Summary Minutes of the

U.S. Department of Energy (DOE)
Secretary of Energy Advisory Board
Public Meeting

Committee Members:	Vicki Hollub, Chair; Richard Mies, Vice Chair; Norman R. Augustine; David Dewhurst; David Lockwood; Pedro Pizarro; Samantha Ravich; Daniel Yergin
Date and Time:	March 5, 2019, 9:00 AM – 11:50 AM EST
Location:	Department of Energy, Forrestal Building, Room 8E-089 1000 Independence Avenue, SW, Washington, DC
Purpose:	Secretary of Energy Advisory Board (SEAB) Meeting
SEAB Staff:	Kurt Heckman, Designated Federal Officer, Office of Science; Michelle Sneed, Director, Office of Boards and Councils; Allison Mills, Deputy Director, Office of Boards and Councils
DOE Speakers:	Secretary Rick Perry; Deputy Secretary Dan Brouillette; Under Secretary of Energy Mark Menezes; Under Secretary for Science Paul Dabbar; Under Secretary for Nuclear Security and Administrator, National Nuclear Security Administration, Lisa Gordon-Hagerty
Invited Presenter:	Director of Idaho National Laboratory and National Laboratory Directors Council Chair Mark Peters

Meeting Summary

This Secretary of Energy Advisory Board (SEAB) meeting was the first SEAB meeting under Secretary Rick Perry. SEAB members heard briefings from Secretary Rick Perry; Deputy Secretary Dan Brouillette; Under Secretary for Nuclear Security and Administrator, National Nuclear Security Administration, Lisa Gordon-Hagerty; Under Secretary for Science Paul Dabbar; Under Secretary of Energy Mark Menezes; and Director of Idaho National Laboratory and National Laboratory Directors Council Chair Mark Peters. SEAB members and DOE Staff held a brief discussion regarding SEAB member questions. The meeting adjourned after an opportunity for public comment.

Opening of Public Meeting

Designated Federal Officer Kurt Heckman opened the meeting, thanking the SEAB Members and the DOE Staff for attending the meeting. He then reviewed the meeting's agenda.

SEAB Chair Vicki Hollub thanked the DOE Staff and SEAB members for attending the meeting. She said that she looked forward to the SEAB having meaningful discussions with the DOE Staff and to providing meaningful advice. SEAB members then introduced themselves.

Secretary Rick Perry

The Secretary thanked the SEAB members for their commitment toward helping the United States (U.S.) Department of Energy (DOE), and the nation continue to advance energy innovation and independence. In his remarks, the Secretary stated that DOE's work extends beyond a traditional understanding of "energy government." In addition to DOE's commonly known efforts in energy, the DOE missions also encompass finding solutions to environmental challenges and advancing scientific and technological innovation. The Secretary emphasized administration efforts to review and adjust regulations to provide better efficiency while protecting public safety and the environment. He mentioned DOE's effort to build a better STEM pipeline to meet the DOE's expanding need for a well-trained and prepared workforce that encourages innovation at the DOE National Laboratories and in the private sector. He mentioned how DOE scientists have built the world's fastest super computers, are world leaders in artificial intelligence and leading the advances in quantum computing. He stated how these efforts advance science research and also help to study and address issues like opioid abuse and traumatic brain injuries. He discussed DOE's leadership in cyber security surrounding energy production and delivery.

He pointed out how America shares technology and ideas, helping other countries learn how to drive down emissions, and do so without sacrificing economic growth. The Secretary stated that America needs more innovators and innovation, needs to revive its nuclear energy capabilities, and needs modern infrastructure that can support the growing needs of 21st century technologies, and prepare the way for future discoveries. He wants the DOE to get better at telling their story so that the American people and the world better understand DOE's leadership in energy research, science and innovation.

Deputy Secretary Dan Brouillette

The Deputy Secretary thanked the SEAB members for serving on the Board. He spoke about DOE's efforts to reduce and modernize regulations and DOE directives, reducing burdensome requirements and allowing for swifter decisions and smoother processes. The Deputy Secretary discussed how DOE is dedicated to improving infrastructure and increasing scientific innovation. Cybersecurity is also a top priority; DOE created a new office—The Office of Cybersecurity, Energy Security, and Emergency Response (CESER)—to focus specifically on issues of cybersecurity, and to better leverage emergency coordination and response capabilities.

Under Secretary for Nuclear Security and Administrator, National Nuclear Security Administration
Lisa Gordon-Hagerty

The Administrator thanked the SEAB members for serving on the Board. The Administrator then spoke about the missions that fall within the scope of the Under Secretary for Nuclear Security. The Administrator provided an overview of the history of the National Nuclear Security Administration (NNSA), from its beginnings as the Atomic Energy Commission. The Administrator said that NNSA will release its vision statement soon, encompassing its three-pronged mission of nuclear deterrent activities; nuclear non-proliferation and counter-terrorism; and nuclear propulsion. She stated that nuclear deterrent is NNSA's core mission. NNSA works with other Federal agencies to ensure nuclear safety and security. The Administrator stated that NNSA is also focused on their workforce, with 40 percent of NNSA employees eligible for retirement within five years. NNSA and DOE's National Laboratories plants and sites are hiring the right people for the right jobs. The Administrator stated that

NNSA employs its cross cutting capabilities when facing the challenges of increased production expectations alongside aging infrastructure, focusing on and developing initiatives to ensure safe, secure, modern facilities, and nuclear safety and security for decades to come.

Following the Administrator's presentation, David Dewhurst asked about the DOE's liability for aging nuclear warheads. The Administrator answered that NNSA has employed a life-extension program for the warheads. NNSA is studying the aging warheads, and taking actions to extend their viability, including replacing certain eligible components.

Norm Augustine then asked about the coordination and communication challenges of working with the Department of Defense (DOD). The Administrator stated that DOD is not just a customer but a partner of NNSA. NNSA holds regular meetings with the DOD, and is institutionalizing those relationships for the future of nuclear safety and security.

Under Secretary for Science Paul Dabbar

The Under Secretary thanked the SEAB members for serving on the Board. The Under Secretary then spoke about the missions that fall within the scope of the Under Secretary for Science. The Office of Science oversees 10 DOE National Laboratories and a large portfolio of scientific grants to universities. DOE National Laboratories are world leaders in research, innovation, and discoveries. Work at DOE National Laboratories includes the discoveries that led to the human genome project, MRI technologies, nuclear power, and high performance computing. The Under Secretary stated that National Laboratory efforts such as exploring artificial intelligence help to shape the future. He emphasized the DOE's leadership in quantum computing, quantum networks and quantum sensors. The Under Secretary stated that one National Laboratory is developing a micro reactor for potential use in space travel, that estimates say will decrease the travel time to Mars by one-half, utilizing the same fuel load for the return trip. The Under Secretary spoke about Office of Environmental Management successes in returning lands to a safe environmental state. He spoke about the commercialization of scientific efforts and technologies. The Under Secretary stated that he is working to ensure resources are used wisely, and that workers have the tools and facilities that they need to succeed.

Under Secretary of Energy Mark Menezes

The Under Secretary thanked the SEAB members for serving on the Board. The Under Secretary then spoke about the missions that fall within the scope of the Under Secretary of Energy. He stated that the DOE mission would not be possible without the dedicated employees of DOE and the National Laboratories. He said that these skilled and committed personnel create an environment where hard work and innovation thrive. The Under Secretary stated that clean energy manufacturing technologies are being developed to reduce carbon emissions and increase the efficiency of carbon use. Next generation nuclear reactors are being developed, including small modular reactors, and micro reactors. The United States can be a world leader in nuclear energy, reducing carbon emissions even further. Other countries want to use U.S. technology, for nuclear, natural gas, and clean coal electricity generation. DOE was created to help the U.S. become energy independent, and to emphasize innovation in the energy sphere. The U.S. is now a net exporter for oil and natural gas. Investments in these initiatives have assisted in the modernization of technology and reducing carbon emissions. The Under Secretary stated that grid resilience is a high priority. The CESER Office was created to improve response to and recovery from disasters or attacks on the grid. The challenges of creating a more modern infrastructure portfolio are addressed by the Office of Electricity every day to ensure grid

security and resilience. The Under Secretary stated that among his goals are ensuring flexibility in implementation, innovation, security, and resilience of DOE's and the United States' many energy capabilities and initiatives.

Director, Idaho National Laboratory, and National Laboratory Directors Council Chair Mark Peters

The National Laboratory Directors Council (NLDC) Chair thanked the SEAB members for serving on the Board, and thanked the SEAB and the DOE Staff for the invitation to speak. The NLDC Chair stated that the DOE National Laboratories greatly value their relationships with their DOE/NNSA partners. DOE/NNSA leadership provides responsible, positive stewardship of the DOE National Laboratory portfolio. DOE National Laboratories are researching reliable, affordable, clean energy solutions, and he is very optimistic about the future due to the work performed at the National Laboratories. The NLDC Chair stated that the DOE National Laboratories have different stewardship, but they work very well together, and with various private and public partners. The NLDC includes leadership from all 17 DOE National Laboratories, and was formed to combine efforts toward common interests, create comprehensive strategic plans, and speak with a unified voice. The NLDC and the DOE National Laboratories, within their various missions, are focused on scientific and technological innovation; industry and academia engagement; and improving communications with DOE/NNSA leadership, and regional, state, and congressional stakeholders. Improving these communications, including a greater understanding of the responsibility for and management of risks through improved partnerships, will place the DOE and the DOE National Laboratories at the forefront of scientific and technological innovation. The NLDC Chair stated that he hopes the SEAB and the DOE Staff view the NLDC as a helpful resource.

Board Member Discussion/Comments/Questions

Daniel Yergin asked about the DOE National Laboratories engagement and collaboration with universities, particularly with post-doctoral candidates. The NLDC Chair stated that most DOE National Laboratories have post-doctoral programs, with some DOE National Laboratories run by universities. He stated that approximately one-third of post-doctoral candidates stay on to work with the DOE National Laboratories, and the others are the best ambassadors for the DOE National Laboratories and their post-doctoral programs. The Under Secretary for Science stated that the DOE National Laboratories host approximately 35,000 students every year. The Administrator for NNSA stated that NNSA works with universities through a partnership program, particularly in areas of nuclear non-proliferation and inertial confinement fusion (ICF).

Samantha Ravich asked about the working partnership with the DOD, and the impact on DOE's mission and industry engagement. The Administrator for NNSA stated that NNSA works with the DOD and the Nuclear Weapons Council regularly to identify capabilities and appropriate partners for different initiatives. These Agencies and organizations are also engaging with private sector organizations. The Administrator for NNSA stated that there is strength in numbers, and that shared interests lead to increased and improved capabilities.

Public Comment Period

Drew Bond, Fellow & Director, Energy Innovation Programs ACCF Center for Policy Research thanked the DOE Staff and the SEAB members for the opportunity to speak. He stated that the United States is a strong presence in the energy community, and has DOE to thank for that strength. Mr. Bond made two requests of the DOE Staff and the SEAB. First, he requested that the Secretary of Energy and the SEAB

consider the vulnerabilities that arise with the changing climate and suggested the development of a responsible and responsive strategic plan to address climate change. Second, Mr. Bond stated that he applauds DOE's core mission of energy innovation. He stated that commercialization efforts are important and DOE's great strides to engage industry are appreciated. Mr. Bond requested that the SEAB clearly state that priorities for the DOE National Laboratories include research and commercialization of that research, and that these measures be included in the performance evaluations of the DOE National Laboratories.

Addison Stark, Associate Director for Energy Innovation at the Bipartisan Policy Center (BPC), thanked the DOE Staff and the SEAB members for the opportunity to speak. He stated that he appreciates the robust competiveness and innovation that DOE and the DOE National Laboratories bring to the development and commercialization of new technologies. Mr. Stark stated that the BPC believes that there are five critical areas which require continued monitoring and development of modern solutions: electricity storage and delivery; nuclear power capabilities; carbon capture and utilization; development and utilization of low carbon fuels; and direct air capture to filter and remove carbon dioxide from the air. Mr. Stark stated that he and the BPC support applied research in these areas.

Meeting Adjourned

Meeting adjourned at 11:50AM.

Respectfully Submitted:
Kurt Heckman
Designated Federal Officer

I hereby certify that these minutes of the March 5, 2019, SEAB meeting are true and correct to the best of my knowledge.

Vicki Hollub

Vicki Hollub
Chair, Secretary of Energy Advisory Board