



News from . . .

Senator Dianne Feinstein

of California

Senator Dianne Feinstein
Statement on the Fusion Energy Sciences Act of 2001
June 28, 2001

Mr. President, I rise today to join my colleague, Senator Larry Craig, in introducing this legislation to accelerate the development of fusion energy as a practical and realistic alternative to fossil fuels for our nation's energy needs.

I would also like to commend my colleague, Congresswoman Zoe Lofgren, who introduced the "Fusion Energy Sciences Act of 2001" on the House side as H.R. 1781.

Since the beginning of the Manhattan Project, scientists have been trying to harness energy from fusion to produce electricity. This legislation will help the scientific community expedite the development of fusion as a viable option for our energy needs. To help fusion science move from the lab to the grid, this bill fast-tracks a key experimental fusion project. This bill also authorizes \$320 million for Fiscal Year 2002 and \$335 million for Fiscal Year 2003 to speed up fusion's current estimated 45-year implementation timetable.

Mr. President, I have spoken frequently to my colleagues on California's current energy situation.

Last week the Department of Energy predicted the State will suffer from around 110 hours of rolling blackouts this summer. Experts say \$21.8 billion of economic output will be lost and over 135,000 workers will lose their jobs because of this summer's blackouts.

I will continue to try to help California and the rest of the West in the short-term. Making rolling blackouts less frequent, lowering electricity costs on the wholesale market, keeping natural gas prices reasonable, and bringing new supplies of power online are the key objectives I have been working toward to bring stability to the Western Energy Market.

While I work on the short-term problems in California, I join my colleague from Idaho on this bill to develop a key long-term solution to our current energy problems.

As world populations grow, and as civilization advances, we need to pursue new energy sources beyond traditional fossil fuels.

It is no secret that fossil fuels are finite and polluting. Beyond expanding renewable energy sources such as those from the sun and the wind, fusion holds a great deal of potential to expand our nation's energy supply.

Fusion is a safe, almost inexhaustible energy source with major environmental advantages. As a co-sponsor of this legislation, I hope to see fusion move quickly from an experiment in the lab to a reality for our homes and businesses.

We have already succeeded in using scientific advancements to harness energy occurring elsewhere on our planet. Solar panels collect the sun's rays to heat pools and power homes. Windmills transfer nature's gusts into electrical currents. Water running from mountaintops to the sea can produce significant amounts of hydroelectric power.

And now, with fusion energy, we will be able to harness the power of the stars to create an almost unlimited and clean form of energy.

Fusion energy is the result of two small hydrogen atoms combining into a larger atom. The energy released from this fusion of the atoms can be harnessed to generate electricity.

Unlike nuclear power, which uses radioactive materials for fuel, fusion uses hydrogen from water. Unlike fossil fuels, which pollute the air when burned, the only byproduct in a hydrogen fusion reaction is helium -- an element already plentiful in the air.

Besides being environmentally benign, fusion is a practically unlimited fuel source. In fact, scientists predict that using 1 gallon of sea water, fusion can yield the energy produced from 300 gallons of gasoline. And with fusion, 50 cups of sea water can be the energy equivalent of 2 tons of coal.

Fusion energy has been proven to be a practical energy endeavor, worthy of more investment for research and development. So just where do we go from here? How do we harness the power of the stars?

A 1999 review by the Department of Energy's task force on Fusion Energy concluded:

- 1) substantial scientific progress has been made in the science of fusion energy;
- 2) the budget for fusion research needs to grow; and
- 3) a burning plasma experiment needs to be carried out.

To expedite the use of fusion to meet our energy needs, we need to strengthen the efforts already underway in fusion research and development and create new programs financed by the government.

Scientists agree that at current funding levels, fusion is approximately 45 years away from entering the marketplace as a viable energy source.

This timetable is based upon a three step process in which the scientific community can: first, carry out a burning plasma experiment; second, build a fusion energy test facility; and third, establish a fusion demonstration plant to generate electricity.

Since practical fusion energy generation is still three stages from real implementation, the first thing we can do is fund the development of a burning plasma experiment.

This legislation will ensure this project will happen soon -- carried out either by the scientific community in the United States, or in collaboration with an international effort. The bill requires the Secretary of Energy to develop a plan by 2004 for a magnetic fusion burning plasma experiment. It is important to point out that this bill adds the burning plasma experiment in addition to -- and not at the expense of -- other ongoing projects.

The goal of fusion energy is to create a continually burning fuel like a fire refueling itself. Developing a magnetic fusion plasma experiment will help the scientific community demonstrate how the heat from the fusion reaction can maintain the reaction as a self-generating fuel. Strong magnetic fields allow the hydrogen plasma to be heated to high temperatures for fusion.

This legislation will help the scientific community overcome the key stumbling block to fusion development. By authorizing \$320 million for Fiscal Year 2002 and \$335 for Fiscal Year 2003 the fusion plasma experiment will be carried out and fusion funding that peaked in the 1970s, but has since tapered off, will be restored.

Let me just take a moment to mention where this funding is going, because it is particularly important for me to point this out.

Annual federal funding for fusion energy has averaged around \$230 million in the last few years. In Fiscal Year 2001, Congress appropriated \$248.49 million for fusion research.

This money has provided approximately 1,100 jobs in California at the following U.S. Fusion Program Participant locations:

UC Davis, UC Berkeley, Stanford, UCLA, UC Santa Barbara, Cal Tech, UC San Diego, UC Irvine, Occidental College, Lawrence Livermore National Lab, Sandia National Lab, Stanford Linear Accelerator Center, Lawrence Berkeley National Lab, TSI Research Inc. and General Atomics

Despite all of the past advancements at these facilities and others, the Fusion Energy Science Advisory Committee has concluded that lack of funding is hindering the technological advance towards fusion energy development. And the Department of Energy's task force on Fusion Energy has concluded that, "In light of the promise of fusion," funding remains "subcritical."

Currently, the international community is outpacing us on the road to realizing the myriad benefits of this new energy resource. The Japanese budget for this type of research is about 1.5 times that of the U.S., and the European budget is about 3 times greater.

It is critical that we be the leader in the renewable energy resources sector.

I urge my colleagues to join Senator Craig and me in supporting fusion energy as a clean, safe, and abundant energy source for our nation's long-term energy supply.