Statement of

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Nominee for the Position of Secretary
of the United States Department of Energy

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United States Senate

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Chairman Wyden, Ranking Member Murkowski, and distinguished members of the Committee, it is a privilege to appear before you as President Obama's nominee for Secretary of Energy. I am deeply honored by the President's confidence in me, as expressed by this nomination. If confirmed by the Senate, I will work to the best of my abilities to advance the public interest across all the missions entrusted to the Department of Energy (DOE) – energy, nuclear security, science, and environmental remediation.

With the Chairman's permission, I would like to start with some thanks. First, I thank Senator Bingaman and General Scowcroft. I cannot adequately express my gratitude for their appearance here today. They have both served our country for decades, with integrity and collegiality across the political spectrum. They have made major contributions to clean energy and to nuclear security, respectively – two of DOE's core missions and high priority areas for the President. It has been an honor to work with them and I will continue to learn from them in the years ahead.

Second, I thank the members of the Committee for taking the time to meet with me and to share your perspectives on challenges facing DOE and the nation. If confirmed, I hope these dialogues can continue in a collaborative search for solutions.

Third, I thank Secretary Steve Chu. He is now the longest-serving Secretary of Energy and has brought to the Department new ideas and new ways of doing business. A signature example was the startup of ARPA-E, with strong support from members of this Committee and other members of Congress.

Finally, I thank my family – starting with four grandparents who emigrated from the Azores Islands to a blue collar American town just over a hundred years ago. My parents, like so many other children of immigrants to America, had dreams for me based on a quality education – public schools, followed by college on a scholarship from my dad's labor union, followed by graduate school with government fellowship and research

project support. Looking ahead, I thank my wife, our daughter and son-in-law, and two grandchildren for their steadfast support – I'm sure this will be essential should I be confirmed. Permit me to introduce Naomi, my wife of nearly 40 years.

I would now like to take a moment to describe for the committee some of the experience that, if confirmed, I will apply to the various mission areas that fall under the responsibility of the Secretary of Energy.

Science

I have served on the MIT faculty since 1973, including as Head of the Department of Physics (1991-1995, 1997) and as Director of the William H. Bates Linear Accelerator Center (1983-1991). The Bates lab was a DOE-funded, MIT-operated national user facility for nuclear physics research using intense electron beams. This gave me experience with DOE administrative and project management systems. I also served as Associate Director for Science of the Office of Science and Technology Policy in the Executive Office of the President (1995-1997) and as DOE Undersecretary (1997-2001).

Taken together, these roles have given me a deep appreciation of DOE's importance to American leadership in science. DOE is the lead funder of basic research in the physical sciences and provides the national research community with unique research opportunities at major facilities for nuclear and particle physics, energy science, materials research and discovery, large scale computation, and other disciplines. More than a hundred Nobel Prizes have resulted from DOE-associated research. DOE operates an unparalleled national laboratory system and partners with both universities and industry at the research frontier.

The Secretary of Energy has the responsibility for stewardship of a crucial part of the American basic research enterprise. If confirmed, I will work with the scientific community and with Congress to assure that our researchers have continuing access to cutting-edge research tools for scientific discovery and for training the next generation.

Energy Technology and Policy

Since 2001, when I returned to MIT from DOE, my principal focus has been at the intersection of energy technology and policy, especially on research and education aimed at a future low-carbon economy. Progress in energy science, technology, analyses and policy is a preeminent challenge for the 21st century. DOE has a central role in advancing the science and technology foundations for the transition to a low-carbon energy system that serves the nation's economic, environmental and security goals.

In 2006, I was appointed the founding Director of the MIT Energy Initiative (MITEI), a campus-wide effort that facilitates research, education, campus energy management, and outreach. About 25 percent of the entire MIT faculty is engaged in MITEI-sponsored

research and education projects, along with many hundreds of students. The MITEI research program has helped generate novel approaches to how energy is produced, delivered, stored and used and is spinning out numerous startup companies from the campus labs into the clean energy economy. The MITEI education program is helping to fill the pipeline of trained scientists, engineers, and entrepreneurs, essential talent for ensuring American competitiveness by creating the products, indeed the industries, of the future. The campus energy management program is demonstrating the cost savings available from efficiency upgrades, materially improving the MIT operating budget. The MITEI outreach program is bringing technically-grounded fact-based analysis to policymakers – including through testimony before this committee and others in Congress.

The President has advocated an "all of the above" energy strategy and, if confirmed as Secretary, I will pursue this with the highest priority. As the President said when he announced my nomination, "we can produce more energy and grow our economy while still taking care of our air, water, and climate." The need to mitigate climate change risks is emphatically supported by the science and by many military and religious leaders as well as the engaged scientific community. DOE should continue to support a robust R&D portfolio of low-carbon options: efficiency, renewables, nuclear, carbon capture and sequestration, energy storage. In addition, a 21st century electricity delivery system, including cybersecurity and a high degree of resilience to disruptions, is vital and deserves increased attention in the next years.

We have also experienced a stunning increase in domestic natural gas and oil production over the last four years. The natural gas "revolution" has led to market-led reductions in carbon dioxide emissions as well as a dramatic expansion of manufacturing and associated job opportunities. The increase in U.S. unconventional oil production, combined with increased vehicle efficiency, will continue to reduce American oil imports and our trade deficit. New technology development and deployment can and must further reduce the associated environmental footprint.

Even as we produce more oil domestically, reducing our oil dependence for transportation fuel remains a national security objective. This will also help shield families from the uncertain impacts of global oil prices. DOE, in line with the Quadrennial Technology Review completed in 2011, should continue to invest in technologies for still greater vehicle efficiency, alternative fuels, and vehicle electrification.

The research program that we have developed at the MIT Energy Initiative reflects this same "all of the above" commitment. It encompasses both innovation around today's energy systems – supply and demand – and transformational technologies for the future. The largest single area of emphasis is solar energy, with environmentally responsible hydrocarbon production and conversion second. The Initiative was intentionally built up with strong partnerships with a range of energy companies, bringing together key players

in the energy innovation "supply chain" – from venture capitalists to multinationals. If confirmed, I hope to be able to build on this experience so as to convene industry, environmental groups, academia, investors, policy makers, and other stakeholders for constructive and consequential discussions about America's energy future.

I also have the pleasure of serving on President Obama's Council of Advisors on Science and Technology (PCAST). At the end of 2010, PCAST issued a report to the President on *Accelerating the Pace of Change in Energy Technologies through an Integrated Federal Energy Policy*. It specifically recommended an Administration-wide Quadrennial Energy Review (QER) with DOE in the executive secretariat role. The previously mentioned Quadrennial Technology Review was the first installment in the QER process. If confirmed, I plan to build on this foundation by working with colleagues across the Administration, garnering strong input from the Congress and private sector stakeholders, and enhancing the Department's analytical and policy planning capabilities.

Nuclear Security

The President, starting with his Prague speech in 2009, has laid out a vision of nuclear security: step-by-step reductions in nuclear weapons, while ensuring the safety, security and effectiveness of our stockpile as long as we have nuclear weapons; strengthened efforts to prevent the spread of nuclear weapons; and measures to prevent nuclear terrorism. DOE has significant responsibilities spanning much of this agenda.

The Department is entrusted with the responsibility to maintain a safe and reliable nuclear weapons stockpile in the absence of underground testing. The responsibility for certifying this to the President rests with the Departments of Energy and Defense, with the DOE/NNSA lab directors at the center of the technical evaluation process. When I served as DOE Undersecretary, I led a review of the science-based stockpile stewardship program that emphasized the importance of strong DOE-DOD collaboration to integrate military requirements with stockpile stewardship activities. If confirmed, I intend to engage actively in this collaborative effort – an important piece of our national security posture and a core element of the President's nuclear security agenda.

The nuclear terrorism threat must be reduced further by continuing efforts to identify, control and eliminate nuclear explosive materials worldwide. As DOE Undersecretary, I served as the Secretary's lead negotiator for enhancing the security of Russian nuclear weapons material. This included putting the very successful "Megatons to Megawatts" program, which has eliminated hundreds of tons of high enriched uranium from Russian weapons, back on track when it had fallen off the rails. I now serve on the Department of Defense Threat Reduction Advisory Committee and am sensitive to enhanced risks in the context of terrorist groups with global reach and ambitions. DOE expertise, to a large extent drawing on the knowledge, skills and commitment of our national laboratory scientists and a technically-versed intelligence group, is critical to our national defense.

If confirmed, I intend to make sure that these DOE assets continue to sustain the nation's nuclear security.

Environmental Remediation, Management and Performance

Environmental remediation at the many sites involved in decades of nuclear weapons production during the Cold War remains a major mission area for the Department. This is a legal and moral imperative. DOE has made substantial progress in this regard but, as you know, the hardest challenges remain as long term, expensive, complex clean-up projects in several states. Each typically presents a one-of-a-kind engineering challenge with limited baseline data and significant health, safety and environmental implications. If confirmed, I pledge to work with the committee, with other members of Congress, and the affected communities and other stakeholders in the most transparent manner. New challenges will almost certainly arise over time, as they have throughout the history of the program, possibly exacerbated by budget constraints that seem likely across the board. Our shared goal will be to accelerate solutions consistent with safe operations and budgetary realities so that contaminated lands can be returned to beneficial and productive use.

A discussion about environmental remediation inevitably triggers a broader discussion about management and performance throughout the Department. If confirmed, I hope to work with members of this committee and others in Congress and the Administration to elevate the focus on management and performance at DOE. Major project execution and cost management, environmental, health and safety compliance, and physical and cyber security are examples of areas that call for continuous improvement. Of course, performance ultimately rests on the shoulders of the Federal and contractor workforce, so maintaining a skilled workforce with initiative, commitment and diversity is necessary for success.

Conclusion

In summary, the Department of Energy has significant responsibilities that bear on America's economic, energy, environmental and security future. I have appreciated the opportunity to collaborate with members of this Committee and with other members of Congress both during my previous tenure at DOE and in the years since. If confirmed, I look forward to working with you as a partner. With your support in addition to that of the President, I feel both prepared to address the challenges and optimistic about the outcomes.

Thank you. I will be pleased to respond to your questions.