

MIT Office of Sustainability

The MIT Office of Sustainability (MITOS) entered into its third year of operation in summer 2015. The momentum to advance sustainability over the course of a historic year intensified, with a public commitment to place climate, from research to action, at the forefront of MIT's agenda. The office made progress on a number of fronts ranging from publishing the first comprehensive greenhouse gas inventory of the campus to resetting the course for sustainable design and construction, stormwater and land management, materials and waste management, and green labs. MITOS representatives also served in a leadership capacity on a multidepartmental team whose efforts made MIT one of the largest employers in the state to provide free, universal transit passes to its employees.

This report is organized around the focus areas of the office and details its major accomplishments over the year.

In the fall of 2015, MITOS formalized a new, multifaceted framework to communicate its mission and work plan; the framework includes a suite of visual materials and a new logo (depicting a blue dot with a network pattern, reminiscent of the planet and the connections needed to drive change). MITOS has set out to transform MIT into a powerful model that generates new and proven ways of responding to the challenges of a changing climate through operational excellence, education, research, and innovation on campus.

To accomplish this mission, the office now organizes its work into four areas of focus:

- Creating sustainable campus systems (i.e., energy, food, transportation)
- Building the leadership and capacity of the MIT community
- Transforming the campus into an urban living laboratory through hands-on education and research
- Forging collaborative partnerships on the campus and throughout our communities

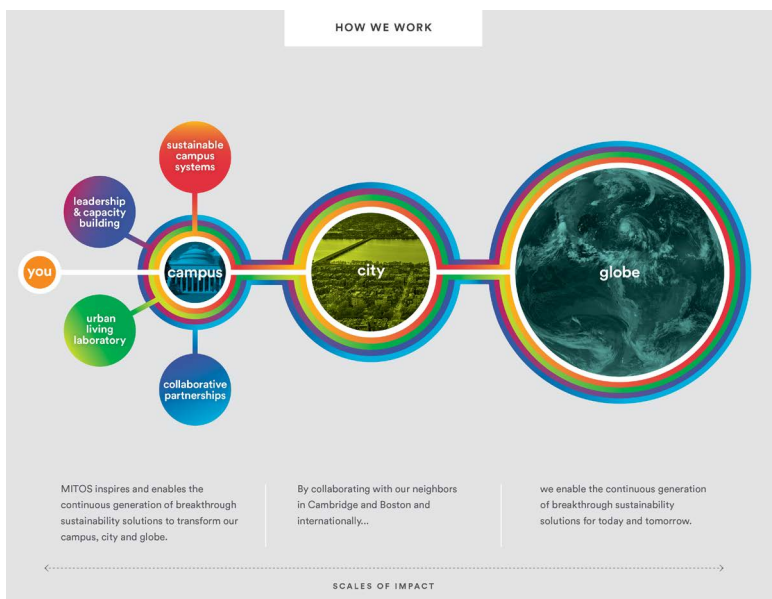


Figure 1. Graphic illustrating the MITOS process for impacting the individual, campus, city, and globe through the office's core areas of work around sustainability.

Given MIT's mission to best serve the nation and the world, the work of the office is meant to impact people and systems at all levels, from individual to campus, city, and globe. The office developed the graphic shown in Figure 1 — as part of the framework — to serve as a visual demonstration of its vision and method. MITOS intends to continuously improve and refine this framework over time.

Creating Sustainable Campus Systems

In 2015–2016, MITOS worked across operational and academic departments to improve the systems that make our campus run (energy, materials, transportation, etc.) while reducing their negative impacts on the community, climate, and ecosystems.

As an important step in measuring the impact of the Institute's sustainability efforts, MITOS developed the campus's first official [greenhouse gas inventory](#) in 2015–2016. The inventory, made available publicly on the MITOS home page, will enable us to track and review the strategies that will significantly reduce the campus's carbon footprint over time.

Fall 2015 also brought two significant and complementary reports that will guide the Institute in meeting its current and future sustainability goals: MIT president Rafael Reif's *Plan for Action on Climate Change* and MITOS's *Campus Sustainability Working Group Recommendations: An Integrative Vision for Our Buildings, Materials, Stormwater, Landscape and Labs*.

The *Plan for Action on Climate Change*, released in October 2015 and updated in April 2016, outlines a comprehensive strategy to address disruption to our global climate and calls for collaborative leadership across sectors to work toward finding solutions. In addition to new research and education, the plan calls on MIT to make our community a “test bed for change,” to reduce campus greenhouse gas emissions by at least 32% by 2030, and to aspire to carbon neutrality. These calls to action are directly aligned with MITOS's work, and the office has been a key stakeholder in the development of a strategy to meet these goals. The greenhouse gas inventory released by MITOS also provides the baseline for the 32% climate goal.

The *Sustainability Working Group Recommendations* report, released by MITOS in November 2015, is the result of a collaborative effort among four working groups, facilitated by MITOS in 2014–2015, that examined a set of operational systems at MIT and charted a course toward goal setting, measurement and verification, and implementation of key strategies. Progress is already being made in meeting these recommendations. For example, the Office of Campus Planning has taken the lead, with support from MITOS, on the development of a comprehensive cutting-edge plan for sustainable stormwater and ecological land management that supports the health and well-being of the MIT community and other living systems while addressing regulations. This will inform the foundation for the development of a climate-resilient campus.

In 2015–2016, MITOS launched and helped facilitate three additional working groups and committees tasked with redefining our campus systems to improve performance,

reduce environmental and human health impacts, and become the “test bed for change” outlined in the president’s climate plan. These three working groups explored the following critical issues over the past year: greenhouse gas emissions, the campus’s vulnerability to climate change, and data.

The Greenhouse Gas Working Group is composed of leaders and staff members from Maintenance and Utilities, Capital Construction, MITOS, the Office of Campus Planning, the MIT Investment Management Company (MITIMco), and the Environment, Health, and Safety Office. The working group will produce a road map for MIT to achieve its 32% greenhouse gas emissions reduction goal by 2030. The MITOS staff is coordinating the group’s work in collaboration with the Department of Facilities.

The Campus Resiliency Committee, chaired by Professor Kerry Emanuel of the Department of Earth, Atmospheric, and Planetary Sciences and supported by MITOS staff, works to identify the risk to MIT from climate impacts. The committee has initiated a collaborative evaluation and planning process to understand how the campus should prepare for uncertain impacts. A primary area of focus is keeping priority academic and research operations online in the event of climate-related impacts while accelerating solutions for regional livability and long-term resilience.

The Sustainability Data Hub Working Group, a partnership between Information Systems and Technology and MITOS, is planning, coordinating, and initiating the development of MIT’s first sustainability data hub. Once the project is completed, the breadth of MIT sustainability data—from parking data to building energy consumption—will be stored in a centralized location where it can be searched, accessed by a broader audience, and seamlessly fed into data analytics tools and user-friendly dashboards. The data will be used to track sustainability trends and performance, improve institutional decision making, enhance accessibility in a secured and controlled manner, and facilitate knowledge sharing, collaboration, and research.

While MITOS worked to operationalize the sustainability data hub, it continued to move forward on the collection of important metrics that help benchmark MIT’s progress and communicate its efforts to both internal and external partners. In 2016, MITOS completed the first full draft of the Association for the Advancement of Sustainability in Higher Education’s Sustainability Tracking, Assessment & Rating System (STARS) report. This national data collection, assessment, and benchmarking standard for institutions of higher education asks for a comprehensive data set related to research, curricula, campus operations, and planning and governance for sustainability. MIT’s submission, when finalized in early FY2017, will mark its first public disclosure of this comprehensive sustainability data set and allow for peer benchmarking and sharing of best practices.

In June 2016, MIT rolled out Access MIT, the Institute’s progressive vision for rethinking the culture and experience of commuting at MIT; the initiative represents more than a decade of collaboration among the Institute’s Committee for Transportation and Parking (on which Director Julie Newman sits), the Parking and Transportation Office, the MIT Transit Lab, and, recently, staff from the Office of Sustainability. Announced to MIT

employees by Executive Vice President and Treasurer Israel Ruiz in June, the initiative combines new benefits with a shift in the way parking permits are administered. The program is meant to increase flexible and affordable transportation options for MIT employees, reduce parking demand, and embrace the *Plan for Action on Climate Change* goals. MITOS played a significant role in shaping the launch of the new program and will continue to act as a driving force in its expansion.

Building Leadership and Capacity

As part of its strategy, MITOS works to build leaders and develop the internal capacity of the campus community to solve complex problems and meet the Institute's sustainability objectives. MITOS facilitates collaborative leadership groups, such as the Campus Sustainability Task Force, to shape a vision and plan of action for sustainability at MIT that reflects faculty, staff, and student perspectives. The office also works to build the capacity of individuals at MIT to understand critical issues and develop skills for integrating sustainability into their day-to-day campus lives. In 2015–2016, MITOS had a number of accomplishments in this area, as described below.

The Campus Sustainability Task Force, whose members were appointed by the provost and the executive vice president and treasurer, was asked by leadership to evaluate and recommend how to advance the Institute's goal of using the campus as a living lab for sustainability. In 2015–2016 the task force, which is chaired by Julie Newman and Professor Andrea Campbell, head of the Department of Political Science, began drafting a blueprint for campus sustainability at MIT through 2025. The final blueprint will be reported on in 2016–2017.

During the academic year, MITOS also convened a student leadership working group, made up of 15 students from 10 different sustainability-related clubs and initiatives, charged with making a set of recommendations to advance the impact of student leadership and further integrate sustainability into the student experience at MIT. In fall 2016, students will work with staff and faculty to transform the recommendations, which focused on increased project support, cultural engagement, and educational opportunities, into action.

In the spring of 2016, MITOS and the Department of Facilities launched a four-part Lunch and Learn series focused on MIT's plan to address climate change. The series brought together more than 240 people throughout the spring semester. The talks engaged staff members in all aspects of energy, building infrastructure, and campus planning and in discussions and brainstorming on the emerging climate action plans under way at MIT. Attendance was at capacity for all four sessions, and feedback from participants was extremely positive. The Lunch and Learn sessions were effective in aligning campus efforts and increasing engagement in climate action planning.

On May 9, 2016, MITOS hosted the second annual Sustainability Connect conference, which brought together over 100 MIT staff, faculty, and students. The event is designed to spark connections and ideas among the impressive collective of people at MIT working to advance sustainability across a diversity of topics and projects. The conference addressed three important themes: Campus Resiliency through Community

Design; 32 Percent and Beyond: MIT's Role in Meeting Local & Global Climate Goals; and Campus as a Living Lab: Reflections from Three Project Teams. The MIT Science Impact Collaborative also led a workshop in which participants prioritized climate-related risks in Cambridge and at MIT and the steps that could be taken to manage health risks caused by climate change.

For the second consecutive year, MITOS led a team of departments and offices in establishing a grant program in conjunction with Earth Day at MIT. The 2016 MIT Earth Day Collective funded 14 projects to promote sustainable action on campus. Members of this year's collective included MITOS, Campus Planning, the MIT Environmental Solutions Initiative, the MIT Energy Initiative, the MIT Recycling Office, the Campus Activities Complex, and the MIT Environment, Health, and Safety Office. Projects were selected on the basis of their capacity to promote climate action, resource efficiency, and sustainable behavior both on the campus and in the community. Showcasing the creativity of the MIT community, projects ranged from a furniture refurbishment workshop to an up-cycled crafts program at the MIT open house.



Figure 2. Researchers, staff, and students discuss living lab projects during a panel at Sustainability Connect. (Source: Ken Richardson Photography)

Transforming the Campus into a Living Lab

A living laboratory exemplifies learning through practice—a tenet of MIT—by opening the doors of the campus to students and faculty to explore, experiment, and develop solutions in a real-world facility. MITOS supports living lab projects that bring staff, faculty, and students together around sustainability issues ranging from traffic congestion in Kendall Square to purchasing behavior at MIT workplaces. In 2015–2016, MITOS supported living lab experiences in several areas, as follows.

The office served as an active MIT research partner by facilitating exchanges of campus data and information among students, faculty, and staff. MITOS worked across MIT with departments and offices such as Facilities, Campus Planning, Procurement, Parking and Transportation, and Architecture and groups including the Sloan School of Management's Sustainability Initiative, and the Kendall Square Ecodistrict. The office acted as an intermediary between data seekers and data providers, facilitated negotiations on terms of usage, and removed sensitive data elements when necessary.

MITOS directly supported a number of classes, theses, and projects. Highlights include:

- Providing advisory services for 11.123 Big Plans, Adapting MIT to Climate Change, in which students were asked what they would want Cambridge to look like in 2070 in the face of climate-based changes.
- Supporting the rollout of an online commuting dashboard called AccessMyCommute, which is now integrated into Atlas. The dashboard is not only a way for MIT Transit Lab students to research commuting behavior but serves as a functional tool that allows MIT staff to review their commuting patterns to and from MIT, participate in a rewards program, and use active, environmentally conscious modes of transport.

As MITOS moves forward, it intends to develop a strategic framework for maximizing the potential of MIT to serve as a living lab for sustainability.

Forging Collaborative Partnerships

To truly bridge the space between the campus, city, and globe, MITOS works purposefully to build collaborative partnerships within and outside MIT that harness the collective intelligence of communities to solve shared problems. Below are a number of highlights from 2015–2016 that demonstrate the office’s collaborative partnerships with the cities of Cambridge and Boston as well as with networks of peer institutions.

Partnerships in Cambridge

FY2016 marked a turning point for the Cambridge Compact for a Sustainable Future, which now has 20 signatories (MIT was a founding member). In June 2016, the compact cemented unanimous member support for the adoption of a comprehensive three-year work plan that lays a path for implementing the priority actions identified by the members. Representatives from MIT continued to play a leadership role in the governance and implementation of the compact by serving as board members, executive committee members, and working group chairs. MIT will extend its participation and leadership in FY2017.

In May 2016, MITOS submitted to the city of Cambridge the second annual submission of what will become publicly available data on MIT building energy use. The city’s Building Energy Use Disclosure Ordinance captures nearly all of MIT’s Cambridge buildings and provides a framework from which to explore how MIT can best create an open-source platform for sharing energy and greenhouse data widely.

MITOS also sits on the Cambridge Recycling Advisory Committee. In 2015–2016, MITOS worked with the committee on the implementation of the city’s Bring Your Own Bag Ordinance. The ordinance, which went into effect in March 2016, prohibits Cambridge businesses (including businesses at MIT) from providing plastic bags. A few months after the implementation of the ordinance, there had already been a significant reduction in the use of single-use plastic and paper bags on campus and throughout Cambridge.

Partnerships in Boston

MIT continued to participate as a member of the Boston Green Ribbon Commission, which seeks to accelerate implementation of the city’s Climate Action Plan and amplify

regional strategies to promote greenhouse gas mitigation, climate resiliency planning, and renewable energy adoption. Executive Vice President and Treasurer Israel Ruiz serves as a member, and MITOS staff members also participate. In February 2016, the commission's Higher Education Working Group and Health Care Working Group launched a regional study to develop energy use benchmarks for area laboratory building spaces. MIT was an active participant and submitted energy use data for 43 buildings where lab space comprised 15% or more of overall gross square footage. Benchmarking data specifically for labs is useful to commission member schools in assessing building performance and opportunities for improvement.

Regional Partnerships

In May 2016, MITOS hosted the 2016 annual summit of the Ivy Plus Sustainability Consortium, which is composed of sustainability directors from 14 peer universities. These summits are designed to accelerate implementation of the group's five-year strategic plan of advancing the practice of campus sustainability in the field, sharing best practices, developing shared data sets for benchmarking and research, and leveraging the group's collective experience to expand progress at all universities.

MITOS also participates in the Northeast Campus Sustainability Consortium and attended its annual meeting at Wellesley College in April 2016, which brought together campuses from around the Northeast and Canada to share best practices. In addition, MITOS helped facilitate monthly membership calls to advance learning and exchanges among our peers.

Global Partnerships

MITOS director Julie Newman is a founding member of the International Sustainable Campus Network. The network, in its 10th year, provides a global forum to support leading colleges, universities, and corporate campuses in the exchange of information, ideas, and best practices for achieving sustainable campus operations and integrating sustainability into research and teaching. MIT is now represented on the network's advisory committee and holds a chair position on one of its working groups.

Summary

In FY2017, MITOS will forge ahead to ensure continued success with the work begun in FY2016 in addition to pursuing new projects. The office will continue to seek collective engagement and action in a number of priority areas. Examples are as follows.

- Climate change: moving ahead with strategies for mitigation, adaptation, and resiliency
- Sustainable transportation: broadening and deepening MIT's commitment to and robust participation in Access MIT
- Data collection and analysis: building a centralized sustainability data hub to inform and learn from our decision-making processes and institutional impacts
- Food and culture: exploring ways to connect food choices to community health, sustainable agriculture, and climate change

- Sustainable design and construction: continuing to ensure that we have access to the knowledge and processes needed to enable our campus growth while minimizing our impacts
- Stormwater and ecological land management: seeking an understanding as to how the ecological systems of our urban campus perform and how we can prepare for a changing climate

Julie Newman
Director