Date/Time Stamp:

Employee Post-Travel Disclosure of Travel Expenses

Post-Travel Filing Instructions: Complete this form within **30 days** of returning from travel. Submit all forms to the **Office of Public Records in 232 Hart Building.**

In compliance with Rule 35.2(a) and (c), I make the following disclosures with respect to travel expenses that have been or will be reimbursed/paid for me. I also certify that I have attached:

☒ The **original** *Employee Pre-Travel Authorization* (Form RE-1), **AND**
☒ A **copy** of the *Private Sponsor Travel Certification Form* with all attachments (itinerary, invitee list, etc.)

Private Sponsor(s) (list all): Massachuetts Institute of Technology

Travel date(s): April 20-22, 2022

Name of accompanying family member (if any): _____
Relationship to Traveler: ☐ Spouse ☐ Child

IF THE COST OF LODGING **DID NOT INCREASE** DUE TO THE ACCOMPANYING SPOUSE OR DEPENDENT CHILD, ONLY INCLUDE LODGING COSTS IN EMPLOYEE EXPENSES. (Attach additional pages if necessary.)

Expenses for Employee:

	Transportation Expenses	Lodging Expenses	Meal Expenses	Other Expenses (Amount & Description)
☐ Good Faith Estimate ☒ Actual Amount	$191.70	$551.94	$232.32	Travel Agent and Booking $34

Expenses for Accompanying Spouse or Dependent Child (if applicable):

	Transportation Expenses	Lodging Expenses	Meal Expenses	Other Expenses (Amount & Description)
☐ Good Faith Estimate ☐ Actual Amount				

Provide a description of all meetings and events attended. *See* Senate Rule 35.2(c)(6). (Attach additional pages if necessary.): An intensive educational seminar presented by MIT faculty with a dinner talk by an industry expert.

5/11/22 (*Date*) Patrick Bond (*Printed name of traveler*) _____ (*Signature of traveler*)

TO BE COMPLETED BY SUPERVISING MEMBER/OFFICER:

I have made a determination that the expenses set out above in connections with travel described in the *Employee Pre-Travel Authorization* form, are necessary transportation, lodging, and related expenses as defined in Rule 35.

5/11/2022 (*Date*) _____ (*Signature of Supervising Senator/Officer*)

Date/Time Stamp:

EMPLOYEE PRE-TRAVEL AUTHORIZATION

Pre-Travel Filing Instructions: Complete and submit this form at least 30 days prior to the travel departure date to the **Select Committee on Ethics** in **SH-220**. Incomplete and late travel submissions will **not** be considered or approved. This form **must** be typed and is available as a fillable PDF on the Committee's website at ethics.senate.gov. Retain a copy of your entire pre-travel submission for your required post-travel disclosure.

Name of Traveler: Patrick T. Bond

Employing Office/Committee: Senator Angus S. King

Private Sponsor(s) (list all): Massachusetts Institute of Technology

Travel date(s): April 20, 2022 - April 22, 2022

*Note: If you plan to extend the trip for any reason you **must** notify the Committee.*

Destination(s): ~~Boston, MA~~ Cambridge, MA PTS 3/29/22

Explain how this trip is specifically connected to the traveler's official or representational duties:

This trip is to connect Congressional staff to the MIT researchers to discuss recent energy innovations and their policy implications. This is directly related to the energy an environmental work which Patrick Bond leads for Sen. King.

Name of accompanying family member (if any): _____

Relationship to Employee: ☐ Spouse ☐ Child

I certify that the information contained in this form is true, complete and correct to the best of my knowledge:

03/28/2022
(Date)

(Signature of Employee)

TO BE COMPLETED BY SUPERVISING SENATOR/OFFICER (President of the Senate, Secretary of the Senate, Sergeant at Arms, Secretary for the Majority, Secretary for the Minority, and Chaplain):

I, Angus S. King hereby authorize Patrick T. Bond

(Print Senator's/Officer's Name) *(Print Traveler's Name)*

an employee under my direct supervision, to accept payment or reimbursement for necessary transportation, lodging, and related expenses for travel to the event described above. I have determined that this travel is in connection with his or her duties as a Senate employee or an officeholder, and will not create the appearance that he or she is using public office for private gain.

I have also determined that the attendance of the employee's spouse or child is appropriate to assist in the representation of the Senate. *(signify "yes" by checking box)* ☐

3/28/2022
(Date)

(Signature of Supervising Senator/Officer)

(Revised 10/19/15)

Form RE-1

0000000001299 RECEIVED BY: SECRETARY OF THE SENATE Date: May 12, 2022

CHRISTOPHER A. COONS, DELAWARE, CHAIRMAN
JAMES LANKFORD, OKLAHOMA, VICE CHAIRMAN

BRIAN SCHATZ, HAWAII
JEANNE SHAHEEN, NEW HAMPSHIRE
JAMES E. RISCH, IDAHO
DEB FISCHER, NEBRASKA

SHANNON HAMILTON KOPPLIN, CHIEF COUNSEL AND STAFF DIRECTOR
WILLIAM B. CABLE, CHIEF CLERK

HART SENATE OFFICE BUILDING, ROOM 220
SECOND AND CONSTITUTION AVENUE, NE
WASHINGTON, DC 20510-6425

TELEPHONE: (202) 224-2981
FACSIMILE: (202) 224-7416
TDD: (202) 228-3752

United States Senate

SELECT COMMITTEE ON ETHICS

April 18, 2022

Patrick Bond
Office of Senator Angus S. King, Jr.
United States Senate
Washington, DC 20510

Dear Mr. Bond:

This responds to your recent correspondence requesting approval from the Select Committee on Ethics (the Committee) to accept an invitation you received to travel to the *Technology & Policy Paths to Net Zero Seminar* in Cambridge, Massachusetts, on April 20–22, 2022, sponsored by the Massachusetts Institute of Technology (MIT). Provided that you adhere to the guidance set forth below, it appears that it is permissible for you to accept necessary expenses from MIT in connection with this trip.

Background

Based on your communication with the Committee, the background in this matter is as follows.[1] You are employed as a Senior Policy Advisor in the Office of Senator Angus S. King, Jr. MIT invited you to travel to the *Technology & Policy Paths to Net Zero Seminar* in Cambridge, Massachusetts, on April 20–22, 2022. MIT certified to the Committee that it will pay the necessary expenses[2] related to the travel and that it is neither a lobbyist, lobbying firm, agent of a foreign principal, or otherwise acting as a representative or agent of a foreign government. Although MIT retains or employs a federally registered lobbyist or foreign agent, MIT has certified that it is an organization designated under § 501(c)(3) of the Internal Revenue Code[3] and that no registered lobbyist or agent of a foreign principal will accompany you at any point throughout your trip.[4]

Additionally, you inform the Committee that you plan to extend your trip for a personal purpose insofar as you will depart for Cambridge, Massachusetts from a location other than the location offered by MIT. Based on the information you submitted, you must pay the cost of your flight to the trip location, as well as any other additional expenses incurred as a result of

---

[1] If this letter does not correctly recite the facts, contact the Committee immediately.

[2] The term "necessary expenses" has a specific definition. *See Select Committee on Ethics' Regulations and Guidelines for Privately-Sponsored Travel – Glossary of Terms* at 8.

[3] 26 U.S.C. § 501(c)(3).

[4] The term "any point throughout your trip" has a specific definition. *See Select Committee on Ethics' Regulations and Guidelines for Privately-Sponsored Travel – Glossary of Terms* at 2-3.

extending your trip.

Discussion

Privately-sponsored travel includes any gift of travel and travel-related expenses for travel outside the Senate duty station, including transportation, lodging, food and refreshments, and conference fees and materials, whether paid for directly, reimbursed, or provided directly, from a private individual or entity, in connection with a Member's, officer's, or employee's official Senate duties. Incorporating reforms from the Honest Leadership and Open Government Act of 2007 (HLOGA), Pub. L. 110–81 (2007), Senate Rule 35.2 permits Members, officers, and employees to accept privately-sponsored travel only with the prior written approval of the Committee.

The Committee's approval process is governed by the *Regulations and Guidelines for Privately-Sponsored Travel and Glossary of Terms* (collectively, *Travel Regulations*). The *Travel Regulations* contain detailed requirements regarding who may sponsor travel; time limits for trips; and the type and amount of expenses that can be reimbursed.

Entities that do not retain or employ a lobbyist or foreign agent and all non-profit organizations designated as tax-exempt organizations under § 501(c)(3) of the Internal Revenue Code of 1986, regardless of whether they retain or employ a lobbyist or foreign agent, may sponsor domestic trips for up to three days. The three-day limitation means three 24-hour periods, calculated from the time of arrival in the trip location to the time of departure from the trip location. For such trips, neither lobbyists nor foreign agents may accompany a Senate invitee at any point throughout the trip, other than in a *de minimis* way.[5] This means that neither lobbyists nor foreign agents may accompany Senate invitees at any point to and from the event, at the event itself, or at the location being visited.[6]

Under Senate Rule 35, Senate staff must receive advance authorization signed by the Member or officer under whose direct supervision the individual works in order to accept payment or reimbursement for necessary expenses related to fact-finding travel. Further, such authorization and expenses must be disclosed to the Secretary of the Senate by filing the completed *Employee Pre-Travel Authorization* and the *Employee Post-Travel Disclosure of Travel Expenses* (Form RE-1 and Form RE-2), along with a copy of the *Private Sponsor Travel Certification Form*, and all relevant attachments (e.g., the private sponsor's invitation and itinerary) **within 30 days of the conclusion of Privately-Sponsored Travel.**[7]

Consistent with these standards and Committee precedent, MIT's factual representations, and the guidance contained in this letter regarding extending your trip for a personal purpose, it

---

[5] The term "*de minimis*" has a specific definition. *See Select Committee on Ethics' Regulations and Guidelines for Privately-Sponsored Travel – Glossary of Terms* at 3.

[6] *See Select Committee on Ethics' Regulations and Guidelines for Privately-Sponsored Travel* at 5; *see also Select Committee on Ethics' Regulations and Guidelines for Privately-Sponsored Travel – Glossary of Terms* at 2-3.

[7] Trip extensions for any purpose do not extend this deadline.

appears that it is permissible for you to accept necessary expenses from MIT in connection with this trip, provided that the actual travel and travel-related expenses conform to the information and materials you provided, and the travel and all required documents are disclosed to the Secretary of the Senate (Office of Public Records).

Finally, Senate Rule 34 requires a reporting individual,[8] on his or her Financial Disclosure Report, to make an annual disclosure of the receipt of payments or reimbursements under Senate Rule 35 from a private sponsor for officially-related travel expenses where, in the aggregate, travel expenses exceed $415 from that sponsor during a calendar year. However, if a Member, officer, or employee properly reports the receipt of necessary expenses for such travel to the Secretary of the Senate within 30 days of the travel, as discussed above, the travel expenses need not be disclosed a second time on their Financial Disclosure Report.

I hope you find this information helpful. If you have any additional questions, please do not hesitate to contact the Committee.

Sincerely,

Shannon Hamilton Kopplin
Chief Counsel and Staff Director

Enclosure: Travel Checklist

[8] A reporting individual is someone whose salary equals or exceeds 120% of the basic rate of pay for GS-15 ($135,468 for CY 2022) or is a political fund designee and is required to file Financial Disclosure Reports.

United States Senate

SELECT COMMITTEE ON ETHICS

HART SENATE OFFICE BUILDING, ROOM 220
SECOND AND CONSTITUTION AVENUE, NE
WASHINGTON, DC 20510-6425

TELEPHONE: (202) 224-2981
FACSIMILE: (202) 224-7416
TDD: (202) 228-3752

Employee Privately-Sponsored Travel Checklist

Employees must submit their completed Pre-Travel Authorization Package to the Select Committee on Ethics (the Committee) **at least 30 days** prior to the travel departure date. Incomplete Pre-Travel Authorization Packages and Packages submitted later than 30 days prior to the travel departure date will not be considered or approved. All of the forms and materials listed below are available as fillable PDFs on the Committee's website at http://www.ethics.senate.gov.

Pre-Travel Authorization

Prior to Submitting a Pre-Travel Authorization Package to the Committee

- ❑ Review Senate Rules and the Committee's Privately-Sponsored Travel Guidelines on the Committee's website.
  - ❑ Ensure your supervising Senator or Officer (President of the Senate, Secretary of the Senate, Sergeant at Arms, Secretary for the Majority, Secretary for the Minority, and Chaplain) has determined the expenses for the trip are necessary and reasonable.
  - ❑ Ensure your supervising Senator or Officer has certified the proposed travel is connected to your official duties and will not create any appearance of a public office being used for private gain.

At Least 30 Days Prior to Travel: Submit Completed Pre-Travel Authorization Package

File with the Select Committee on Ethics in SH-220

- ❑ Complete Employee Pre-Travel Authorization Form (Form RE-1)
  - ❑ Ensure this form is typed and that all of the fields are completed.
  - ❑ Ensure your supervising Senator or Officer has signed this form.
  - ❑ Personally sign this form.
- ❑ Ensure Pre-Travel Authorization Package is complete. A complete Package includes:
  - ❑ Form RE-1
  - ❑ Private sponsor invitation (the formal invitation, letter or e-mail you received from the private sponsor).
  - ❑ Completed and signed Private Sponsor Travel Certification Form (4 page form that includes detailed information about the trip).
  - ❑ All attachments to the Private Sponsor Travel Certification Form
    - ❑ Complete and final itinerary
    - ❑ List of Senate invitees
    - ❑ Any other necessary attachments
- ❑ Retain a copy of your complete Pre-Travel Authorization Package for inclusion in your required post-travel disclosure.

PRIVATE SPONSOR TRAVEL CERTIFICATION FORM

This form must be completed by any private entity offering to provide travel or reimbursement for travel to Senate Members, officers, or employees (Senate Rule 35, clause 2). Each sponsor of a fact-finding trip must sign the completed form. The trip sponsor(s) must provide a copy of the completed form to each invited Senate traveler, who will then forward it to the Ethics Committee with any other required materials. The trip sponsor(s) should **NOT** submit the form directly to the Ethics Committee. Please consult the accompanying instructions for more detailed definitions and other key information.

The Senate Member, officer, or employee **MUST** also provide a copy of this form, along with the appropriate travel authorization and reimbursement form, to the Office of Public Records (OPR), Room 232 of the Hart Building, within thirty (30) days after the travel is completed.

---

1. Sponsor(s) of the trip (please list all sponsors): Massachusetts Institute of Technology

2. Description of the trip: An intensive educational seminar presented by MIT faculty with a dinner talk by an industry expert.

3. Dates of travel: April 20-22, 2022

4. Place of travel: Cambridge, MA

5. Name and title of Senate invitees: See enclosed list.

6. I *certify* that the trip fits one of the following categories:

   ☐ (A) The sponsor(s) are not registered lobbyists or agents of a foreign principal **and** do not retain or employ registered lobbyists or agents of a foreign principal **and** no lobbyist or agents of a foreign principal will accompany the Member, officer, or employee *at any point* throughout the trip.

   – OR –

   ☒ (B) The sponsor or sponsors are not registered lobbyists or agents of a foreign principal, but retain or employ one or more registered lobbyists or agents of a foreign principal and the trip meets the requirements of Senate Rule 35.2(a)(2)(A)(i) or (ii) *(see question 9)*.

7. ☒ I *certify* that the trip will not be financed in any part by a registered lobbyist or agent of a foreign principal.

   – AND –

   ☒ I *certify* that the sponsor or sponsors will not accept funds or in-kind contributions earmarked directly or indirectly for the purpose of financing this specific trip from a registered lobbyist or agent of a foreign principal or from a private entity that retains or employs one or more registered lobbyists or agents of a foreign principal.

8. I *certify* that:

   ☒ The trip will not in any part be planned, organized, requested, or arranged by a registered lobbyist or agent of a foreign principal except for *de minimis* lobbyist involvement.

   – AND –

   ☒ The traveler will not be accompanied on the trip by a registered lobbyist or agent of a foreign principal except as provided for by Committee regulations relating to lobbyist accompaniment (*see question 9*).

9. **USE ONLY IF YOU CHECKED QUESTION 6(B)**
I *certify* that if the sponsor or sponsors retain or employ one or more registered lobbyists or agents of a foreign principal, one of the following scenarios applies:

☐ (A) The trip is for attendance or participation in a one-day event (exclusive of travel time and one overnight stay) and no registered lobbyists or agents of a foreign principal will accompany the Member, officer, or employee *on any segment* of the trip.

– OR –

☐ (B) The trip is for attendance or participation in a one-day event (exclusive of travel time and two overnight stays) and no registered lobbyists or agents of a foreign principal will accompany the Member, officer, or employee *on any segment* of the trip *(see questions 6 and 10)*.

– OR –

☒ (C) The trip is being sponsored only by an organization or organizations designated under § 501(c)(3) of the Internal Revenue Code of 1986 and no registered lobbyists or agents of a foreign principal will accompany the Member, officer, or employee *at any point* throughout the trip.

10. **USE ONLY IF YOU CHECKED QUESTION 9(B)**
If the trip includes two overnight stays, please explain why the second night is practically required for Senate invitees to participate in the travel:

11. ☒ An itinerary for the trip is attached to this form. I *certify* that the attached itinerary is a detailed (hour by-hour), complete, and final itinerary for the trip.

12. Briefly describe the role of each sponsor in organizing and conducting the trip:

The seminar will be held on MIT's campus and utilizes its faculty, classrooms and laboratories.
MIT is the sole sponsor and is providing all the funding as well as developing the agenda and
invitation list.

13. Briefly describe the stated mission of each sponsor and how the purpose of the trip relates to that mission:

MIT is a major non profit research university with a mission focused on education & research in
science, engineering & technology. Congressional staff will be exposed to the latest research &
thinking about climate change and associated public policy options.

14. Briefly describe each sponsor's prior history of sponsoring congressional trips:

MIT has hosted similar seminars on a wide range of public policy issues related to science &
technology for over 20 years. The most recent 'in person' seminar was held in April, 2019

15. Briefly describe the educational activities performed by each sponsor (other than sponsoring congressional trips):

As noted above, MIT is a major non-profit research university with a mission focused on education & research in science, engineering & technology & has a corresponding history of public service in these fields. Undergrad & graduate students are taught & MIT pioneered free Open Courseware.

16. Total Expenses for Each Participant:

	Transportation Expenses	Lodging Expenses	Meal Expenses	Other Expenses
☒ Good Faith estimate ☐ Actual Amounts	$297.60 total ($147.60 1-way flight including $34 booking fee + $150 ground/bus transportation + up to a max. of $80 for cabs to/from home & airport or parking	$238 per night for a total of $476.00	$255 which includes 2 formal/working meals.	n/a

17. State whether a) the trip involves an event that is arranged or organized *without regard* to congressional participation or b) the trip involves an event that is arranged or organized *specifically with regard* to congressional participation:

The trip involves an event that is arranged & organized specifically with regards to congressional participation.

18. Reason for selecting the location of the event or trip

The seminar is being held on the MIT campus in Cambridge, MA to enable extensive participation of MIT faculty as well as use of MIT's facilities and access to its Laboratories.

19. Name and location of hotel or other lodging facility:

Residence Inn Boston Cambridge, 120 Broadway, Cambridge, MA 02142

20. Reason(s) for selecting hotel or other lodging facility:

The hotel is less than a 10 minute walk to the MIT campus so it offers proximity, room availability and a good room rate which is less than the government per diem rate.

21. Describe how the daily expenses for lodging, meals, and other expenses provided to trip participants compares to the maximum per diem rates for official Federal Government travel:

Lodging expenses are below the per diem rate for the city. We are doing our best to stay as close to the to the per diem rate for food & beverages but in addition to the high cost of catering in the Boston area in general, Covid precautions have greatly increased the cost of providing food & beverages.

22. Describe the type and class of transportation being provided. Indicate whether coach, business-class or first class transportation will be provided. If first-class fare is being provided, please explain why first-class travel is necessary:

One way only from BOS to DCA on commercial, regularly scheduled Jetblue flight since Mr Bond is making his own way to Boston. Ground transportation to & from MIT will be provided via bus or cab.

23. ☒ I represent that the travel expenses that will be paid for or reimbursed to Senate invitees do not include expenditures for recreational activities, alcohol, or entertainment (other than entertainment provided to all attendees as an integral part of the event, as permissible under Senate Rule 35).

24. List any entertainment that will be provided to, paid for, or reimbursed to Senate invitees and explain why the entertainment is an integral part of the event:

None

25. I hereby *certify* that the information contained herein is true, complete and correct. (For trips involving more than one sponsor, you *must* include a completed signature page for each additional sponsor):

Signature of Travel Sponsor: Robert C Armstrong

Name and Title: Dr Robert Armstrong, Director, MIT Energy Initiative

Name of Organization: Massachusetts Institute of Technology

Address: 77 Massachusetts Avenue, E19-307D, Cambridge, MA 02139

Telephone Number: 617 253 4581

Fax Number: 617 253 8013

E-mail Address: rca@mit.edu

P. Bond ADDENDUM

Private Sponsor Travel Certification Form for
MIT Congressional Staff Seminar
"Technology & Policy Paths to Net Zero"
April 20-22, 2022

Question 16: All are 'Good Faith Estimates' and I enclose a breakdown of the expenses listed.

Transportation Expenses: $297.60 total, which represents a one way airfare of $113.60 + $34 booking fees + approx. $150 for ground/bus transportation to & from the airport and hotel and between the hotel and the Samberg Center and the Labs. Mr. Bond will also be reimbursed for cabs/Lyft/Uber fares to and from his home and DCA/Reagan airport up to a maximum of $80.00.

Lodging: We have secured an excellent rate at the Residence Inn Boston Cambridge at a total cost of $476 + tax for 2 nights. This is well below the per diem and includes breakfast.

Meal expenses: We estimate that the total for all meals will be $255 which includes two formal meals. (see question 21, below, for more details). This represents $85 on the first day; $125 for the second day and $45 for the last day (1/2 day).

Question 21: Food expenses for catered events on campus and in Cambridge, MA in general are somewhat higher than the per diem rate due to the high cost of food/catering in the general Boston area. Restaurant Associates are the sole provider of food at the MIT Samberg Center where we are holding our two formal events (the opening working lunch on April 20th and the dinner with speaker on April 21st). Their prices are generally a little less than local hotel restaurants but as with every caterer we have approached this year, food prices have increased due to both staff shortages and due to the extra precautions taken with food preparation due to Covid (eg. catering staff use of PPE, extra sanitation requirements, individually wrapped items where possible, etc). We feel confident that we have secured the cheapest available food options.

0000000001308 RECEIVED BY: SECRETARY OF THE SENATE Date: May 12, 2022

Massachusetts Institute of Technology

Senior Congressional Staff Seminar
"Technology and Policy Paths to Net Zero"

April 20-22, 2022
Patrick Bond
PRELIMINARY AGENDA

Wednesday, April 20 – Day 1

9:30 – 10:00 am	**Travel from Logan Airport to Residence Inn by Marriott Boston Cambridge**
10:00 am-11:45am	**Check into Residence Inn by Marriott Boston Cambridge and wait for other attendees to arrive at hotel.** 120 Broadway, Cambridge, MA 02142
11:45am–12:00pm	**Take bus with other attendees to Samberg Conference Center & Registration** Samberg Conference Center, 6th floor, Dining Rooms 5 and 6 50 Memorial Dr, Cambridge, MA 02142
12:00-1:15 pm	**Welcome, introductions, and luncheon**
12:10-12:30 pm	**Participants introduce themselves**
12:30-12:45 pm	**Maria T. Zuber**, E. A. Griswold Professor of Geophysics, MIT Department of Earth, Atmospheric and Planetary Sciences and MIT Vice President for Research; Co-Chair, President's Council of Advisors on Science and Technology *Dr. Zuber will welcome participants on behalf of MIT's central administration and provide an overview of MIT's climate action plan.*
12:45-1:15 pm	**Robert C. Armstrong**, Director, MIT Energy Initiative and Chevron Professor of Chemical Engineering *Dr. Armstrong will provide a brief background on MITEI, MIT's energy hub, focused on developing low- and no-carbon solutions to meet global energy needs. In addition, he will give an overview of the seminar's program.*
1:15-2:45 pm	**Science**
1:15-2:00 pm	**Understanding climate risks and impacts on the U.S. to inform energy transitions** **Noelle Eckley Selin**, Professor, Institute for Data, Systems and Society and the Department of Earth, Atmospheric, and Planetary Sciences, MIT *Dr. Selin will provide an overview of the history of climate science, the current state of knowledge, and a framing of the current challenges in terms of risk including health impacts.*
2:00-2:45 pm	**Methane abatement strategies on the horizon** **Desiree Plata**, Director, MIT Methane Network and Gilbert W. Winslow Associate Professor in Civil Engineering *Dr. Plata will present her research on strategies to identify and significantly reduce methane leaks.*

2:45-3:00 pm	**Break**
3:00-4:15 pm	**Energy system modeling** **Emre Gençer**, Research Scientist, MIT Energy Initiative *Overview and demonstration of some of the energy system modeling tools developed at MIT followed by break-out groups for analysis and discussion*
4:15-4:30 pm	Walk to **MIT Plasma Science and Fusion Center** 190 Albany St, Cambridge, MA 02139
4:30-5:30 pm	**Tour of the MIT Plasma Science and Fusion Center Lab** *The MIT Plasma Science and Fusion Center is a center of research on developing fusion energy. Scientists and engineers from the Lab and MIT spinout Commonwealth Fusion Systems will present on recent advances in fusion technology and progress on a pilot-scale reactor.*
7:00 pm	**Informal dinner with MIT faculty and students** Residence Inn by Marriott Boston Cambridge, 120 Broadway, Cambridge, MA 02142 *Working event for seminar participants to engage with MIT professors, panel participants, and graduate students to further discuss the topics explored during the afternoon sessions.*

Thursday, April 21 – Day 2

7:30-8:30 am	**Continental breakfast at hotel** Residence Inn by Marriott Boston Cambridge, 120 Broadway, Cambridge, MA 02142
8:30-9:40 am	**Paths to net zero: Technology** *Dr. Armstrong will moderate a series of presentations by MIT faculty about the low- and no-carbon energy technologies that could be employed to decarbonize the U.S. economy, e.g., energy storage and low-carbon fuels, materials/supply chain challenges, and carbon management.*
8:30-8:40 pm	**Brief overview** **Robert C. Armstrong**, Director, MIT Energy Initiative and Chevron Professor of Chemical Engineering
8:40-9:10 am	**Energy storage** **Yet-Ming Chiang**, Professor, Department of Materials Science and Engineering and Kyocera Professor
9:10-9:40 am	**Hydrogen for storage and industrial heat** **Yogesh Surendranath**, Associate Professor of Chemistry and Paul M. Cook Career Development Associate
9:40-10:00 am	**Walk or bus from Marriot Residence Inn Cambridge to Samberg Conference Center** Samberg Conference Center, 50 Memorial Dr, Cambridge, MA 02142
10:00 am-12:00 pm	**MIT Climate Grand Challenges Event**

	Samberg Conference Center, 50 Memorial Dr, Cambridge, MA 02142 *Attend broadly open, widely attended, and free event at which the flagship research projects from MIT's Climate Grand Challenges competition will describe the work they will undertake on some of the most complex and unsolved climate problems. In addition, outside speakers will discuss how to move innovations from the lab to the marketplace.*
12:00-12:30 pm	**Walk to the Bush Room** Building 10-105, 222 Memorial Drive, Cambridge, MA 02142
12:30-1:30 pm	**Lunch**
1:30-3:30 pm	**Paths to net zero: Technology (continued)**
1:30-2:00 pm	**Materials and supply chain challenges** **Elsa Olivetti**, Esther and Harold E. Edgerton Associate Professor in Materials Science and Engineering *Dr. Olivetti will discuss the rare materials needed for new energy technologies and the supply chain obstacles to obtaining them.*
2:00-2:30 pm	**Carbon removal and storage** **Betar Gallant**, Associate Professor and the American Bureau of Shipping Career Development Professor in Mechanical Engineering *Dr. Gallant will describe the current state of technologies designed to capture CO2 from the air and the technical issues with permanently storing that carbon.*
2:30-3:30 pm	**Fitting it all together: Cross-cutting analysis through modeling** **Robert C. Armstrong**, Director, MIT Energy Initiative and Chevron Professor of Chemical Engineering **Dharik Mallapragada**, Research Scientist, MIT Energy Initiative *Drs. Armstrong and Mallapragada will lead a discussion on how the technologies discussed in the earlier sessions might complement each other and what kind of analytical tools might capture synergistic impacts.*
3:30-3:50 pm	**Walk to The Engine** *(venture firm and incubator founded by MIT to support "tough tech" companies)* 501 Massachusetts Ave, Cambridge, MA 02139
3:50-5:00 pm	**Tour of The Engine** *The tour will provide information on the work of energy-related companies, and of approaches to bringing new ideas from lab to market.*
5:00-5:30 pm	**Walk to Residence Inn** Residence Inn by Marriott, 120 Broadway, Cambridge, MA 02142
6:30-6:45pm	**Bus from Residence Inn to Samberg Conference Center** Samberg Conference Center, 50 Memorial Dr, Cambridge, MA 02142
6:45- 8:45 pm	**Dinner** David Cox, IBM Director, MIT-IBM Watson AI Lab *A speaker from industry will provide the business perspective on how the sector can contribute to sustainability and climate change mitigation.*

Friday, April 22 – Day 3

7:30-8:30 am	**Continental breakfast at hotel/check out** *(Bags should be packed and ready to go with you on the bus.)*
8:45 am	**Take bus to** The Bush Room Building 10-105, 222 Memorial Drive, Cambridge, MA 02142
9:00 am-1:00 pm	**Paths to net zero: Policy** *Dr. Knittel and MIT faculty will discuss possible policy approaches to decarbonization and their implications for society. These include policies related to workforce transition; infrastructure development, siting and public acceptance; electricity market redesign; and private sector financial disclosure rules*
9:00-9:10 am	**Brief overview** **Christopher R. Knittel**, Deputy Director for Policy, MIT Energy Initiative, and George P. Shultz Professor of Energy Economics, MIT Sloan School of Management; Director of the Center for Energy and Environmental Policy Research (CEEPR)
9:10-10:00 am	**The Roosevelt Project** *Project's goal is to provide an analytical basis for charting a path to a low-carbon economy in a way that promotes high-quality job growth, minimizes worker and community dislocation, and harnesses the benefits of energy technologies for regional economic development.* **Ernest J. Moniz**, Professor of Physics and Special Advisor to the MIT President; former U.S. Secretary of Energy **Michael Kearney**, Executive Director, The Roosevelt Project and Partner, The Engine
10:00-10:30 am	**Electricity transmission siting** **John Parsons**, Associate Director, MIT Center for Energy and Environmental Policy Research; Senior Lecturer, MIT Sloan School of Management
10:30-10:45 am	**Break**
10:45-11:15 am	**Infrastructure: Electric vehicle charging, natural gas and hydrogen pipelines** **Christopher R. Knittel**, Deputy Director for Policy, MIT Energy Initiative, and George P. Shultz Professor of Energy Economics, MIT Sloan School of Management; Director of the Center for Energy and Environmental Policy Research (CEEPR)
11:15-11:45 am	**Financial disclosure** **Michelle Hanlon**, Howard W. Johnson Professor, MIT Sloan School of Management
11:45 am-12:15 pm	**Electricity regulation, learnings from Europe** **Tim Schittekatte**, Postdoctoral Fellow, MIT Energy Initiative
12:15-1:00 pm	**Fitting it all together** *All presenters facilitated by Christopher Knittel*
1:00-2:00 pm	**Box lunches; final discussion, including seminar evaluation**

2:00-2:45 pm	Board bus/Travel to Logan Airport
4:00-5:30 pm	JetBlue Flight from Boston to Washington, D.C.

First Name	Last Name	Title	Organization Name (Parent)
Robert	Ahern	Legislative Assistant	Office of Senator Ron Wyden
Mike	Albares	Senior Policy Advisor	Office of Senator Tommy Tuberville
Kara	Allen	Senior Advisor	Office of Senator Sheldon Whitehouse
Laura	Atcheson	Senior Counsel	Office of Senator John Cornyn
Armando	Avila	Senior Professional Staff Member	Senate Committee on Energy & Natural Resources
Chris	Avila	Legislative Correspondent	Office of Senator Chris Coons
Andrew	Bahrenburg	Legislative Assistant	Office of Senator Patrick J. Leahy
Darien	Bailey Flowers	Deputy Policy Director, Minority	Senate Committee on Commerce, Science & Transportation
Nick	Barbash	Legislative Director	Office of Senator Tim Kaine
Micah	Barbour	Legislative Assistant	Office of Senator Mark R. Warner
Alec	Bartishevich	Assistant to the Legislative Director	Office of Senator Dianne Feinstein
Luke	Bassett	Senior Professional Staff Member	Senate Committee on Energy & Natural Resources
Adam	Battalio	Legislative Assistant	Office of Senator Mike Braun
Adam	Berry	Senior Professional Staff Member	Senate Committee on Energy & Natural Resources
Clarissa	Bhargava	Legislative Fellow	Office of Senator Ben Ray Luján
Prerna	Bhat	Climate, Energy & Environment Policy Aide	Office of Senator Elizabeth Warren
William	Birsic	Legislative Assistant	Office of Senator Roger Wayne Marshall
Renae	Black	Majority Staff Director	Senate Committee on Energy & Natural Resources
Christine	Blackburn	Energy and Climate Advisor	Office of Senator Brian Schatz
Matthew	Bobbink	Professional Staff Member	Senate Committee on Commerce, Science & Transportation, Subcommittee on Oceans & Climate
Patrick	Bond	Senior Policy Advisor	Office of Senator Angus King
Anais	Borja	Senior Legislative Assistant	Office of Senator Martin T. Heinrich
Will	Brewster	Legislative Assistant	Office of Senator Richard C. Shelby
J. David	Brooks	General Counsel	Senate Committee on Energy & Natural Resources
Susanne	Brooks	Senior Advisor	Office of Senator Michael F. Bennet
Joe	Brown	Legislative Assistant	Office of Senator John Boozman
Sarah	Brown	Legislative Assistant	Office of Senator Tim Scott
Caitlin	Buchanan	Policy Advisor	Office of Senator Jeff Alan Merkley
Elizabeth	Callaway	Legislative Assistant	Senate Committee on Environment & Public Works
Micah	Chambers	Legislative Director	Office of Senator Kevin J. Cramer

Kyle	Chapman	Senior Policy Advisor	Office of Senator Catherine Cortez Masto
Annie	Chestnut	Legislative Assistant	Office of Senator Ron Johnson
Emma	Cimino	Legislative Assistant	Office of Senator Chris Murphy
Brian	Clifford	Principal Deputy Staff Director, Minority	Senate Committee on Energy & Natural Resources
Travis	Cone	Deputy Staff Director, Minority	Senate Committee on Environment & Public Works
Chris	Cryan	Legislative Assistant	Office of Senator Mazie K. Hirono
Jeremy	D'Aloisio	Legislative Director	Office of Senator Ed Markey
Shelby	Davis-Prettiman	Legislative Assistant	Office of Senator Chris Van Hollen
Lydia	Denis	Legislative Assistant	Office of Senator Rob Portman
Janelle	DiLuccia	Policy Advisor	Office of Senator Jeanne Shaheen
Crystal	Dollins Tully	Deputy Staff Director, Minority	Senate Committee on Commerce, Science & Transportation
Greg	Dotson	Chief Counsel	Senate Committee on Environment & Public Works
Andrew	Fisher	Legislative Assistant	Office of Senator Roy Blunt
Nathan	Flagg	Deputy Chief of Staff for Policy	Office of Senator John Neely Kennedy
Brendan	Gavin	Senior Policy Advisor/Coast Guard Fellow	Senate Committee on Commerce, Science & Transportation
Tiffany	Ge	Legislative Director/Legal Counsel	Office of Senator Mitch McConnell
Joseph	Gilson	Legislative Assistant	Office of Senator Chuck Grassley
Anna	Gokaidas	Legislative Assistant	Office of Senator Sherrod Brown
Scott	Graber	Chief Counsel	Office of Senator Lindsey Graham
Christian	Graf	Legislative Assistant	Office of Senator Debbie Stabenow
Kelsey	Griswold	Legislative Assistant	Office of Senator Richard Burr
Hailey	Hamel	Senior Legislative Correspondent	Office of Senator Ted Cruz
Beth	Hammon	Professional Staff Member	Senate Committee on Environment & Public Works
Elena	Haynes	Legislative Assistant	Office of Senator Dick Durbin
Lila	Helms	Majority Staff Director	Senate Committee on Commerce, Science & Transportation
Jessica	Hernandez	Legislative Assistant	Office of Senator Kirsten E. Gillibrand
Jacob	Hinch	Policy Advisor	Office of Senator James Inhofe
Holly	Hinojosa	Policy Advisor	Office of Senator Steve Daines
Annie	Hoefler	Legislative Director	Office of Senator Lisa Murkowski
Andrew	Hogin	Deputy Chief of Staff for State Relations	Office of Senator Bill Hagerty
Matt	Jackson	Researcher	Office of Senator Sheldon Whitehouse

Isaac	Jalkanen	National Security Counsel	Office of Senator John Cornyn
John	Kane	Senior Policy Advisor, Majority	Senate Committee on Environment & Public Works
Ericka	King	Legislative Counsel	Office of Senator Rand Paul
Cole	LaCroix	Legislative Assistant	Office of Senator Mike Lee
Sebastien	Lasseur	Legislative Assistant	Office of Senator Mark R. Warner
Scott	Leathard	Minority Staff Director, Subcom on Oceans & Cl	Senate Committee on Commerce, Science & Transportation
Christianna	Lewis Barnhart	Senior Counsel	Senate Committee on Commerce, Science & Transportation
Drew	Lingle	Legislative Assistant	Office of Senator Kevin J. Cramer
Sean	Lokken	Legislative Assistant	Office of Senator Catherine Cortez Masto
Collin	Lomagistro	Senior Policy Advisor	Office of Senator Rick Scott
Nicholas	Malatesta	Legislative Assistant	Office of Senator Maggie Hassan
Valerie	Manak	Director of Energy Policy	Office of Senator James Lankford
David	Marten	Legislative Director	Office of Senator Maria Cantwell
Richard	Mather Russell	Minority Staff Director	Senate Committee on Energy & Natural Resources
Nick	Matiella	Senior Legislative Assistant	Office of Senator Mark E. Kelly
Patrick	McCormick III	Special Counsel, Minority	Senate Committee on Energy & Natural Resources
Jonathan	McCracken	Legislative Assistant	Office of Senator Sherrod Brown
John	McDonald	Senior Legislative Assistant	Office of Senator Richard Burr
Joseph	McGarvey	Senior Policy Advisor	Office of Senator Mazie K. Hirono
Malcolm	McGeary	Natural Resources Director	Office of Senator Ron Wyden
Kayla	McMurry	Counsel	Senate Committee on Environment & Public Works
Brandon	McMurtry	AAAS Congressional Science Fellow	Office of Senator Chris Coons
Evan	McWalters	Legislative Assistant	Office of Senator Tim Kaine
Naseem	Mehyar	Legislative Assistant	Office of Senator Maria Cantwell
Justin	Memmott	Deputy Staff Director for Energy, Minority	Senate Committee on Energy & Natural Resources
Christopher	Miller	Senior Policy Advisor	Office of Senator Cindy Hyde-Smith
Shannon	Mills	Legislative Assistant	Office of Senator Brian Schatz
Rachel	Mitnick	Legislative Assistant	Office of Senator Jack Reed
Mary Kate	Munro	Legislative Assistant	Office of Senator Joni K. Ernst
Elizabeth	Olsen	Counsel	Office of Senator Tammy Duckworth
Fabiola	Pagan	Legislative Assistant	Office of Senator Robert Menendez

Daniel	Palken	Legislative Assistant	Office of Senator John Hickenlooper
Levi	Patterson	Legislative Assistant	Office of Senator Ben Ray Luján
Jessica	Pavel	Legislative Assistant	Office of Senator Mitt Romney
Bryan	Petit	Senior Professional Staff Member	Senate Committee on Energy & Natural Resources
Christopher	Phalen	Policy Advisor	Office of Senator Kyrsten Sinema
Joycelyn	Pickens	Legislative Assistant	Office of Senator Robert P. Casey
Melissa	Porter	Deputy Staff Director, Minority	Senate Committee on Commerce, Science & Transportation
Sanjana	Puskoor	Legislative Assistant	Office of Senator Michael F. Bennet
Jennifer	Quan	Senior Professional Staff Member	Senate Committee on Commerce, Science & Transportation, Subcommittee on Oceans & Climate
Jake	Rascoff	Legislative Assistant	Office of Senator Brian Schatz
Mary Frances	Repko	Majority Staff Director	Senate Committee on Environment & Public Works
Kelly	Riddle	Policy Advisor	Office of Senator Jacky Rosen
Henry	Ring	Legislative Assistant	Office of Senator Jon Tester
Amit	Ronen	Advisor	Office of Senator Maria Cantwell
Alexis	Rudd	Professional Staff Member	Senate Committee on Commerce, Science & Transportation
Molly	Ryan	Legislative Assistant	Office of Senator Susan M. Collins
Rishi	Sahgal	Legislative Assistant	Office of Senator Dianne Feinstein
Esther	Salters	Legislative Assistant	Office of Senator James M. Inhofe
Josh	Sanders	Legislative Assistant	Office of Senator Robert Menendez
Peter	Schirtzinger	Military Legislative Assistant	Office of Senator Deb Fischer
Benjamin	Schreiber	Director of Energy and Climate	Office of Senator Jeff Alan Merkley
Andrew	Shamaskin	John A. Knauss Marine Policy Fellow	Office of Senator Roger F. Wicker
Kristen	Siegele	Legislative Assistant	Office of Senator Mike Crapo
Jacqueline	Silvers	General Counsel	Office of Senator Jon Ossoff
Cole	Simons	Policy Advisor	Office of Senator Bill Cassidy
Cody	Sims	Deputy Legislative Assistant	Office of Senator Tim Scott
Joshua	Sizemore	Legislative Assistant	Office of Senator Steve Daines
Ariana	Spawn	Environment Policy Advisor	Office of Senator Cory Booker
Rory	Stanley	Professional Staff Member	Senate Committee on Energy & Natural Resources
Justin	Stebbins	Legislative Assistant	Office of Senator Ron Johnson
David	Stewart	General Counsel	Senate Committee on Commerce, Science & Transportation

Michael	Stoever	Legislative Assistant	Office of Senator Gary C. Peters
Aaron	Suntag	Senior Policy Advisor	Office of Senator Debbie Stabenow
Sarah	Swig	Policy Advisor	Office of Senator Alex Padilla
John	Tanner	Deputy Staff Director for Lands, Minority	Senate Committee on Energy & Natural Resources
Nicole	Teutschel	Senior Professional Staff Member	Senate Committee on Commerce, Science & Transportation
Aaron	Thiele	Legislative Assistant	Office of Senator Lisa Murkowski
Colleene	Thomas	Senior Policy Advisor	Office of Senator Tammy Baldwin
Megan	Thompson	Legislative Assistant	Office of Senator Maria Cantwell
Matthew	Thomson	Legislative Assistant	Office of Senator Cory Booker
Camila	Thorndike	Legislative Assistant	Office of Senator Bernard Sanders
Adam	Tomlinson	Minority Staff Director	Senate Committee on Environment & Public Works
Connor	Tomlinson	Legislative Assistant	Office of Senator Marco Rubio
Christophe	Tulou	Senior Counsel/Policy Director	Senate Committee on Environment & Public Works
Zahava	Urecki	Professional Staff Member	Senate Committee on Energy & Natural Resources
Brie	Van Cleve	Senior Energy Advisor	Senate Committee on Energy & Natural Resources
Jacob	Vance	Legislative Assistant	Office of Senator Jerry Moran
Hannah	Vogel	Policy Advisor	Office of Senator Ed Markey
Stephen	Voljavec	Legislative Assistant	Office of Senator Marsha W. Blackburn
Paul	Wasik	Professional Staff Member	Senate Committee on Commerce, Science & Transportation
Corey	Weber	General Counsel	Office of Senator Thom Tillis
Pierce	Wiegard	Senior Counsel	Office of Senator Dan Sullivan
Bryson	Wong	Legislative Assistant	Office of Senator James E. Risch
Wesley	Wright	Legislative Assistant	Office of Senator Pat Toomey
Pete	Wyckoff	Senior Policy Advisor	Office of Senator Tina Smith
Lucy	Xiao	Legislative Director	Office of Senator Thomas R. Carper
Anna	Yelverton	Deputy Legislative Director	Office of Senator Chris Coons
Adam	Zipkin	Deputy Chief of Staff	Office of Senator Cory Booker