

An aerial photograph of the MIT campus in Cambridge, Massachusetts. In the foreground, a large green lawn is flanked by dense trees. In the middle ground, a parking lot and several buildings are visible. In the background, the city skyline of Cambridge is seen across the Charles River, with a bridge crossing the water. The sky is clear and blue.

# MIT Office of Sustainability Annual Report to the President FY2016



Office of Sustainability

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## FY2016 Annual Report to the President

The Office of Sustainability entered into its third year of operation in the summer of 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, nicknamed "MITOS" that year, 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 via the Sustainability Working Group Recommendations. MITOS representatives also served in a leadership capacity on a multi-departmental team that made MIT into 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.

## Establishing a guiding framework for MITOS

In the fall of 2015, MITOS formalized a new, multi-faceted framework to communicate its mission and work plan, which 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; and
- Forging collaborative partnerships on campus and throughout our communities.

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, to city, to globe. The Office developed the graphic below – 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.

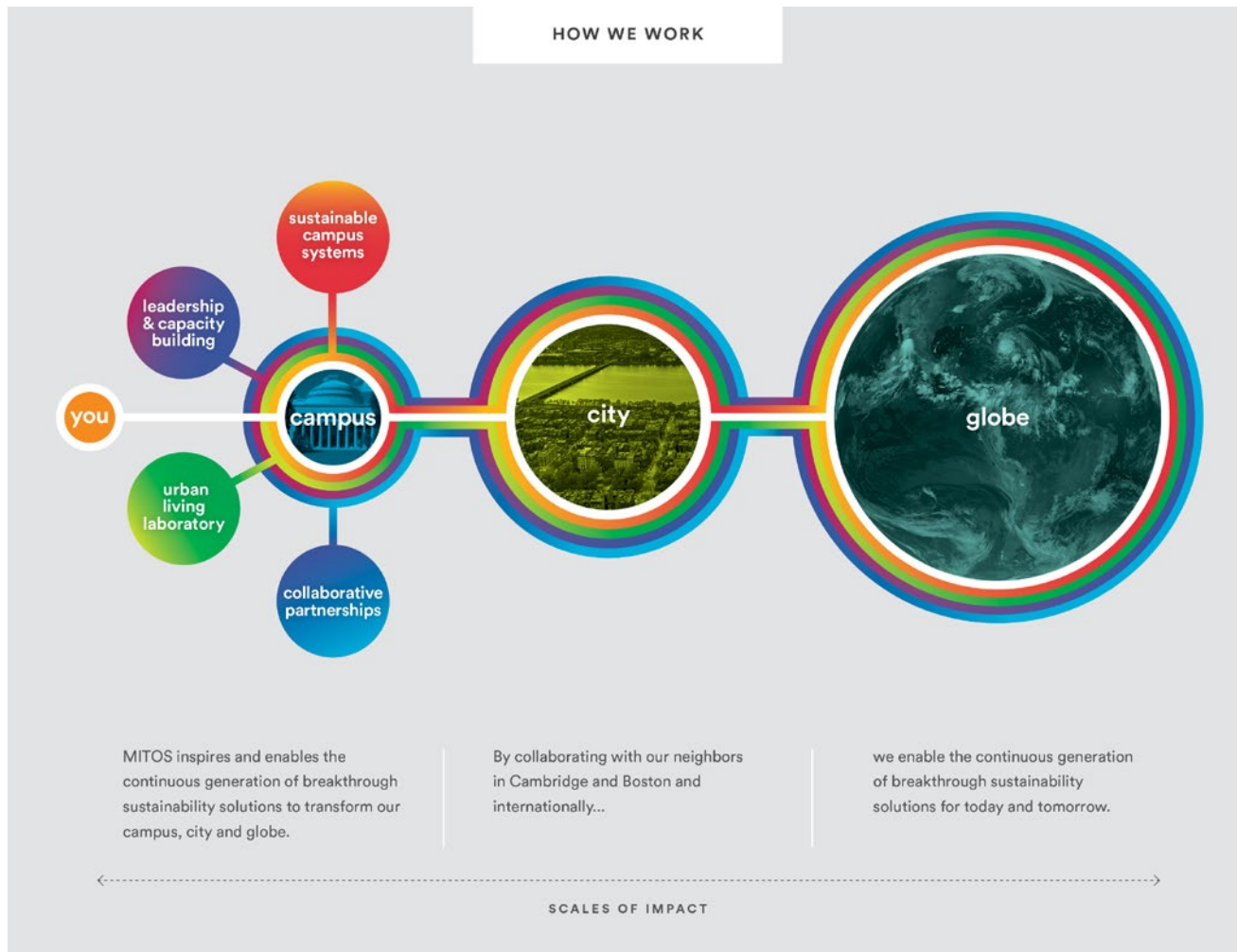


Figure 1. MIT Office of Sustainability Framework

*This graphic illustrates MITOS' process for impacting the individual, campus, city, and globe through its core areas of work around sustainability.*

## Creating Sustainable Campus Systems

In 2015-2016, MITOS worked across operational and academic departments to improve the systems that make our campus run (i.e. 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' first official Greenhouse Gas Inventory in 2015-2016. The Inventory was made available publicly on the MITOS webpage, and will enable us to track and review which strategies will significantly reduce the campus's carbon footprint over time.

The fall of 2015 also brought two significant and complimentary reports – which will continue to guide the Institute toward meeting its current and future sustainability goals – President Reif's MIT Plan for Action on Climate Change and MITOS' Campus Sustainability Working Group Recommendations: An Integrative Vision for our Buildings, Materials, Stormwater, Landscape and Labs.

- The MIT Plan for Action on Climate Change, released in October 2015 and updated in April 2016, outlines a comprehensive strategy to address the 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 own community into a “test bed for change,” to reduce campus greenhouse gas emissions by at least 32 percent by 2030, and to aspire to carbon neutrality. These calls to action are directly aligned with MITOS' 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 percent climate goal.
- The Sustainability Working Group Recommendations, released by MITOS in November 2015, are the result of a collaborative effort between 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 toward meeting these recommendations is already underway. 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 support 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. The three working groups in 2015-2016 explored the following critical issues: greenhouse gas emissions; the campus’ vulnerability to climate change; and data.

- The Greenhouse Gas (GHG) Working Group is comprised of leadership and staff from the Departments of Maintenance and Utilities, Capital Construction, MITOS, Office of Campus Planning, Environmental, Health, & Safety, and MITIMco. The Working Group will be producing a road map for MIT to achieve its 32 percent GHG emissions reduction goal by 2030. MITOS staff is coordinating the work of this working group in collaboration with the Department of Facilities.
- The Campus Resiliency Committee (CRC) is chaired by Dr. Kerry Emanuel, EAPS faculty with support from MITOS staff and is working to identify the risk to MIT from climate impacts: drought to flooding. The CRC has initiated a collaborative evaluation and planning process to understand how the campus ought to prepare for uncertain impacts. A primary area of focus is how to keep 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 is a partnership between IS&T and MITOS and is planning, coordinating, and initiating the development of MIT’s first ever Sustainability DataHub. Once 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 searchable, accessible to a broader audience, and seamlessly fed into data analytics tools and user-friendly dashboards. The data will be used to:
  - o track sustainability trends and performance
  - o improve institutional decision-making
  - o enhance accessibility in a secured and controlled manner
  - o facilitate knowledge sharing, collaboration, and research

While MITOS worked to operationalize a 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 (AASHE) Sustainability Tracking, Assessment & Rating System (STARS) report. This national standard for data collection, assessment and benchmarking for institutions of higher education asks for a comprehensive data set related to research, curriculum, campus operations, and planning and governance for sustainability. MIT's submission, when finalized and submitted in early FY17, will mark MIT first public disclosure of this comprehensive sustainability data set and allow for peer benchmarking and the sharing of best practices.

In June 2016, MIT rolled out the first major initiative of "Access MIT," the Institute's progressive vision for rethinking the culture and experience of commuting at MIT, representing over a decade of collaboration between the Institute's Committee for Parking and Transportation (on which Director Julie Newman sits), the Parking and Transportation Office, the MIT Transit Lab, and recently the Office of Sustainability staff. The initiative, announced to MIT employees by EVPT Israel Ruiz in June, 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 goals of the Plan for Action on Climate Change. MITOS played a significant role in shaping the launch of the new program and will continue to act as a driving force in the expansion of Access MIT.



## 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 models, 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 the individual at MIT to understand critical issues and develop skills for integrating sustainability into their day-to-day campus lives. In 2015-2016, MITOS had the following accomplishments in this area.

- The Campus Sustainability Task Force, whose members were appointed by the Provost and the Executive Vice President and Treasurer, were asked by leadership to evaluate and recommend how to advance the Institute goal of using the campus as a living lab for sustainability. Throughout 2015-2016, the Task Force, which is chaired by Julie Neman and Professor Andrea Campbell, Dept. Head 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 fifteen students from ten 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 the fall of 2016, students will work with staff and faculty to turn the recommendations into action. The recommendations focused on increased project support, cultural engagement, and educational opportunities.
- 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 our Plan for Climate Action on campus. The series brought together over 240 people throughout the spring semester. The talks engaged staff members involved in all aspects of energy, building infrastructure, and campus planning around discussions and brainstorming on the emerging climate action plans underway 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 building aligning campus efforts and increasing engagement on climate action planning.
- MITOS hosted the second annual "Sustainability Connect" conference on May 9, 2016, which brought together over 100 MIT staff, faculty, and students. The event is meant to spark connections and ideas between the impressive collective of people at MIT working to advance sustainability across a diversity of topics and projects. The conference narrowed in on three important areas: 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 year in a row, MITOS led a team of departments and offices to establish 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: the MIT Office of Sustainability, MIT Environmental Solutions Initiative, the MIT Energy Initiative, the MIT Recycling Office, the MIT Environment, Health, and Safety Office, the MIT Office of Campus Planning, and the Campus Activities Complex. Projects were selected based on their ability to promote climate action, resource-efficiency, and sustainable behavior both on 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. Sustainability Connect, held on May 9, 2016 at the Samberg Conference Center.](#)

*Researchers, staff, and students discuss living lab projects during a panel at Sustainability Connect.*

## 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 laboratory. MITOS supports living lab projects that bring staff, faculty, and students together around sustainability issues ranging from traffic congestion in Kendall Square to the purchasing behavior of MIT workplaces. In 2015-2016, MITOS supported living lab experiences in the following ways:

- MITOS serves as an active MIT research partner by facilitating the exchange of campus data and information between students, faculty, and staff. The Office worked across MIT with offices such as Facilities, Campus Planning, Procurement, Parking and Transportation and groups such as the Sloan School of Management's Sustainability Initiatives, the Department of Architecture, and the Kendall Square Ecodistrict. In order to facilitate each data exchanges, MITOS acted as an intermediary between the data seekers and data providers, facilitated negotiations on the terms of usage, and removed sensitive data elements when necessary.
- MITOS directly supported a number of classes, theses, and projects. Highlights include:
  - Serving as an advisor in 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 roll out 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 lets MIT staff review their commuting patterns to and from MIT, participate in a rewards program, and other 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 without MIT that harness the collective intelligence of communities to solve shared problems. To highlight this work, below are a number of accomplishments from 2015-2016 that demonstrate MITOS' collaborative partnerships with the cities of Cambridge, Boston, and networks of peer institutions.

### In Cambridge

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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. MIT continued to play a leadership role in the governance and implementation of the Compact through its roles as Board members, Executive Committee members, and working group chairs. MIT will extend its participation and leadership in FY2017.

In May of 2016, MITOS submitted to the City of Cambridge the second annual submission of what will become publically available data on MIT building energy use. The 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 Bring Your Own Bag Ordinance. As of March 2016, the Ordinance prohibits Cambridge businesses from providing plastic bags – including businesses at MIT. Five months after the Ordinance took effect, there had already been a significant reduction in the use of single use plastic and paper bags on campus and throughout Cambridge. On-campus business managers and employees expressed positive feedback on the Ordinance, “I think [the Ordinance] is a good idea and I feel like it's working,” said a food service employee in the Stratton Student Center. “Fewer people are taking bags.”

### In Boston

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MIT continued to participate as a member in the City of Boston's Green Ribbon Commission that seeks to accelerate implementation of Boston's Climate Action Plan and amplify regional strategies to promote GHG mitigation, climate resiliency planning, and renewable energy adoption. EVPT Israel Ruiz serves as a member, and MITOS staffs MIT's engagement. In February 2016, the Higher Education Working Group and Health Care Working Group of the Boston Green Ribbon Commission, launched a regional study to develop energy use benchmarks for

area laboratory building spaces. MIT was an active participant and submitted building energy use data for 43 building where lab space comprised 15 percent or more of all gross square footage. Benchmarking data specifically for labs is useful to Commission member schools in assessing building performance and opportunities for improvement.

#### [In the region](#)

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In May 2016, MITOS hosted the 2016 Annual Summit of the Ivy Plus Sustainability Consortium, which is comprised of 14 peer universities' sustainability directors. The Summits are designed to accelerate the implementation of the group's 5 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 (NECSC) 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. MITOS helped facilitate monthly membership calls to advance learning and exchange between our peers.

#### [In the world](#)

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MITOS director, Julie Newman is a founding member of the International Sustainable Campus Network [ISCN]. The ISCN, in its tenth 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 in research and teaching. MIT is now represented on the Advisory Committee and holds a chair position for Working Group 3: Integration of Teaching, Research and Facilities.

## Conclusion

In FY2017, MITOS is forging ahead with ensuring continued success with the work that was started in FY2016 and also looking ahead to new project development. MITOS will continue to seek collective engagement and action on priority areas that include: climate change, forging ahead with strategies for mitigation, adaptation and resiliency; sustainable transportation, broadening and deepening MIT's commitment 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 & 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 prepare for a changing climate.