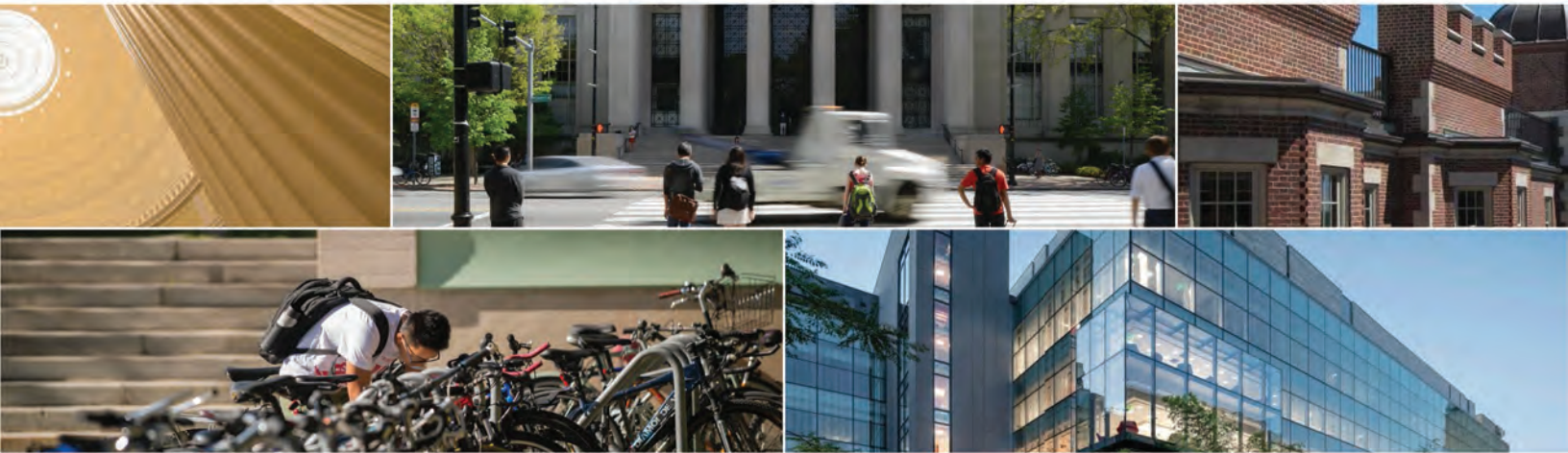


2021

Town Gown Report *to the City of Cambridge*



Quarter Century of Submissions



Massachusetts
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logy



The Cover

Photos on the front and back cover represent MIT's Town Gown Report submissions over the past 25 years. Details about the photos and the respective years the photos represent can be found in the 'Quarter Century of Submissions' section.

2021 Town Gown Report

This year marks MIT's 25th submission of its annual Town Gown Report to the City of Cambridge. While the report touches on similar themes each year, unique priorities and projects emerge from a quarter-century retrospective. Topics such as housing, sustainability, building activity, and transportation considerations remained constant. Each year, the Institute also reflected on notable milestones from City collaborations and approvals to groundbreaking ceremonies and ribbon-cutting celebrations. All of the activities reported in these pages, and in the quarter-century retrospective, serve to advance MIT's mission of teaching and research as the Institute strives to address local and global challenges that impact society and the planet.

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MIT Town Gown Report: Quarter Century of Submissions

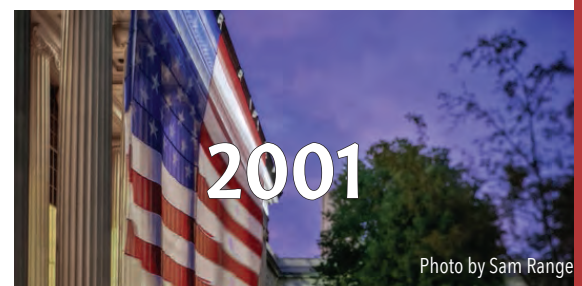
With a total of six pages, MIT's first report to the City of Cambridge is also the shortest. The report solidifies the institutional planning processes and transparency outlined in the 1991 Mayor's Committee on University-Community Relationships. The summary notes dormitory and lab modernization from the previous five years and describes new transportation policies — a T-pass subsidy program and paid parking program. Charles M. Vest is MIT's President.

The second report underscores the push for alternate transportation and raises safety concerns regarding traffic in the area, particularly on Memorial Drive and Massachusetts Avenue. The summary also highlights several community engagement practices including Cambridge First Day, public presentations, and newsletters.

The third report doubles in length per the City's request to include more details on transportation demand management programs and MIT's housing policies and plans. Baker House (W7) renovations and the construction of Simmons Hall (W79) are announced. Findings from the Task Force on Student Life and Learning kick off a new emphasis on student life and the evolving residential campus that is central to MIT's capital plans for the next decade.

MIT responds to the ever-changing role of technology while addressing the increased need among its students for a more integrated quality of life. The report includes announcements of new residences and construction project updates for the Albert and Barrie Zesiger Sports and Fitness Center, the Media Lab, and the Ray and Maria Stata Center for Computer, Information and Intelligence Sciences, designed by Frank Gehry. The MIT Center for the Study of Diversity in Science, Technology, and Medicine is established to study the impact of diversity in theory and practice.

With various construction projects commencing on campus, the report details MIT's efforts to keep the broader Cambridge community informed and engaged. These initiatives range from public hearings and groundbreaking ceremonies to the development of online information — now available with just a click. Thousands of MIT community members gather on Killian Court for a day of remembrance and reflection following the September 11 terrorist attacks.

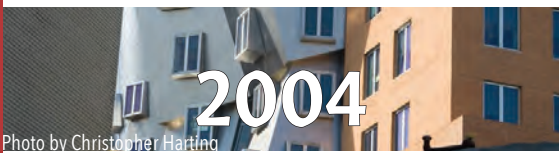




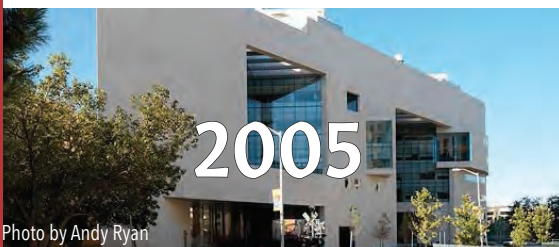
Highlights include the completed Baker House renovation, the opening of Simmons Hall, and the ongoing construction of the Stata Center at the former site of the W20 'Rad Lab.' Public improvement projects progress on Vassar Street and Cambridgeport roadways. Sidney-Pacific Graduate Dormitory opens (NW86).



The Zesiger Sports and Fitness Center opens, and MIT breaks ground for the Brain and Cognitive Sciences project. The report delves into MIT environmental initiatives including how buildings are being built or upgraded and ways in which MIT is engaging with the community, such as an environmental education collaboration with Cambridge Public Schools.



As the campus continues to evolve, so does the leadership. Susan Hockfield is elected the 16th president of MIT after the conclusion of Vest's 14-year tenure. The Stata Center opens (Building 32).



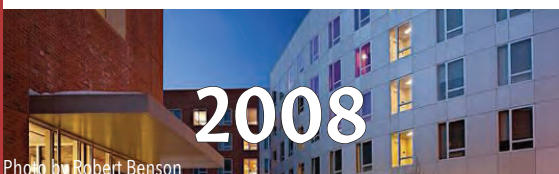
MIT opens the Brain and Cognitive Sciences Complex (Building 46) – the largest neuroscience center in the world. The LEED Silver-certified mixed-use facility is designed to foster groundbreaking collaborations, and its construction revitalizes Vassar Street with new trees, lighting, paving, and bicycle lanes. The building's completion marks the conclusion of the 'Evolving Campus' building program.



Construction on multiple projects is ongoing, including Ashdown House and the David H. Koch Institute for Integrative Cancer Research at MIT. Speaking to these efforts, MIT President Hockfield states: "Our investments will amplify our work in critical, high-impact areas of education and research – fields that will improve human health, strengthen entrepreneurship and economic growth, and address pressing social needs."



The report describes streetscape work on the edges of campus along Massachusetts Avenue. Approximately 15,000 people attend the inaugural Cambridge Science Festival at MIT, the first and largest multi-day celebration of science and technology in the United States, held to celebrate and make accessible the wide range of scientific research going on in Cambridge. A major Physics Department renovation in Building 6C includes a Sol LeWitt installation *Bars of Color within Squares (MIT)*.



Graduate residence Ashdown House (NW35) opens and is the first MIT building to receive LEED Gold certification. Despite the national economic downturn, projects that support excellence in teaching push forward.

An intensive collaboration between the City of Cambridge and MIT, the Vassar Street West streetscape project is completed, building on the achievements of the Vassar Street East project five years prior. To improve the experience for pedestrians and bicyclists, the project widened sidewalks, improved crosswalks, and added new light fixtures, new trees, and a separated bicycle track.

The 2010 report reflects on the end of the decade. Since 2000, the scope of development on the MIT campus was the largest since the major expansion of the campus in the 1960s. The Media Lab expansion is completed. Jaume Plensa's *Alchemist* is gifted to MIT from an anonymous donor and installed in front of the Stratton Student Center at 84 Massachusetts Avenue.

MIT celebrates its 150th anniversary as well as numerous project completions. These projects include: Fariborz Maseeh Hall renovations (W1); MIT Sloan School expansion (E62); and renovations to the Arthur D. Little Building (E60). The Koch Institute for Integrative Cancer Research (Building 76) is dedicated. MIT holds an Under the Dome Open House and welcomes 20,000 visitors to campus. The Simons Center for the Social Brain (Building 46) is established.

L. Rafael Reif is inaugurated as MIT's 17th president. A new floating dock is added to the Wood Sailing Pavilion (Building 51) on the Charles River. The Accelerated Capital Renewal and Comprehensive Stewardship Program is launched. The initiative aims to reduce deferred maintenance in buildings, better enable buildings to support the Institute's initiatives, and provide a systematic approach to campus stewardship.

President Reif establishes the Institute-wide Task Force on the Future of MIT Education and the MIT Innovation Initiative (MITⁱⁱ), both of which will have a profound effect on how MIT organizes space and develops the campus. The Great Dome's oculus (Building 10) is reopened, illuminating the Barker Library reading room, now restored to its original splendor.

The 2014 report provides updates on projects in progress, such as the MIT.nano building, and in the planning and design phase, including the restoration of Kresge Auditorium. Additionally, the report underscores the use of the MIT 2030 framework as a planning tool for the physical campus to envision and invent a vibrant future.

The Sean Collier Memorial is dedicated to celebrate the life of MIT Police Officer Sean Collier, who was killed in the line of duty on April 18, 2013, by the Boston Marathon bombers. In a shape akin to an open hand, the memorial represents the many connections Collier built within the MIT community as well as the sense of service he brought to his job. Renovations to the MIT Chapel (W15), Building 66, and the Simons Building (Building 2) are completed.

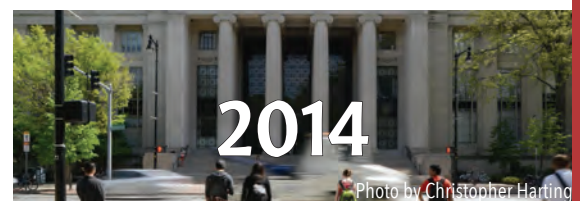




Photo courtesy of MIT Museum



Photo by Christopher Harting



Photo by Wilson Architects



Photo by Gretchen Ertl



Photo by Logan Read

To celebrate 100 years in Cambridge, MIT hosts another Under the Dome Open House. The event attracts more than 40,000 attendees. MIT launches its Campaign for a Better World, a landmark fundraising initiative, and implements a scholarship program for college-bound students in Cambridge to assist with the cost of college. The Access MIT initiative launches as a pathway to increase flexible, affordable, and low-carbon commuting options for the MIT community.

The 2017 report features updates on key developments such as the six-building Kendall Square Initiative, the Volpe Site redevelopment, a new undergraduate dormitory on Vassar Street, and the Institute's comprehensive sustainability and resiliency programs. To support the latter, MIT begins intensive climate resiliency planning with the City of Cambridge and starts the Campus Sustainability Incubator Fund. The MIT Theater Arts building (W97) opens, consolidating all theater activities under one roof on Vassar Street.

The MIT.nano facility (Building 12) opens its doors, representing one of the largest commitments to research in MIT's history. To address the global opportunities and challenges presented by the prevalence of computing and the rise of artificial intelligence (AI), the MIT Stephen A. Schwarzman College of Computing (Building 45) is announced. MIT launches the Task Force on the Work of the Future.

Work continues on the mixed-use Kendall Square Initiative, including Site 4 (Buildings E37 and E38), the future home of a new MIT Welcome Center and MIT Admissions. As part of the Volpe Site redevelopment project, The Job Connector by MIT opens its doors at 792 Main Street as a workforce development hub for Cambridge residents.

The challenges of Covid-19 bring an unprecedented urgency to MIT's Town Gown relationship with Cambridge. MIT mobilizes to find ways to manufacture face shields more quickly and create low-cost, open-source alternative ventilators to combat shortages. MIT supports the City of Cambridge with funds, personal protective equipment, space, and expertise, and suspends rent for its 33 retail tenants.

As described in the current report, MIT continues its commitment to nurturing a diverse community. Through the leadership of the Institute's Community Equity Office (ICEO), MIT hires six new assistant deans to serve as diversity, equity, and inclusion professionals and releases the Task Force 2021 and Beyond report. In Kendall Square, the MIT Welcome Center opens at Site 4 and MIT's Open Space Programming team begins offering activities for the broader community in the new Kendall/MIT Open Space.

Diversity, Equity, and Inclusion

On Campus and in the Community

MIT is committed to creating and nurturing a diverse community that acknowledges individual members and contributors from every corner of the globe and empowers people of all races, gender, and social identities. MIT endeavors to promote an inclusive workplace that welcomes and supports people with various backgrounds, viewpoints, experiences, talents, and ideas. The Institute's mission to advance knowledge and educate students includes supporting all members of the MIT community and encouraging them to embrace diversity and equity, creating a respectful and caring environment that inspires all to do their best.

Strategic Action Plan for Diversity, Equity, and Inclusion

MIT's Institute Community and Equity Office (ICEO) serves as a focal point for the Institute's strategies, programs, and activities related to diversity, equity, and inclusion. The ICEO disseminates best practices and inspires awareness of and enthusiasm for these practices. Drawing on the strength and energy generated by the extraordinary diversity of experiences and backgrounds at MIT, the ICEO seeks to cultivate a caring community focused on shared values of excellence, community, equity, belonging, openness, integrity, and mutual respect.

In 2020, the ICEO was charged to lead the process of creating MIT's first [Strategic Action Plan for Diversity, Equity, and Inclusion](#). The details of the plan proceed from its mission statement:

MIT has offered generations of people the opportunity to change the trajectory of their lives, develop their full potential, and have an impact on the world. Yet the Institute is part of a society in which opportunity is not evenly distributed and in which not all people feel equally valued. To more fully live up to its mission and increase

its own impact, MIT will continue removing barriers to equity, opportunity, and belonging, increasing the diversity of its community, and shaping an environment in which all people can do their best work and thrive. By establishing and pursuing concrete objectives for improvement, MIT can play an important role in meaningful societal change.

The first draft of the strategic action plan was released to the MIT community in March 2021. It proposes that the Institute organize its inquiry and activities around three strategic priorities.

- **Composition:** MIT's community of students, staff, postdocs, faculty, and leadership should reflect a commitment to diversity.
- **Belonging:** MIT can best achieve its goals by creating a community in which all people feel they are connected to each other, can do their best work, and can thrive as members of a community with a sense of shared purpose and agency.
- **Achievement:** MIT will ensure equity is central to how opportunities are presented to all members of the community, and to the assessments of all students, staff, postdocs, and faculty.

As work on the Strategic Action Plan continues, MIT is also investing in the Institute's capacity to create a more welcoming community. Six [new assistant deans for diversity, equity, and inclusion](#) have joined the staff, one in each of the Institute's five schools and one in the MIT Stephen A. Schwarzman College of Computing, with dotted-line reporting to the ICEO. MIT also created several new diversity-related positions in departments, labs, and administrative units across campus. Their expertise will be crucial to the implementation of the Strategic Action Plan.

Other Institute-wide initiatives, programs, and planning activities with diversity-related objectives or anticipated outcomes include:

- The [Ad Hoc Committee on Arts, Culture, and DEI](#), launched in July 2020 to activate the arts and humanities as part of MIT's efforts to confront our history, challenge common assumptions, and incorporate previously marginalized voices in the MIT community;
- The [MIT Values Statement Committee](#), created in December 2020 to provide a statement of institutional values that will help the MIT community "understand itself and maintain the best aspects of its identity over time"; and
- [MIT's Task Force 2021 and Beyond](#), which issued a report in November 2021 that features within its broader scope many recommendations related to diversity, equity, and inclusion at MIT.

As these selected examples highlight, MIT is actively working to improve the Institute's ability to attract, retain, and ensure success for all members of its community. As these initiatives and others mature and move into implementation, MIT will make measurable progress on its goal to be a more welcoming and inclusive environment.

Small and Diverse Business Program

MIT is committed to increasing procurement from minority and Black-owned businesses at the central Institutional level and within individual administrative units on campus. The Small and Diverse Business Program has made significant strides by building a network of active and engaged purchasers across campus and facilitating relationships between the Institute and local organizations such as the Black Economic Council of Massachusetts (BECMA). Over the next year, the program will release new resources for on-campus purchasers and work closely with BECMA and other organizations

to increase procurement opportunities for local small and diverse businesses.

Volpe Equity and Inclusion Workshops

As part of the Volpe project's community engagement process, MIT hosted a series of seven equity and inclusion workshops during 2020 and 2021 in an effort to determine how to make the development as equitable and inclusive as it can possibly be. These community-based workshops focused on Volpe's community center, retail, employment, open space, and housing. Approximately five hundred members of the Cambridge community participated and helped MIT understand how best to achieve meaningful equity and inclusion objectives. Nearly every element of the Volpe plan was touched by this process, including the open space details, operational and logistical practices, and the retail development planning process.

Inclusion Drives Innovation

MIT was deeply engaged in the Kendall Square Association's Inclusion Drives Innovation (IDI) initiative during 2020 and 2021. IDI is a ten-week professional development program focused on building anti-racist organizations and activating a team of change agents in Kendall Square. Fifty MIT employees participated in three different IDI cohorts, and the Institute served as a sponsor and member of the program's host committee. Facilitated by She Geeks Out, each cohort requires an individual commitment of 25 hours for personal and organizational learnings. More MIT staff are expected to participate in the KSA's 2022 IDI cohorts.



Photo by Gretchen Ertl

Housing

Undergraduate Housing

MIT houses 95 percent of its undergraduates in MIT-approved housing, primarily in on-campus residence halls but also in fraternities, sororities, and independent living groups (FSILGs) in Cambridge, Brookline, and Boston. MIT offers four years of housing to all undergraduates and requires all first-year students to live on campus.

According to the latest City of Boston Student Housing Trends report, MIT houses a higher percentage of its undergraduate population than all but three of the 27 reporting institutions. As a whole, the reporting colleges and universities house less than 50 percent of their undergraduate population.

MIT's newest undergraduate dormitory, New Vassar Residence Hall, opened in January 2021, adding 450 new beds for undergraduates. This provided the flexibility to close Burton Conner House (371 beds) for renewal. Burton Conner is expected to be available again in the fall of 2022. A continuing sequence of undergraduate residence hall renovations is anticipated over the next decade.

Graduate Housing

The housing needs of the graduate student population have been studied extensively and explored in the Clay report (2014), in the Graduate Student Housing Working Group report (2018), and now in the ongoing work of a newly chartered Graduate Housing Working Group (GHWG). The recommendations from those reports included the addition of 500-1,100 new beds for graduate students.

MIT responded by making a commitment to deliver a total of 950 beds of graduate student housing and has made great progress toward that goal:

- At 70 Amherst Street (E2), 135 beds were converted to graduate student use in 2017, and an additional 15 graduate student beds were created or converted in other undergraduate facilities.
- The Site 4 Graduate Tower (E37) opened in 2021 with 454 units. Given the imminent demolition of the Eastgate Apartments (E55) (abatement is underway, and demolition is

Housing	Tax Exempt		Taxable	
	MIT-Owned and Managed Housing	Other Housing	MIT-Owned and Managed Housing*	Other Housing
2017				
Units	0	0	163	930
Buildings	0	0	12	7
2018				
Units	0	0	163	939
Buildings	0	0	12	7
2019				
Units	0	0	163	939
Buildings	0	0	11	7
2020				
Units	0	0	163	939
Buildings	0	0	11	7
2021				
Units	0	0	163	939
Buildings	0	0	11	7
2031				
Units	0	0	163	939
Buildings	0	0	11	7

* Occupied by both MIT and Non-MIT residents.



Photo by Gretchen Ertl

planned for 2022), the net gain is 250 beds for graduate students.

- The West Campus Graduate Student Dormitory, scheduled to begin construction in 2022, is expected to deliver approximately 675 new beds in 2024.

By the fall of 2024, MIT will have delivered more than 1,075 new beds for graduate housing, exceeding its commitment by more than 100 beds. Even before these major gains, MIT has been a leader in the provision of graduate student housing. According to the Boston Student Housing Trends report, only 11% of the reported 55,000 graduate students in the region live in university-provided housing; in contrast, MIT provides 36.9% of its graduate students with housing, three times the rate of other Boston area institutions. For those that choose to live in Cambridge, MIT provides housing for more than 50% of its graduate students.

The new Graduate Tower at Site 4 has the highest occupancy of all of the MIT residence halls. The distribution of Site 4 occupants by program is similar to that of Eastgate, which may indicate that many Eastgate residents moved to Site 4 and may also reflect the attractiveness of an east campus location close to academic labs and graduate programs.

MIT has worked directly with the graduate student community to provide residents with additional housing flexibility during the pandemic, for example by allowing early housing lease termination and providing opportunities to pause rent payments for extended periods during the Independent Activities Period (IAP) and again during summer 2021. The Institute has also engaged with graduate student residents on other support measures including a 15 percent discount for Eastgate residents who chose to live at Site 4, a grant program for students with children, short- and long-term emergency funds for graduate students, and a need-based subsidy coordinated by Student Financial Services.

Housing rates at MIT, generally set on an annual basis, were kept level for 2021-2022 due to the pandemic and as a part of an effort to address volatility in the market. This approach was formulated in consultation with the Graduate Housing Working Group, composed of student leaders, Heads of House, and Institute leaders. The Division of Student Life (DSL) and the Office of the Vice Chancellor (OVC) continue to work closely together to support graduate students as they navigate their MIT experience. MIT's goal is to provide an array of affordable, quality housing options so that students can make choices that fit their individual circumstances.

This year, MIT launched a graduate housing referral program which provides current residents of MIT graduate housing with a rental credit for each graduate student they refer who subsequently chooses to live in MIT graduate housing. The referral program was developed to spread awareness about on-campus housing options while encouraging peer-to-peer connections. In addition, MIT pursued new technology to enhance communication and outreach with residents, including a new email ticketing system and a housing management tool (in development) that will increase the convenience of housing selection, enhance management, and promote system efficiency.

As previously reported, MIT has made other recent management improvements intended to make the best use of existing resources while responding to and accommodating graduate student needs. These improvements include:

- Setting on-campus rental periods in closer alignment with off-campus housing market practices for greater convenience and improved choices

- Improving communication and simplifying the housing allocation process resulting in more beds being committed to graduate students sooner in the process, reducing uncertainty and improving the student experience
- Guaranteeing a second year of housing in all facilities, which gives greater housing security for campus residents, particularly master-degree students who desire dependable housing for their full two-year program
- Permitting roommates to sign up for housing as a group
- Allowing couples in buildings previously reserved for single students as well as opening 1-bedroom units for single residents in previously family-only buildings

MIT and Community Housing

Like every employer in Greater Boston, MIT is impacted by high housing costs. The housing shortage imposes a burden on existing and prospective employees at all levels of the Institute, from service and professional staff to academic employees including faculty and post-doctoral researchers. High housing costs can create

Student Residences	2017	2018	2019	2020	2021	2031
Undergraduate Students Residing in Cambridge						
In Institute-approved housing	3,652	3,555	3,626	3,591	767	3,600-3,700
In off-campus housing owned & managed by MIT	1	0	0	0	0	
In off-campus non-MIT housing	107	159	146	126	217	
Graduate Students Residing in Cambridge						
In Institute-approved housing	2,221	2,262	2,348	2,446	1,412	3,200-3,500
In off-campus housing owned & managed by MIT	27	22	32	38	29	
In off-campus non-MIT housing	2,468	2,500	2,415	2,422	2,303	
Student Parking						
Number of student parking permits issued (including resident and commuter parking)*	194	219	364**	451	976	

*Reporting on permits rather than spaces as we have done in previous years allows MIT to more accurately reflect the number of students driving on or around campus.

**Change in the number of active permits from previous years is the result of a change in reporting methodology.

transportation and quality-of-life issues, as employees find they must search farther from campus to find suitable housing they can afford.

To assist with the high cost of housing in the region, MIT provides a flexible, tax-efficient, low-interest mortgage program for its faculty. The program has proven to be an important recruiting and retention tool and is similar to programs offered by peer institutions. MIT's program enrolls approximately 75 percent of eligible faculty. More than 500 faculty members have participated, of whom 146 participants have lived in Cambridge. An important goal of the program is to give faculty more flexibility to choose where they would like to live in the region.

MIT is taking major steps to build housing that will be available to all families in Cambridge and the region, including its own employees. Currently, MIT's plans include building 1,700 units of housing in Kendall Square and at the Volpe Site, of which approximately 330 will be affordable units. The first of these efforts is in construction at 165 Main Street, a 300-unit apartment building with 54 affordable units, nine middle-income units, and 36 innovation units, scheduled to be completed in the second quarter of 2022. In addition, MIT will contribute approximately \$36 million to the Cambridge Affordable Housing Trust during the course of the Volpe Redevelopment Project. To date, MIT has contributed \$11.5 million to the Trust for Sites 3 and 4 of the Kendall Square Initiative.



Photo by Gretchen Ertl

Students, Faculty, and Staff

Student Population

Over the last 40 years, the undergraduate population at MIT has remained within the range of 4,000-4,600 students. MIT's undergraduate student population was 4,577 in 1981 while the reported figure for 2021 is 4,360 — a difference of only 271 students and a small decrease from the previous year. These current numbers are based on FY2021, which uses the fall 2020 enrollment figures. This decrease is primarily attributed to Covid-19 disruptions, with some students choosing to defer enrollment. Preliminary counts for fall 2021 suggest a full recovery of the undergraduate population.

Graduate student enrollment and the number of post-doctoral employees fluctuates based on the independent decisions of academic departments. These determinations are governed by a variety of factors including the availability of research funding, the ability of international students to obtain visas, and more recently the impacts of a global pandemic. Since 2003, the average annual growth rate for graduate students has been 0.5%. Despite Covid-19 disruptions, the graduate student population dropped only 51 students to a total of 6,729 for FY2021. With the opening of the MIT Schwarzman College of Computing, MIT expects its student population to increase over the next decade, matching the augmented teaching and research facilities and faculty available.

Student Body	2017	2018	2019	2020	2021	2031
Total Undergraduate Students	4,489	4,489	4,550	4,516	4,360	4,600
Day	4,489	4,489	4,550	4,516	4,360	
Evening	N/A	N/A	N/A	N/A	N/A	
Full Time	4,444	4,456	4,506	4,487	4,234	
Part Time	45	33	44	29	126	
Total Graduate Students	6,599	6,695	6,742	6,780*	6,729	7,000-7,300
Day	6,599	6,695	6,742	6,780	6,729	
Evening	N/A	N/A	N/A	N/A	N/A	
Full Time	6,592	6,571	6,570	6,774	6,713	
Part Time	7	124	2	6	16	
Non-Degree Students	191	197	195	159	121	
Day	191	197	195	159	121	
Evening	N/A	N/A	N/A	N/A	N/A	
Total Students Attending Classes in Cambridge	11,279	11,381	11,487	11,455	11,210	11,100-11,500
Non-resident students not included	97	85	87	65	44	
Number of Cambridge undergraduate applicants accepted during the application cycle					9	

* International students account for 42% of the 2020 graduate student population.



Photo by Gretchen Ertl

Faculty and Staff

MIT's faculty and staff employment is largely based on the needs and strategies developed at the department, laboratory, and center (DLC) level rather than a centralized planning process at the Institute level.

Approximately 105 DLCs manage their own staffing in support of their objectives with funding that is assembled from a variety of sources. Staffing was reduced by more than 900 employees in the recession more than a decade ago. The staff population did not recover to pre-recession levels until 2015. Since then, the staff population has grown at an annual rate of 0.8%. Over the past year, employee population saw a 5.4%

decline with a loss of 580 employees. The proportion of employees who are Cambridge residents has remained above 20% since 2004.

Postdoctoral employees are staff who have completed their formal education but continue to gain research experience by working in academic laboratories, similar to how medical doctors complete a residency program to specialize in a field of medicine. The number of postdoctoral employees has dropped at an annual rate of 1.4% since 2015, including a significant decline of 11.9% in the current reporting year. The number of faculty members has been relatively flat, growing at 0.4% annually since 2010. The Schwarzman College is expected to increase the faculty headcount by 50 over the next several years.

Faculty and Staff	2017	2018	2019	2020	2021	2031
Cambridge-based Staff						
Head Count	10,596	10,801	10,813	10,805	10,225	10,000-11,000
FTEs	9,009	9,148	9,217	9,198	8,802	
Post-Doctoral Staff**	1,488	1,442	1,434	1,452	1,279	
Cambridge-based Faculty						
Head Count	1,020	1,027	1,037	1,050	1,040	1,100
FTEs	1,013	1,020	1,028	1,041	1,031	
Number of Cambridge Residents Employed at Cambridge Facilities	2,552	2,575	2,560	2,524	2,190	2,500-2,750
** Post-doctoral employees are included in the headcount for Cambridge-based staff.						

Transportation

A Comprehensive Transportation Framework

MIT launched the Access MIT program in the fall of 2016 with the goal of reducing campus parking demand by 10 percent through new commuting incentives and a shift from annual to daily parking fees for employees. By connecting programs, education, modes of transportation, and personal decision-making, MIT strives to create a new awareness and shared understanding of transportation choices and their impacts. This change in parking policy has unlocked commuters from the annual financial commitment of the traditional year-long parking pass. They can opt to commute via bike, subway, bus, or another method on days that they can, without being charged for parking. Between 2016 (when Access MIT launched) and 2019, on-campus parking in gated lots fell by nearly 15 percent.

Employees at MIT have a fully-subsidized transit pass for subway and local bus embedded in their ID cards, enabling them greater flexibility to choose how they get to work every day. MBTA pay-per-use billing has allowed MIT to offer this benefit to its full-time employees. These efforts are designed to help mitigate traffic congestion and advance a culture of low carbon commuting.

Access MIT Program benefits include:

- Free, unrestricted use of the MBTA subway and local bus systems for benefits-eligible Cambridge campus MIT faculty and staff;
- A 60% commuter rail subsidy;
- A 50% subsidy for parking at MBTA stations, up to \$100 per month;
- A shift from annual to pay-per-day parking.

In anticipation of more MIT community members returning to campus this fall, the Institute made adjustments to the Access MIT program to aid in the transition and encourage more public transit use. The commuter rail subsidy was increased to 90% for September and October 2021, and 75% for November and December 2021. Parking at MBTA stations was 100% subsidized for the fall semester, September through December.

MIT is committed to providing amenities to support and encourage students, faculty, and staff to commute to campus by bicycle. The Institute maintains over 5,000 bike parking spaces across campus. All bike racks are located with a focus on providing secure, accessible, well-lit spaces close to building entrances and placed indoors or in covered areas where possible. MIT plans to continue providing additional parking



spaces and other bicycle infrastructure to meet the needs of our growing and enthusiastic cycling community.

In 2009, MIT created a Bicycle Commuter Benefit Program for full-time employees that provides a reimbursement of up to \$300 per year for the purchase, improvements, repair, or storage of a bicycle used for commuting to MIT. To increase flexibility for MIT commuters, revisions to the program were made last year that allow all cyclists to claim a partial subsidy even if they participate in other MIT-subsidized parking or transit programs.

MIT's '[Getting around MIT by Bicycle](#)' map and information pamphlet provides information on bike lanes, bike parking areas, and bike repair stations. The brochure also educates the community on bike safety, etiquette, and security, and communicates the need to 'share the road' with pedestrians, vehicles, and other roadway users.

MIT sponsors six Bluebikes stations with a total of 156 docks on campus. Two of the stations have been in place since the bike-share program began in Cambridge in 2012. These stations are some of the busiest in Cambridge and are located near 77 Massachusetts Avenue and on Vassar Street near the intersection with Main Street.

The most recent station additions were installed on campus at Carleton Street and Hayward Street last year as part of the Kendall Square Initiative. MIT has also committed to expanding the existing Bluebikes station at Westgate by 27 docks as part of the new West Campus Graduate Student Dormitory project.

In addition to sponsoring Bluebikes stations, MIT subsidizes annual Bluebikes memberships for all MIT students, staff, and faculty. Typically, the Institute offers memberships at \$40/year (regularly \$109/year). To ease the transition back to campus this fall, MIT has temporarily increased the popular Bluebikes membership subsidy to 100%.

Since 2014, MIT has been designated as a Silver-level Bicycle Friendly University by the League of American Bicyclists for its excellent bike infrastructure and programs.

The Institute encourages the use of sustainable transportation methods, but also recognizes that it is necessary for many people to drive to campus. To serve its students, faculty, staff and visitors, MIT maintains a campus-wide inventory of vehicular parking spaces. MIT community members with parking accounts are assigned to areas of campus based primarily on where they live or work.



Photo by Christopher Harting

Transportation Policy and Advocacy

MIT is a major supporter of improvements to local and regional transportation, working closely with the City of Cambridge, the Kendall Square Association, the Cambridge Redevelopment Authority, the Cambridge Innovation Center, and other local companies in creating Transport Kendall.

The Transport Kendall focus areas include:

- **Grand Junction Corridor:** Maximizing transportation benefits for pedestrians, cyclists, and transit riders.
- **Red Line:** Improving operational capacity and reliability to meet current and future demands.
- **Bus Connections:** Improving and increasing direct connections to and from Kendall Square.

MIT works with its Transport Kendall partners to take stock of new transportation concerns that have arisen under pandemic conditions, including the meaning of remote work and potential new transit fare products, and to seek federal and state funding for projects that have long been desired but have not been funded, like the Red-Blue Connector at Charles/MGH MBTA Station.

Most recently, MIT was part of the coalition of community groups, advocates, businesses,

and institutions that won an important victory when the Commonwealth opted for an all-at-grade solution as the preferred alternative for the critical I-90 Allston multimodal project. This project will build a new Grand Junction bridge over Soldiers Field Road and create a portal for bicycle and pedestrian connections to Boston and along an improved riverbank next to the Charles River. This will be the first step in creating a transit and multi-use path connection across the river.

Working with the Kendall Square Association, MIT noted the low vehicular volumes experienced in early stages of the pandemic and successfully persuaded MassDOT to install bus lanes on the Charles River Dam road, facilitating the EZRide and other shuttles to more quickly get from North Station to Kendall and the MIT campus.

MIT will continue to work with our partners to advance the Transport Kendall agenda and to engage with other large employers in Kendall on the Transportation ADVANCE initiative, sponsored by the Kendall Square Association. The purpose of ADVANCE is to engage Kendall employers, generate near-term transportation pilot projects for local companies, and tell the story of that experience. MIT will share its experience with Access MIT to explore the impact of an improved employee transit subsidy program incorporating a shift from annual parking rates to a daily parking fee.





Point of Origin for Commuter Trips to Cambridge

Home Location	Count	Percentage
Cambridge	2,190	19.4%
Boston	1,561	13.9%
Somerville	904	8.0%
Arlington	427	3.8%
Brookline	333	3.0%
Newton	287	2.5%
Medford	267	2.4%
Belmont	236	2.1%
Lexington	231	2.1%
Quincy	201	1.8%
Watertown	175	1.6%
Malden	162	1.4%
Winchester	120	1.1%
Waltham	101	0.9%
Melrose	86	0.8%
North Of Boston	635	5.6%
South of Boston	83	0.7%
West Of Boston	102	0.9%
Outside 128	1,794	15.9%
Outside 495	398	3.5%
Connecticut	18	0.2%
Maine	36	0.3%
New Hampshire	164	1.5%
Rhode Island	70	0.6%
Vermont	14	0.1%
Outside New England	493	4.4%
Outside US	177	1.6%
Grand Total	11,265	100.0%

Parking spaces maintained in Cambridge

Number of parking spaces maintained on campus as reported in the annual MIT Parking Inventory **3,706**

MIT Bicycle Infrastructure

Data as of June 30, 2021
Buildings with academic occupancy shown

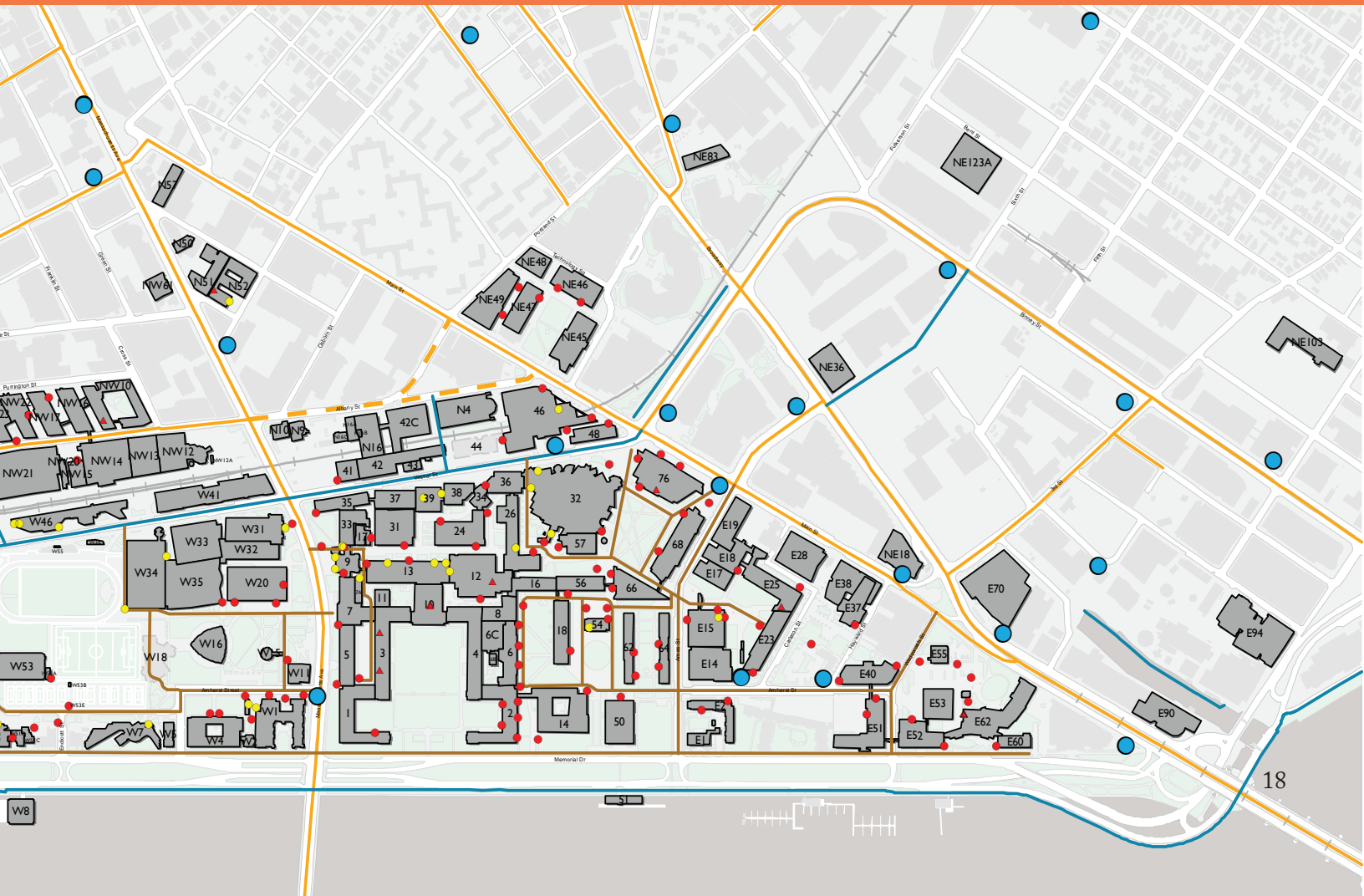


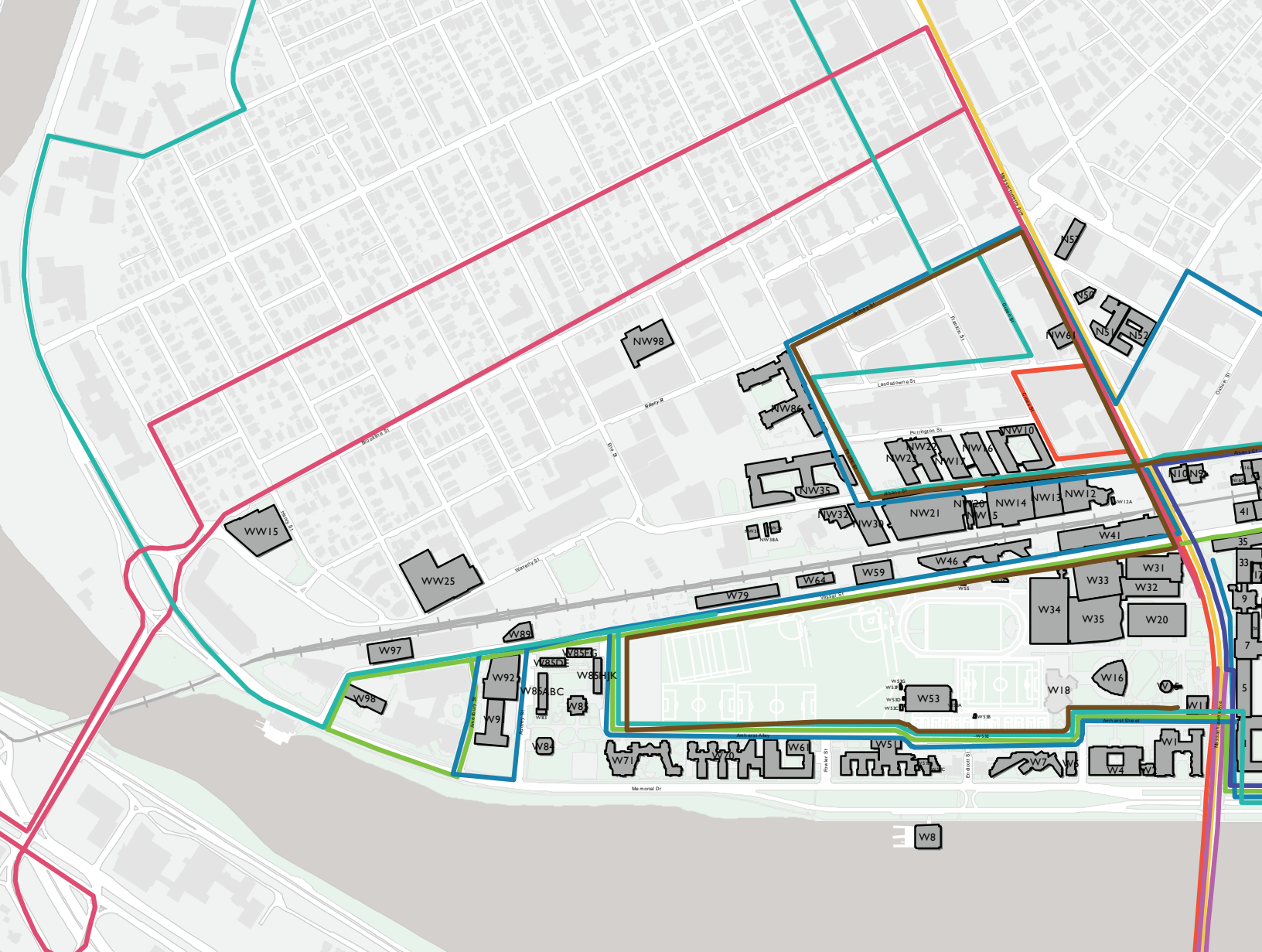
Commuting Mode of Choice

Commuting Mode	2012	2014	2016	2018	2021*
Drove alone entire way	22%	21%	18%	18%	14%
Took public transportation	41%	39%	42%	43%	20%
Carpooled	6%	6%	5%	5%	4%
Bicycled	15%	15%	16%	16%	15%
Walked	13%	14%	15%	15%	11%
Other	3%	5%	3%	3%	2%

*Reporting methodology changed to incorporate remote and flexible working arrangements, including 34% of respondents who did not commute (worked remotely).

- Outdoor bike racks
- Outdoor, covered bike racks
- Major campus pathways
- On-street bike routes
- ▲ Indoor bike racks
- Bluebikes Stations
- Off-street bike routes
- On-street planned bike routes





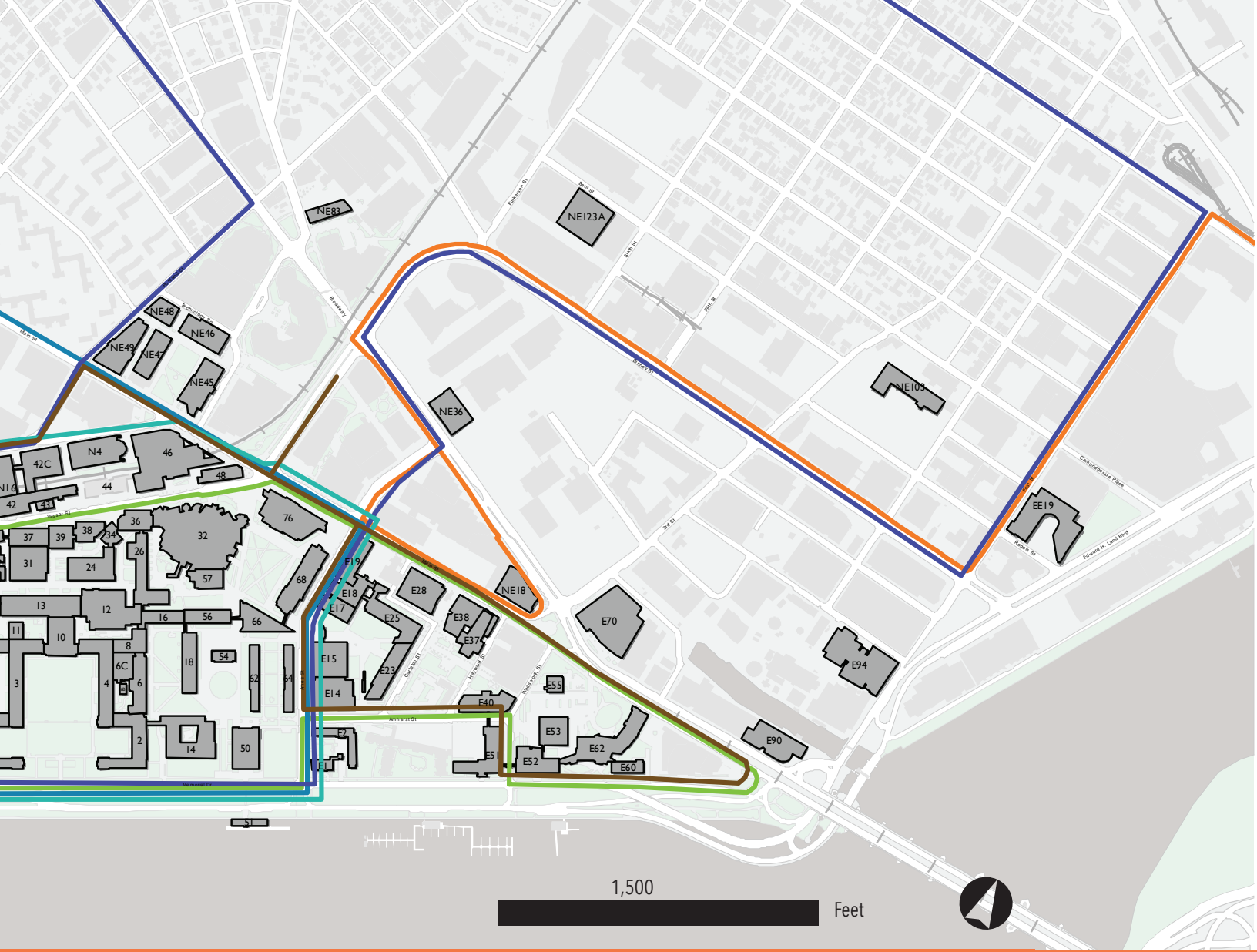
MIT Shuttle Routes

Data as of June 30, 2021
Buildings with academic occupancy shown

Route Name

Vehicle Type

Route Name	Vehicle Type
Tech Shuttle	Mid-size transit, biodiesel
Boston Daytime Shuttle (May-Sept)	Mid-size transit, biodiesel
SafeRide Cambridge East/Somerville	Mid-size transit, biodiesel
SafeRide Cambridge West/Brookline	Mini-bus, gas
SafeRide Boston East	Mid-size transit, biodiesel
SafeRide Campus Route	Mid-size transit, biodiesel
EZRide by CRTMA	---
M2 Shuttle	---
Trader Joe's Shuttle	Mid-size transit, biodiesel
Costco Shuttle (3 Sundays a month)	Mid-size transit, biodiesel
OnDemand Shuttle	Mini-bus, gas



Capacity	Frequency of Operation		Weekday Hours of Operation	Weekend Hours of Operation <i>Buildings with academic occupancy shown</i>
	Peak	Off-Peak		
32 seats	10 min	20 min	6:15AM-11:00PM	---
32 seats	30 min	30 min	8:00AM-5:54PM	---
32 seats	40 min	30 min	6:00PM-11:00PM	6:00PM-11:00PM
14 seats	40 min	30 min	6:00PM-11:00PM	6:00PM-11:00PM
32 seats	20 min	30 min	6:00PM-1:00AM	6:00PM-1:00AM
32 seats	35 min	35 min	6:00PM-11:00PM	6:00PM-11:00PM
---	30 min	20 min	6:20AM-7:40PM	---
---	30 min	20 min	6:20AM-11:00PM	---
32 seats	45 min	45 min	11:30AM-4:30PM (Wednesdays only)	11:30AM-4:30PM (Sundays only)
32 seats	60 min	60 min	---	11:00AM-3:05PM
14 seats	On Demand		11:00PM-2:30AM	11:00PM-3:30AM

Campus Planning

Renewed Central Spine on Vassar Street

Vassar Street is celebrated for its first-in-the-nation separated bicycle track that transformed a drab, industrial service corridor into a cohesive streetscape of trees with attractive paving and street lighting and with utilities buried underground. This work happened in two phases, east and west of Massachusetts Avenue, between 2002 and 2008. Four important projects were built along both ends of the new Vassar Street: the Stata Center (Building 32), the Brain and Cognitive Sciences Center (Building 46), the Zesiger Center (W35), and Simmons Hall (W79, an undergraduate dormitory).

A renewed effort to strengthen Vassar Street as a central spine on the campus is now underway and will unfold in the first half of this decade. Similar to the initial program, this effort involves a dual emphasis: the public realm and core campus activities, including research, teaching, and residential life. The key projects are:

- The Schwarzman College of Computing (Building 45)
- The Vassar Street tree planting program (east of Massachusetts Avenue)

- New street light fixtures (phased replacement of original fixtures with more energy-efficient LED technology)
- The Metropolitan Storage Warehouse (Building W41, the new home of the School of Architecture and Planning and a Project Manus makerspace)
- The New Vassar Residence Hall for undergraduates (W46, now completed)
- The West Campus Graduate Student Dormitory (W87 and W88)

The Grand Junction Multi-use Path for bicycles and pedestrians is the key to enlivening the railroad corridor running east and west, enhancing the track crossings running north and south, and making the campus more porous and inviting. To date, MIT has contributed \$1,000,000 for the design and construction of the Path and has committed an additional \$8,000,000 for construction and to provide an easement through its property.

The Grand Junction Path, the Central Utilities Plant expansion (construction nearly complete) and the Schwarzman College of Computing (Building 45) together constitute a substantial contribution to the larger campus greening plans. Through these projects, an existing narrow asphalt path across the railroad tracks



Photo by Logan Read



will transform into an attractive walkway that connects MIT, the adjacent Albany Street innovation activities, Main Street retail stores, and the Cambridge community. The walkway will include new tree plantings to cool and green this important pedestrian corridor and to filter stormwater runoff. It breaks up a 19th-century industrial superblock between Main Street and Massachusetts Avenue with an enhanced pedestrian and cycling railroad crossing, and it will serve as a major node and crossroad on the planned Grand Junction Multi-use Path.

Along Vassar Street, MIT has reestablished the structural soil and planted 36 new trees from Massachusetts Avenue to Main Street. The plan is to carefully coordinate with ongoing utility and building construction in the area, including the planting of additional street trees at the Schwarzman College of Computing (Building 45).

The proposed use of the Metropolitan Storage Warehouse (Met Warehouse) for the School of Architecture and Planning and a Project Manus makerspace will bring new life to this historic structure, dramatically altering this section of Vassar Street and revitalizing the Massachusetts

Avenue corner. This location will be a major street crossing for the Grand Junction Multi-use Path and an opportunity to turn south toward Boston or north into Central Square and beyond. The Met Warehouse project reclaims a former loading zone to improve the public right-of-way by expanding sidewalk and landscape space on Vassar Street.

Construction of New Vassar (W46), the now-completed undergraduate residence on Vassar Street, provides opportunities to make major improvements to the Vassar streetscape with creative architecture, public art, bike parking, and benches. Additionally, the landscape includes green infrastructure elements such as new plantings, street trees, and trees on the plaza that will capture and filter stormwater runoff. The project enabled MIT to install light-colored paving and expand the urban canopy to reduce heat islands as well as create outdoor space for social gatherings and improve campus accessibility. The area south of the Multi-use Path and the Grand Junction tracks was enlarged and transformed at the Pacific Street crossing into a lively urban plaza that will improve the pedestrian environment and properly connect cyclists to and from the Vassar Street cycle tracks.

The West Campus Graduate Student Dormitory provides the location of a final node, at least for the near future, for a north-south connection from the Grand Junction Multi-use Path. Fort Washington Park lies to the north of the Path, and a large landscaped public plaza and walkway will be located alongside the new dormitory project. This enhanced connection to the network of open spaces will bring pedestrians and cyclists into a growing portion of the MIT campus and provide further connections to the river, including the signalized crossing on Amesbury Street. In close collaboration with the City, MIT has proposed a complete reconstruction of the public way, including new trees and streetlights. The updated streetscape will allow trees

to thrive and provides an opportunity to replace existing trees that are in irreversible decline.

Eversource has advanced a proposal to place major transmission lines underneath Vassar Street. Redundant and resilient electric transmission connections to the new station planned for the site of the Blue Garage in Kendall are needed. A preliminary review revealed that substantial portions of the proposed route are in and around the southern sidewalk of Vassar Street. MIT will carefully review this proposal and work with Eversource to ensure that the final location is coordinated with all the other utilities, infrastructure, treeways, and surface improvements in the area.

Property Transfers

Cambridge properties purchased since filing previous Town Gown Report: 266 Mass Ave

Cambridge properties sold since filing previous Town Gown Report: 351-355 Mass Ave

Planned dispositions or acquisitions: None

Real Estate Leased

Use	Leased Location*	Sq Ft**
Institutional/Academic	255 Main Street (previously known as 1 Cambridge Center)	20,509
Institutional/Academic	1 Kendall Center	15,085
Institutional/Academic	1 Kendall Square, Building 300 - 4th-5th Floor	22,506
Institutional/Academic	1 Main Street - Suite 1250	31,836
Institutional/Academic	1 Main Street - Suite 900	31,571
Institutional/Academic	1 Rogers Street - 3rd Floor	24,046
Institutional/Academic	105 Broadway - 6th-7th Floor	47,488
Institutional/Academic	222 Third Street - Suite 300	2,584
Institutional/Academic	245 First Street - Suite 1500	19,805
Institutional/Academic	300 Tech Square - 2nd Floor	6,451
Institutional/Academic	400 Tech Square - 6th Floor	10,901
Institutional/Academic	500 Tech Square	93,108
Institutional/Academic	600 Tech Square - 2nd-4th Floor	83,561
Institutional/Academic	600 Tech Square - 5th Floor	25,346
Institutional/Academic	700 Tech Square	15,753

Total

450,550

* Leased by MIT from third-party landlords.

**The Sq Ft may only be a portion of the entire building.

Wayfinding at MIT

MIT's 168-acre campus, with its numbered buildings, many of which are not on public streets, can be challenging to navigate. Too often, visitors to campus emerge from the Kendall/MIT MBTA station and ask, "Where is MIT?"

MIT is implementing a comprehensive campus wayfinding system to answer this question. The system serves Cambridge residents, people who work in Kendall Square, and visitors, especially those unfamiliar with the campus. It establishes MIT's presence at the campus edge, on a scale that is immediately visible and beckoning to visitors. The program reflects the unique spirit of MIT, making a complex campus more navigable and taking cues from the major urban and geographic elements that define this area. There will be a phased roll-out of wayfinding signage across the entire campus.

The wayfinding program is inspired and guided by Cambridge planning documents, from the K2C2 Final Report (2013) to Envision Cambridge (2019). These documents promote a robust wayfinding system for Kendall Square and the campus, including directions to the Charles River, Massachusetts Avenue, and MIT campus locations. The program required 91 variances for the Cambridge sign regulations, and it found support from Cambridge residents and from the Board of Zoning Appeal (BZA).

The wayfinding program comprises three different elements: Nine campus identifiers at campus gateway locations, 16 campus directories at more interior locations within the campus, and 78 pedestrian beacons — the workhorses of the system — along primary campus routes.



Capital Renewal

Stewardship of the MIT campus requires continuing investment to preserve iconic buildings and to renew systems that support student life and the Institute's educational and research mission. Many of the large building renovation projects initiated through the MIT 2030 Capital Plan have created modern spaces with updated energy-efficient systems to meet the demands of contemporary research. Additionally, these projects have enhanced community and residential spaces essential for the thousands of people who work, study, play, and live in this vibrant community. The Institute recognizes this is a long-term effort, which requires careful planning of resources — and attention to mitigate disruption from construction. The renewal program has high ambitions and, with perseverance, progress will continue in retiring deferred maintenance, thus sustaining MIT's position as a global leader in teaching and research. A few of the renewal projects initiated over the past year are highlighted in this section.

Main Group Electrical Substation Renewal

Building 6B sits in the Main Group's 'Atomic Courtyard,' an interior courtyard bound by buildings 2, 4, 6, and 6C, and only accessible through tunnels. The one-story brick building was initially constructed as solvent storage in 1921. Since 1967, Building 6B's primary use has been to house an electrical substation and switchgear providing electrical service to Buildings 4, 6, and 8.

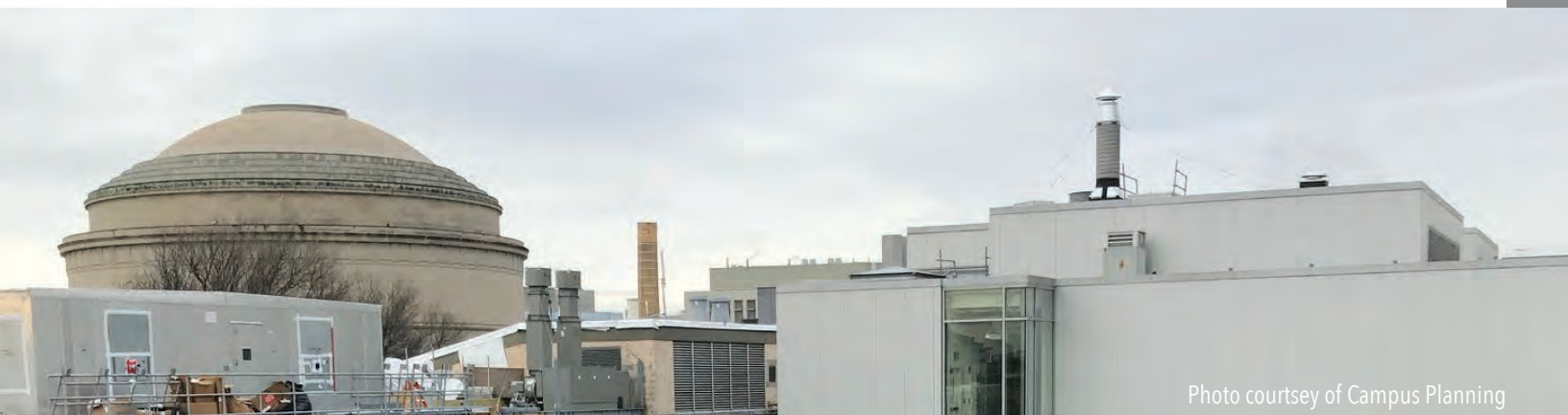
MIT completed design plans to relocate the current electrical distribution equipment to the

modern electrical room in Building 6C. This new substation and switchgear location respond to MIT's climate resiliency planning, provide redundant support to critical research by connecting to an existing substation capable of serving multiple buildings, and improve reliability of electrical service. Construction has commenced and is scheduled to be completed in 2022.

Main Group Domestic Water

The Main Group buildings, designed by architect William Wells Bosworth, were constructed between 1913 and 1937. The 11 original buildings were planned to form one large interconnected structure containing offices, labs, classrooms, seminar rooms, and meeting spaces. Many of the domestic water mains in the basement of the buildings were installed with the original system and were over 100 years old. The piping experienced recurring failures resulting in costly repairs; corrosion and scaling significantly reduced the water flow in some areas. In addition, many of the isolation valves were not functioning properly, resulting in multiple building shutdowns to conduct repairs.

MIT completed plans to replace the pipes, and phased work minimized the impact to building users. Construction began first on the odd-numbered buildings on the west side of the Main Group, then shifted to the even-numbered buildings on the east side. Over 12 months of construction, the team replaced 2,900 linear feet of piping, 38 valves, and two booster pumps. This work, to be completed in early 2022, provides system redundancy and allows for isolation of the system by building, including core distribution bypasses for future maintenance and renovations.



Main Group Materials Handling

Today, the Main Group's labs, classrooms, and offices are underserved for large materials handling. A study determined that the buildings' elevators take an estimated 100 trips per day, with approximately 25 percent of these requiring a freight elevator due to size and weight restrictions or hazardous nature. The two freight elevators in Building 3 (c.1915) and Building 4 (c.1913) were original to the building construction and required frequent service calls. The aging elevators interrupted service and caused challenges for the transport of lab equipment and gas cylinders, construction materials, trash, recycling, and package deliveries across the Main Group.

Construction of the new service elevator in Building 4 was completed in January 2021. Construction documents have been completed for a renewed freight elevator in Building 3, and work is scheduled to be completed in early 2022.

Albany Street Parking Garage Repairs

The Albany Street Garage (N4) located at 32 Albany Street is one of six covered parking facilities on MIT's campus. The five-story garage was constructed in 1966 and provides approximately 440 spaces. Winter weather, de-icing salt usage, and the garage's traffic volume require scheduled repairs to keep the concrete structure in good condition. MIT developed plans identifying concrete spall locations, cracks, and

traffic coating replacement evaluations as part of a scheduled maintenance plan. The construction was carefully phased to allow for approximately 60% parking capacity at all times, which involved rerouting traffic as the spiral ramp was recoated and repaired and never closing more than one of the four pedestrian stairways at one time. The project was completed in phases between July 2020 and April 2021.

Zesiger Sports and Fitness Center Pool Renewal

The Zesiger Sports and Fitness Center's (W35) competition pool was closed during Covid-19 campus shutdowns. Due to its high demand, the pool had never been fully emptied in its 18 years of operations. Quick action and careful pre-planning addressed deteriorating grout and tile below the water line. After MIT completed a design review, groundwater and structural modeling determined the behavior of the pool structure without water. Once this review was completed, MIT's Facilities Engineering and Utilities teams submitted de-chlorination reports to the Massachusetts Water Resources Authority (MWRA) and the City of Cambridge. The pool was emptied using submersible pumps over five days. The pool remained empty for three months while it was regouted, repaired, and the tiles were cured. The pool was refilled over the course of eight days and reopened in September 2020.



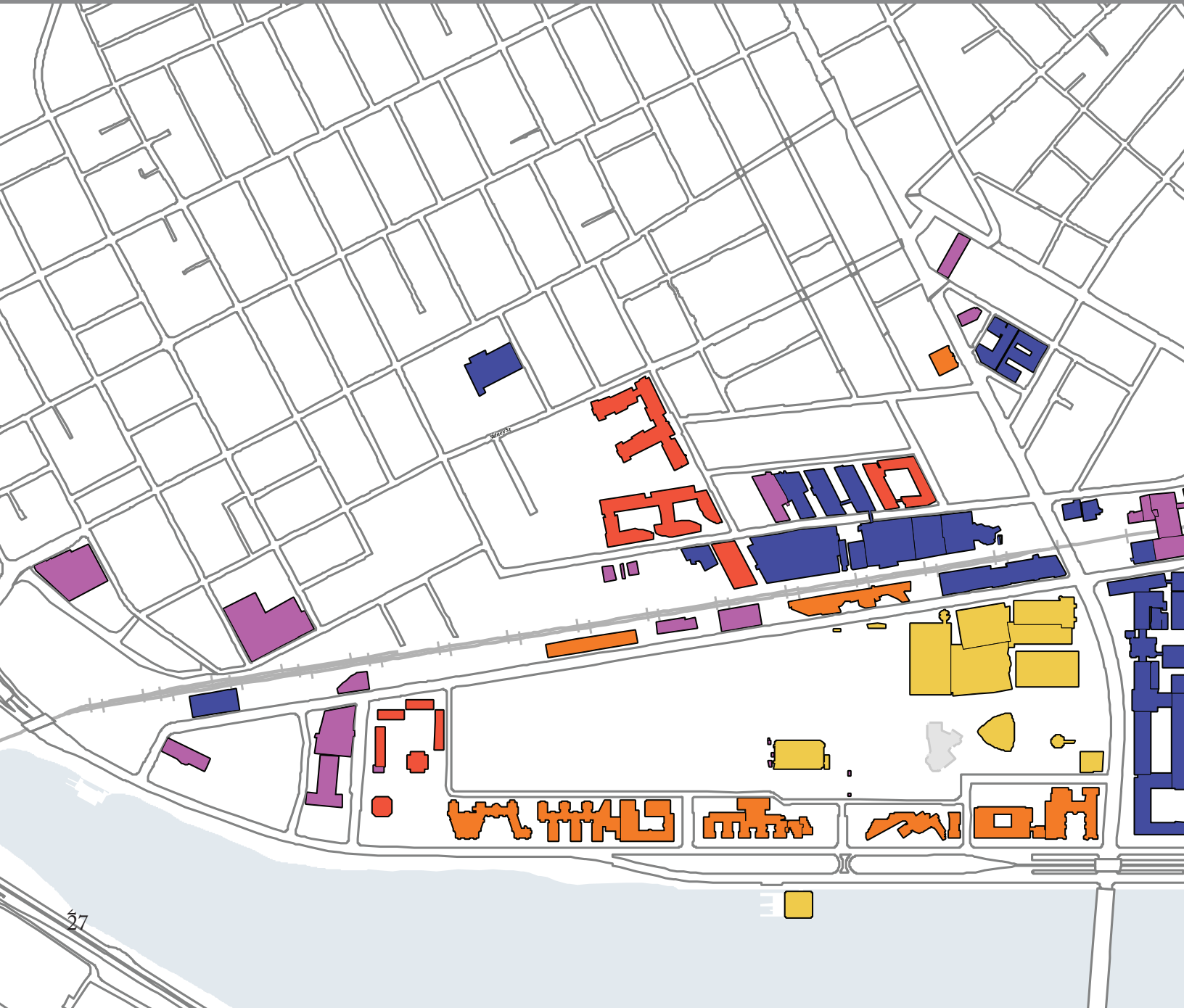
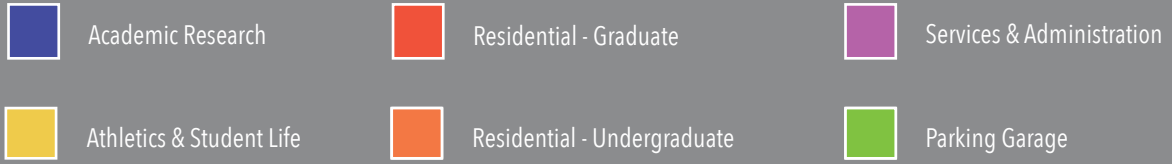
Photo courtesy of Campus Planning

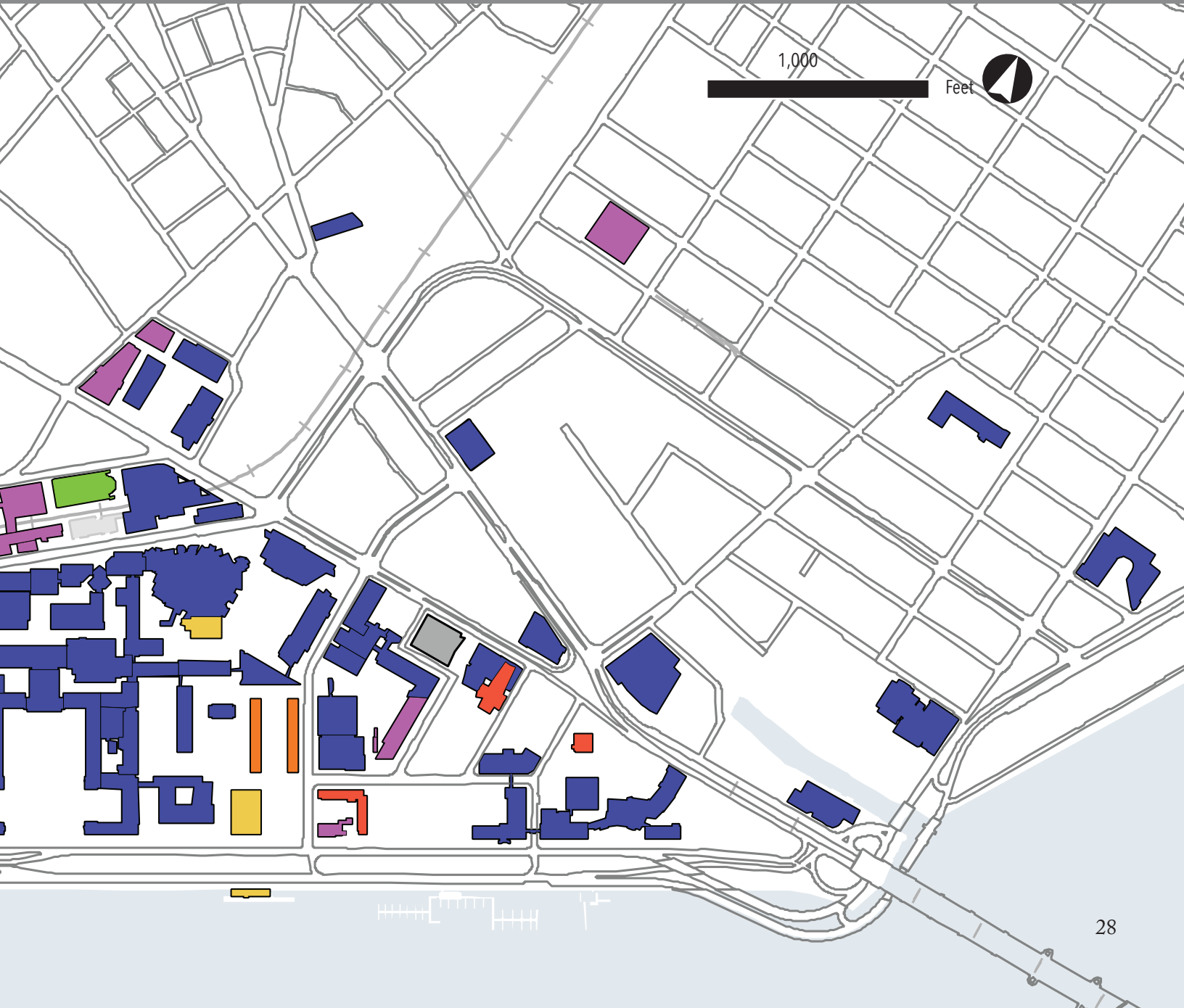


Photo courtesy of Campus Planning

MIT Buildings and Occupied Spaces by Use

Data as of June 30, 2021





1,000



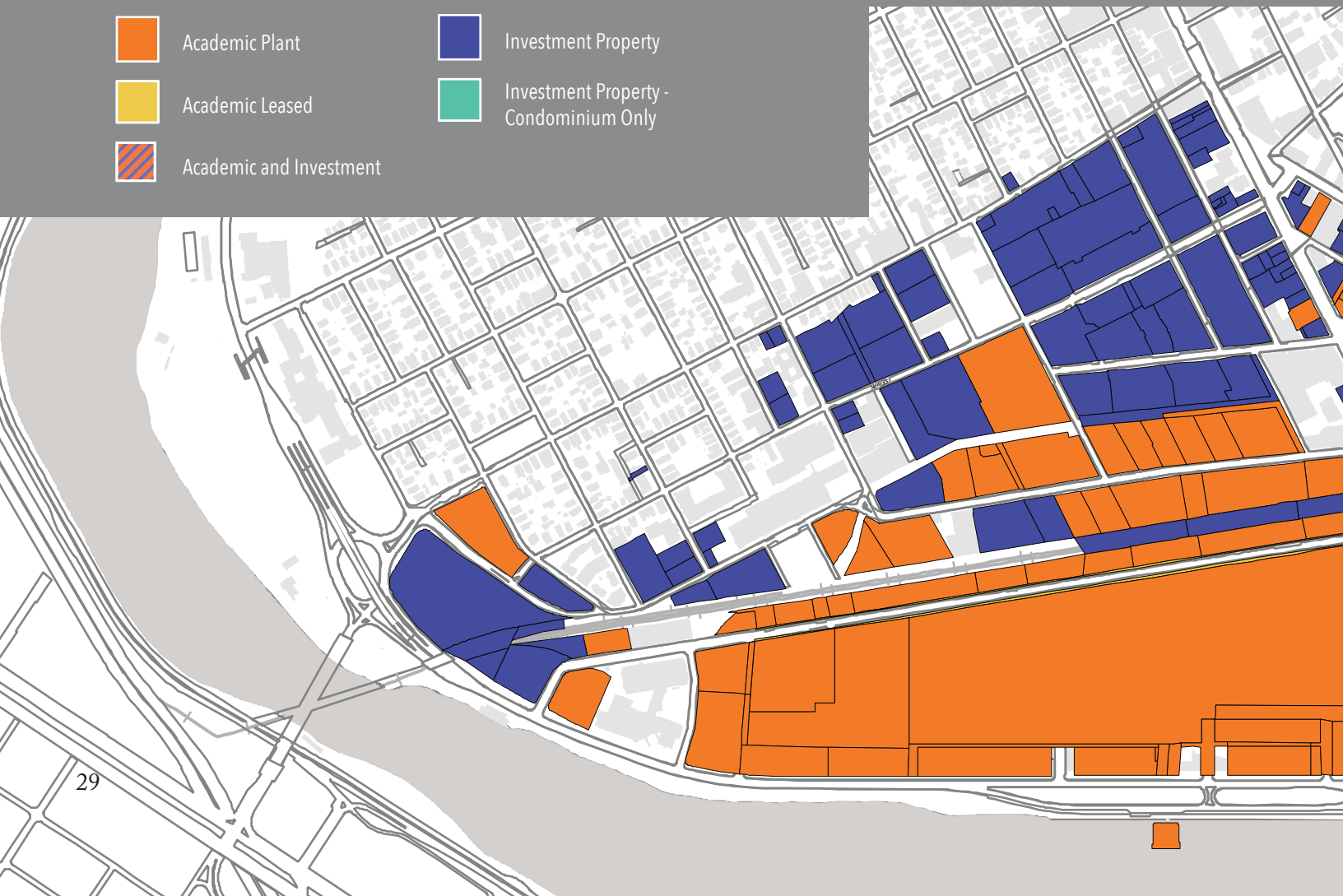
Facilities and Land Owned	2017	2018	2019	2020	2021
Acres					
Tax Exempt	166	166	168	168	168
Taxable	92	92	90	90	91
Number of Buildings (academic)	114	114	115	115	118
Dormitories					
Number of Buildings	28	28	28	28	30
Number of Beds	5,898	5,662	5,997	5,964	6,285*
Size of Buildings (gross square feet unless otherwise noted)					
Institutional/Academic	7,235,839	6,985,293	7,223,070	7,223,070	7,325,522
Student Activities/Athletic/Service	2,243,358	2,068,551	2,063,599	2,063,599	2,166,267
Dormitory/Nontaxable Residential	2,882,602	2,882,602	2,882,602	2,894,036	3,484,978
Commercial (in square feet)	6,337,516	6,403,144	6,408,948	6,380,578	7,096,270
Taxable Residential (in rental units)	163	163	163	163	163

*The 2021 number is the number of beds available. The actual number of beds utilized during the reporting period was 2,225 due to Covid-19.

MIT Property in Cambridge

Data as of June 30, 2021

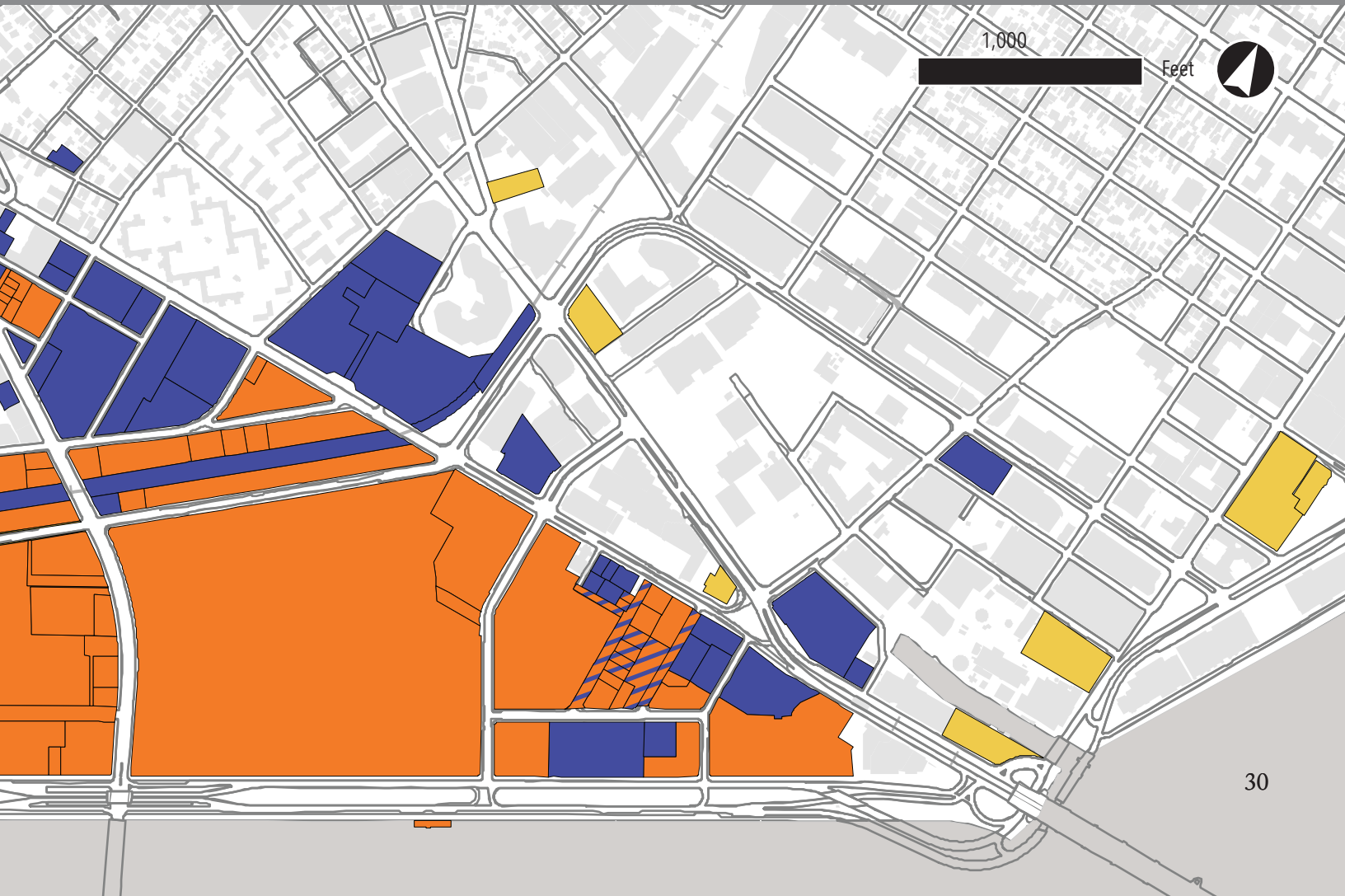
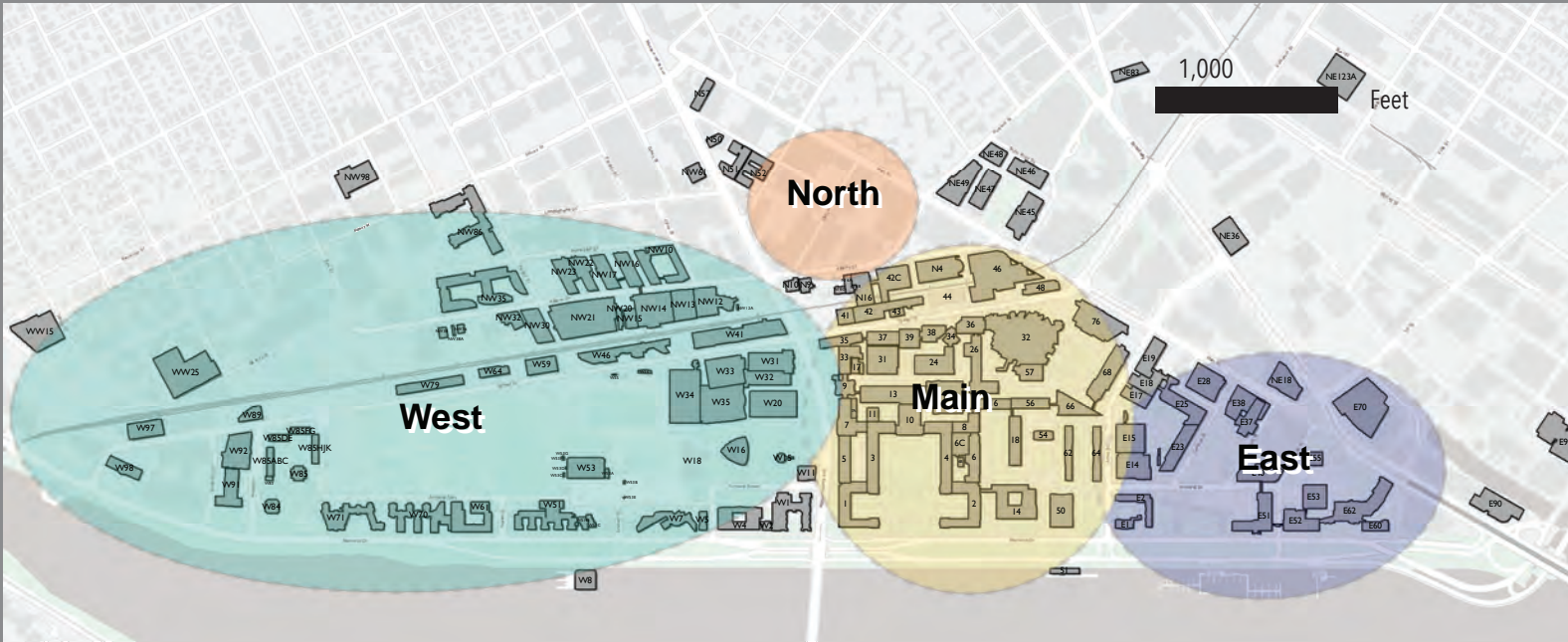
- Academic Plant
- Academic Leased
- Academic and Investment
- Investment Property
- Investment Property - Condominium Only



Future Development Opportunities

Data as of June 30, 2021

Buildings with academic occupancy shown



Projects

The projects that are being completed in 2021-2022 are building blocks for the Institute's strategy of strengthening infrastructure and initiating key renovations to create welcoming and active places for all people. These projects will greatly improve energy resiliency and efficiency and will unlock the opportunity for large-scale residential renovations over several years. In addition, a new set of campus projects – a new music facility, the Burton Conner renovation, the Metropolitan Warehouse renovation, the Schwarzman College of Computing, the Grand Junction Multi-use Path, and the West Campus Graduate Student Dormitory – will provide additional streetscape and place-making opportunities as well as extend transportation infrastructure.

Completed

Graduate Residence Tower, Site 4 (E37): This residence tower, completed in October 2020, provides 454 housing units and a variety of amenities for MIT graduate students and families.

MIT Welcome Center, Site 4 (E38): A gift of Tina and Hamid (SB 1977, SM 1978) Moghadam, MIT's new Welcome Center at Site 4 was completed in October 2020 and is designed to create a dynamic visitor experience for prospective students and other guests. The building is also home to MIT InnovationHQ, MIT Office

of Sustainability, Abdul Latif Jameel Water & Food Systems Lab (J-WAFS), and MIT Environmental Solutions Initiative.

New Vassar Residence Hall (W46): Opening its doors to students in January 2021, this undergraduate residence adds 450 new beds to MIT's housing stock and enables MIT to move forward with planned renovation of other undergraduate houses over the next decade.

Building 4 Laboratory Renovation: Completed in June 2021, this renovated lab serves the Department of Earth, Atmospheric and Planetary Sciences (EAPS).

Harold W. Pierce Boathouse (W8): The boathouse renovation, completed in March 2021, improved access and provided enlarged, upgraded spaces for MIT's rowing program.

Vassar Street Trees (East of Massachusetts Avenue): Completed in the fall of 2020, this large-scale streetscape revitalization involved aeration, irrigation, and replanting of trees along Vassar Street.

One Broadway (Site 1/E70): The second phase of the One Broadway ground floor renovation was completed in 2020 and included the retail addition on the north side. The first tenant, K-OOP Hair Styling, opened for business last year. Dig, the second tenant, has completed the interior construction of its space and anticipates opening for business in early 2022. Interior construction and occupancy of the remaining space is also expected later in 2022.

314 Main Street (Site 5): MIT completed construction and received a certificate of occupancy for the base building in the fall of 2020. Since then, contractors have completed several interior spaces, including the MIT Press Bookstore, the MIT Museum, and Cambridge Mobile Telematics. The MIT Museum is currently working on the installation of exhibits and expects to open in the spring of 2022.



In Construction

A few of the projects listed in this section have been completed as of the publication date of this report. For consistency, they are kept in the 'In Construction' section as they were not completed by the end of the Town Gown reporting period.

Hayden Library

Originally designed by Voorhees, Walker, Foley & Smith, Hayden Library (Building 14) first opened in 1951 and has served for nearly 70 years as a central element of the campus. MIT has renewed and restored the Library's first two floors and mezzanine levels and has updated the main reading rooms and office spaces to reflect the changing nature of the research library for today's students and faculty. Improvements in-

clude new interactive spaces such as a café and a multipurpose event and teaching space, improved office spaces, and a variety of quiet and collaborative workspaces for both individuals and groups.

Building 14 also received a range of infrastructure upgrades including systems improvements, accessibility upgrades, enlarged and renovated restrooms, and updates to improve energy performance. Exterior work included restoration of the north and south windows, repairs to the limestone walls, refurbishment of the northeast entrance, and a revitalized Lipschitz Courtyard with three MIT Public Art program sculptures.

Kennedy & Violich Architecture is the designer for the Hayden Library renovation, and Elaine Construction is the construction manager. Completed in 2021, the project has received LEED v4 Gold certification.





Photo by Logan Read

Wright Brothers Wind Tunnel

Since it first opened in September 1938, MIT's Wright Brothers Wind Tunnel has been an instrumental tool in the development of aerospace, architectural, vehicular, sports, and other engineering systems. Testing at the facility has ranged from aircraft and ground structure aerelasticity to the aerodynamics of subway station entrances, space suits, racing bicycles, and Olympic ski suits. After 80 years of service, the landmark facility has now been renovated and modernized.

The new tunnel incorporates state-of-the-art technologies and equipment that expand its capacity while lowering its fan motor power consumption. With a planned test area volume of 1700 cubic feet and the ability to test speeds up to 200 mph, it is expected upon completion to be the largest and most advanced academic wind tunnel in the nation. Located at Building 17 on the site of the original tunnel (which has been dismantled), the new facility will retain the Wright Brothers Wind Tunnel name.

Renovations included updated control facilities, a full rehabilitation of Building 17, and infrastructure updates in Building 37 and in the Building 33 Hangar. The project also created direct connections between the tunnel and AeroAstro workshops. The Imai Keller Moore Architects firm is the designer of the renovation, and Turner Construction is the construction manager. The project will be completed in 2021.

Central Utilities Plant Upgrade

Work is nearing completion on the upgrade to MIT's Central Utilities Plant (CUP), a distributed energy resource that utilizes combined heat and power technology (cogeneration) to provide electrical and thermal energy to the campus microgrid. Cogeneration is a clean, efficient, and cost-effective choice for power production, and the new CUP is a key milestone in MIT's commitment to reduce campus greenhouse gas emissions by at least 32% by 2030. MIT's CUP currently provides electricity, steam heat, and chilled water to more than 100 MIT buildings, and the recent upgrades replaced aging equipment and increased the plant's power capacity and resiliency to support current and future research while also reducing emissions.

The scope of the CUP upgrade includes replacement of the previous 21-MW natural gas turbine with the installation of two 22-MW natural gas turbine engines, each coupled to a heat recovery steam generator (HRSG). Each turbine powers a generator that produces electricity (up to 44 MW total capacity), and the waste heat from the turbine exhaust is converted into thermal energy by the HRSG. The resulting steam and hot water are subsequently used for on-campus heating and cooling. This upgraded cogeneration system is designed to help MIT achieve greater campus resiliency by enabling the campus to produce up to 44MW of power independently from the electric grid. For example, when



Photo courtesy of Campus Planning

grid power is lost, the new turbines will have the ability to maintain or restore heat and electricity, safeguarding on-campus residences and protecting vital research. Additionally, the upgraded plant is essential for meeting the Institute's sustainability goals to reduce emissions, conserve energy, and operate more efficiently.

MIT's upgraded CUP currently emits approximately 457 lbs CO₂ per MWH, which is 30% less than the New England grid's current emissions rate of 653 lbs CO₂ per MWH. Massachusetts currently mandates that the grid should be sourcing 100% of its electricity supply from zero-carbon generation resources by 2050, and although the grid is getting cleaner and improving its emissions rate annually, current trends forecast that it will take at least until 2030 for the grid to outperform the CUP's current emissions rate.

The engineer for the project is Vanderweil Engineers' Power Group, and Bond Brothers is the construction manager. The architect for the building is Ellenzweig, the firm that has led the architectural design for MIT's CUP for the past 20+ years. Construction of the new cogeneration plant housing the turbines commenced in the summer of 2017. The new turbines are anticipated to be fully operational in 2021.

Schwarzman College of Computing

Established in September 2019, the Schwarzman College of Computing is a unique interdisciplinary organization that addresses the opportunities and challenges of the computing age

— from hardware and software to algorithms and artificial intelligence — by transforming the capabilities of academia in three key areas: computing fields, computing across disciplines, and social and ethical aspects of computing. The College's unique structure is both broadly multidisciplinary and firmly focused as a home for computer science and artificial intelligence education and research. As a result, it will strengthen the computing fields and more effectively and creatively connect AI and computing to every discipline.

MIT is in the process of constructing a new building (Building 45) to house the Schwarzman College, located at the site of the former Building 44. As proposed, Building 45 will provide state-of-the-art space for computing research and education, including collaborative spaces and gathering areas to facilitate spontaneous interactions. The building's lower floors will offer multiple convening areas including a 250-seat lecture hall, a suite of student spaces for project-based work and tutoring, and a café. The building's shingled-glass façade and transparent elements will further encourage the campus community to engage and interact with the College.

Centrally located on Vassar Street between Main Street and Massachusetts Avenue, the proposed building will have an event space and outdoor terrace on its top floor, offering views of the campus and the Boston skyline. The building designer is Skidmore, Owings and Merrill LLP, and Suffolk Construction is the construction manager.



Rendering courtesy of Skidmore, Owings & Merrill

Burton Conner Residence Hall Renewal

Burton Conner is a 168,000 sf residence hall on Memorial Drive overlooking the Charles River. The five-story building houses approximately 371 undergraduates and contains 67 suites (240 rooms), nine graduate resident advisor apartments, and two heads of house suites. Originally built as the Riverside Apartment Hotel in 1927, the building was acquired by MIT in 1948, and a dining hall was added in 1960. The last major renovations occurred nearly 50 years ago, and many of the building's systems are beyond their useful life.

As part of the Institute's ongoing efforts to renew existing residence halls and provide additional housing options for its community, Burton Conner is now undergoing a major renovation. The project addresses priority areas in the building's envelope and infrastructure systems and includes programmatic improvements to student common spaces, bathrooms, kitchens, and the Porter Room, a community dining and gathering space. Updated furniture will be provided for bedrooms, suite common rooms, floor lounges, and community spaces. These building-wide improvements will ensure

compliance with all state and local building and accessibility requirements, provide for sustainability and climate resiliency, and enhance the student experience.

The project team includes the architectural firm of Goody Clancy and construction manager Consigli Construction. The building was taken offline in January 2021 and is scheduled to re-open in August 2022.

W91 Police Relocation

The MIT Police is a university-based force dedicated to providing for the safety and security of all members of the MIT community, 24 hours/day, 7 days/week. The current location of MIT Police headquarters in W89 is scheduled to be demolished as part of the West Campus Graduate Dormitory project, and the MIT Police operation is relocating to a newly renovated two-story section of Building W91 on Audrey Street facing Memorial Drive.

The renovated first floor spaces will support the day-to-day functions of the MIT Police and will include public-facing spaces as well as private spaces for a roll call room, breakroom, and rooms for property storage, equipment storage, and small meetings. New amenities will include space for active training and a community room available for campus groups and organizations to meet with each other and/or with the Police. On the second floor, the renovated spaces will include offices, storage for records, a gym and locker rooms, and spaces for meetings and investigation teams. Exterior improvements for W91 will include landscaping and patio work as well as an expanded parking lot on the building's east side.

SLAM is the architect for the project, and Suffolk Construction is the construction manager. The team is targeting LEED v4 Gold certification for the project. Construction is underway, and the relocation is scheduled to be completed in early 2022.





Rendering courtesy of Elkus-Manfredi Architects

165 Main Street: Construction started on this 300-unit apartment building in early 2020. The exterior envelope is almost complete, and interior work is progressing on schedule. The project, which includes 54 affordable units, nine middle-income units, and 36 innovation units, is scheduled to be completed in the second quarter of 2022.

238 Main Street: Construction of this commercial research and development building started in 2019. Work on the new structure and exterior envelope is complete, and interior work is ongoing, as is the renovation and restoration of the existing historically significant building. The base building was completed in the fall of 2021, together with the interior fit-out for the first tenant. Interior work for remaining tenants will continue into 2022.

730 - 750 Main Street: The renovation of 750 Main Street and the expansion and renovation of the adjacent 730 Main Street building started in early 2020 and is expected to be completed in late 2022. Once complete, the two-building complex will be occupied by The Engine (the entity launched by MIT that invests in early-stage tough tech companies), MIT, and commercial tenants.



Rendering courtesy of The Engine

Building 54 Priority Infrastructure Renewal

The Green Building (Building 54), designed by I.M. Pei & Associates and completed in 1964, is a 22-story Brutalist concrete tower with 20 uniform floors above a double-height open entrance loggia. Currently, it is home to the Department of Earth, Atmospheric and Planetary Sciences, MIT's Environmental Solutions Initiative, and MIT-Woods Hole Oceanographic Institute programs.

The infrastructure renewal project will enable the ongoing and long-term research needs for the building by addressing deficiencies in the building envelope, upgrading electrical and mechanical systems, and ensuring the building is accessible to the community. Additionally, the project will renew the concrete façade, replace the roof, install new main electrical substations, upgrade the restrooms and other building interiors, and carry out all code-required upgrades. The building's large radome will be replaced, and its rooftop equipment layout and support will be redesigned.

The project team includes the design firm of Beyer Blinder Belle Architects & Planners LLP and Barr & Barr as the construction manager. Work is scheduled to be completed in 2023.



In Planning and Design

Earth and Environment Pavilion

The Cecil and Ida Green Building (Building 54) is the headquarters of MIT's Department of Earth, Atmospheric and Planetary Sciences (EAPS). While construction to update Building 54's infrastructure is ongoing, planning is underway to renovate the primary lecture hall in Building 54 and create the new Earth and Environment Pavilion (Building 55): a v4 LEED-certified addition that will serve as an atrium gateway to the Institute's programs focused on Earth and environmental sciences as well as climate science.

As planned, the Earth and Environment Pavilion project will yield about 11,900 square feet of additional space, providing new meeting places, classrooms, and study areas. The enlarged and revamped Green Building is expected to help EAPS attract and retain top faculty and students. The project's other ambitious objective is to enhance the research undertaken within the department by co-locating EAPS, the MIT-Woods Hole Oceanographic Institution Joint Program, and the MIT Environmental Solu-

tions Initiative (ESI), creating a vital center for interdisciplinary research that affords greater opportunities for interaction and the cross-pollination of ideas.

Anmahian Winton Architects is the designer of Building 55, and Barr & Barr is the construction manager for the project. Construction is expected to begin at the end of 2021 and will continue through 2022 into early 2023.

Metropolitan Storage Warehouse

Originally designed by Peabody & Stearns, the Metropolitan Storage Warehouse (Met Warehouse) is one of the oldest buildings on the MIT campus and is listed on the State Register of Historic Places. Its massive structure consists of five connected buildings constructed between 1895 and 1923. With its square brick tower and crenellated cornice, it resembles a medieval castle on a city street corner.

MIT is designing a renovation/adaptive reuse project that will redevelop the Met Warehouse building as a center of interdisciplinary design research and education and as a new home for the School of Architecture and Planning (SA+P). The building will also house a flagship



makerspace for Project Manus, MIT's community-wide makerspace initiative. Elements of the building's renovation include new classrooms, design studio space that will significantly increase MIT's capacity for arts and design programming, new faculty offices, and areas for meetings and collaborative activities.

The proposed adaptive reuse plan is based around the five original buildings and involves partial removal of floors, columns, and the roof and façade to make way for a series of insertions that will bring light and air deep into the heart of the structure. The strategic integration of old and new is designed to preserve the building's historic character while leveraging and valorizing its existing spaces to serve the needs of current and future programming.

The architect for the project is Diller Scofidio + Renfro, and Shawmut Design and Construction is the construction manager.

West Campus Graduate Student Dormitory

As part of MIT's Volpe zoning commitment to expand the stock of graduate student housing, MIT is planning to build a new graduate student dormitory on Vassar Street that will add approximately 675 new beds and enhance connections with the surrounding neighborhood.

Located adjacent to Simmons Hall on the site of Building W89 and the West Lot parking area, the planned dormitory will encompass two buildings framing a publicly accessible central plaza and green space gateway leading to the Fort Washington Historic District and Park. Housing options will include studios and one-, two-, and four-bedroom units. The dormitory will also provide lobbies, lounges, study spaces, a fitness center, and other resident amenities, including ample indoor bike storage. Outside, the buildings' façades and windows are designed to echo the framework of Simmons Hall and the masonry of Baker House and the MIT Chapel. Glass curtain walls and other transparent elements will break up the structural mass and reveal the activity within. The Central Plaza will encourage varied, multi-season activities with outdoor seating, urban tree groves, and a raised platform surrounded by a lawn and plantings. A north-facing terrace and gardens will augment the dormitory's active outdoor life, and the project is an opportunity to comprehensively rebuild and renew the streetscape with an extension of the separated bike lane, more street trees, and new energy-efficient street lighting.

Kieran Timberlake is the designer for the project, and John Moriarty & Associates is the construction manager. MIT is working with American Campus Communities, an experienced third-party campus housing developer, to design and develop the dormitory. Construction is expected to be completed in 2024, and the project team is targeting LEED v4 Platinum certification.



Music Building

The Institute is preparing to build a new state-of-the-art Music Building that will support the popular program's curricular requirements. Sited adjacent to Kresge Auditorium, the building's three complementary sections will house performance, rehearsal, and recording spaces as well as a large-scale, purpose-built performance lab. The brick-clad structures – the Performance Lab Pavilion, the Music Maker Pavilion, and the Music and Culture Pavilion – will be connected by a glass-walled lobby providing multiple entrance points. Each building will incorporate sound-insulating walls and world-class acoustical design. Below grade, a two-level garage will provide 146 parking spaces.

The building is sited within an illustrious context that includes Eero Saarinen's Kresge Auditorium and MIT Chapel as well as Baker House, designed by Alvar Aalto. In response, its design incorporates strong geometry, warmly colorful brick, a stand of trees, and a curving curtainwall and roof that are a visual extension of nearby Kresge. Its several entrances relate to the pedestrian walkways outside and invite people to

pass through the airy, open lobby. The building will be set among a grove of trees that creates a shady new campus green space, complementing the historic Kresge quadrangle.

Sejima and Nishizawa and Associates (SANAA) is the design architect, Perry Dean Rogers Partners Architects is the executive architect firm, and Lee Kennedy Company is the construction manager. Construction of the building began in summer 2021, with a target completion date of 2024.

Kendall Site 2

The proposed building at Site 2 is the last of the major commercial research and development projects in the Kendall Square Initiative. MIT received a special permit for this building in 2016 (together with the other Kendall Square projects) and has submitted design review materials to the Planning Board. Abatement and demolition of the existing building on the site started in 2021 and is scheduled to be completed in 2022, followed by construction of the below-grade garage and building foundations.



Volpe Redevelopment

After completing utility-enabling work on the Volpe parcel in 2019, MIT commenced work on behalf of the federal government to begin the new facility for the Volpe Transportation Center. The contractor has completed work on the below-grade parking garage, steel erection, and exterior envelope, and is progressing on schedule with interior construction. The federal building project is expected to be completed in 2023.

After a robust community engagement process, the Planning Board approved MIT's masterplan for the remaining 10 acres of the Volpe site in

the summer of 2021. Following the completion and acceptance of the federal building, MIT will take possession of these 10 acres and will be able to commence development. Consistent with the zoning passed by the City Council in 2017, the proposed development includes four commercial buildings, four residential buildings, more than 3.5 acres of publicly beneficial open space, and a 25,000 square foot community center.

MIT anticipates soliciting proposals and starting the design phase for below-grade infrastructure, individual buildings, and open spaces in 2022.



Rendering courtesy of Interface

MIT Cellular Antenna Installations




Data as of June 30, 2021
Buildings with academic occupancy shown

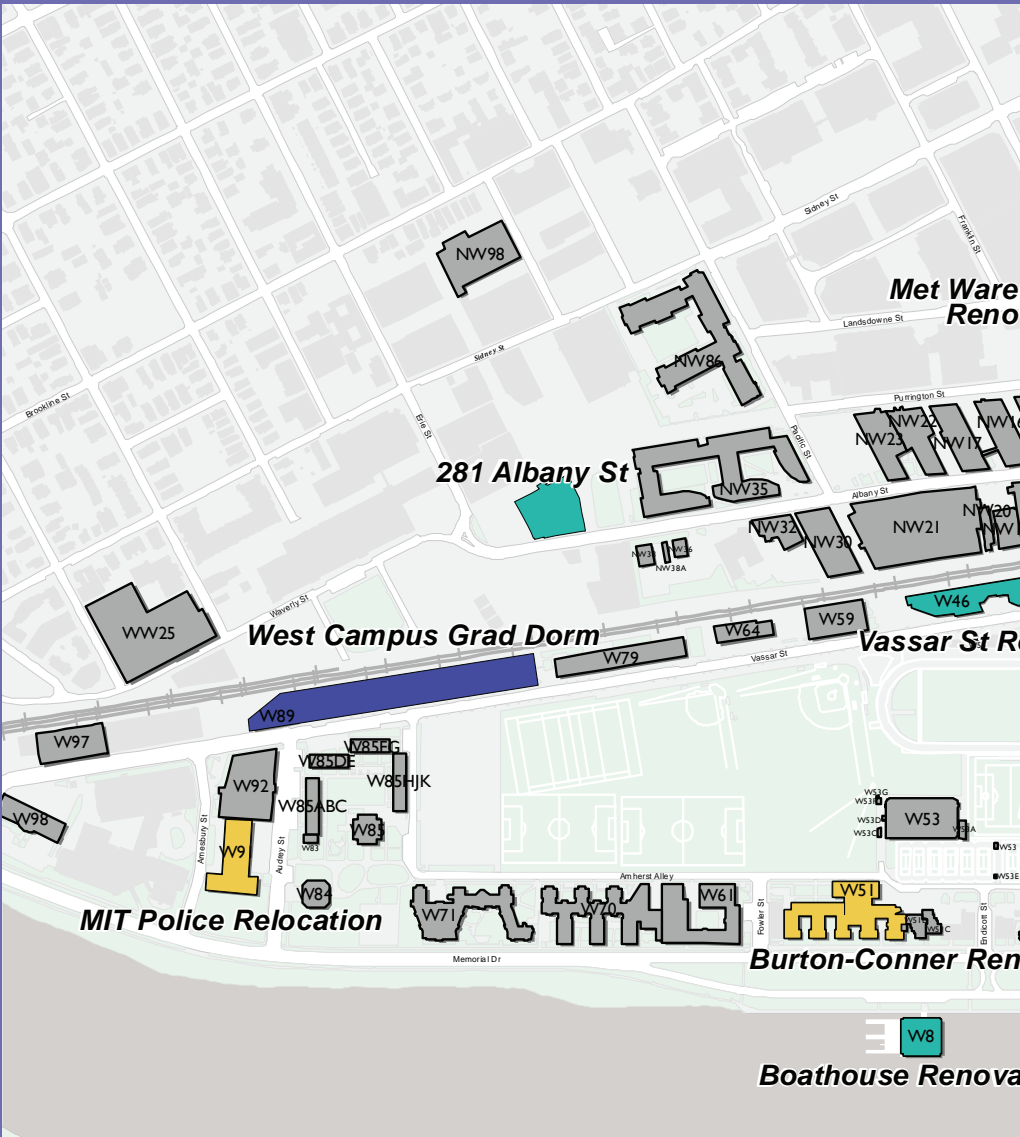
 Cellular Antenna Locations

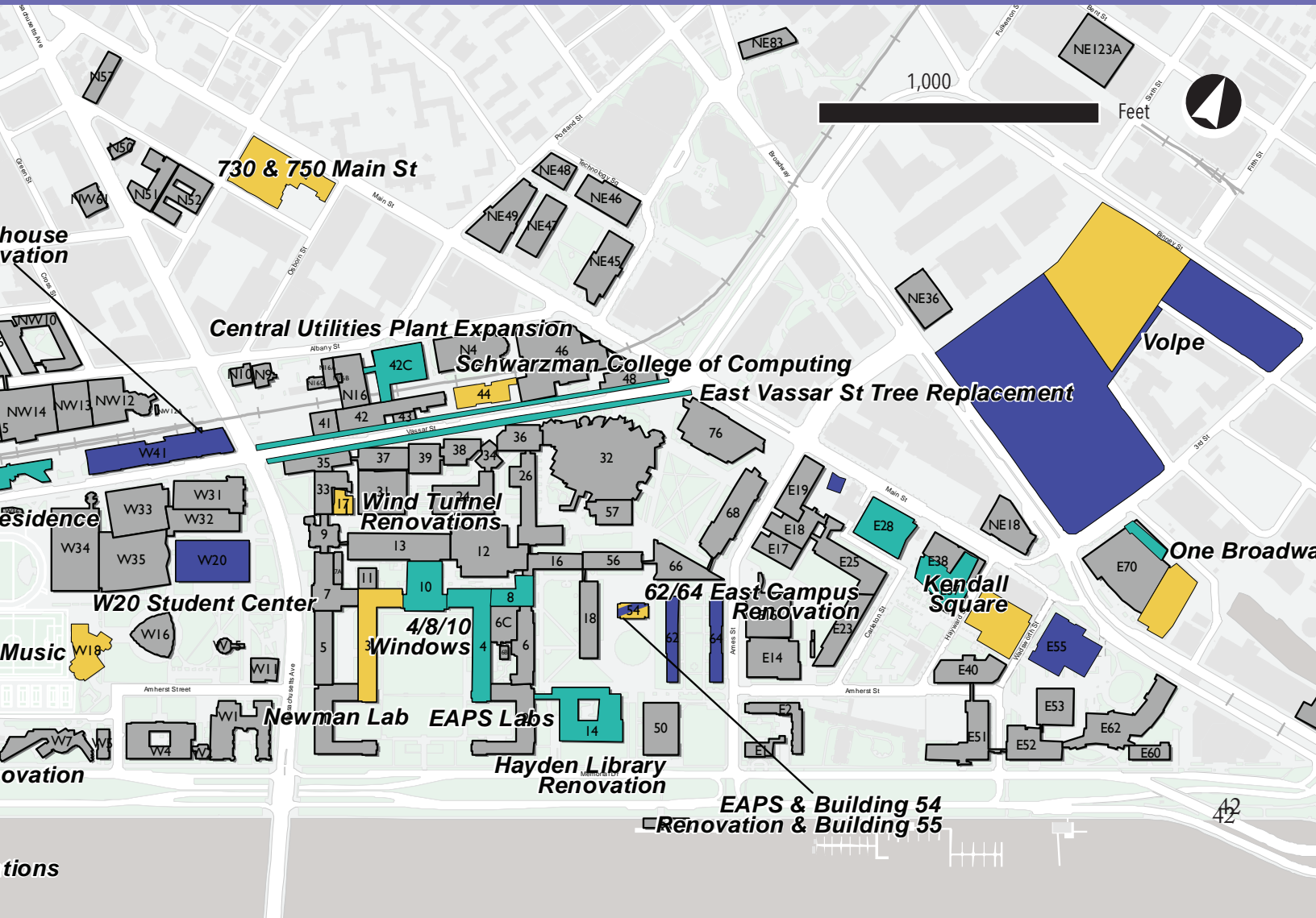


MIT Major Projects

Data as of June 30, 2021
Buildings with academic occupancy shown

-  Planning/Design
-  Construction
-  Completed





Open Space Programming

The first event in the new Kendall/MIT Open Space took place on a sunny day on August 24, 2021, after years of planning and construction. A band with students and recent alumni of Cambridge Rindge and Latin High School played a mix of New Orleans brass band music, funk, R&B, and hip-hop, filling the space with hope, good cheer, and optimism.

On September 7, the MIT Welcome Center opened in MIT's Building E38, adjacent to the Open Space and the Kendall/MIT MBTA stop. Brimming with colorful art and friendly staff, the new space offers visitors and community members guidance about visiting MIT and a convenient spot to access the public restrooms, fill their water bottles, or charge their phones.

An eclectic, experimental mix of programs and events

In fall of 2021, participants enjoyed an eclectic mix of more than 30 programs, organized in several series. All programs were free and open to the public, and all were geared toward the Cambridge, Kendall Square, and MIT communities.

The 'Lunch Breaks' series took place on Tuesdays and offered pop-up talks, performances, and hands-on activities. Wednesday evening 'Movie Nights' engaged audiences with outdoor film screenings under the stars. 'Sweat & Reset' offered fitness and wellness programming on Thursday evenings, alternating between high-intensity classes, such as boot camp and dance, and restorative practices like yoga and meditation. On Saturday mornings, families and children gathered for playful connections and hands-on learning in the 'LEAP Lab' series.

Meaningful collaborations with community partners

The Open Space Programming team worked closely with collaborators from the Cambridge, Kendall Square, and MIT communities to present programs. This model of co-producing with local partners and organizations was integral to their work and helped attract and engage local participants.

Fall season collaborators included residents of MIT's Graduate Tower at Site 4; MIT's international education group ([MISTI](#)); yoga instructor Malaika ([Ms. Bonafide Creations](#)); the [MIT Press Bookstore](#); [The Martin Trust Center for MIT Entrepreneurship](#); [Kendall Square's Inner City Weightlifting](#); [Cambridge Community Television](#); yoga instructor [Marlene Boyette](#); Cambridge-based [Science Club for Girls](#); [MIT Spouses & Partners Connect](#); Cambridge-based [Barre & Soul studio](#); the [MIT Outing Club](#); the [MIT Museum](#); mindfulness instructor [Zeenat Potia](#); [PlayCity](#), an initiative by MIT Masters of Architecture students at the School of Architecture and Planning; the [MIT Community Service Fund](#); Cambridge musician [Skooby Laposky](#); [MIT's Office of Sustainability](#); and [Jean Appolon Expressions](#) in collaboration with the [Cambridge Dance Complex](#).

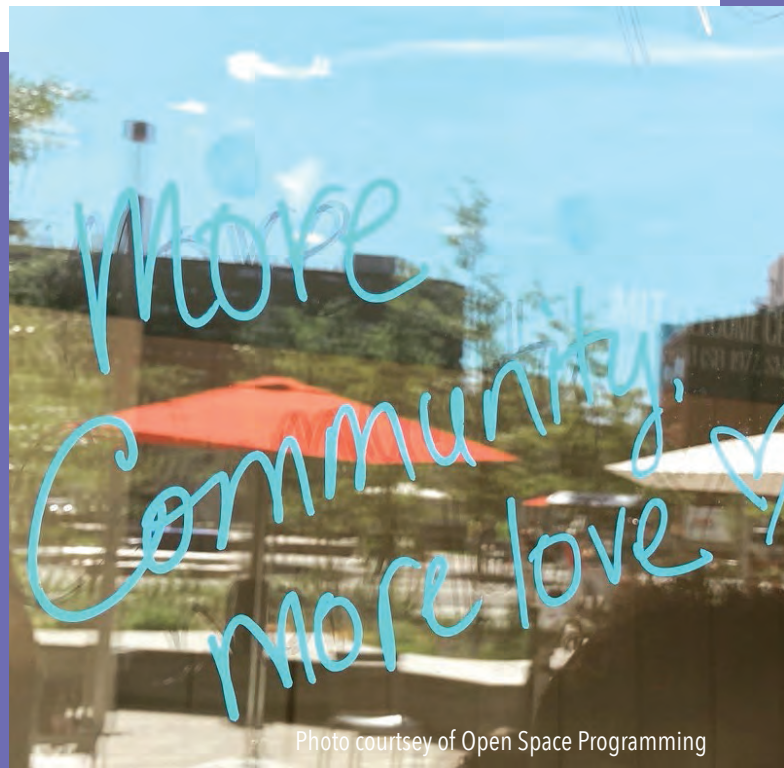


Photo courtesy of Open Space Programming

A Community Reflects

Over the summer and fall of 2021, the Open Space Programming team worked closely with MIT's Investment Management Company (MITIMCo) on a temporary public art project called 'A Community Reflects' with local artist [Silvia López Chavez](#).

The artist engaged with the Cambridge, Kendall, and MIT communities during a four-part series. In the first two events, participants shared reflections of the past year and engaged in an interactive photo booth while enjoying music and ice cream. In the third event, participants joined a Community Painting Day and added color, pattern, and words to the portraits the artist painted on Main Street windows. The final program was an Unveiling Party where participants and community members connected with one another, viewed the artwork, and celebrated with friends. Fabulous music was provided by Cambridge-based [Dj Knszwrth](#).

Learning and planning for future programs

The last section of the space was completed in November 2021. Local groups will be able to reserve the MIT Welcome Center auditorium beginning in the spring of 2022. The team is planning a robust schedule of programs to engage the Cambridge, Kendall, and MIT communities, incorporating lessons learned in the first season of programming. They continue to embrace a culture of collaboration, experimentation, inclusion, and playfulness in their work.











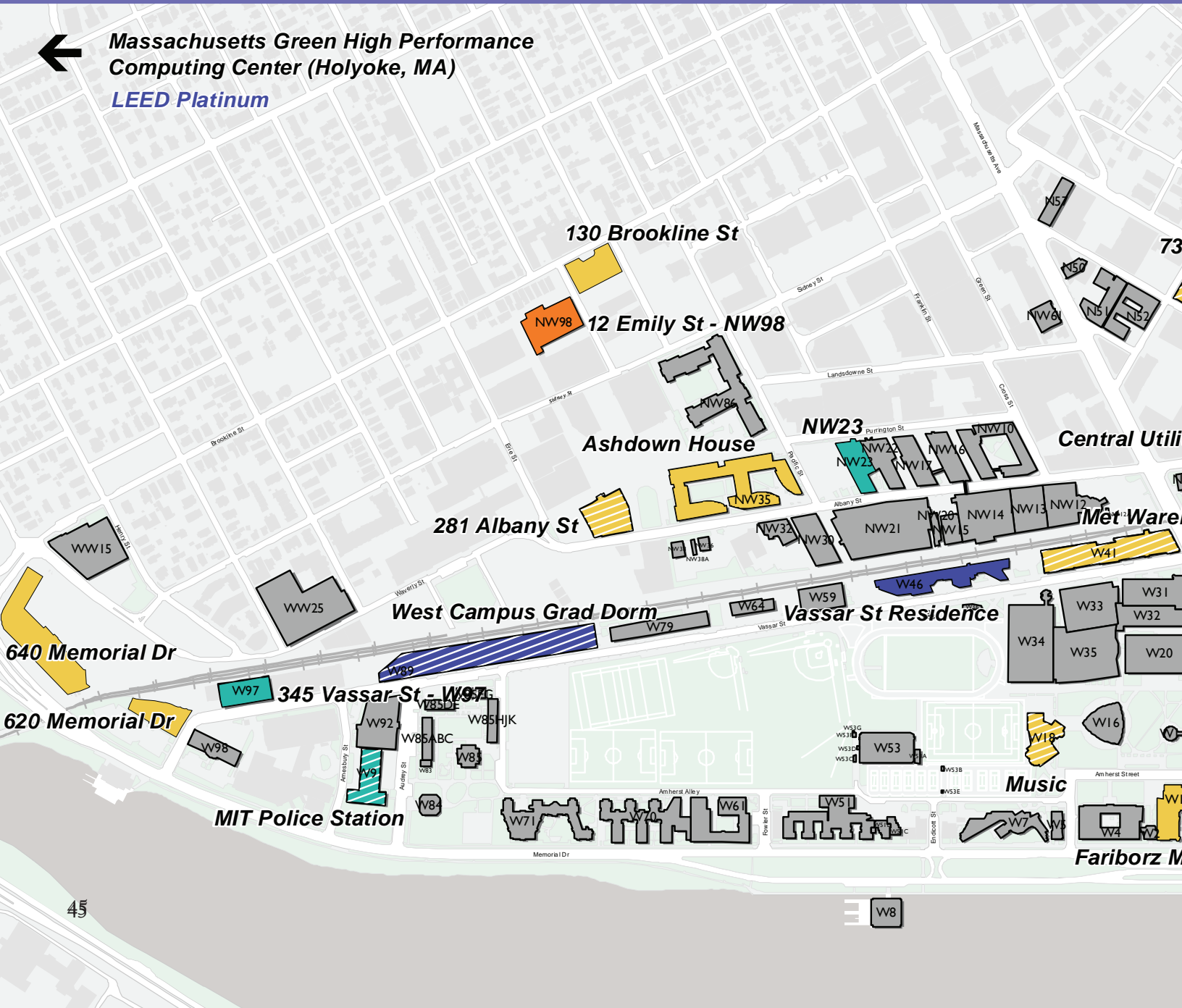
Photo courtesy of Open Space Programming

Photo courtesy by Logan Read

MIT LEED-Certified Buildings

Data as of June 30, 2021
Buildings with academic occupancy shown

- | | | | |
|---|---------------------------------|---|---|
|  | LEED Platinum |  | Planned LEED Platinum |
|  | LEED Gold |  | Planned LEED Gold |
|  | LEED Silver |  | Planned LEED Silver |
|  | LEED Gold - Commercial Interior |  | Planned LEED Gold - Commercial Interior |



Sustainability

With the May 2021 launch of the Institute's new climate action plan, Fast Forward: MIT's Climate Action Plan for the Decade, MIT frames the climate challenge by stating that "Humanity must find affordable, equitable ways to bring every aspect of the global economy to net-zero carbon emissions no later than 2050" to avert the worst outcomes of climate change. The plan also gravely states that we must begin to "adapt to effects of climate change we can't prevent, taking care of those with the fewest resources." Included in the plan are ambitious campus goals for net-zero emissions by 2026 and the elimination of direct campus emissions by 2050. Several supporting strategies are outlined in the plan to reach these goals. Broadly, these goals are organized around the areas of resiliency and mitigation, greenhouse gas portfolio expansion, climate justice, and leadership.

These campus goals represent the acceleration of work from operational staff and researchers in these areas and the enablement of newly formed cross-functional teams.

MIT continues to reduce its greenhouse gas emissions, leveraging the campus as a test bed to create open-source climate solutions. More than two dozen offices, operational departments, research programs, and academic initiatives at MIT work specifically to address sustainability and climate action, on and off campus. The Fast Forward action plan also mobilizes the entire campus in these efforts. The Office of Sustainability (MITOS) serves as an anchor point for many of these efforts by empowering and engaging community members in the mission of sourcing scalable climate solutions.

MIT Energy Efficiency Upgrade Projects

Data as of June 30, 2021
Buildings with occupancy shown

 In Construction or Planned for 2021/2022

 Completed in 2020/2021



Highlights

MITOS employs a methodology that engages the community, bringing researchers, students, and staff together to frame and solve climate and sustainability challenges on the campus. This was reflected in multiple efforts over the past year which sought to educate and activate the MIT community and cross-departmental teams around climate resiliency, greenhouse gas mitigation, sustainable building design and construction, and materials management commitments.

In 2021, MITOS and the Urban Risk Lab organized a citizen science effort to inform climate resiliency analysis by harmonizing MIT and City of Cambridge flood data. The citizen science project called upon students, faculty, researchers, and staff to engage in a campus ‘Porosity Hunt.’ This hunt tasked team members with capturing data on building porosity — openings such as vents, doors, and windows — to better understand how water could move into campus buildings and basements during flooding events. The data captured will enable a deeper level of understanding and planning on the climate resiliency dashboard. The Porosity Hunt model also serves to educate and raise awareness about potential campus risks from a changing climate.

MIT recently launched a sustainable building education project to inform MIT building occupants and visitors about sustainable design, construction processes, and commitments to achieve certification at or beyond the LEED v4 Gold level. As the new MIT Welcome Center and Graduate Tower at Site 4 (E37/38) in Kendall Square neared completion, MIT pursued a Green Building Education credit in support of LEED v4 Gold certification for the space (a minimum standard requirement set by the Institute in 2016). A collaborative MIT team designed a signage program to educate the public on the benefits and features of E37/E38’s innovative design. The displays in the lobbies of E37 and E38 highlight topics ranging from commu-

nity connection and climate resiliency to health and well-being. Additional sustainable building education projects are in progress across campus to highlight building features and inspire sustainable action for all who visit these spaces.

This past year also saw the launch of the Safe and Sustainable Labs Task Force, offering a new iteration on the former Green Labs program. The Safe and Sustainable Labs Task Force is managed via partnerships throughout the Institute. The members of the task force are evaluating current practices to institutionalize compliance, safety, and sustainability as a best practice across campus.

Despite less waste being generated on campus due to fewer people on site over the past year, 2021 proved to be a pivotal year for improving waste collection processes and sustainable procurement strategies. Spurred by data collected in past waste audits, standardized waste signage and centralized bins that include food waste collection were piloted in E37/38 and NW23, with more locations planned. The goals of these research and data-backed pilots are to limit waste stream contamination rates and increase recycling and food waste collection rates across campus.

Lastly, 2021 saw departments and schools launch plans to tailor their efforts to support MIT’s climate goals. Guided by MITOS in collaboration with School of Architecture and Planning (SA+P) faculty, specifically Professors Caroline Jones and David Hsu, SA+P debuted the first school-level climate action plan at MIT at the end of 2020. The school-wide climate action plan is designed to advance Institute efforts to address climate change and model local-level steps that could be taken throughout MIT. The plan — which presents detailed analysis of SA+P carbon emissions for a single calendar year (2019) and outlines steps to reduce these through changes in procurement, waste tracking, airline travel, and other areas of operation — serves as a model for other schools and departments throughout MIT.

Supporting a Net-Zero MIT

Greenhouse Gas Portfolio Expansion

Since 2018, MITOS has enlisted Jeremy Gregory, Executive Director of the MIT Climate & Sustainability Consortium and a research scientist specializing in lifecycle assessment, as a MITOS Faculty Fellow to build a preliminary estimate of MIT Scope 3 greenhouse gas emissions (indirect emissions). In this phase of the project, the team has been collecting available operational data targeting MIT-sponsored travel, commuting, waste, and capital goods. The researchers use the World Resources Institute/World Business Council for Sustainable Development Greenhouse Gas Protocol for Scope 3 framework to calculate the emissions related to these activities. Gregory, with the support of students working with MITOS, developed a beta version reporting platform — highlighted in the Fast Forward action plan — that tracks Scope 3 emissions for MIT-sponsored travel. MITOS aims to publicly launch this business travel emissions platform in 2022 to empower MIT entities with data for reducing greenhouse gas emissions from travel. The Scope 3 data platform will be expanded to report additional MIT greenhouse gas emission categories in the coming years.

Greenhouse Gas Mitigation Performance

Since the 2015 launch of the MIT Plan for Action on Climate Change, MIT has tracked performance and publicly reported progress about campus greenhouse gas emissions reduction and mitigation measures across campus. In 2021, efficiency gains from MIT's updated Central Utilities Plant as well as new complementary approaches to scale energy efficiency measures in buildings began to ramp up.

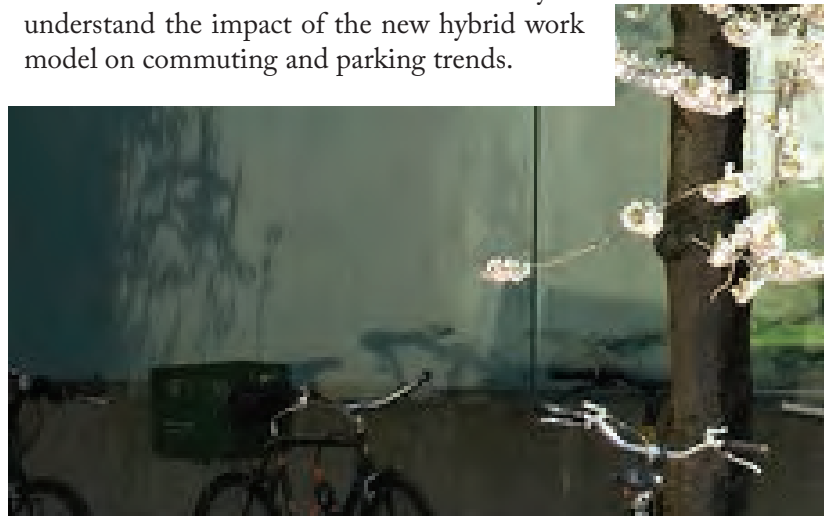
These efforts enable MIT to better understand its own contribution to global climate change, and they inform our carbon reduction strate-

gies and enable us to measure progress over time against the Institute's previous commitment to a 32% reduction in campus emissions by 2030. Since 2014, MIT has reduced its net emissions by approximately 21% toward this 32% goal, taking into account the purchase of solar power from Summit Farms in North Carolina. Of the 21% net reduction achieved to date, about 12% is attributable to the Summit Farms purchase agreement, 8% to on-campus mitigation measures, and less than 1% to carbon improvements to the local electricity grid. This progress establishes a strong foundation to meet MIT's new goals of a net-zero campus by 2026 and eliminate direct campus emissions by 2050. This experience will help inform the necessary strategies to reach net zero and zero-carbon emission goals while supporting core mission activities of research and education.

Informing Sustainable Mobility Choices

Earlier this year, MITOS launched *Commuting at the Institute: The Story of Access MIT*. The new data dashboard in the Sustainability DataPool shares aggregate data on employee commuting choices, enabling Institute leaders to identify patterns and best practices to support low-carbon commutes.

While the original intent of the data collection and sharing was to understand employee behaviors and respond by continuing to adjust the program to support low-carbon commutes, the pandemic changed the commuting context. The dashboard has been additionally useful to inform return-to-work decisions, balancing parking demands with incentives for safe and sustainable commutes. Efforts are underway to understand the impact of the new hybrid work model on commuting and parking trends.



Climate Resiliency

Climate Resiliency and Adaptation Roadmap

Within Fast Forward: MIT's Climate Action Plan for the Decade, there is a call for MIT to "continue to advance climate resiliency plans and mitigation strategies for the campus and publish an adaptation roadmap for the campus by 2025." The work building up to such a plan has been going on for the past several years. In 2015, MIT launched the Climate Resiliency Committee, managed by MITOS, which works to collaboratively assess, plan, and operationalize a climate resilient MIT. It seeks to ensure a campus community that continues to fulfill its mission in the face of climate risks and disruptions due to flooding from more frequent and extreme rains, storm surges, rising sea levels, and extreme heat events.

Managing the uncertainty of these climate risks requires understanding challenges and identifying adaptive opportunities through integrated 'layers of resilience': community, buildings, infrastructure, and site. These organizing layers are both interdependent and collectively critical to supporting MIT's mission. Experts from the MIT Joint Program on the Science and Policy of Global Change, the MIT Urban Risk Lab, and the Concrete Sustainability Hub serve as partners contributing new research to reduce the uncertainty for operational decision making.

This applied research resiliency collaboration evaluates probabilities and models campus exposure to: "flash flood" 1-3 hour intense rains; day-long rain events from tropical storms, hur-

ricanes, and nor'easters; and storm surge and sea level rise. MIT's flood risk modelling strategy also integrates planning approaches learned from MIT's Covid-19 campus response by prioritizing protection and adaptation of critical research facilities, community functions, and core campus operations.

Climate Resiliency Dashboard

The Sustainability DataPool, powered by MITOS, provides the MIT community the opportunity to access data on priority sustainability metrics such as energy, water use, greenhouse gas emissions, transportation trends, and hazardous waste and recycling rates. While many visualizations share data from past events, the MIT Climate Resiliency Dashboard is a predictive model that illustrates potential campus flooding events.

The tool displays projected flooding data laid over a campus map of MIT. Users can zoom in on a portion of campus under a specific scenario and see the projected potential peak rain or storm surge water depth at that location. The dashboard has already informed new building designs, such as the Schwarzman College of Computing, which is designed to be resilient to a 100-year flood event anticipated under a changed climate 50 years from today. The underlying flood risk model visualized in the dashboard is harmonized with the City of Cambridge flood risk model. Research efforts give MIT and Cambridge a more complete understanding of potential flood risks and impacts, including impacts to campus buildings and systems.



Photo by Christopher Harting

Looking Forward

The return to campus and launch of MIT's new climate action plan provides an exciting reset moment for MIT and its focus on sustainability and climate action. MIT will continue to apply knowledge, empower people to act, and pioneer solutions to address challenges. The Institute is well positioned to oversee and lead the fourteen campus climate commitments outlined in Fast Forward: MIT's Climate Plan for the Next Decade.

Additional commitments for the year ahead include:

- Advancing and accelerating ongoing efforts to reduce MIT's greenhouse gas emissions
- Informing and managing the Safe and Sus-

tainable Labs Task Force and emerging program

- Modeling and planning a climate resilient MIT
- Managing the impact of the Institute's purchasing and waste systems in a manner that takes the full lifecycle costs and impacts of materials and products into consideration
- Broadening and deepening MIT's commitment to sustainable transportation and robust participation in Access MIT
- Expanding data collection and accessibility of data sources and visualizations
- Integrating an environmental justice lens into day-to-day work
- Continuing to expand the reach of communications and outreach to engage more of the MIT community

MIT Tree Locations

Data as of June 30, 2021

Buildings with academic occupancy shown

 Tree Locations





Photo by Gretchen Ertl

MIT and Cambridge Public Schools

MIT extends its mission to advance knowledge through a variety of academic enrichment opportunities for Cambridge students and works closely with Cambridge Public Schools (CPS) to deepen engagement and participation. Below are selected examples of current initiatives.

City of Cambridge Global Local Challenge

MIT continues its partnership with the City's Global Local Competition. This year's competition took place over six weeks with Cambridge students participating in small teams. Every year, students are asked to solve a challenge local to Cambridge that has global implications. The 2021 challenge asked students to investigate ways to educate and engage the Cambridge community to care for our urban forests. Proposed solutions included thermal imaging of Cambridge public spaces, identifying optimal tree planting locations, and installing seating areas outfitted with board games and trivia around Cambridge trees. This fall, MIT's Office of Government and Community Relations (OGCR) supported five paid internships for Cambridge Rindge and Latin School (CRLS) students as they implement Glocal Challenge projects in the Cambridge community.

MIT Impact Scholarships

The MIT Impact Scholarship celebrated its fifth year of awarding scholarships to ten phenomenal students (six CRLS students, two Prospect Hill Academy students, and two Community Charter School of Cambridge students) from a range of backgrounds. Instead of focusing on traditional academic markers, students are selected for the scholarship based on the impact they bring to the people and communities around them. After a full review by CRLS and MIT staff, ten \$10,000 scholarships were awarded pending confirmation of full-time college enrollment. Over the past five years, \$500,000 in scholarships has been awarded to Cambridge students.

Scanning Electron Microscope Explorations with CPS

MIT Museum educators collaborated with science teachers at Putnam Avenue, Rindge Avenue, and Cambridge Street Upper Schools to lead virtual classroom visits focused on using a Scanning Electron Microscope (SEM). This tabletop research tool, on loan from Hitachi to the MIT Museum, can magnify objects up to 2000x. Over the course of 15 classroom visits, more than 275 young Cambridge scholars were invited to explore and engage with the smallest details of the world around them. From identifying mystery microparticles in wood samples to learning about the structure of pollen, museum educators worked with CPS curriculum coordinators to create engaging virtual experiences that supplemented learning objectives.

Charles River Floating Wetlands Educational Kits

MIT Sea Grant partnered with the Charles River Conservancy to develop an [educational science kit](#) and complementary curriculum to teach Cambridge scholars about the Charles River Floating Wetland and connect them with local ecology during the Covid-19 pandemic. These educational kits and accompanying illustrated booklets encourage young scientists to build living wetland models at home, complete with plants and a paint-with-algae activity. The kits were piloted at the Morse School and Prospect Hill Academy during the 2021-2022 school year; expansions of these kits in CPS upper school science classrooms are currently being explored.



Photo courtesy of LMIT

Pathways to Invention

MIT, with support from the [Lemelson-MIT Program](#) (LMIT) and other campus collaborators, has redoubled efforts in the 2021-2022 school year to help youth in Cambridge and greater Boston get on the Pathway to Invention. The multi-pronged approach includes offerings at multiple grade levels and focuses on both educators and students. In grades K-5, LMIT continued to support Sisters With a Dream, an afterschool program serving 16 girls (3rd through 5th grade) at the Fletcher Maynard Academy, and helped build a new effort for ten girls between 1st and 3rd grade at Fletcher. Sisters With a Dream helps young scholars explore STEM with a social activism lens and is supported by retired public school teachers, LMIT staff, and an MIT student mentor.

The LMIT Invention Adventures program offers online coaching for educators and mentoring opportunities for students of all ages to prepare for the second annual Massachusetts Invention Convention (MAIC) next spring, to be held during the Cambridge Science Festival.

LMIT staff will work in afterschool programs in Cambridge to prepare students for the convention. This summer, LMIT hosted 26 local educators at no cost for a three-day online professional development workshop to support invention. Over 60 presenters shared ways they've engaged school-aged youth with invention education activities and suggestions for how educators can bring those opportunities to their own students. Forty other educators from Cambridge and greater Boston joined specialty workshops to learn classroom activities that can help prepare students for MAIC.

Supported by Pathways to Invention, LMIT and Biogen partnered to offer a virtual internship program called Biotech In Action for 176 students statewide during the summer and fall. Interns explored career options, met with Biogen scientists, and invented solutions to address medical challenges. Additionally, LMIT participated in the City of Cambridge STEAM Initiative's STEAM it UP event in October, working with students and families to 'invent' a launcher prototype.

Selected K-12 Resources and Community Collaborations

Kitchen Matters

Kitchen Matters is a team of materials science PhD students at MIT who are passionate about science outreach and also love to cook. The team produces [YouTube videos](#) on the science of food and cooking, showcasing home cooking experiments from tempering chocolate to baking bread and making jellies. Recently, the Kitchen Matters team presented at the Cambridge STEAM Initiative's STEAM It Up event and at the inaugural Nerd Alert speaker series at the Cambridge Public Library.

Virtual Read-Alongs for CSEdWeek

This winter, members of the MIT Community collaborated with the CPS Educational Technology team to record virtual read-along videos of computer science children's books for young CPS scholars and their families. Students read and listened along to books like *Doll-E 1.0* and *How to Code a Sandcastle* before participating in the CPS Computer Science Student Contest.

Direct Economic Impact

The Job Connector by MIT

The Job Connector by MIT is a free workforce development hub for Cambridge residents. Created as part of the community benefits package of MIT's Volpe zoning agreement, it provides comprehensive career-related services through workshops and individual counseling.

The Job Connector by MIT remained agile throughout 2021 to discover new ways to serve the Cambridge community. The Job Connector staff blended virtual programming with in-person workshops, adhering to MIT's Covid-19 protocols, and managed to serve more than 170 clients in 2021 and help approximately one-third of those clients obtain employment. The Job Connector continues to identify and work with organizations to advance its workforce development mission; for example, the team hosted a workforce development session for Cambridge youth who participated in IQHQ's local internship program. The students developed post-internship career plans with actionable next steps. Several more programs are highlighted below.



My Brother's Keeper Partnership

The Job Connector creates workforce development programs of its own and also partners with others to develop targeted opportunities and curriculum. One ongoing partnership is with My Brother's Keeper (MBK) Cambridge — a nonprofit organization dedicated to disrupting barriers faced by young people of color.

Career Pathways

Partnering with MBK Cambridge, the Job Connector co-produced a five-week life skills and employment readiness paid training program for local 18- to 26-year-olds. After the success of the first session in the fall of 2020, a second cohort was welcomed in the winter of 2021. Reflecting on the program, participant Jackson Schuh shared: "Thanks to the Job Connector and My Brother's Keeper Career Pathways Program, I have the confidence to try a different career!" Jackson is currently working as a Covid testing assistant at MIT.

Summer Youth Empowerment Program

The Job Connector by MIT teamed up with My Brother's Keeper this summer to help lead the paid Summer Youth Empowerment Program for 50 Cambridge youth aged 15-19. Over the course of four weeks, Program Associates learned how to represent and advocate for themselves professionally, research companies, and prepare for virtual and in-person interactions. The Job Connector team presented career development workshops, provided individual coaching sessions and mock interviews, and led team-building activities and outdoor games.

2020-2021 Workshops

Prepare for it Now

Working with the Margeret Fuller Neighborhood House (MFNH), the Job Connector hosted a two-part series which combined a group workshop with individual virtual career coaching sessions for MFNH clients between the ages of 18 and 30. The workshop focused on action planning, resume and cover letter writing, and interview skills. Participants earned career preparation certificates at the conclusion of the workshop. The content is available online for all MFNH clients.

Career Readiness

The Job Connector hosted a three-part workshop series on job searching basics, resume writing, and interview skills working with Homeowners Rehab Inc. (HRI). The online program

is available on Facebook as an on-demand resource for 1,300 HRI residents. Speaking about the workshop, Kemila Ahmed noted: "I had a great experience working with the Job Connector. I was struggling to find a job in the beginning, and I didn't have a resume. The Job Connector helped me create a resume and helped me understand what the job interview could be."

Introduction to Construction and the Building Trades

In partnership with the Massachusetts Building Trades Council and the Greater Boston Building Trades Union, the Job Connector ended 2021 with the paid training opportunity: Introduction to Construction and the Building Trades. The five-week program featured trade and construction-related experts providing industry-based technical and career readiness skills for 15 Cambridge residents.

Cambridge First Purchasing Program

MIT's Cambridge First Purchasing Program resulted in the additional investment of over \$13.5 million in Cambridge businesses in FY21. This program, together with taxes paid, payments in lieu of taxes, and municipal fees, brought MIT's 2021 direct economic contribution to the City to over \$100 million. This figure does not include MIT's indirect investment in Cambridge such as student spending and the salaries of more than 2,500 residents employed by the Institute.

The Institute is committed to increasing purchasing and contracting with Black- and minority-owned businesses, including those in the City of Cambridge. To support these efforts, the Small and Diverse Business Program is working on a baseline supplier diversity analysis and tools to support campus purchasers with visibility into their suppliers, their credentials, place

of business, and other helpful information. The program will work with partners both on and off campus to assist small and diverse businesses in addressing MIT's complex organizational needs. In addition, MIT launched a program to incentivize residence halls to order food from local eateries for Covid-safe residence gatherings.

#1 Taxpayer in Cambridge

MIT's FY21 real estate tax payment represents 14.9% of the City's total tax revenue stream.

Payments to the City of Cambridge

	FY 17	FY 18	FY 19	FY 20	FY 21
Real Estate Taxes Paid*	\$54,891,906	\$56,971,040	\$60,291,173	\$65,318,882	\$70,355,886
Payment in Lieu of Taxes (PILOT)**	\$2,080,717	\$2,211,875	\$2,150,218	\$2,211,549	\$2,232,696
Water and Sewer Fees Paid	\$8,315,850	\$7,937,273	\$8,536,068	\$7,812,810	\$6,201,488
Other Fees and Permits Paid	\$5,644,924	\$11,483,296	\$5,006,735	\$8,242,958	\$11,313,394
Total Payments	\$70,933,397	\$78,603,484	\$75,984,194	\$83,586,199	\$90,103,464

* Includes real estate taxes paid by MIT, taxes paid on MIT-owned property through ground leases, and real estate taxes generated by Independent Living Groups.

** The amount of MIT's PILOT payment is governed by the 2004 agreement between MIT and the City of Cambridge.

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