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Statement by Chairman Randy Weber (R-Texas)

The Future of U.S. Fusion Energy Research

Chairman Weber: Good morning and welcome to today's Energy Subcommittee hearing. Today, we will hear from a panel of experts on the status of U.S. fusion energy research and discuss what we can do as a nation to advance this critical area of discovery science.

The goal of fusion research is to create a star here on earth and control it to the point that we can convert its immense heat into electricity. Easy, right? In the center of stars like our sun, extreme temperatures, pressures and gravitational conditions create a unique natural environment for fusion to occur.

On earth, scientists push the boundaries of experimental physics in a number of ways to duplicate these reactions, with the hopes of eventually generating fusion energy as power we can use in everyday activities.

The potential benefits to society from a fusion reactor are beyond calculation; the fuel is abundant and widely accessible, the carbon footprint is zero and the radioactive waste concerns are minimal. Despite these incentives, fusion energy science remains one the most challenging areas of experimental physics today.

Generally speaking – and don't worry I'll leave the detailed explanation to our panel of expert witnesses – fusion energy science is the applied study of a plasma, or ionized gas, and is dependent on three main conditions – plasma temperature, density and confinement time.

During this hearing, you'll hear terms like "Inertial Confinement" and "Tokamak." These are different techniques and devices used by scientists to control these three quantities in their experiments as they work to successfully generate fusion energy.

The Department of Energy (DOE) supports fusion research primarily through its Fusion Energy Sciences (FES) program within the Office of Science. Domestically, it funds robust research through its national labs and partnerships with industry.

At Lawrence Livermore National Laboratory, the National Ignition Facility (NIF) pursues ignition in the lab by using a high-energy laser to induce inertial fusion and provide critical science for DOE's nuclear stockpile stewardship mission.

The DIII-D National Fusion Facility, a DOE user facility managed by General Atomics, is the largest magnetic fusion facility in the United States. This program seeks to provide solutions to operational issues that are critical to the success of tokamak-style fusion reactors like the International Thermonuclear Experimental Reactor (ITER) project.

Considered the leading research initiative in fusion science, the ITER project is a major international collaboration to design, build and operate a first-of-a-kind research facility to achieve and maintain a successful fusion reaction in the lab.

Though located in France, ITER is also a U.S. research project. Over 80 percent of total U.S. awards and obligations to ITER are carried out in the United States. As of December 2017, the U.S. ITER organization has awarded more than $975 million in research and engineering funding to approximately 600 U.S. laboratories, companies and universities.

The DOE's fiscal year 2019 budget request for ITER is $75 million, well below the required commitment level to keep the project on track.

If enacted, this may result in damaging delays to the ITER project, and sends the wrong message to the international fusion community about America's commitment to its international agreements, and our leadership in science.

When determining the next steps for the domestic U.S. fusion energy program, we must consider the importance of access to the ITER reactor for American researchers and America's standing and credibility as a global scientific collaborator. If the U.S. is going to lead the world in cutting edge science, we cannot take our commitments to our international partners lightly.

I want to thank our accomplished panel of witnesses for their testimony today, and I look forward to a productive discussion about this exciting area of research.

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