Statement of

Steven Chu
Secretary of Energy

Before the
Committee on Environment and Public Works
United States Senate
Washington, D.C.

July 7, 2009

Chairman Boxer, Ranking Member Inhofe, and Members of the Committee, thank you for the opportunity to testify on moving America toward a clean energy economy.

We face many serious and immediate challenges. American families and businesses are struggling in a recession and an increasingly competitive global economy. We have become deeply dependent on a single energy source to power our cars, trucks and airplanes, and spend hundreds of billions of dollars a year to import nearly 60 percent of the oil we use. We face an unprecedented threat to our very way of life from climate change.

To solve these challenges, the Administration and Congress need to work together to spur a revolution in clean energy technologies. The President and I applauded the historic action by the House to pass a clean energy bill, and we look forward to working with the Senate to pass comprehensive energy legislation.

I want to focus today on the threat of climate change. Overwhelming scientific evidence shows that carbon dioxide from human activity has increased the atmospheric level of CO_2 by roughly 40 percent, a level one- third higher than any time in the last 800,000 years. There is also a consensus that CO_2 and other greenhouse gas emissions have caused our planet to change. Already, we have seen the loss of about *half* of the summer arctic polar ice cap since the 1950s, a dramatically accelerating rise in sea level, and the loss of over two thousand cubic miles of glacial ice, not on geological time scales but over a mere hundred years.

The Intergovernmental Panel on Climate Change (IPCC) projected in 2007 that, if we continued on this course, there was a 50 percent chance of global average air temperature increasing by more than 7 degrees Fahrenheit in this century. A 2009 MIT study found a fifty percent chance of a 9 degree rise in this century and a 17 percent chance of a nearly 11 degree increase. 11 degrees may not sound like much, but, during the last ice age, when Canada and much of the United States were covered all year in a glacier, the world was only about 11 degrees colder. A world 11 degrees warmer will be very different as well. Is this the legacy we want to leave our children and grandchildren?

Denial of the climate change problem will not change our destiny; a comprehensive energy and climate bill that caps and then reduces carbon emissions will.

America has the opportunity to lead a new industrial revolution of creating sustainable, clean energy. We can sit on the sidelines and deny the scientific facts, or we can get in the game and play to win.

Opponents of this effort claim the nation cannot afford to act at this time. I disagree, and so do the Environmental Protection Agency and the Congressional Budget Office. These organizations estimate that meeting the greenhouse gas targets in the House bill can be achieved at an annual cost between 22 to 48 cents per day per household in 2020. That's about the price of a postage stamp per day.

History suggests that the actual costs could be even lower. The costs to save our ozone layer, to reduce smog with catalytic converters, and to scrub the sulfur dioxide from power plants were all far less than estimated. For example, according to the EPA, the SO_2 reductions will be achieved for one-quarter of the estimated cost.[1] The right clean energy incentives will start the great American research and innovation machine, and I am confident that American ingenuity will lead to better and cheaper climate solutions.

We can make significant near-term carbon reductions through energy efficiency. We use 40 percent of our energy in buildings. I firmly believe that, with today's technologies, we can build new homes and buildings that use 40 percent less energy than today's new buildings and therefore save money on energy bills. By developing a system integration approach, I believe we could eventually build buildings that use 80 percent less energy with investments that pay for themselves in less than 15 years through reduced energy bills. Similarly, we could retrofit existing buildings to achieve 50 percent energy savings with investments that will pay for themselves.

A comprehensive energy and climate bill will drive American innovation in fuel efficient automobiles and the development of advanced batteries for electric vehicles. It will offer incentives to re-start our nuclear power industry and encourage utilities to invest in carbon capture and sequestration. It will drive investments in wind and solar power and next generation biofuels from grasses and agricultural waste.

In addition to deploying the technologies we have today and can see on the horizon, we must pursue truly transformative solutions. Climate experts, such as the IPCC, tell us we must reduce our carbon emissions by 80 percent by mid-century to stabilize atmospheric greenhouse gas concentrations at a level that may avoid the worst consequences of climate change. To achieve our long-term goals in a more cost-effective way, we will need a sustained commitment to research and development. Only R & D can deliver a new generation of clean technologies.

Let me close with a quote from Dr. Martin Luther King. His words seem so fitting for today's climate crisis:

"We are now faced with the fact, my friends, that tomorrow is today. We are confronted with the fierce urgency of now. In this unfolding conundrum of life and history, there is such a thing as being too late."

[1] http://www.epa.gov/airmarkets/cap-trade/docs/ctresults.pdf

Now is the time to take comprehensive and sustained action. With the leadership of the President, the actions of this Congress, and the support and participation of the American people, I am confident that we will succeed.

Thank you. I would be glad to answer your questions at this time.

Dr. Steven Chu, Secretary of Energy

Dr. Steven Chu, distinguished scientist and co-winner of the Nobel Prize for Physics (1997), was appointed by President Obama as the 12th Secretary of Energy and sworn into office on January 21, 2009.

Dr. Chu has devoted his recent scientific career to the search for new solutions to our energy challenges and stopping global climate change – a mission he continues with even greater urgency as Secretary of Energy. He is charged with helping implement President Obama's ambitious agenda to invest in alternative and renewable energy, end our addiction to foreign oil, address the global climate crisis and create millions of new jobs.

Prior to his appointment, Dr. Chu was director of DOE's Lawrence Berkeley National Lab, and professor of Physics and Molecular and Cell Biology at the University of California. He successfully applied the techniques he developed in atomic physics to molecular biology, and since 2004, motivated by his deep interest in climate change, he has recently led the Lawrence Berkeley National Lab in pursuit of new alternative and renewable energies. Previously, he held positions at Stanford University and AT&T Bell Laboratories.

Professor Chu's research in atomic physics, quantum electronics, polymer and biophysics includes tests of fundamental theories in physics, the development of methods to laser cool and trap atoms, atom interferometry, and the manipulation and study of polymers and biological systems at the single molecule level. While at Stanford, he helped start Bio-X, a multi-disciplinary initiative that brings together the physical and biological sciences with engineering and medicine.

Secretary Chu is a member of the National Academy of Sciences, the American Philosophical Society, the Chinese Academy of Sciences, Academica Sinica, the Korean Academy of Sciences and Technology and numerous other civic and professional organizations. He received an A.B. degree in mathematics, a B.S. degree in physics from the University of Rochester, a Ph.D. in physics from the University of California, Berkeley as well as honorary degrees from 10 universities. Chu was born in Saint Louis, Missouri on February 28, 1948. He is married to Dr. Jean Chu, who holds a D.Phil. in Physics from Oxford and has served as chief of staff to two Stanford University presidents as well as Dean of Admissions. Secretary Chu has two grown sons, Geoffrey and Michael, by a previous marriage.

In announcing Dr. Chu's selection on December 15, 2008, President Obama said, "the future of our economy and national security is inextricably linked to one challenge: energy… Steven has blazed new trails as a scientist, teacher, and administrator, and has recently led the Berkeley National Laboratory in pursuit of new alternative and renewable energies. He is uniquely suited to be our next Secretary of Energy as we make this pursuit a guiding purpose of the Department of Energy, as well as a national mission."