets can provide, the LPO could not only accelerate deployment of first- and second-generation fusion power plants, but also enable the domestic production of critical fusion components such as magnets, capacitors, and specialized parts that will be essential for realizing scaled deployment.
- **45X Manufacturing Production Tax Credit:** This tax credit, designed to incentivize domestic manufacturing of renewable energy components, can be adapted to include fusion. By amending 45X,[22] Congress can provide a strong incentive and level playing field to companies manufacturing fusion-specific components like power semiconductors, high-voltage capacitors, and first-wall materials—which are currently not produced in the U.S.
- **The CHIPS and Science Act:** While the CHIPS Act is focused on revitalizing the U.S. semiconductor industry, its framework could be extended to fusion. Semiconductors are critical for the pulsed power systems used in many fusion generators, and creating a dedicated CHIPS sub-program to support the development and manufacturing of fusion-related semiconductors would be a natural extension of the program's goals.[23]

These existing programs provide a solid foundation, but they must be adapted and targeted specifically toward fusion to meet the scale of the challenge ahead. Congress should ensure that the demonstration of electricity production from fusion triggers the rapid mobilization of these resources.

B. Develop New Programs for Support

While existing programs provide a good starting point, they may not be enough to meet the full scope of the challenge. Fusion, as a transformative energy technology, requires targeted support beyond what current frameworks offer. To truly compete with China and secure U.S. leadership in the fusion marketplace, we need new, bold initiatives. To that end, the U.S. can take the best elements of a bipartisan program akin to the CHIPS Act but with a focus on fusion—a "Fusion Advantage Initiative." It should have the following programs:

- **Strategic Manufacturing Support:** This program would provide significant funding in a strategic manner to build out the manufacturing capacity necessary for large-scale fusion deployment. By establishing dedicated funding for fusion manufacturing, the U.S. can ensure that it is not left behind when the time comes to build at scale.

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[21] U.S. Department of Energy Loan Programs Office, *Loan Programs Office* (as of Sept. 16, 2024).
[22] Federal Register, *Section 45X Advanced Manufacturing Production Credit* (Dec. 15, 2023).
[23] Senator Cantwell, *Letter to Secretary of Commerce: Support for Fusion Consideration in CHIPS for America Fund* (June 30, 2023).

- **Applied Materials R&D:** Given the unique materials required for fusion generators, the whole industry could benefit from a major applied R&D program to discover new metals and ceramics that can withstand the high-energy environments inside fusion generators at a commercial operation. Unlike general R&D funding, which focuses on scientific breakthroughs, this initiative would focus specifically on solving the challenges getting us to producing fusion power reliably while enabling production of one fusion generator a day.

- **Strategic Materials Initiative for Fusion:** Given the unique materials required for fusion systems, the U.S. should create a strategic stockpile of key raw materials. This would include metals for high-performance magnets, ceramics or metals for first walls, and other specialized materials critical for fusion's core components. By ensuring that these materials are readily available domestically, the U.S. can reduce its reliance on foreign supply chains and protect against disruptions.

- **Fusion Manufacturing Hubs:** The government could establish designated "Fusion Manufacturing Hubs" in key regions,[24] offering enhanced tax incentives, streamlined permitting, and workforce development programs to attract fusion companies and suppliers. These hubs would serve as focal points for the rapid expansion of fusion-related manufacturing, fostering a concentrated ecosystem where the industry can thrive and scale efficiently.

These initiatives will not only advance our energy goals but also create thousands of high-paying jobs, fostering economic growth and reinforcing the U.S.'s position as a global leader in advanced manufacturing.

2. Establish Clear Regulatory Frameworks

Commercializing fusion energy hinges on building regulatory frameworks that enable safe and rapid deployment. Building a fusion generator a day is meaningless if we can't deploy them just as fast. While the NRC and Congress have made great strides, critical gaps remain as we push toward commercialization—especially in scalable licensing and environmental reviews, and faster energy grid integration.

These are complex, long-standing challenges, and we must tackle them now. Policy changes can take years, so we can't wait until the first fusion power plant is online. The demonstration of electricity production must trigger serious work to develop the regulatory groundwork needed to fully unleash fusion's potential in the U.S. energy landscape.

A. Licensing for Mass Production

In 2023, the NRC made a crucial decision to regulate fusion under its "byproduct materials" framework, the same used for handling radioactive materials in hospitals and universities.[25] This separates fusion from the stricter regulations applied to fission reactors, recognizing fusion's unique safety profile—it

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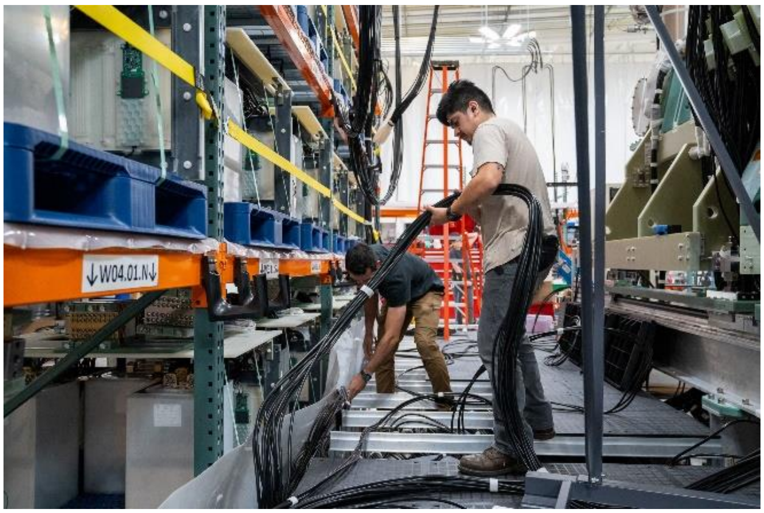
[24] Opportunity Zones may be an example. *See* Internal Revenue Service, *Opportunity Zones* (as of Sept. 16, 2024).
[25] U.S. Nuclear Regulatory Commission, *NRC to Regulate Fusion Energy Systems Based on Existing Nuclear Materials Licensing* (Apr. 14, 2023).

can't trigger a runaway chain reaction and doesn't produce long-lived high-level radioactive waste. This forward-thinking move lays the groundwork for licensing the first generation of fusion power plants.

However, while this was a critical first step, the current licensing process is still designed for one-off, bespoke power plants, where each facility is reviewed on a site-by-site basis. This process works for the first fusion power plants, but it is not conducive to mass deployment, which is important to both drive down costs and generate rapid adoption of this important source of clean, firm energy. To enable the widespread commercialization of fusion, we will need a more scalable licensing approach.

Helion to this end has proposed a design-specific license (DSL).[26] Under this model, second- and third-generation fusion generators could be registered with the NRC and Agreement States, much like smaller sources and medical technologies are under the existing byproduct materials framework. This registration would focus on the key systems that relate to fusion safety. Paired with a national generic environmental assessment, this would allow a single, one-time license to cover a standardized design and safety approach, enabling deployment anywhere within an approved environmental envelope. Regulators would be kept informed through notifications and rigorous oversight, avoiding repetitive, time-consuming reviews that don't enhance safety.

This DSL approach is particularly well-suited to fusion, given the potential for mass production of standardized fusion generators. By starting the conversation now on a regulatory pathway that supports the rapid and safe deployment of factory-built fusion plants, the U.S. can accelerate fusion's contribution to the energy grid and set a precedent for global regulatory harmonization.



Our team is hard at work completing construction on Polaris,
our 7th generation prototype that will demonstrate electricity production from fusion

B. Tailored Environmental Reviews

Fusion power plants, like those we're developing at Helion, have fundamentally different safety characteristics compared to traditional nuclear reactors, resulting in significantly smaller environmental impacts. Fusion systems generally proposed for deployment by the private sector don't require large-

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[26] Helion Energy, Inc., Pre-Print Discussion Draft, *Preparing for At-Scale Deployment of Fusion Energy Via a Design-Specific License* (Jan. 19, 2024).

scale safety measures and pose no off-site risks in the event of a malfunction. Their modular design further reduces site impacts. For example, our power plant for Microsoft will use a standard utility water supply, avoiding the heavy water consumption typical of conventional plants.

Given these advantages, the regulatory approach to fusion's environmental reviews must account for its minimal risks. Congress should urge regulatory agencies to treat fusion energy projects with a fresh perspective, allowing for findings of "non-significant impact" rather than defaulting to large-scale environmental impact statements (EIS). Mitigation measures can be integrated into the permitting process to streamline deployment.

Looking ahead, and building on the DSL concept, we need an environmental framework by the 2030s that supports the mass deployment of fusion power plants across the U.S. A generic environmental assessment (EA) for registered generators—like what's already done in other energy sectors—would enable factory-built systems to be deployed efficiently while ensuring public participation early on. A tailored regulatory approach will accelerate fusion's ability to meet rising energy demand while maintaining strong environmental stewardship.

C. Energy Regulations: Grid Interconnection and Siting Challenges

Beyond the NRC's role in regulating the safety of fusion plants, energy regulations related to grid integration and siting must also evolve to accommodate fusion's unique characteristics. Fusion energy, as a clean, firm power source, has the potential to significantly impact the U.S. electrical grid, but here again the current regulatory process is not designed for scale.

- **Grid Interconnection:** One major challenge is the grid interconnection process. Fusion power plants will need quick and efficient connections to the electrical grid, but in many regions, interconnection timelines can stretch beyond six years,[27] potentially delaying fusion rollout. As we have experienced in the site selection process for our first commercial fusion plant, interconnection delays can take many locations off the table.

  To address this, federal and state regulators must all work to streamline interconnection permitting processes and ensure that fusion generators can be integrated into the grid as soon as they are ready for operation. As well, the same statutory opportunities for interconnection that have been made available to renewable energy providers should be made available to fusion generation, to allow for an even playing field for all zero-carbon energy sources.

- **Collocated Siting:** Fusion is ideally suited for collocated generation, where its firm, reliable power can be directly supplied to large energy consumers such as data centers or industrial facilities without the need for extensive grid infrastructure. However, the regulatory environment in many parts of the country is unclear and could limit the ability of fusion power plants to provide this type of generation. A lack of consistent rules can prevent fusion from realizing its full potential and inhibit the ability of industrial entities to manage their energy requirements in a way that meets their business and clean energy requirements.

[27] Electric Power Supply Association, *Scores for Interconnection Times Highlight the Need for Reform in PJM* (Apr. 1, 2024).

- **Coal Plant Repowering:** Fusion's small footprint and flexible siting options make it ideal for repurposing retiring coal plants and other fossil fuel infrastructure. By revitalizing these sites, fusion can create jobs, support energy communities, and reduce carbon emissions. To accelerate this, regulators should implement policies that streamline permitting and interconnection for fusion plants at retiring coal sites and encourage repowering fossil fuel plants with fusion technology.

We know these are bold asks for bold goals, but when fusion is ready to scale, the U.S. will have only one shot to win the deployment race. Conditioning this work—especially on the supply chain—on a core milestone like electricity production ensures we make the most of limited government resources. But we cannot afford to wait. The time to act is now, so that when Helion or any other fusion company hits that milestone, the U.S. is ready to lead and win.

Conclusion: Securing U.S. Leadership in Fusion Energy

Before us, is an opportunity to deploy virtually limitless safe, reliable, and clean power in the form of fusion energy. Helion is building the technology to make this a reality, already achieving 100-million-degree plasma temperatures and securing over $600 million in funding to back it.

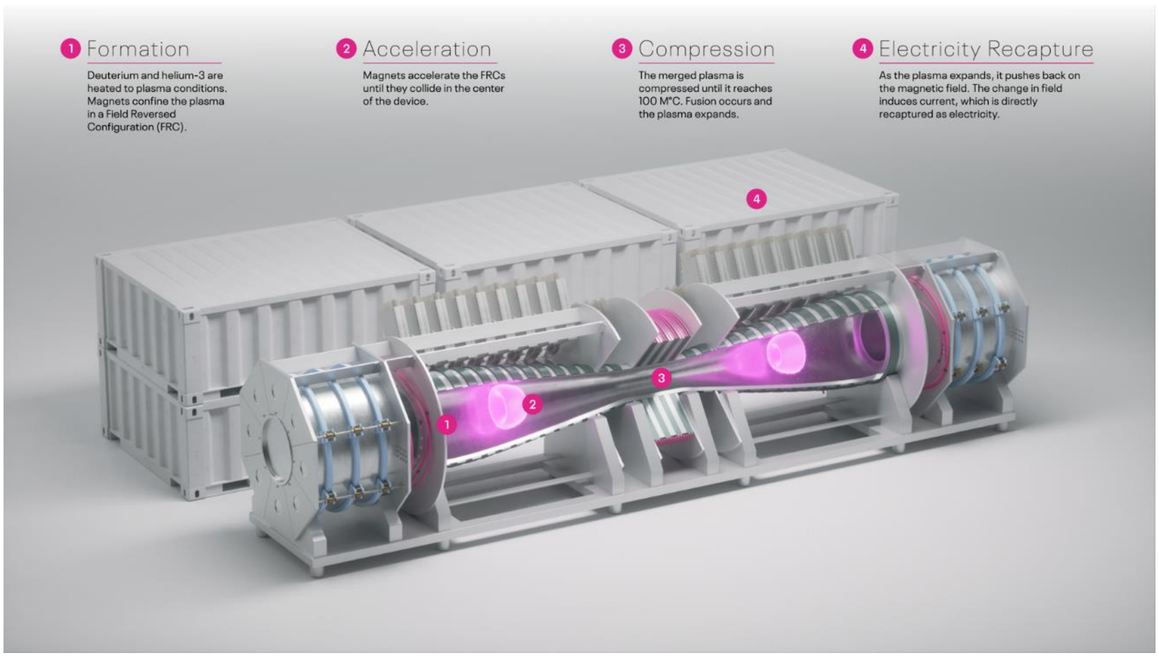
The U.S. stands at a crossroads. We're on the brink of unlocking fusion energy, but only if the public and private sectors work together. The next few years will decide if America leads the world in fusion—or gets left behind. With bold action on supply chains and smart regulatory frameworks, fusion can revolutionize our energy future and cement U.S. leadership in the global clean energy race

Thank you again for the opportunity to testify, and I look forward to your questions.

Appendix

Helion's Technology

Helion uses an approach to fusion called magneto-inertial fusion.[28] Our technology forms two ring shaped plasmoids, called field reversed configurations (FRCs), on each end of a symmetrical vessel. We then use electromagnets to accelerate the FRCs to the center of our machine until they collide. When the plasmoids collide, they combine into a single plasmoid, which is then compressed by very strong magnets to the point that particles become hot enough and dense enough to fuse in substantial quantities, releasing energy in the process.



Compared to other approaches in the field, our magneto-inertial fusion approach has three key differences:

1. **Our machine is pulsed** rather than steady state. This helps us overcome the hardest physics challenges in fusion, particularly around sustaining long-life plasmas. It also allows us to build more efficient devices, solve certain materials and impurity challenges, and adjust the power output based on need.
2. **We directly capture energy** from the expanding FRC during the fusion process instead of heating water to turn a steam turbine, while also recycling the energy used to create the initial pulse. The efficiency gains from directly capturing the fusion energy, while simultaneously saving the energy that goes into the fusion pulse, enables compact systems that can achieve commercial viability at much lower and easier to achieve levels of fusion gain (Q).
3. **We use deuterium and helium-3 as fuel** instead of deuterium and tritium. Deuterium and helium-3 are the ideal fuels for generating electricity because fusing these elements results in a proton and a normal helium nucleus—both charged particles whose energies can be directly

[28] Helion Energy, Inc., Technology (as of Sept. 16, 2024).

converted to electricity. This fuel cycle also reduces neutron emissions, substantially reducing many of the engineering challenges faced by users of deuterium-tritium fuels.

Helion's technology benefited from early U.S. government support, which helped de-risk our core technology in its earliest stages, helping set the foundation for our continued progress.

Because our approach enables small, compact fusion systems, we were able to move from the drawing board to the shop floor quickly and start building prototypes. These prototypes and the progress they demonstrated in turn helped us raise the private sector funding needed to develop the final fusion technology we are using today. To date, our team has built six working fusion prototypes, which achieved record-breaking results and technological milestones. These prototypes have allowed us to learn from engineering and building working systems and ultimately bring theory to reality, giving us confidence in our ability to deploy.