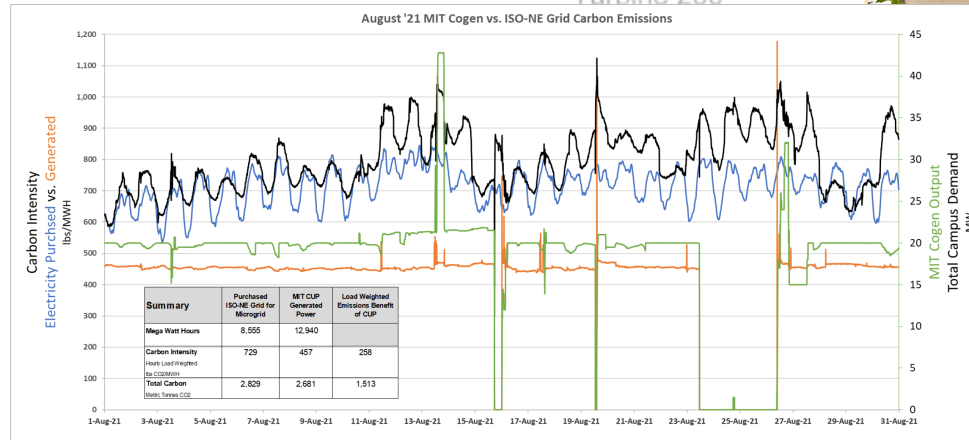
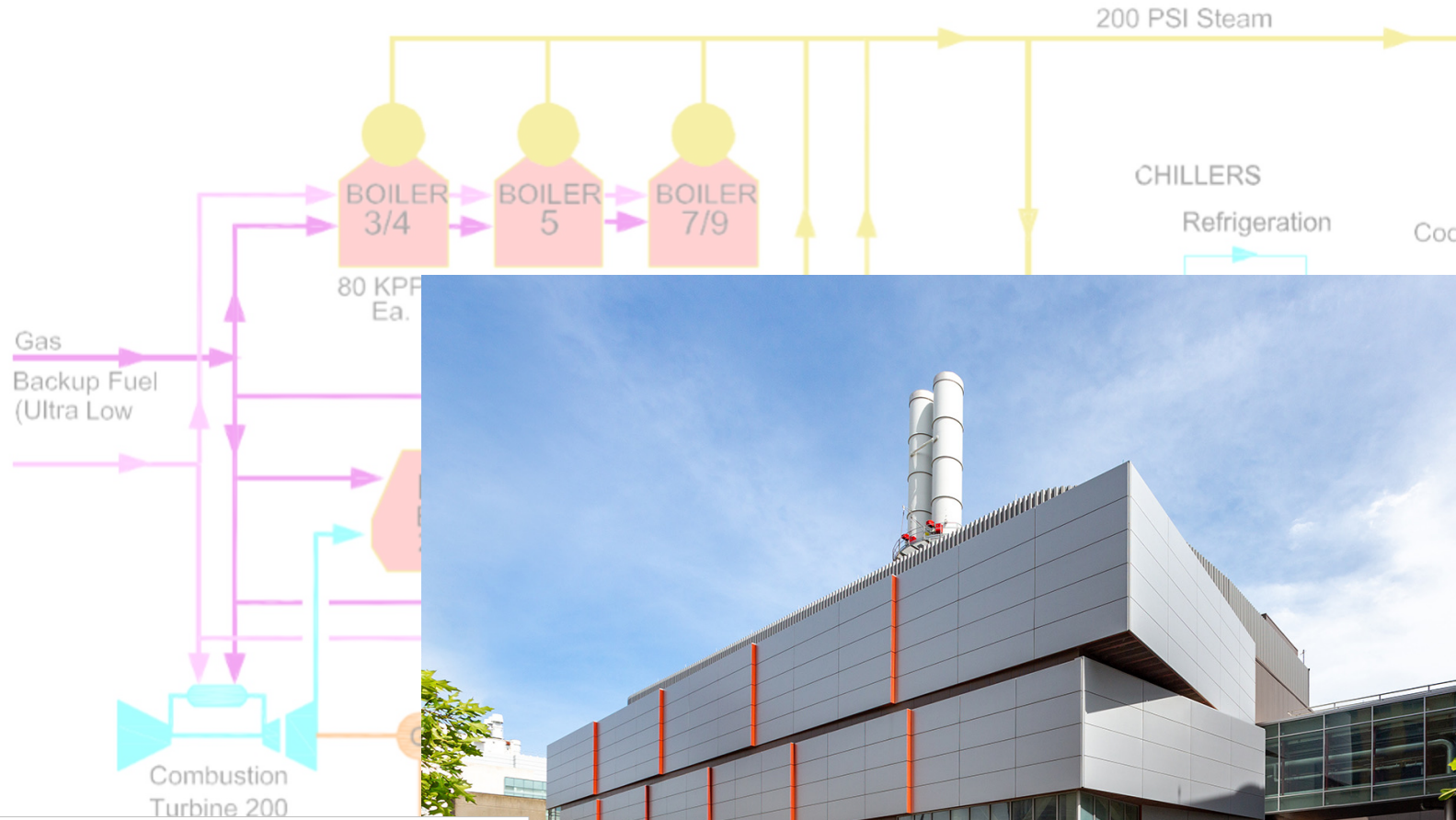


# Decarbonizing the campus district energy system



Using cogeneration technology, the Central Utilities Plant generates power to our campus that is **up to 20% less carbon intensive** than the local power grid.

# Carbon reduction goals for campus

- Overarching goal of **eliminating direct emissions from campus by 2050\***
- Important near-term milestone of **achieving net-zero emissions by 2026**
- MIT's campus climate commitments build towards each of these goals and include developing a plan to **decarbonize the campus district energy system.**

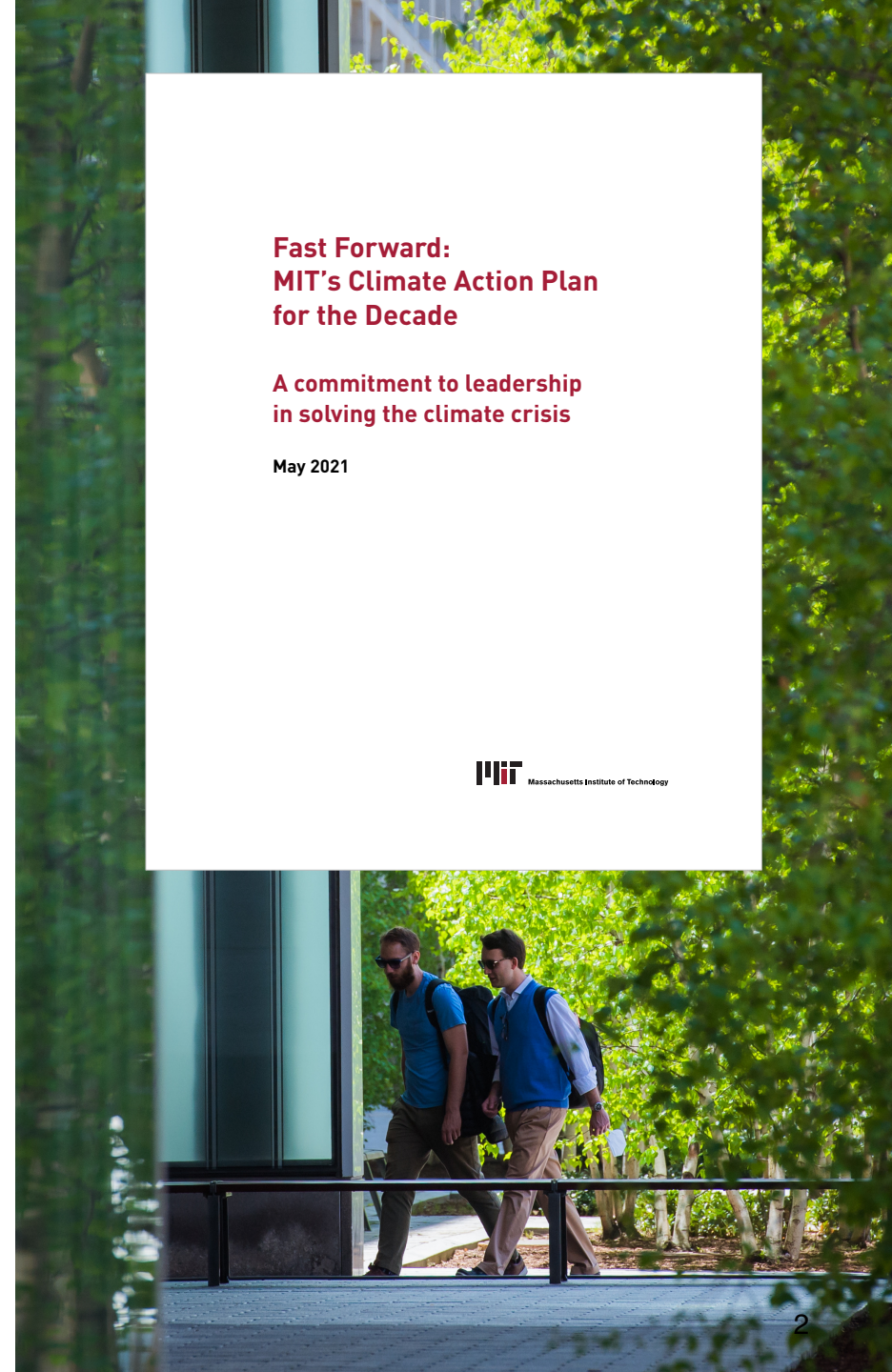
## \*Key dependencies

1. Rate at which we can decarbonize the power grid and add capacity for electrification
2. Needed breakthroughs in technologies for resilient and reliable power

**Fast Forward:  
MIT's Climate Action Plan  
for the Decade**

**A commitment to leadership  
in solving the climate crisis**

May 2021



# Getting to 2050

- **Planning for the next energy era on our campus** – collaborating with faculty, students, industry experts, innovators, peer institutions, and the cities of Cambridge and Boston
- **Accelerating actions** by making deeper energy reductions in existing buildings, electrifying buildings and the vehicles we own, increasing rooftop solar, and expanding electric vehicle charging stations for use by our community
- **Evaluating new technologies and strategies** for the next generation of our district energy system
- **Develop pathways to evolve our district energy systems** while taking into account the technical and operational resiliency considerations needed to sustain MIT's mission

# Developing a plan for decarbonization

## Discovery – establish baseline



April – October 2023

- Assess existing conditions
- Analyze economic variables
- Analyze campus growth and load projections
- **Report:** Energy & Emissions Baseline Scenario and Planning Tool

## Identify energy reduction opportunities



August – December 2023

- Gather data, conduct interviews, survey sites
- Identify constraints, opportunities; develop ideas
- Frame the roadmap to decarbonization
- **Report:** Energy Conservation Measure opportunities

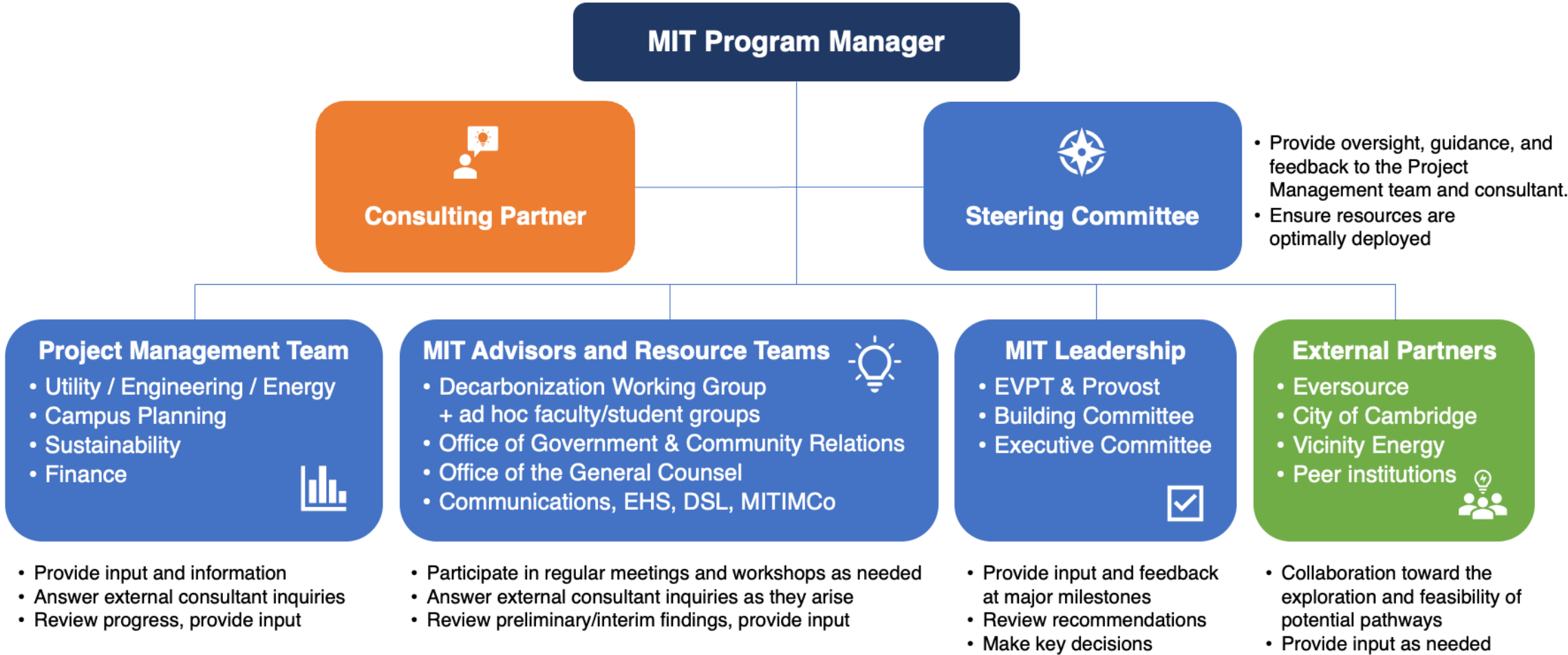
## Develop campus decarbonization plan



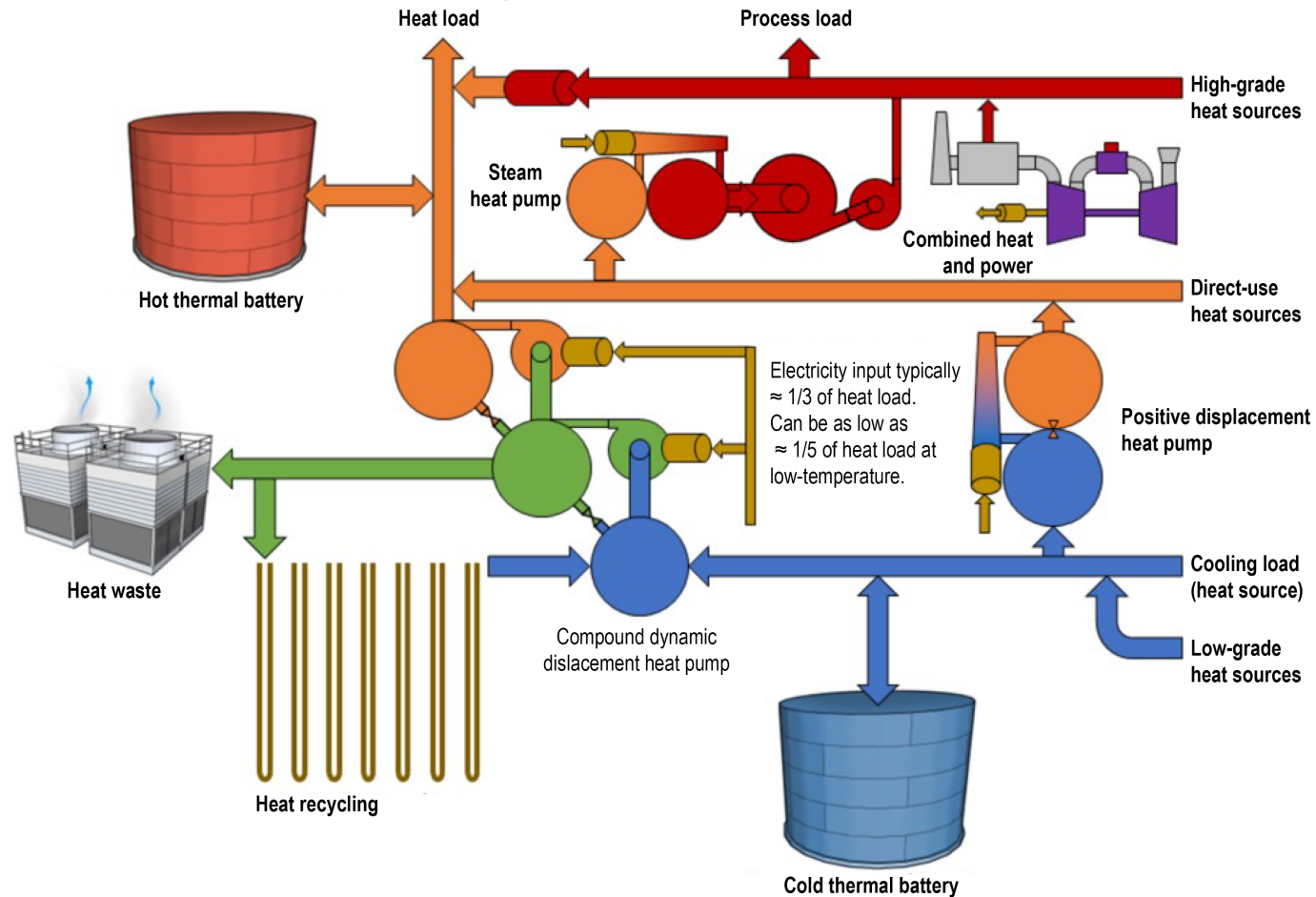
January – September 2024

- Evaluate decarbonization pathway scenarios
- Select 3-4 to model and assess further
- **Report:** Findings and recommended solutions

# Engaging faculty, students, staff, industry experts, city, and peers in decarbonization planning



# Pathways toward the decarbonization of our district energy systems (examples for evaluation)

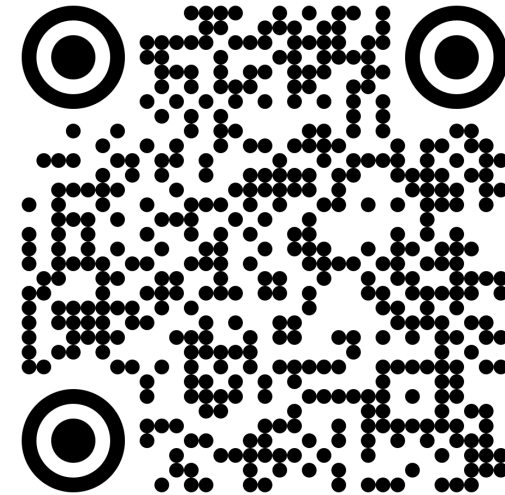
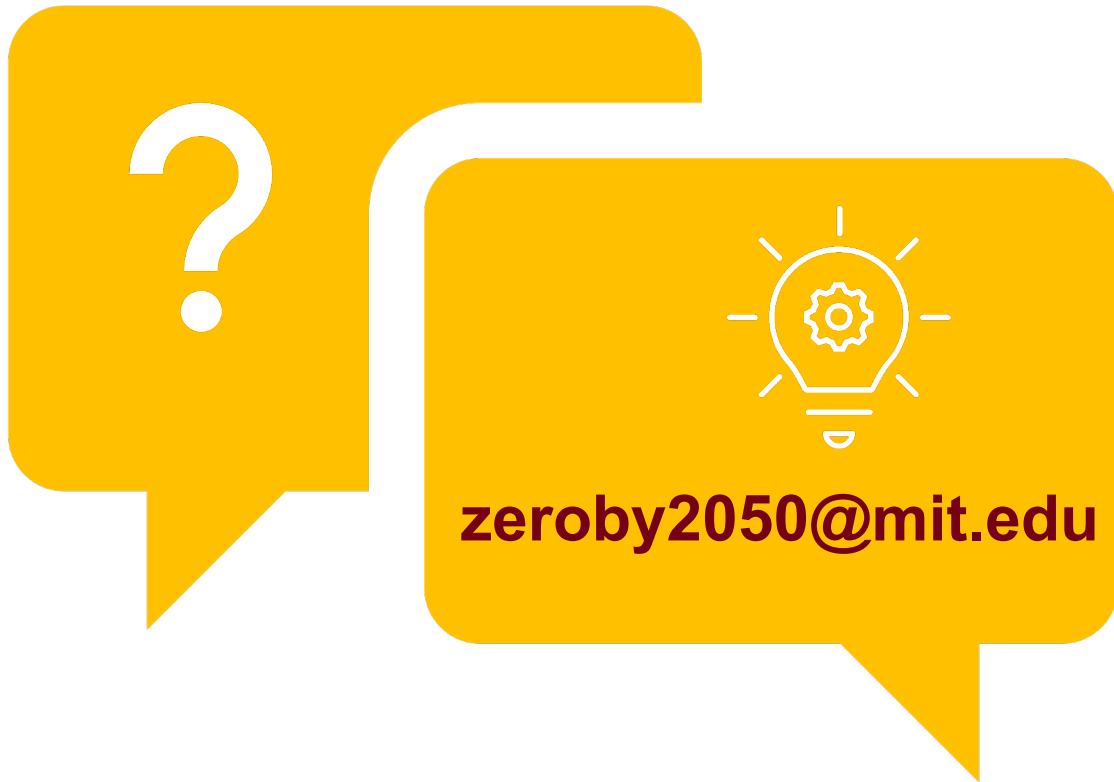


## Technologies under consideration:

- Electrification through centralized heat-pump technologies\*
- Decentralized heat-pump technologies\*
- Electric boilers
- Geothermal / deep-well geothermal
- River water for thermal energy exchange (geo-exchange or other)
- Energy storage for thermal and/or electrical energy (e.g., aluminum sulfur batteries)
- Microreactors and small modular reactors (SMR)
- Renewable fuels
- CO2 capture technology
- Renewable energy PV on campus
- Partnerships with nearby thermal energy producers for green steam
- Opportunities to electrify process steam needs for research equipment within individual buildings
- Other opportunities?

\*Utilizing heat transfer from geo exchange, air-source, water-source, river-water source, and/or triple stage systems capable of producing steam

# Have an idea or question? We'd love to hear from you!



[Learn more](#)