

**Summary Minutes of the
U.S. Department of Energy (DOE)
Secretary of Energy Advisory Board (SEAB)
Public Meeting**

Date and Time: October 26, 2023, 9:00 a.m.-1:00 p.m. PDT
Location: SLAC National Accelerator Laboratory
Purpose: Secretary of Energy Advisory Board (SEAB) Meeting

Advisory Board Members: (in attendance) Arun Majumdar, Chair; Madeline Creedon, Vice-Chair; Norman Bay; John Dabiri; Kerry Duggan; Brian Garcia; Philip Giudice; Paula Gold-Williams; Kate Gordon; Denise Gray; Maria Pope; Adriana Quintero; Suzanne Singer, Christopher Smith.

Presenters: Secretary of Energy Jennifer Granholm, Dr. John Sarrao (SLAC), Helena Fu (DOE), Dr. Jonathan Carter (Berkeley), Dr. Jason Pruet (Los Alamos), Dr. Fei-Fei Li (Stanford), Amy Zegart (Hoover Institution), Bill Dally (NVDIA), Lane Dilg (OpenAI).

SEAB Staff: David Borak (Designated Federal Officer), Karen Skelton, Oriana Tannenbaum

Meeting summary

This is the ninth Secretary of Energy Advisory Board (SEAB) convened under Secretary of Energy Jennifer M. Granholm. The meeting was physically conducted at SLAC National Accelerator Laboratory, Menlo Park, CA, and virtually on ZOOM. The meeting was called to order at approximately 9:00 a.m. PDT. The meeting was attended by members of Secretary Granholm's staff, SEAB members, members of the public and the press. The topic of the meeting was Artificial Intelligence (AI). Presentations were made on AI at DOE: Perspective from the National Laboratories and AI, Private Sector Perspectives. The presentations were followed by a SEAB discussion with the Secretary. The meeting concluded with a public commentary period.

Public Meeting

Designated Federal Officer (DFO) David Borak Mr. Borak opened the meeting by addressing housekeeping and logistical items attendant to the meeting. Mr. Borak then took roll call to ascertain a quorum of attendees for the record. Upon completion of roll call and noting a quorum, he introduced Dr. Arun Majumdar, the SEAB Chair, for meeting direction.

SEAB Chair Dr. Arun Majumdar Chair Majumdar offered some general commentary on the upcoming panel discussions and introduced Dr. John Sarrao, SLAC Director for comments.

Dr. Sarrao thanked everyone for attending the meeting, offered a few highlights about the Stanford Linear Accelerator National Laboratory, touched on the ceremony that would occur

later in the day dedicating an increase in laser technology. Lastly, he noted procedures to follow in the unlikely event of an emergency while the SEAB was occurring.

Dr. Majumdar then introduced the Department of Energy Secretary Jennifer Granholm for her comments.

Secretary Granholm again expressed appreciation for the topic of AI which was to be discussed at the meeting. She then highlighted the accomplishments of the Department relative to execution of the Department's action items contained in the Inflation Reduction Act (IRA), particularly noting that almost 100% of the over 60 programs that were given to the Department of Energy to administer in the IRA had been launched. She continued her comments by noting at a high level how workers in the current energy workforce might find themselves pursuing future careers in clean energy, particularly noting the hydrogen hubs. As well, she noted the money being invested in battery supply chains across the country and the very large number of jobs that would create. She continued by discussing the number of electric charging stations that the Administration was aiming to have online, and how the Department was also focused on weatherization of existing homes. She then entertained a discussion with various SEAB members.

She was followed by Helene Fu, Director of Critical and Emerging Technology at DOE. Helena was the moderator for the first panel which dealt with AI at DOE: Perspectives from the National Laboratories.

Helena Fu was joined by **Drs. John Sarrao, Jason Pruitt, and Jonathan Carter** (called in from the UK). The panelist began by noting that the Department was in a great position to lead AI and noted that the scientists in the national laboratories lived at the intersection of cutting-edge advances in science and national security, and how by that very descriptor was not an easy place to live. While they noted the tremendous advances in capability that are and would continue to be afforded by AI, they also noted that Congress was very heavily focused, rightfully, on the risk side of things. They highlighted that the most important things being done currently were not being accomplished in teams of 4 or 5 researchers, but with teams made up of thousands of people. As well, they articulated the need for a new class of partnerships with universities to qualitatively accelerate progress in science and technology to gain the critical strategic advantage at the national level.

They spoke about the role of AI in translating data to answer questions in molecular chemistry, cosmology, and large-scale data conversion, and how SLAC was playing a key role. As well, members touched on AI and the important role it was playing in the world of exoscale computing. Finally, the discussion turned to the workforce needed to execute in an AI world and the challenges that government would face in recruiting and retaining the talent when industry could pay significantly more than government could for AI educated people.

The ensuing discussion among SEAB members touched on Congressional fear of what AI might do and how it should be regulated. The SEAB members noted that Congressional regulation could inhibit use of AI for needed research at the national labs.

Dr. Majumdar was the mediator for the second panel discussion which focused on AI Applications: Private Sector Perspectives. The panel included **Drs. Fei-Fei Li** of Stanford, **Amy Zegart** of the Hoover Institution and Freeman-Spogli Institute for International Studies, **Bill Dally** of NVIDIA, and **Lane Dilg**, Head of Strategic Partnerships, Global Affairs, OpenAI. The panelists addressed questions such as contemplating the top three applications for AI. The responses included use in caring for elderly patients through smart sensors and cameras, use of AI in a collaborative learning environment, pharmaceutical discovery, and biodiversity mapping to name a few. The panelists noted that society is at an inflection point vis-à-vis the convergence of hardware technology. A point was made that investment was needed in the public sector. As an example, a panelist noted that not one single university in America today could train a ChatGPT model.

Panelists articulated that AI would play a significant role in addressing the biggest challenges as cited in a National Intelligence Council report which are the existence of unexpected challenges, the processes needed to break through and address the challenges, and to help deal with the public disconnect between expectations. It was noted the importance of having the human-in-the-loop relative to many potential AI applications.

Another panelist spoke to the use of AI in the national security realm, citing that one of the things AI is better at than humans is pattern recognition. He recalled an exercise where a human team and a machine learning (ML) algorithm both attempted to identify surface to air missile sites over a large territory. Both the human team and the ML algorithm had the same level of accuracy in assessing the challenge except that the ML algorithm accomplished the task 80 times faster than the human team. The panel noted that society is at a moment of profound technological change. Finally, a panelist offered some advice on what the Department should do and not do. The first thing that was articulated was that government should avoid chasing industry in the AI pursuit as it would be a waste of resources. As well, attempting to duplicate what industry has already done would be another less-than-optimal use of resources. And lastly, the suggestion was that the national labs should “play to their strengths” particularly in science and simulation.

Dr. Majumdar noted that the discussions had been great and unfortunately the meeting was up against time constraints. He passed the floor to David Borak to moderate the public comment section of the meeting.

David Borak noted that there was one individual registered for public comment and introduced Mr. Moran.

Mr. Moran thanked the Secretary for the opportunity to update the SEAB on the topic of connecting nano grids to micro grids. He explained that they are electro-magnetic pulse (EMP) hardened to protect from geomagnetic disturbances and could play a role in grid modernization.

The Secretary thanked everyone again and provided final comments on the substance of the SEAB meeting.

The SEAB Chair adjourned the meeting, thanking everyone for their participation.

Meeting Adjourned at approximately 1 pm PDT.

Respectfully Submitted:

David Borak
Designated Federal Officer

I hereby certify that these meeting minutes of the October 26, 2023, SEAB meeting are true and correct to the best of my knowledge.

A handwritten signature in black ink, appearing to read "Arun Majumdar", with a horizontal line underneath.

Dr. Arun Majumdar
Chair, Secretary of Energy Advisory Board