Chairman Manchin's Opening Statement for the Full Committee Hearing to Examine Fusion Energy Technology Development

Introduction

- The Committee will come to order.
- This morning we're here to discuss the commercialization of fusion energy, one of the critical and emerging technologies that we are in a global race to develop.
- Fusion energy would be a total game-changer.
- It's dispatchable power that's zero-emitting. And unlike conventional nuclear fission, we have abundant and accessible fuel for fusion, with minimal waste.
- We know energy has played a major role in spurring the wars of the past century; from Japan's dependence on imported oil in World War II to Europe's dependence on Russian natural gas and conflicts in the middle east.
- But widely-available fusion power would help end conflicts over energy. It would change the world.
- In 2022, I visited the ITER experimental site in France, where the U.S. and 32 other countries are working together

to get the first fusion reactor online – including not just our allies, but also countries of concern, China and Russia.

- While we are in conflict on other geopolitical issues, we are cooperating on ITER because all of these countries see the merit and promise of fusion energy.

- ITER gave me hope, and I saw a real opportunity for this technology to bring us together. I saw, in a sense, world peace.

- What I saw there changed my outlook on energy forever, and I really encourage all of you to make the trip there if you can.

- What we are doing with fusion power is essentially trying to harness the power of the stars here on Earth.

- Lightweight elements fuse together and, in the process, release massive amounts of energy.

- But it is much more challenging to artificially produce fusion here on Earth because of the difference in gravity – which means we need to create temperatures ten times hotter that the sun here in our labs.

- And believe it or not, we are actually able to do that today.

- But despite our scientific progress to date, challenges remain that are preventing us from having operational fusion power plants today.

How Close Are We to an Operational Fusion Power Plant?

- Currently, there are over 40 fusion companies globally that have raised a collective $7.1 billion of investment over the past five years, and over 85% of that is private capital.

- And there have been significant advances in fusion energy technology in recent years, such as the National Ignition Facility at the Lawrence Livermore National Lab achieving fusion ignition, for the first time producing more energy from fusion than was used to drive the reaction.

- This is the only facility in the world to reach this milestone.

- And we are also seeing many of these new designs making fusion reactors smaller, similar to how the nuclear fission industry is innovating from the large, conventional reactors to the smaller modular and micro reactors.

- But despite decades of research and a rapid increase in global investment in fusion energy technologies, no one has been able to produce fusion energy at the grid-level, commercial scale.

- I look forward to hearing from our witnesses about the roadblocks they're seeing.

- I understand that there are still outstanding scientific questions that need to be answered, which the Energy Act of 2020 and CHIPS and Science Act aimed to help address.

- And I know DOE's fusion energy program is busy implementing these laws and working with the private sector to coordinate efforts.

- But I've recently learned that ITER continues to face delays and its new startup date is in 2039, four years later than we hoped.

- So, we need to get a better understanding of why that is, and how we can get things back on track.

- Meanwhile, the private sector seems to be charging ahead.

- Helion Energy, one of our witnesses today, recently visited a Nucor steel facility in my home state of West Virginia, where the two companies are considering co-locating steel production with a fusion plant.

- Helion is looking for an online date for their first grid-scale commercial fusion power plant in 2028.

- That would be more than a decade before ITER, and almost seems too good to be true.

- Now I understand that ITER and Helion's plant are designed for different purposes, but it's clear from these examples that there is a lot of uncertainty surrounding the potential deployment date of the first fusion power plant.

Global Investment and Competition

- I would be remiss not to mention that the race against China that we've discussed time and time again in this Committee applies here, as well.

- China has recently mimicked our own U.S. strategic plan for developing fusion energy and is rapidly building out their research program and labs, modeled after our own DOE national labs.

- As you can see in the chart behind me, fusion investments have ramped up in the past few years.

- The U.S. is still in the lead, but you can see China entering the field in a big way.

- In 2023, China's investments in 2023 are more than all of the other countries combined.

- And China is not only trying to beat us in the science, they are also working to corner the fusion energy supply chain by securing the market for critical materials needed to build fusion power plants—like that have for solar power and electric vehicle batteries.

- We cannot afford to lose our competitive edge in fusion energy technology.

Conclusion

- I'm looking forward to hearing from our witnesses about the timeline we are facing for fusion power, and about specific steps we can take to ensure America is able to maintain our competitive edge.

- With that, I will turn it over to Senator Barrasso for his opening remarks.