Statement of Steven E. Koonin
Under Secretary for Science Designee
Senate Committee on Energy and Natural Resources
April 23, 2009

Chairman Bingaman, Senator Murkowski, members of the Committee, I am honored to appear before you as President Obama's nominee for Under Secretary for Science in the Department of Energy. With me this afternoon are my wife Laurie, who has been my companion and support for 39 years, and the second of our three children, Alyson, a junior at the University of Richmond.

As you consider my nomination, I thought it would be useful for me to say something about myself beyond the bare biographical facts, something about my perceptions of Science in the Department of Energy, and about what I hope to accomplish if my nomination is confirmed.

I have worked in Science for almost 4 decades, most of that time as a professor of Theoretical Physics at the California Institute of Technology. As a researcher, I have several times had the thrill of understanding something new about Nature: in the Cosmos, in the atomic and subatomic realms, and in the Earth's climate system. As a teacher, I have had the satisfaction of supervising some 25 PhD theses and educating hundreds of talented undergraduate and graduate students. And as Caltech's Provost for nine years, I gained a deeper understanding of the breadth of technical cultures, supervised the selection and hiring of 1/3 of the Institute's professors, and shaped programs in the biological sciences, astronomy, the earth sciences, the social sciences, and information science.

For the past five years as BP's Chief Scientist, I've helped guide that company's long-range technology strategy, in the process forming a synthetic and synoptic understanding of energy and catalyzing a major initiative in biofuels. I also came to appreciate the dynamics, strengths, and weaknesses of the private sector, and to better understand the global context for US research and education efforts. And in diverse government advisory roles for the past 25 years, including work with the JASON group, I've been exposed to the variety of technical problems facing the government, particularly in National Security, and have even occasionally contributed to their solution.

Throughout my career, it has been a privilege and pleasure for me to learn and understand deeply from many teachers, mentors and colleagues, to apply the substance and methods of Science toward defining problems and seeking their solutions, to clearly communicate those learnings, and then to be a part of their implementation. Over the decades, my tastes have broadened from the fascinating, but relatively circumscribed, problems of basic science to the richer, and more difficult, problems that intertwine science, technology, economics, and politics.

My involvement with the DOE began as a Los Alamos summer graduate student in 1972. Since then, more by inclination than design, I've worked significantly in the three major areas of DOE technical activities – basic science, nuclear security, and energy technologies. Let me offer a few observations about each.

The basic research supported by the Office of Science is one of the jewels of the Federal research portfolio. The long tradition of peer-reviewed support for university and national laboratory researchers and forefront user facilities continues to drive advances on many fronts. We are on the cusp of understanding the origin of mass, the nature of most of what's in the universe, and how quarks and gluons combine to form nuclei. New instrumentation and new information technologies are enabling better understanding of the changing climate and new capabilities to predict, manipulate, and control materials, biological systems, and plasma. The commitments from Congress and the Administration to double support for these activities over the next decade are more than justified.

In nuclear security, the President has set ambitious goals for reducing the US stockpile of weapons while maintaining confidence in their safety, security, and reliability in the absence of nuclear testing. But these will not be achievable without a robust technical enterprise in the NNSA. The National Nuclear Security Administration's ongoing Stockpile Stewardship program of simulation, non-nuclear experimentation, and warhead surveillance and refurbishment has been effective for more than a decade, but faces growing challenges in maintaining technical capabilities. Strengthening these capabilities will be essential to achieving the President's non-proliferation goals.

In Energy, President Obama has set ambitious goals to enhance energy security and reduce GHG emissions while creating new jobs. Improvements in the technologies to produce, transmit, store, and use energy are essential to meeting these goals. But the scale, duration, cost, and complexity of energy matters pose great challenges. Technical understanding and judgement are important to making the right decisions about which technologies to pursue and how each should be advanced from research and development through demonstration and deployment. Novel forms of public/private and international partnerships will be required to address these global problems. I have pledged to Secretary Chu to work closely with the Under Secretary of Energy on these matters, I am confident that Dr. Johnson and I will work well together, should we both be confirmed.

What might I aspire to accomplish in the position to which I've been nominated? As you know, by statue the Under Secretary for Science has the dual responsibilities of overseeing the basic research carried out in the Office of Science, and of serving as the principal scientific advisor to the Secretary. In the former capacity, I would look forward to working with this Committee, Secretary Chu, the Director of the Office of Science, and the broader scientific community to see that the existing and planned incremental funds for basic research are wisely allocated and the programs well-executed. In the latter capacity, I would hope to coordinate and harmonize technical activities across the department, looking for gaps and identifying synergies, bringing the rigor of appropriate peer review, program and project management to all parts of DOE. Indeed, the tone Secretary Chu has already set, and the team he is assembling, are highly conducive to achieving those goals. I would also hope to promote thorough and unbiased technical assessments in all matters facing the Department, as these necessarily underpin all good policy decisions.

In closing, let me say that I am both humbled and energized by the confidence President Obama has placed in me through this nomination. If confirmed, I will do my

utmost to work with this Committee, Secretary Chu, and others to sustain and enhance the Department of Energy's basic research and to ensure quality technical thinking across the entire spectrum of the Department's activities.

Thank you for the opportunity to address the committee and I am happy to address any questions that you might have for me.