Employee Post-Travel Disclosure of Travel Expenses

RECEIVED
SECRETARY OF THE SENATE
PUBLIC RECORDS
2022 MAY 17 PM 5:00

Date/Time Stamp:

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): Massachusetts Institute of Technology

Travel date(s): April 19-22, 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	$379.02	$551.94	$232.32	

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.): The seminar's purpose was to expose relevant congressional staff to the latest energy & climate technology and its implications via discussions and lab tours / demonstrations

5/13/22 *(Date)*

Prerna Bhat *(Printed name of traveler)*

Prerna Bhat *(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.

5/17/2022 *(Date)*

(Signature of Supervising Senator/Officer)

(Revised 1/3/11)

Form RE-2

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: Prerna Bhat

Employing Office/Committee: Office of Senator Elizabeth Warren

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

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

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

Destination(s): Boston and Cambridge, Massachusetts

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

Prerna Bhat works on climate, energy, and environmental policy issues in our office, and therefore this MIT Senior Congressional Staff Seminar on 'Technology & Policy Paths to Net Zero' will cover topics within her portfolio.

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:

3/21/22
(Date)

Prerna Bhat
(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, Senator Elizabeth Warren hereby authorize Prerna Bhat
(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)* ☐

3/21/2022
(Date)

Elizabeth Warren
(Signature of Supervising Senator/Officer)

(Revised 10/19/15)

Form RE-1

0000000001478 RECEIVED BY: SECRETARY OF THE SENATE Date: May 17, 2022

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Maria T. Zuber
Vice President for Research
E. A. Griswold Professor of Geophysics

77 Massachusetts Avenue, Building 3-234
Cambridge, Massachusetts 02139-4307
Phone (617) 253-3206
Email mtz@mit.edu

March 16, 2022

Ms. Prerna Bhat
Climate, Energy & Environmental Policy Legislative Aide
Office of Senator Elizabeth Warren
309 Hart Senate Office Building
Washington, DC 20510

Dear Ms. Bhat,

I am writing to invite you to participate in an MIT seminar for senior Congressional staff on technology and policy options for addressing climate change. The seminar, **"Technology & Policy Paths to Net Zero,"** will take place on the MIT campus in Cambridge, MA from April 20 – 22. To allow for robust discussion, invitations are being extended only to senior Congressional staff who work on a variety of energy-related policy areas.

We are able to pay for the cost of travel and hotel accommodations and are carefully following House and Senate Ethics Committee requirements. The necessary forms will be provided to you should you apply to attend.

As you will see in the attached agenda, the seminar will include sessions with a range of MIT faculty with expertise on potential technological and policy approaches to climate. The seminar will also include tours of The Engine, a technology incubator and venture fund spun off from MIT, and of our fusion energy laboratory.

On the morning of April 21, the seminar will include attendance at a broader MIT event at which the flagship research projects from our Climate Grand Challenges competition will describe their plans. That event will also include a panel discussion with outside experts on moving research breakthroughs from the lab to the marketplace.

The organizers of this seminar include Robert C. Armstrong, Director of the MIT Energy Initiative and Chevron Professor of Chemical Engineering; Robert Stoner, Deputy Director of the MIT Energy Initiative; and Professor Christopher Knittel from the MIT Sloan School of Management.

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If you apply and are offered a place at the seminar, you will need to adhere to MIT's Covid in-person event policies. Attendees will have to attest that they have been vaccinated and boosted, or that they have a religious or medical reason for exemption. As of now, masks will be required at this event.

The seminar is sponsored by my office. If you would like to attend, please apply no later than close of business on Thursday, March 17 by CLICKING HERE. This will allow sufficient time for filing the necessary paperwork with your Ethics Committee by March 21. Spaces are limited, so early application is strongly suggested.

If you have received this invitation in error and the seminar is not relevant to your portfolio, please feel free to forward it to a colleague who focuses on energy and/or climate issues.

Helen Haislmaier in the MIT Washington Office will be happy to answer any questions, and she can be reached at (202) 789-1828 or at helenh@mit.edu.

Sincerely,

Maria T. Zuber

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.

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

2. Description of the trip: The seminar's purpose is to expose relevant congressional staff to the latest energy & climate technology and its' implications via discussions and lab tours/demonstrations.

3 Date of travel: april 19 – 22, 2022

4. Place of travel: Cambridge, MA

5. Name and title of Senate invitees: See attached 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	$411.19 total ($261.19 flight incl. $34 booking fee + $150 ground/bus transportation + up to a max. of $80 for a cab to/from DCA & home or airport 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:

Roundtrip, regularly scheduled,coach class commercial Jetblue flights from DCA to Boston and back
Cab/bus ground transportation from hotel to airport on 4/22 & from hotel to conference sites & labs.

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. Bhat 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: $411.19 total, which represents an airfare of $261.19 (incl. $34 booking fee) + approx. $150 for ground/bus transportation between Logan airport and the hotel, the hotel and the Samberg Center and the Labs and then a bus back to Logan airport on 4/22. Ms. Bhat will also be reimbursed for a cab/Lyft/Uber fare to and from her 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.

0000000001485 RECEIVED BY: SECRETARY OF THE SENATE Date: May 17, 2022

Massachusetts Institute of Technology

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

April 20-22, 2022

Prerna BHAT
PRELIMINARY AGENDA

Wednesday, April 20 – Day 1

7:30- 9:00am	**Jetblue Flight 1554 from Washington, D.C. to Boston**
9:30 – 10:00 am	**Take cab from Logan Airport to Residence Inn by Marriott Boston Cambridge**
10:00am-12:00 pm	**Check into Residence Inn by Marriott Boston Cambridge & wait for other Congressional staff to arrive from airport.** 120 Broadway, Cambridge, MA 02142 **Bus to Samberg Conference Center for 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.*
5:30 – 6:00pm:	**Walk to Residence Inn**
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	**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	**Bus or 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.**

0000000001490 RECEIVED BY: SECRETARY OF THE SENATE Date: May 17, 2022

Massachusetts Institute of Technology

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

April 20-22, 2022

Prerna BHAT
PRELIMINARY AGENDA

Tuesday, April 19:

9:30am -11:00am	**JetBlue Flight 1954 from Washington Reagan National Airport to Boston Logan Airport**

Wednesday, April 20 – Day 1

11:00 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.

5:30 – 6:00pm: **Walk to Residence Inn**

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 **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 **Bus or 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
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Nick	Barbash	Legislative Director	Office of Senator Tim Kaine
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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
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Sarah	Brown	Legislative Assistant	Office of Senator Tim Scott
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Emma	Cimino	Legislative Assistant	Office of Senator Chris Murphy
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