The Secretary of Energy
Washington, D.C. 20585

October 12, 2009

Dear Colleague:

Overwhelming scientific evidence demonstrates that carbon dioxide emissions from fossil fuels have already caused the climate to change. The world is on a perilous course that poses clear threats to the well-being and economic prosperity of our people.

We also know that prosperity depends on reliable, affordable access to energy. Coal accounts for 25 percent of the world's energy supply and 40 percent of carbon emissions, and is likely to be a major and growing source of electricity generation for the foreseeable future.

For this reason, I believe we must make it our goal to advance carbon capture and storage technology to the point where widespread, affordable deployment can begin in 8 to 10 years.

Can this aggressive timeline be achieved? Having examined the technology and consulted with leading scientists, researchers and industry experts over the past few months, I am convinced the answer is yes. Without question, there are many hurdles to the broad deployment of this technology, but none appear to be insurmountable.

Success is within reach, but not guaranteed. It will not come easily. It will require an aggressive global effort, harnessing the scientific talent and resources of governments as well as industry. That is why I am making this call to action to the Department of Energy's National Laboratories as well as to my fellow energy ministers, scientists and industry partners around the world.

President Obama and the United States have already embarked on the largest government investment in carbon capture and storage of any nation in history. We are investing more than $4 billion, which will be matched by about $7 billion more from industry in the U.S. We are also strongly encouraged by the commitments other countries have made, and the international partnerships that are forming to drive this technology forward.

The U.S. Department of Energy's effort includes:

- A commitment of more than $1 billion to the FutureGen project, with the goal of achieving a commercial scale power plant that can capture and safely sequester carbon emissions by 2016.

- Investments totaling over $1.4 billion to support five commercial scale demonstration projects at coal fired power plants that will apply promising new technologies for carbon capture and sequestration.
- Approximately $1.3 billion to support an additional five industrial demonstration projects retrofitting existing industrial facilities with innovative new carbon capture technologies.
- Approximately $100 million to demonstrate innovative concepts for beneficial carbon dioxide use.
- $50 million to evaluate geological formations and identify potential future sites for large scale carbon storage.
- Training grants of $20 million to develop the highly skilled workforce needed to make the new technology work.
- Invest about $400 million in research funding in 2010 to develop new capture and carbon dioxide compression technologies to reduce the cost and increase the efficiency of the carbon capture process. This research could also make coal fired plants more efficient with new technologies like higher temperature materials for ultra supercritical plants, next generation gasification technology and advanced oxyfuel combustion.
- A continuing investment of over $500 million over 10 years in sequestration science and monitoring techniques to ensure safe and long-term effective geologic storage of carbon dioxide, through our seven Regional Carbon Sequestration Partnerships.
- Coordinate a U.S.–China Clean Energy Research Center with a goal of facilitating joint research in carbon capture and sequestration. Intellectual property developed jointly will be shared between our countries.

The United States' commitment could bring up to ten commercial demonstration projects online by 2016 enabling us to evaluate and improve on the technology to make it commercially deployable. We are pursuing a range of options for new coal-fired power plants – from coal gasification to burning coal in an oxygen atmosphere to post-combustion capture – in order to find the most cost effective approach. In addition, our research investments will help develop game-changing, revolutionary new technologies that could begin to be deployable after 2020.

Of course, no one can predict how or exactly when scientific breakthroughs happen, but I believe it should be our shared goal of fully developing this technology to scale and cost on this aggressive timeframe.

To accelerate carbon capture and storage technology on a global scale both in industrial and developing economies, we need to continue the cutting-edge research, enhance global collaborations to leverage our combined resources, share in the knowledge, and foster capacity building in this technology around the world. The Carbon Sequestration

Leadership Forum represents a crucial opportunity to bring world energy leaders together to advance this technology sooner rather than later.

Without question, there are many other scientific breakthroughs that will be needed to solve the energy and climate crisis, from energy storage to building efficiency to reducing the cost of renewable energy. But finding safe, affordable, broadly deployable methods to capture and store carbon dioxide is clearly among the most important issues scientists have ever been asked to solve. We can, and should, and must strive to do so within the next 8 to 10 years.

As a scientist, I am by nature an optimist. While the challenge we face is enormous, I believe that scientific innovation can provide the answers we need. This is an aggressive goal, but the climate problem compels us to act with fierce urgency.

Steven Chu