

Summary Minutes of the

U.S. Department of Energy Secretary of Energy Advisory Board Public Meeting

<u>Committee Members:</u>	John Deutch, Chair; Arun Majumdar, Vice-Chair; Rafael Bras, Michael Greenstone, Paula Hammond, Shirley Ann Jackson, Michael McQuade, Richard Meserve, Dan Reicher, Carmichael Roberts, Martha Schlicher, Ram Shenoy, Linda Stuntz, Ellen Tauscher, Harold Varmus
<u>Date and Time:</u>	December 12, 2016, 4:00 – 5:00 PM EST
<u>Location:</u>	U.S. Department of Energy (DOE), Room 1E-245 1000 Independence Avenue SW, Washington, DC 20585
<u>Purpose:</u>	Quarterly Meeting of the Secretary of Energy Advisory Board (SEAB)
<u>SEAB Staff:</u>	Karen Gibson, Director and Designated Federal Official; Maria Callejas, Deputy Director; Max Bonardi, Special Assistant
<u>Presenters:</u>	Ernest Moniz, Secretary of Energy

Meeting Summary

SEAB members heard opening remarks from Secretary Ernest Moniz and from SEAB Chair John Deutch. Following the remarks, SEAB Vice-Chair Arun Majumdar briefed the members and the Secretary on the report of the Task Force on CO₂ Utilization. After discussion and an opportunity for public comment, the Board voted to approve the report. The meeting adjourned at 5:00 PM, following concluding remarks from the Secretary.

Opening of Public Meeting

The meeting was called to order at 4:00 PM by SEAB Chair, John Deutch. He began by thanking SEAB for its service and its role in shaping the Department's agenda. Deutch then described the letter that SEAB wrote to Secretary Moniz. The letter contains the thoughts of SEAB members on the past four years, provides an examination of SEAB's work and the work of the Secretary, and suggests what the new Administration should focus on for the future. Deutch finished his remarks by introducing, and expressing his admiration for, the **CO₂ Utilization Task Force report**.

SEAB Discussion and Consideration of Task Force Recommendations (Vote on Draft Report)

Arun Majumdar started his presentation by thanking John Deutch for his service as the SEAB Chairman and thanking the Secretary for his leadership. Majumdar noted that the Secretary tasked the Task Force on June 7th with creating an RD&D framework at the gigatonne (GT) scale for negative carbon emissions and carbon dioxide utilization. The draft report was posted on the SEAB website and made available for public comment on November 28. The Task Force met on three separate occasions, with additional

conference calls, before delivering their draft to a review committee of experts. Majumdar explained that due to the short timeframe for the Task Force, there were no public workshops. He admitted that while the RD&D framework was fairly straightforward to create, the GT scale made the report very difficult. The recommendations include creating a holistic systems approach that considers consequences at the GT scale, utilizing the natural carbon cycle to store more carbon, improving synthetic CO₂ use and CO₂ sequestration, as well as CO₂ capture and transformation technology. Other emerging technologies, such as direct air capture and mineralization were also analyzed. Majumdar also made the point that significant attention was paid to the consequences, especially those unintended, of any program of that magnitude and scale.

The Secretary thanked Arun and the Task Force for the report. He remarked that the report will open new doors of research and that the challenge will be decarbonizing major sectors of U.S. industry. He reminded the board that the report focuses on very hard problems, which will take decades to solve. Secretary Moniz also admitted that DOE has underinvested in this type of research and that working on a GT scale requires a varied approach that incorporates both physical and social sciences. Rafael Bras replied that economics were incorporated into the report, and re-emphasized that the GT scale made it very difficult to find solutions. After motions from the Board, the report was approved by SEAB.

Concluding Remarks

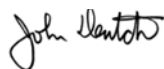
The Secretary concluded the meeting by thanking all past and current members of SEAB. The board held 14 meetings, including 6 at National Labs, and released 19 reports and letters. The Secretary reiterated that SEAB's reports and advice have led to significant DOE action that will carry over into the next Administration. He noted that the 21st Century Cures Act includes a line authorizing DHS and DOE collaboration, which the Secretary directly links to the SEAB Biomedical Sciences report. Other notable actions include new ERFs as a result of the Environmental Management report and further exascale research being recommended as a result of the High Performance Computing report. He noted that in addition to SEAB's own reports, the comments SEAB provided on other external studies reflected a different, but valuable way of using SEAB. The Secretary finished by stating that DOE would have a written response for the CO₂ Utilization report, as well as the other recently completed reports, by the end of the term. The Chairman and the members thanked the Secretary for his time and leadership and concluded the meeting.

This concluded the Secretary of Energy Advisory Board Public Meeting at 5:00pm.

Respectfully Submitted:

Karen Gibson
Designated Federal Officer

I hereby certify that these minutes of the December 12, 2016 SEAB public meeting are true and correct to the best of my knowledge.



John Deutch,
Chair