Program – April 14

(8:00 – 9:00) Breakfast

(9:00 – 9:20) Welcome and Opening Remarks
We set the stage for this workshop, which rethinks computing infrastructure, from semiconductors to datacenters, for sustainable systems and artificial intelligence. We will introduce an NSF Expedition Computing, a multidisciplinary team of academic researchers studying these questions from diverse perspectives.

- Benjamin Lee, University of Pennsylvania

(9:20 – 10:30) Panel — Artificial Intelligence and Efficiency
We explore the challenges and opportunities in developing energy-efficient AI systems. What are the latest advances in AI and what does the future hold? How can we design AI systems that are both capable and energy-efficient? How can we coordinate the optimization of software models, hardware architectures, and system platforms?

- Chris Callison-Burch, University of Pennsylvania
- Beidi Chen, Carnegie Mellon University
- Emma Strubell, Carnegie Mellon University (M)
- Rene Vidal, University of Pennsylvania

(10:30 – 10:45) Coffee Break

(10:4512:00) Panel — Datacenter Policy and Regulation
We explore the regulatory landscape of building and connecting datacenters to the grid. Should datacenters be treated differently from other industrial loads from a legal and policy perspective and, if so, in what ways? How can we reconcile data center growth and the clean energy transition? How can we ensure costs are spread equitably? Are there countries or states that are managing particularly well? What role can academia play?

- Shelley Welton, University of Pennsylvania (M)
- Miles Farmer, Federal Energy Regulatory Commission
- Tom Bonner, PECO
- Tim Burdis, PJM

(12:00 – 1:30) Lunch

(1:30 – 2:45) Panel — Datacenters and Energy
We explore the technical challenges in provisioning and managing energy for modern datacenters. What strategies do datacenters employ to provision energy for next-generation workloads like artificial intelligence? How can datacenter and grid operators work together to manage energy demand, optimize workload distribution, and maintain grid stability? How can we balance the need for computational power with sustainable energy practices?

- Eric Manaset, University of California, Santa Barbara
- Varun Rai, University of Texas, Austin
- Angel Rodriguez, Harvard Kennedy School
- Tom Wilson, Electric Power Research Institute (EPRI)
- Adam Wierman, California Institute of Technology (M)

(2:45 – 3:30) Coffee Break

(3:30 – 4:45) Panel — Carbon Accounting for the Tech Sector
We explore strategies for accurately measuring and disclosing emissions from technology companies and datacenters. What do regulations from the European Union (CSDR and SFDR) and California require, and how do they impact technology companies? What is the role of ISSB standards, which are being adopted or considered by 30+ countries? What role can academia play?

- Vit Henisz, University of Pennsylvania, Wharton (M)
- Elizabeth Seeger, ISSB
- Guenther Glenk, University of Mannheim
- Mary Beth Houlihan, Kirkland

(4:45 – 5:30) Virtual Talks – Datacenter Computing
We explore strategies for energy-efficient artificial intelligence, focusing on power, energy and thermal challenges associated with generative AI in datacenter computing.

- Vincent Liu, University of Pennsylvania (M)
- Ricardo Bianchini, Microsoft
- Esha Chouske, Microsoft

(5:30 – 8:00) Reception and Dinner

Program – April 15

(8:00 – 9:00) Breakfast

(9:00 – 10:15) Plenary – Energy Systems and Innovation
We explore scenarios and pathways to sustainable energy and systems. How can we accelerate the commercialization of sustainable energy technologies? How can insights from behavioral sciences inform energy policy and promote sustainable practices? What are broader challenges in the provision and use of energy and water resources for computing?

- Vanessa Chan, University of Pennsylvania
- Kelly Sanders, University of Southern California
- Benjamin Lee, University of Pennsylvania (M)

(10:15 – 11:30) Panel – Datacenter Architecture
We explore new directions in datacenter architecture, design, and management. How can we better integrate renewable energy sources and emerging cooling technologies into datacenter infrastructure? What are the opportunities for developing microgrids and deploying batteries into datacenter infrastructure? How can we develop flexible energy management systems with improved monitoring, attribution, and decision making?

- Dorit Aviv, University of Pennsylvania
- William Braham, University of Pennsylvania
- Anand Ramesh, Verrus
- Benjamin Lee, University of Pennsylvania (M)

(11:30 – 1:00) Lunch

(1:00 – 2:15) Panel – Embodied Carbon
We explore advances and challenges in sustainable hardware manufacturing. How do we define and quantify metrics for carbon-efficient computing and develop strategies for reducing the impact of semiconductor fabrication? What is the state-of-the-art in life cycle assessment (LCA) for decision making? How can we build an ecosystem that encourages collaboration within industry?

- Gage Hills, Harvard University (M)
- Kelly Scanlon, IPC
- Udit Gupta, Cornell University

(2:00 – 3:15) Panel – Looking Forward
We discuss policy pathways in energy and technology policy. How can policymakers ensure that AI technologies are adopted responsibly? How can federal initiatives strengthen the research enterprise and support innovation in artificial intelligence and technology systems? What are critical policy considerations for competing effectively in emerging technologies?

- Arthur van Benthem, University of Pennsylvania (M)
- Marsden Hanna, Google
- Oliver Stephenson, Federation of American Scientists
- Tanya Das, Bipartisan Policy Center

(3:15 – 3:30) Closing Remarks followed by Networking Reception.