RE-2 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 144 Hart Building. **This form is a public disclosure. The form and all attachments will be made publicly available.**

Date/Time Stamp
RECEIVED
SECRETARY OF THE SENATE
PUBLIC RECORDS
2025 MAY 12 PM 2:20

Certification: *In compliance with the Regulations Governing Privately Sponsored Travel, Senate Rule 35, and the Honest Leadership and Open Government Act of 2007, I certify that I accepted the following gift of privately sponsored travel:*

Private Sponsor(s):

Massachusetts Institute of Technology

Travel Dates:

April 23-25, 2025

Name of accompanying family member (if any):

Relationship to Traveler:

Total Expenses

Transportation Expenses	Lodging Expenses	Meals Expenses	Other Expenses (Amount & Description)
$456.70	$582.00	$173.06	$0

I also certify that attached to this form are all required documents for post travel disclosure, including:

- **The final Employee Pre-Travel Authorization** (Form RE-1)
- The final **Private Sponsor Travel Certification Form** with all attachments
- The final invitation
- The final approved itinerary

Finally, I certify that all trip information reflected in the attachments above accurately reflects the travel that I accepted. If there were any changes to the trip after I received approval from the Committee, the changes are described in ATTACHMENT 1.

5/12/25 — Date

Sindhu Nathan — Printed Name of Traveler

Sindhu Nathan — 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.

05/12/2025 — Date

Signature of Supervising Senator/Officer

ATTACHMENT 1 – CHANGES FROM APPROVED PRE-TRAVEL

Note: Material changes to a trip that occur after the Committee has issued an approval letter may invalidate the Committee's approval. Please contact the Committee with any questions regarding changes to an approved trip.

Were there any changes to the pre-approved travel expenses? (Transportation, Meals, Lodging, Other)?

(●) Yes ( ) No

Expense Change	Revised Amount	Explanation
Transportation	$456.70	Difference is the actual vs estimated cost.
Meals	$173.06	Difference is the actual vs estimated cost.
Other	$0	No expense related to travel to/from airport.

Were there any changes to the pre-approved itinerary?

( ) Yes (●) No

Explanation:

Were there any additional changes to the pre-approved trip?

( ) Yes (●) No

Explanation:

RE-1 Employee Pre-Travel Authorization

Date/Time Stamp

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.

Name of Traveler:

Sindhu Nathan

Employing Office/Committee:

US Senator Tina Smith

Private Sponsor(s):

Massachusetts Institute of Technology

Destination(s):

Cambridge, Massachusetts

Travel Dates:

April 23 - April 25, 2025

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

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

I cover all climate-related issues for Senator Smith. The MIT seminar is very relevant to the work in my portfolio, for example, transitioning to a clean electricity sector with the rise in demand for AI and reducing emissions in the agricultural sector (including through the Senator's work on the Agriculture Committee. Additionally, the tours of MIT businesses also are relevant; though Form Energy does not manufacture in Minnesota, some of their first deployments are in Minnesota.

Do you have an accompanying family member or spouse on this trip? **Name and Relationship to Traveler:**

☐ (signify "yes" by checking box)

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

3/20/25 — Sindhu Nathan

Date — Signature of Employee

TO BE COMPLETED BY SUPERVISING MEMBER/OFFICER

(President of the Senate, Secretary of the Senate, Sergeant at Arms, Secretary for the Majority, Secretary for the Minority, and Chaplain)

I Sen. Tina Smith (Print Senator's/Officer's Name) hereby authorize Sindhu Nathan (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)

March 20, 2025

Date

Tina Smith

Signature of Supervising Senator/Officer

Trip Name: 2025 MIT Energy seminar for Congressional Staff

Organization Information

Organization Name:
Massachusetts Institute of Technology

Is your organization classified as a §501(c)(3)?
(●) Yes ( ) No

If Yes, §501(c)(3) Organization Type:
[ ] Private Foundation [✓] Public Charity

Address:
77 Massachusetts Avenue

City, State, Zip:
Cambridge, MA 02139

Phone Number:
617 324 9105

Organization URL:
https://web.mit.edu/

History of Congressional Travel

Describe your organization's history of sponsoring congressional travel.

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 on the MIT campus in October 2023.

Educational Activities

Describe the educational activities performed by your organization other than sponsoring congressional travel

MIT is a major non-profit research university with a mission focused on education & research in science, engineering and technology. It offers both undergraduate and graduate level degrees and has multiple departments working on cutting-edge energy & climate technology and related policy.

Lobbyist and Foreign Agent Registration Information

Lobbyist Registration Status (Select one):

( ) I certify that the sponsor is not a federally registered lobbyist and does not retain or employ a federally registered lobbyist.

(●) I certify that the sponsor is not a federally registered lobbyist but does retain or employ one or more federally registered lobbyists.

Foreign Agent Registration Status (Select one):

(●) I certify that the sponsor is not an agent of a foreign principal and does not retain or employ an agent of a foreign principal

( ) I certify that the sponsor is not an agent of a foreign principal but does retain or employ one or more agents of a foreign principal

Foreign Government Involvement

Foreign Agent Registration Status (Must select all):

[✓] I certify that the sponsor is not a foreign government

[✓] I certify that the sponsor is not an entity that is owned or operated by a foreign government

[✓] I certify that the sponsor does not receive funding from a foreign government.

Purpose and Details

Provide a brief description of the trip.

This is an intensive educational seminar presented by MIT faculty with a dinner talk by an industry expert on geothermal energy. The title of the seminar is 'Technologies and Strategies for Responding to Energy and Climate Challenges' and the majority of the seminar will be held on MIT's campus and utilizes its faculty, classrooms and laboratories. There will be two off-campus visits to MIT spin-off companies working on energy innovations.

Explain how the purpose of the trip relates to your organization's mission.

MIT is a major non-profit research university with a mission focused on education and research in science, engineering and technology. Congressional staff will be exposed to the latest research and thinking about technologies related to energy and climate and associated public policy options. MIT has hosted similar seminars on a wide range of public policy issues related to science and technology for over 20 years.

Is your organization the only sponsor for this trip?

(●) Yes ( ) No

If No, describe your organization's role in planning the trip.

Members of the MIT Washington Office, along with campus faculty who focus on energy and climate issues, were wholly responsible for organizing the agenda and logistics for the seminar. Funding for the seminar is being provided directly from MIT's office of the Vice President for Research.

If there are multiple sponsors, each sponsor must submit Organization Information (Page 1 of the Private Sponsor Travel Certification Form) and a Signature Page Form.

Grantmaking Organizations (Optional)

If you have a Grantmaking Organization, you must attach a Grantmaking Organization Certification Form.

1.

2.

3.

With or Without Regard to Congressional Participation (Select one):

- ○ The trip is arranged or organized without regard to congressional participation
- ◉ The trip is arranged or organized with regard to congressional participation

Lobbyist/Foreign Agent Involvement in Planning, Organizing, Requesting or Arranging

- ☑ The trip will not in any part be planned, organized, requested, or arranged by a registered lobbyist or agent of a foreign principal, other than de minimis involvement.

Lobbyist/Foreign Agent Financing (Must select all):

- ☑ The trip will not be financed in any part by a registered lobbyist or agent of a foreign principal.
- ☑ No funds or in-kind contributions were 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.

Lobbyist/Foreign Agent Accompaniment

Complete if all sponsors are §501(c)(3) organizations (Select one):

- ◉ The trip is limited to three days (for trips inside the continental United States) or seven days (for trips outside the continental United States), and no lobbyist or agents of a foreign principal will accompany the Member, officer, or employee at any point throughout the trip
- ○ The trip is limited to 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
- ○ The trip is limited to 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

Complete if any of the sponsors is not a §501(c)(3) organizations (Select one):

- ○ No sponsor retains or employs a registered lobbyist or agent of a foreign principle, the trip is limited to three days (for trips inside the continental United States) or seven days (for trips outside the continental United States), and no lobbyist or agents of a foreign principal will accompany the Member, officer, or employee at any point throughout the trip
- ○ The trip is limited to 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
- ○ The trip is limited to 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

Required if selecting the third option in either column - Please explain why the second overnight stay is practically required and necessary to accomplish the purpose of the trip.

Certification of No Recreational Activity and No Alcohol (Must select all):

- ☑ Travel expenses paid for will not include expenditures for recreational activities.
- ☑ Travel expenses paid for will not include expenditures for alcohol, except as permitted by the Regulations Governing Privately Sponsored Travel

Invitees list

- ☑ A list of all Senate invitees is attached to this form (required).
- ☑ Members and staff from the House of Representatives will also receive invitations

Travel Details (Submit additional pages as needed)

Trip Start Date/Time:	⇄	Trip End Date/Time:
April 23, 2025 8:30am		April 25, 2025. 8:00pm

Will the traveler be accompanied by a family member for whom the sponsor will pay travel expenses?

◯ Yes ◉ No

Transportation (Member/Officer/Employee: $ 488.60 Accompanying Family Member: $ n/a)

Transportation Type	Class	Amount
Fully refundable JetBlue flights + booking fees	economy	$396.60
Bus to/from airport & hotel/campus & site visits	Basic/no special seats	$92.00

Details (optional)

Lodging (Member/Officer/Employee: $ 582.00 Accompanying Family Member: $ n/a)

Check-In	Check-Out	Facility	City	State	Country
4/23/25	4/25/25	Marriott Residence Inn	Cambridge	MA	USA

Nights	Cost/Night	Cost Exceed Per Diem (Yes/No)	If Yes, please explain why expenses over the per diem rate are reasonable and necessary
2	291.00	NO	

Check-In	Check-Out	Facility	City	State	Country

Nights	Cost/Night	Cost Exceed Per Diem (Yes/No)	If Yes, please explain why expenses over the per diem rate are reasonable and necessary

Check-In	Check-Out	Facility	City	State	Country

Nights	Cost/Night	Cost Exceed Per Diem (Yes/No)	If Yes, please explain why expenses over the per diem rate are reasonable and necessary.

Meals (Member/Officer/Employee: $ 234.00 Accompanying Family Member: $ n/a)

Date	Breakfast	Lunch	Dinner	Incidentals	Total	City	State	Country	Cost Exceeds Per Diem (Y/N)
4/23/25	0 - included in hotel room rate	$33.00	$42.00	$13.00	$88.00	Cambridge	MA	USA	NO
4/24/25	0 included in hotel room rate	$24 50	$73.00	$12.00	$109.50	Cambridge	MA	USA	YES
4/25/25	0 included in hotel room rate	$24 50	n/a	$12.00	$36.50	Cambridge	MA	USA	NO

If costs exceed the federal per diem, please explain why expenses over the per diem rate are reasonable and necessary.

There is a formal working dinner with speaker on 4/23/25 where there is no option to choose a less expensive caterer but we have picked the cheapest meal option available.

Reasonable Miscellaneous Expenses

(Member/Officer/Employee: $ 80.00 Accompanying Family Member: $ n/a)

Expense Type	Amount	Notes
Cabs to/from home & Reagan National Airport OR parking at Reagan airport.	$80.00	MIT will cover UP TO $80.00 per person

Additional Details (optional)

PRIVATELY SPONSORED TRAVEL

SPONSOR SIGNATURE PAGE

I hereby certify that the information submitted in connection with the trip listed below is true, complete, and correct to the best of my knowledge and belief.

Trip Name: 2025 Energy Seminar for Congressional Staff

Travel Date(s): April 23-25, 2025

Travel Destination(s): Cambridge, MA

Sponsor: Massachusetts Institute of Technology

Ian Waitz — *(printed name of sponsor representative)*

Vice President for Research — *(title)*

Ian A Waitz — *(signature of sponsor representative)*

2/26/25 — *(date)*

First name:	Last name:	Title:	Office:	Email address:
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March 12, 2025

Ms. Sindhu Nathan
Legislative Assistant
Office of Senator Tina Smith
720 Hart Senate Office Building
Washington, DC 20510

Dear Ms. Nathan,

I am writing to invite you to attend an MIT seminar for senior Congressional staff. The seminar, "**Technologies and Strategies for Responding to Energy and Climate Challenges**," will take place on the MIT campus in Cambridge, MA from April 23-25, 2025.

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

As you will see in the agenda below, the seminar will include sessions with MIT faculty on a range of technology matters designed to inform Congressional staff, as well as tours of MIT's Plasma Science & Fusion Center, and of two companies spun out from MIT— Sublime Systems, a company making low-carbon cement, and Form Energy, a maker of iron-air batteries for utility-scale energy storage (Form Energy also has facilities in Maine and West Virginia).

The seminar, which is sponsored by my office, was organized by the MIT Energy Initiative (MITEI), the MIT Washington Office, and the MIT Climate Policy Center. If you would like to attend, please apply no later than close of business on Friday, March 21 by clicking here. This will allow sufficient time for filing the necessary paperwork with your Ethics Committee by Monday, March 24. 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,

Ian A. Waitz
Vice President for Research
Jerome C. Hunsaker Professor of Aeronautics and Astronautics

Massachusetts Institute of Technology
Senior Congressional Staff Seminar
Technologies and Strategies for Responding to
Energy and Climate Challenges
April 23-25, 2025

AGENDA

Wednesday, April 23: Day 1

- **9:00-10:45 am** Flight from Washington D.C. to Boston, MA
- **10:45-11:15 am** Ground transportation from Logan Airport to Residence Inn by Marriott Boston Cambridge
- **11:15-11:40 am** Check into Residence Inn by Marriott Boston Cambridge
- **11:40 am** Bus from Residence Inn by Marriott Boston Cambridge to Samberg Conference Center for registration
- **11:50 am-12:00 pm** Registration for participants
- **12:00-1:30 pm** Welcome and luncheon
  - Participants introduce themselves
  - **Ian A. Waitz**, Jerome C. Hunsaker Professor of Aeronautics and Astronautics; MIT Vice President for Research
    Dr. Waitz will welcome participants on behalf of MIT's central administration.
  - **William H. Green**, Director, MIT Energy Initiative; Hoyt C. Hottel Professor, MIT Department of Chemical Engineering
    Professor Green 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.
- **1:30-2:45 pm** Climate and AI
  AI tools offer opportunities for better climate mitigation but pose significant energy demand challenges.
  - Moderator: **David Goldston**, Director, MIT Washington Office
  - **Saurabh Amin**, Professor, MIT Department of Civil and Environmental Engineering
  - **Priya Donti**, Silverman (1968) Family Career Development Professor; Assistant Professor, MIT Department Electrical Engineering and Computer Science
- **2:45-3:00 pm** Break
- **3:00-4:15 pm** The Role of Nuclear Energy in U.S. Power Generation
  The panelists will explore the technological, economic, and other factors that could affect prospects for the expanded use of nuclear energy in the United

States, including the development of small modular reactors and other newer nuclear technologies.

- Moderator: **John Parsons**, Deputy Director for Research, MIT Center for Energy and Environmental Policy Research
- **Jacopo Buongiorno**, Battelle Energy Alliance Professor of Nuclear Engineering; Director of Science and Technology, MIT Nuclear Reactor Laboratory; Director, MIT Center for Advanced Nuclear Energy Systems (CANES)
- **Koroush Shirvan**, Atlantic Richfield Career Development Professor in Energy Studies, MIT Department of Nuclear Science and Engineering

- **4:15-4:30 pm** Bus to MIT Plasma Science and Fusion Center
- **4:30-6:00 pm** Tour of MIT Plasma Science and Fusion Center
  The MIT Plasma Science and Fusion Center is an international leader in the development of fusion energy. Scientists and engineers from the PSFC and MIT spinout Commonwealth Fusion Systems will present on recent advances in fusion science and technology and give an update on progress towards a commercial fusion power plant.
  - **Jennifer Ganten**, Chief Global Affairs Officer, Commonwealth Fusion Systems
  - **Nuno F. Loureiro**, Director, MIT Plasma Science and Fusion Center; Professor of Nuclear Science and Engineering and Herman Feshbach (1942) Professor of Physics, MIT
- **6:00 pm** Bus to Residence Inn by Marriott Boston Cambridge
- **6:30-8:15 pm** Dinner with Panel of MIT Graduate Students talking about the Future of Climate & Energy Research
  Working event for seminar participants to engage with MIT graduate students working on energy research to further discuss the topics explored during the afternoon sessions and those in upcoming sessions.
  - Moderator: **Bethany Patten**, Executive Director, MIT Climate Policy Center; Staff Director, MIT Climate Project Policy Mission; Senior Lecturer, MIT Sloan School of Management

Thursday, April 24: Day 2

- **7:30-8:30 am** Breakfast at Residence Inn by Marriott Boston Cambridge
- **8:30-8:45 am** Walk to MIT Bush Room
- **8:45-10:15 am** Agriculture: Climate Adaptation and Emissions Abatement Tools
  The panelists will explore possible technological approaches to help feed the world as the climate changes and while reducing the climate impacts of agriculture. Specific topics will include capturing methane, strengthening crop resiliency, and developing low-carbon methods for crop fertilization.

- Moderator: **Desirée Plata**, Professor, MIT Department of Civil and Environmental Engineering; Director, MIT Climate and Sustainability Consortium; Director, MIT Methane Network; Co-Director, MIT Superfund Research Program
- **Ariel L. Furst**, Paul M. Cook Career Development Professor, MIT Department of Chemical Engineering
- **Benedetto Marelli**, Associate Professor, MIT Department of Civil and Environmental Engineering; Wild Cards Mission Director, MIT Climate Project
- **Bradley D. Olsen**, Alexander and I. Michael Kasser (1960) Professor, MIT Department of Chemical Engineering

- **10:15-10:30 am** Break
- **10:30 am-12:30 pm** Advancing Industry & Commercial Transportation
  The panelists will explore possible ways to reduce the climate impacts of industrial production, aviation, and trucking–all sectors that contribute significantly to U.S. CO2 emissions but cannot be easily electrified. Specifically, the panelists will discuss their work to develop affordable, low-emissions solutions for these sectors.
  - Moderator: **William H. Green**, Director, MIT Energy Initiative; Hoyt C. Hottel Professor, MIT Department of Chemical Engineering
  - **Florian Allroggen**, Principal Research Scientist, MIT Department of Aeronautics and Astronautics
  - **Yet-Ming Chiang**, Kyocera Professor, MIT Department of Materials Science and Engineering
  - **Bilge Yildiz**, Breene M. Kerr (1951) Professor, MIT Departments of Nuclear Science and Engineering and Materials Science and Engineering
- **12:00-1:30 pm** Lunch with MIT Climate Project Mission Directors
  In 2024, MIT launched whole-of-MIT initiative to respond to the multiple challenges of global climate change. As part of that project, six areas of focus or "missions" emerged. Each mission addresses a broad domain where solutions are required for effective climate response and where a critical mass of excellent research capabilities exists at MIT. The panelists will cover their roles in the Climate Project, and will encourage an open dialogue with participants to identify areas at the intersection of the mission objectives and policy community needs.
  - **Andrew R. Babbin**, Associate Professor, MIT Earth, Atmospheric & Planetary Sciences; Director, MIT Climate Project Mission on Restoring the Atmosphere, Protecting the Land and Oceans
  - **Christopher Knittel**, Associate Dean for Climate and Sustainability, George P. Shultz Professor and Professor of Applied Economics; MIT Sloan School of Management; Director, MIT Climate Project on Inventing New Policy Approaches
  - **Benedetto Marelli**, Associate Professor, MIT Department of Civil and Environmental Engineering; Director, MIT Climate Project Mission on Wild Cards

- **Elsa Olivetti**, Associate Dean of Engineering, Jerry McAfee Professor in Engineering, MIT Department of Materials Science and Engineering; Director, MIT Climate Project Mission on Decarbonizing Energy and Industry
- **Christoph Reinhart**, Alan and Terri Spoon Professor of Architecture, MIT Department of Architecture; Climate Director, MIT Climate Project Mission on Resilient and Prosperous Cities
- **Evelyn Wang**, MIT Vice President for Climate; Ford Professor of Engineering, MIT Department of Mechanical Engineering

- **1:30-2:45 pm** Resilient and Energy Efficient Housing for the Future
  The panelists will explore approaches to making housing more energy efficient and resilient to climate change in affordable ways. They will discuss examples of how technologists, architects, planners, and others involved in housing are working on these issues.
  - **Mariana Arcaya**, Professor of Urban Planning and Public Health, MIT Department of Urban Studies and Planning
  - **Christoph Reinhart**, Alan and Terri Spoon Professor of Architecture, MIT Department of Architecture; Climate Director, MIT Climate Project Mission on Resilient and Prosperous Cities
  - **Justin Steil**, Associate Professor of Law and Urban Planning, MIT Department of Urban Studies and Planning
- **2:45-3:15 pm** Tour travel time
- **3:15-5:30 pm** Tours
  - **Sublime Systems**
    Sublime Systems is an MIT spinout that makes low-carbon cement, using electrochemistry instead of heat and combustion to transform minerals into the building material.
    Glen Junor, Program Manager, Public Sector, Sublime Systems
  - **Form Energy**
    Form Energy is an MIT spinout that makes iron-air batteries that store electricity for multiple days. The batteries use common materials and can help utilities meet power demand and ensure a clean, secure, and reliable electric grid.
    Ted Wiley, President and Chief Operating Officer, Form Energy
- **5:30-6:00 pm** Travel back to campus/hotel
- **6:30 pm** Walk/bus to Samberg Conference Center
- **6:45- 8:45 pm** Dinner with speaker
  Terawatt Scale Geothermal
  Carlos Araque, CEO of Quaise Energy, a U.S.-based geothermal energy MIT spin-out that is commercializing a drilling technology to unlock geothermal energy at scale, will discuss this emerging technology and share perspectives on how the sector can contribute to decarbonizing primary energy.
  - **Carlos Araque**, Founder and CEO, Quaise Energy

Friday, April 25: Day 3

- **7:30-8:45 am** Continental breakfast at hotel/check out
- **8:45-10:15 am** Electricity Transmission: Ensuring a Smart, Affordable and Resilient Grid
  The panelists will explore possible approaches to enabling the U.S. electric power system to meet projected demand growth and spur economic development, to lower household energy costs, to bolster the system's resilience to natural or deliberate disruptions, and to achieve environmental outcomes. The discussion will include MIT research on smart grids and on modeling the impacts of various policy approaches.
  - Moderator: **Drew Story**, Policy Director, MIT Climate Policy Center
  - **Anuradha Annaswamy**, Senior Research Scientist, MIT Department of Mechanical Engineering; Founder and Director, Active-Adaptive Control Laboratory
  - **Christopher Knittel**, Associate Dean for Climate and Sustainability, George P. Shultz Professor and Professor of Applied Economics; MIT Sloan School of Management; Director, MIT Climate Project on Inventing New Policy Approaches
  - **Juan Senga**, Postdoctoral Associate, MIT Center for Energy and Environmental Policy Research and MIT Climate Policy Center
- **10:15-10:45 am** Carbon Border Adjustments
  This session will describe recent research on policy options for a carbon border adjustment policy and their potential impacts on trade flows, revenues, consumer prices, and environmental outcomes. The presentation will include discussion of the European Union Carbon Border Adjustment Mechanism and what the U.S. can conclude from it.
  - **Catherine D. Wolfram**, William Barton Rogers Professor in Energy and Professor of Applied Economics, MIT Sloan School of Management
- **10:45-11:00 am** Break
- **11:00-11:30 am** The Effects of Climate Change on Home Insurance
  The speaker will discuss how climate risk is disrupting insurance markets, and will analyze policy responses being tried around the world and in the U.S.
  - **Adam Solomon**, PhD Candidate, MIT Department of Economics
- **11:30 am-12:45 pm** En-ROADS
  The En-ROADS Climate Workshop uses the En-ROADS climate solutions simulator, which gives users the opportunity to test out different policy approaches for climate change, and to assess their possible impacts. This will be an interactive, group exercise.
  - **Andrew Jones**, Executive Director, Climate Interactive; Research Affiliate, MIT Sloan School of Management
- **12:45-1:00 pm** Walk to MIT Energy Initiative

- **1:00-2:30 pm** Lunch with discussion: The Costs and Benefits of Environmental Policies
  This session will present recent research that evaluated 96 U.S. environmental policies from the last 25 years to quantify their effects on Americans and their cost to taxpayers. This approach to policy analysis facilitates policy comparisons across policy categories, such as comparing environmental policies to public investments in education or healthcare.
  - **Nathaniel Hendren**, Professor, MIT Department of Economics; Co-Founder, Policy Impacts
- **2:30-3:30 pm** Fitting it all together, discussion & seminar evaluation
  This session will review the entire program and provide participants a chance to ask questions about the full picture that has emerged.
  - Moderator: **David Goldston**, Director, MIT Washington Office
  - **William H. Green**, Director, MIT Energy Initiative; Hoyt C. Hottel Professor, MIT Department of Chemical Engineering
  - **Christopher Knittel**, Associate Dean for Climate and Sustainability, George P. Shultz Professor and Professor of Applied Economics; MIT Sloan School of Management; Director, MIT Climate Project on Inventing New Policy Approaches
- **3:30-4:15 pm** Return to Residence Inn by Marriott Boston Cambridge, retrieve luggage and board bus
- **4:15-4:45 pm** Travel by bus to Logan Airport
- **6:11-7:59pm** Flight from Boston to Washington, D.C.

0000000002049 RECEIVED BY: SECRETARY OF THE SENATE Date: May 12, 2025

Massachusetts Institute of Technology

Massachusetts Institute of Technology
Senior Congressional Staff Seminar
"Technologies and Strategies for Responding to Energy and Climate Challenges"
April 23-25, 2025

AGENDA

Wednesday, April 23: Day 1
Seminar location: Samberg Conference Center, 6th floor, Dining Rooms 5 and 6

9:00 am	**JetBlue Flight 1154 from Washington, D.C. to Boston**
10:30 am	**Land in Boston, MA Logan airport**
10:30-11:00 am	**Ground transportation from Boston Logan Airport to Residence Inn by Marriott Boston Cambridge (MIT buses)**
11:00-11:35 am	**Check into Residence Inn by Marriott Boston Cambridge** 120 Broadway, Cambridge, MA 02142
11:35 am	**Bus from Residence Inn by Marriott Boston Cambridge to Samberg Conference Center for registration** Samberg Conference Center, 6th floor, Dining Rooms 5 and 6 50 Memorial Drive, Cambridge, MA 02142
11:45 am-12:00 pm	**Registration for participants**
12:00-1:30 pm	**Welcome and luncheon** Samberg Conference Center, 6th floor, Dining Rooms 5 and 6
12:15-1:00 pm	**Participants introduce themselves**
1:00-1:05 pm	**Ian A. Waitz**, MIT Vice President for Research; Jerome C. Hunsaker Professor of Aeronautics and Astronautics *Dr. Waitz welcomes participants on behalf of MIT's central administration.*
1:05-1:20 pm	**Evelyn N. Wang**, MIT Vice President for Energy and Climate, Ford Professor of Engineering *Dr. Wang will speak about MIT Climate Project and MIT's approach to climate. She will provide an overview of energy and climate research at MIT.*
1:20-1:30 pm	**William H. Green**, Director, MIT Energy Initiative; Hoyt C. Hottel Professor, MIT Department of Chemical Engineering **Christopher Knittel**, Associate Dean for Climate and Sustainability, George P. Shultz Professor and Professor of Applied Economics, MIT Sloan School of

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Management; Director, MIT Climate Project on Inventing New Policy Approaches

Professor Green will provide a brief background on MITEI, MIT's energy hub, focused on developing low- and no-carbon solutions to meet global energy needs. Professor Knittel will provide a brief background on MIT's Climate Policy Center, which serves as MIT's "front door" for local, state, federal, and international climate policymakers. In addition, both will give an overview of the seminar's program.

1:30-1:45 pm Attendees transition from lunch space to main seminar space

1:45-3:00 pm **Climate & AI Session**

AI tools offer opportunities for better climate mitigation but pose significant energy demand challenges. It will discuss: 1) the energy use of AI–how it might be reduced, and how to meet it; 2) the way AI can help with management of the electric grid, which can make it easier to use renewables; 3) the use of AI to study climate.

Moderator: **Bethany Patten**, Executive Director, MIT Climate Policy Center; Staff Director, MIT Climate Project Policy Mission; Senior Lecturer, MIT Sloan School of Management

Saurabh Amin, Edmund K. Turner Professor in Civil Engineering, MIT Laboratory for Information and Decision Systems and MIT Department of Civil and Environmental Engineering

Priya Donti, Silverman (1968) Family Career Development Professor and Assistant Professor, MIT Department of Electrical Engineering and Computer Science and MIT Laboratory for Information and Decision Systems

3:00-4:15 pm **The Role of Nuclear Energy in U.S. Power Generation**

The panelists will explore the technological, economic, and other factors that could affect prospects for the expanded use of nuclear energy in the United States, including the development of small modular reactors and other newer nuclear technologies.

Moderator: **John Parsons**, Deputy Director for Research, MIT Center for Energy and Environmental Policy Research

Jacopo Buongiorno, Battelle Energy Alliance Professor of Nuclear Engineering; Director of Science and Technology, MIT Nuclear Reactor Laboratory; Director, MIT Center for Advanced Nuclear Energy Systems

Koroush Shirvan, Atlantic Richfield Career Development Professor in Energy Studies, MIT Department of Nuclear Science and Engineering

4:15-4:30 pm **Bus to MIT Plasma Science and Fusion Center**
190 Albany St, Cambridge, MA 02139

4:30-6:15 pm **Tour of the MIT Plasma Science and Fusion Center with a presentation by Commonwealth Fusion Systems**

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The MIT Plasma Science and Fusion Center is an international leader in the development of fusion energy. Scientists and engineers from the PSFC and MIT spinout Commonwealth Fusion Systems will present on recent advances in fusion science and technology and give an update on progress towards a commercial fusion power plant.

Jennifer Ganten, Chief Global Affairs Officer, Commonwealth Fusion Systems
Nuno F. Loureiro, Director, MIT Plasma Science and Fusion Center; Professor of Nuclear Science and Engineering and Herman Feshbach (1942) Professor of Physics, MIT

MIT Plasma Science and Fusion Center Lab tour instructions

- Closed-toe shoes should be worn on the lab tour.
- During the tour, information on the hallway walls may be photographed.
- In the lab, there are a few areas that cannot be photographed. Tour location staff will confirm these locations upon arrival.

6:15 pm **Bus to Residence Inn by Marriott Boston Cambridge**
Residence Inn by Marriott Boston Cambridge
120 Broadway, Cambridge, MA 02142

6:30-8:30 pm **Dinner with Panel of MIT Graduate Students talking about the Future of Climate & Energy Research**
Doc Edgerton Room, Residence Inn by Marriott Boston Cambridge,
120 Broadway, Cambridge, MA 02142
Working event for seminar participants to engage with MIT graduate students working on energy research to further discuss the topics explored during the afternoon sessions and those in upcoming sessions.

Moderator: **Bethany Patten**, Executive Director, MIT Climate Policy Center; Staff Director, MIT Climate Project Policy Mission; Senior Lecturer, MIT Sloan School of Management

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Thursday, April 24: Day 2
Seminar location: MIT Bush Room (10-105)

7:30-8:30 am **Breakfast at Residence Inn by Marriott Boston Cambridge**
Residence Inn by Marriott Boston Cambridge
120 Broadway, Cambridge, MA 02142

8:30-8:45 am **Walk to MIT Bush Room (10-105)**

8:45-10:15 am **Agriculture: Climate Adaptation and Emissions Abatement Tools**
The panelists will explore possible technological approaches to help feed the world as the climate changes and while reducing the climate impacts of agriculture. Specific topics will include capturing methane, strengthening crop resiliency, and developing low-carbon methods for crop fertilization.

Moderator: **Desirée Plata**, Professor, MIT Department of Civil and Environmental Engineering; Director, MIT Climate and Sustainability Consortium; Director, MIT Methane Network; Co-Director, MIT Superfund Research Program
David L. Des Marais, Cecil and Ida Green Career Development Professor and Associate Professor, MIT Department of Civil and Environmental Engineering
Ariel L. Furst, Paul M. Cook Career Development Professor of Chemical Engineering, MIT Department of Chemical Engineering
Bradley D. Olsen, Alexander and I. Michael Kasser (1960) Professor and Executive Officer, MIT Department of Chemical Engineering; Faculty Director, MISTI-Brazil and MISTI-Amazonia Programs

10:15-10:30 am **Break**

10:30 am-12:00 pm **Advancing Industry & Commercial Transportation**
The panelists will explore possible ways to reduce environmental impacts of industrial production, aviation, and trucking – sectors that contribute significantly to greenhouse gas emissions but which cannot be easily electrified. They will discuss their work to develop affordable low-emissions solutions for these sectors.

Moderator: **William H. Green**, Director, MIT Energy Initiative; Hoyt C. Hottel Professor, MIT Department of Chemical Engineering
Florian Allroggen, Principal Research Scientist, MIT Department of Aeronautics & Astronautics; Executive Director, MIT Laboratory for Aviation and the Environment
Yet-Ming Chiang, Kyocera Professor, MIT Department of Materials Science and Engineering
Bilge Yildiz, Breene M. Kerr (1951) Professor, MIT Departments of Nuclear Science and Engineering and Materials Science and Engineering

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12:00-1:30 pm **Lunch with MIT Climate Project Mission Directors**

In 2024, MIT launched a whole-of-MIT initiative to respond to the multiple challenges of global climate change. As part of that project, six areas of focus or "missions" emerged. Each mission addresses a broad domain where solutions are required for effective climate response and where a critical mass of excellent research capabilities exists at MIT. The panelists will cover their roles in the Climate Project, and will encourage an open dialogue with participants to identify areas at the intersection of the mission objectives and policy community needs.

Andrew R. Babbin, Associate Professor, MIT Department of Earth, Atmospheric & Planetary Sciences; Co-Director, MIT Climate Project Mission on Restoring the Atmosphere, Protecting the Land and Oceans
Christopher Knittel, Associate Dean for Climate and Sustainability, George P. Shultz Professor and Professor of Applied Economics, MIT Sloan School of Management; Director, MIT Climate Project on Inventing New Policy Approaches
Christoph Reinhart, Alan and Terri Spoon Professor of Architecture and Climate, MIT Department of Architecture; Director, MIT Climate Project Mission on Resilient and Prosperous Cities

1:30-2:45 pm **Resilient and Energy Efficient Housing for the Future**

The panelists will explore approaches to making housing more energy efficient and resilient to climate change in affordable ways. They will discuss examples of how technologists, architects, planners, and others involved in housing are working on these issues.

Moderator: **Drew Story**, Policy Director, MIT Climate Policy Center
Mariana Arcaya, Germeshausen Professor of Urban Planning and Public Health, MIT Department of Urban Studies and Planning
Christoph Reinhart, Alan and Terri Spoon Professor of Architecture and Climate, MIT Department of Architecture; Director, MIT Climate Project Mission on Resilient and Prosperous Cities
Justin Steil, Associate Professor of Law and Urban Planning, MIT Department of Urban Studies and Planning

2:45-3:15 pm **Travel time to Lab Tours**

3:15-5:45 pm **Tours**

Sublime Systems
28 Park Street, Somerville, MA
Sublime Systems is an MIT spinout that makes low-carbon cement, using electrochemistry instead of heat and combustion to transform minerals into the building material. The visit will be to the headquarters of Sublime Systems, located in Somerville, MA. The headquarters houses Sublime's 5,000 square foot laboratory for R&D as well as Sublime's pilot plant, with a nameplate production

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capacity of 250 tons per year. The tour will describe the core Sublime technology and showcase Sublime's world class cement testing laboratory.

Glen Junor, Program Manager, Public Sector, Sublime Systems

Sublime Systems tour instructions

- Sublime's office space includes a research lab and pilot cement-production plant.
- Photography is not allowed.
- Tour of Sublime's pilot cement-production plant requires a signed NDA.
- Closed-toe shoes and pants are required for entry.
- Protective eyewear will be provided for the tour.
- No food or drink is allowed.

Form Energy
30 Dane St, Somerville, MA 02143
Form Energy is an MIT spinout making iron-air batteries that store electricity for multiple days. We will tour the company's R&D and subscale testing facility and hear about the full-scale development and manufacturing of this American-made multi-day energy storage system. The batteries use common materials and can help utilities meet power demand and ensure a clean, secure, and reliable electric grid.

Ted Wiley, Co-founder and Chief Operating Officer, Form Energy

Form Energy tour instructions

- Tour of Form Energy requires a signed NDA.
- Footwear/Clothing: Please wear closed-toed shoes and long pants, as well as socks that leave no skin exposed on your ankles for your safety.
- Safety Glasses: If you take a tour of our lab spaces, you will be provided with regular, non-prescription safety glasses. We have both regular safety glasses and ones that fit over existing prescription glasses.
- Please do not take photos in lab spaces or technology. Form Energy team members on the tour will find time for some photos at the beginning and/or end of the tour for photos.

5:45-6:20 pm **Travel time back to campus/hotel**

6:30 pm **Walk to Samberg Center**

6:45-8:45 pm **Dinner with speaker: Terawatt Scale Geothermal**
Samberg Conference Center, 7th floor, Salons T and West,
50 Memorial Drive, Cambridge, MA 02142
Carlos Araque, CEO of Quaise Energy, a U.S.-based geothermal energy MIT spin-out that is commercializing a drilling technology to unlock geothermal

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energy at scale, will discuss this emerging technology — using gyrotrons to unlock superhot geothermal energy. It is one of the only solutions that can reach economic and power parity with fossil fuels. He will share perspectives on how the sector can contribute to decarbonizing primary energy and make the future of energy secure and affordable for everyone by drilling hotter and deeper than ever before.

Carlos Araque, Founder and CEO, Quaise Energy

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Friday, April 25: Day 3

Seminar location: Doc Edgerton Room, Residence Inn by Marriott Boston Cambridge, 120 Broadway, Cambridge, MA 02142

7:30-8:45 am **Continental breakfast at hotel/check out**
(Bags can be left at the hotel front desk)

8:45-10:15 am **Electricity Transmission: Ensuring a Smart, Affordable, and Resilient Grid**
The panelists will explore possible approaches to enabling the U.S. electric power system to meet projected demand growth and spur economic development, to lower household energy costs, to bolster the system's resilience to natural or deliberate disruptions, and to achieve environmental outcomes. The discussion will include MIT research on smart grids and on modeling the impacts of various policy approaches

Moderator: **Drew Story**, Policy Director, MIT Climate Policy Center
Anuradha Annaswamy, Senior Research Scientist, MIT Department of Mechanical Engineering; Founder and Director, Active-Adaptive Control Laboratory
Christopher Knittel, Associate Dean for Climate and Sustainability, George P. Shultz Professor and Professor of Applied Economics, MIT Sloan School of Management; Director, MIT Climate Project on Inventing New Policy Approaches
Juan Senga, Postdoctoral Associate, MIT Center for Energy and Environmental Policy Research and MIT Climate Policy Center

Introductions for the following individual presenters will be provided by:
Bethany Patten, Executive Director, MIT Climate Policy Center; Staff Director, MIT Climate Project Policy Mission; Senior Lecturer, MIT Sloan School of Management

10:15-11:00 am **The Effects of Climate Change on Home Insurance**
The speaker will discuss how climate risk is disrupting insurance markets, and will analyze policy responses being tried around the world and in the U.S.

Adam Solomon, PhD Candidate, MIT Department of Economics

11:00-11:20 am **Break**

11:20 am-12:45 pm **En-ROADS**
The En-ROADS Climate Workshop uses the En-ROADS climate solutions simulator, which gives users the opportunity to test out different policy approaches for climate change, and to assess their possible impacts. This will be an interactive, group exercise.

Andrew Jones, Executive Director, Climate Interactive; Research Affiliate, MIT Sloan School of Management

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12:45-2:30 pm **Lunch with discussion**
The Costs and Benefits of Environmental Policies
This session will present recent research that evaluated 96 U.S. environmental policies from the last 25 years to quantify their effects on Americans and their cost to taxpayers. This approach to policy analysis facilitates policy comparisons across policy categories, such as comparing environmental policies to public investments in education or healthcare.

Nathaniel Hendren, Professor, MIT Department of Economics; Co-Founder, Policy Impacts

2:30-3:30 pm **Fitting It All Together: Discussion & Seminar Evaluation**
This session will review the entire seminar program, including sessions on climate and AI, nuclear energy, agriculture, industry and commercial transportation, MIT's Climate Project, housing, electricity transmission, carbon border adjustments, home insurance, and En-ROADS. We will answer additional questions from participants about the material throughout the seminar program and the full picture that has emerged. We will also ask for feedback on the seminar structure and additional areas of interest.

Moderator: **David Goldston**, Director, MIT Washington Office
William H. Green, Director, MIT Energy Initiative; Hoyt C. Hottel Professor, MIT Department of Chemical Engineering
Christopher Knittel, Associate Dean for Climate and Sustainability, George P. Shultz Professor and Professor of Applied Economics, MIT Sloan School of Management; Director, MIT Climate Project on Inventing New Policy Approaches

3:30-4:00 pm **Retrieve luggage and board bus**

4:00-4:45 pm **Travel by bus to Boston Logan Airport**

6:11-7:59 pm **JetBlue Flight 2255 from Boston to Washington, D.C.**