Five-Year Master Plan
University of Michigan-Ann Arbor
FY2022

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Facilities and Operations
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FIVE-YEAR MASTER PLAN AND PROJECT REQUEST
UNIVERSITY OF MICHIGAN-ANN ARBOR
FY2022

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I. MISSION STATEMENT

The mission of the University of Michigan is to serve the people of Michigan and the world through preeminence in creating, communicating, preserving and applying knowledge, art, and academic values, and in developing leaders and citizens who will challenge the present and enrich the future.

VISION STATEMENT

As the University of Michigan is now fully into its third century, we fully embrace the legacy bestowed upon us by President James B. Angell in our first century. We are proud to offer "an uncommon education for the common man."

We are a community of learners. We serve our multiple constituents by providing access to and participation in scholarly and creative endeavors on a vast scale. Our academic research enterprise affects the world. The university is defined by a culture of interdisciplinary teaching and research, coupled with academic rigor. We encourage our students, faculty, and staff to transcend disciplinary boundaries by tackling complex and vexing problems facing modern societies at local, national, and global levels.

We endorse and promote creativity in its many facets. We recognize the arts as a human essential and a foundation that helps to define our future. We create new knowledge and share the joy of discovery, and we see information technology as a powerful means for broadening access to knowledge and exchanging ideas.

We draw from study and experience to prepare our students for leadership in a wide range of social endeavors, including government, law, education, medicine and business, reflecting the university's many roles in contributing to good design and decision making within major domestic and international institutions.

We celebrate and promote diversity in all its forms, seeking the understanding and perspective that distinct life experiences bring. We proclaim ourselves a scholarly community in which ideas may be freely expressed and challenged, and all people are welcomed, respected, and nurtured in their academic and social development.

We are committed to providing for our students and faculty international learning and teaching experiences that will prepare them for a rapidly changing global community. The university encourages intellectual and cultural exchange in other countries, and programs that deeply engage scholars from disparate areas of the globe. We support and promote student, faculty, and staff immersion in local and national communities via service, learning, and leadership endeavors. We nurture lifelong relationships with alumni who span the globe.

We advance health care through discovery and practice. We deliver clinical services to people within our state and the world, educate future generations of health care professionals, conduct basic research in fundamental processes of life, and vigorously advance research on the mechanisms, detection and treatment of a spectrum of human diseases. The university champions fitness, disease prevention, and policy research to advance health, quality of life, and longevity of our own community, the nation, and the globe.

We stimulate economic growth and development in Michigan and beyond. The university engages in productive partnerships among academe, industry, and government to sustain and grow a vigorous and dynamic economy. University students, faculty, and staff embody and advance innovative attitudes and entrepreneurial spirit.

We strive to be an exemplary employer and a positive influence in our community. We provide an environment where all employees have opportunities to develop their potential, and where there is a shared passion for excellence and a commitment to respect for one another.

We dedicate ourselves to ethical and responsible stewardship of financial, physical and environmental resources. We look for tools and strategies to create and enhance sustainable practices in all facets of operations and seek to lead in the global quest for a sustainable future.

We enthusiastically accept the challenges and opportunities confronting us and understand that the University of Michigan must change, adapt and grow to meet the needs of a rapidly evolving society. We will always focus on the horizon.

II. INSTRUCTIONAL PROGRAMMING

NOTE: As is the case with institutions, businesses, and organizations around the world, the current COVID-19 pandemic has greatly impacted how we work, required us to leverage technology in new and innovative ways, and as a result, is influencing how we think about our needs for physical space. Because the COVID-19 pandemic is still underway, efforts in recent months focus on providing safe facilities to continue mission-critical work and preserve university finances. Planning for capital projects not currently under construction has been primarily paused to preserve financial resources and to allow the university time to focus on our pandemic response.

For this year's Five-Year Plan, and specifically this Instructional Programming section, we are making minor updates to the content where clearly needed. In the coming months, we will revisit paused capital projects to determine any appropriate next steps. While we expect there may be shifts in priorities, we also recognize that our research enterprise and academic programs will continue to require new or renewed physical spaces to maintain excellence in our teaching and research missions.

The University of Michigan, founded in 1817, has a history of over 200 years of leadership in education, innovative research, stewardship and service to the State of Michigan. The university consistently ranks in the top ten of public universities in the U.S., according to the U.S. News and World Report, and receives high marks for retention and graduation rates and for the reputation and excellence of many of the undergraduate, graduate, and professional degree programs offered by the university's 19 schools and colleges. As a public institution, the university strives to achieve its mission through teaching, research, and service, set within the framework of various schools, colleges, institutes and centers and through strategic partnerships with public and private institutions in Michigan and beyond.

The following information describes various programs that support these core missions of the university and activities that may impact facility needs in the next five years.

A. Alfred Taubman College of Architecture and Urban Planning

The University of Michigan offered its first courses in architecture in 1876. The program became a department in 1913, and by 1931, the College of Architecture was established as a separate entity. Today, the college offers bachelor's, master's, and doctoral degrees in various fields, including architecture, urban and regional planning, and urban design. The college was renamed in 1999 in honor of A. Alfred Taubman, a longtime donor and adviser to the college. In 2014, A. Alfred Taubman continued his generosity to the college with a gift to support a partial renovation and expansion of the Art and Architecture Building, where the Taubman College is located. Opened for the fall 2017 term, the A. Alfred Taubman wing provides modern instructional space, expanded student studios, and more spaces for student and faculty interaction, critiquing, and exhibitions. While the addition and partial renovation provided the college with much needed program growth space, much of the original 1970s building contains outdated classrooms, administrative and faculty spaces, and other support spaces that will need to be addressed at some point in the future.

Penny W. Stamps School of Art & Design

Education in the arts was first offered as part of architecture and engineering studies at the university. As art evolved as a discipline, the programs were moved out of these colleges and the School of Art & Design became a separate school in 1974. The school was renamed the Penny W. Stamps School of Art & Design in 2012 after receiving a significant donation from Penny and E. Roe Stamps. The school shares the Art and Architecture Building with the A. Alfred Taubman College of Architecture and Urban Planning, where it provides a comprehensive range of bachelor's and graduate degree programs in art, design, and inter-arts performance. In 2011, the university renovated and repurposed an existing university warehouse building one mile from the school to address its pressing need for graduate student and faculty art studios. In 2014, the school conducted a study of its long-term facilities needs and identified the need for a major renovation and expansion of their space in the Art and Architecture Building. This study led the school to repurpose their on-site art gallery into much needed student maker space and collaboration space and move the gallery to an off-campus lease. While this has helped to free a small amount of space within the Art and Architecture Building, the 1970s structure limits the school's capability to have all of the modern, collaborative teaching and studio spaces it needs.

Stephen M. Ross School of Business

The School of Business Administration was formally established in 1924. Today, at all levels of instruction—bachelor's, master's, doctoral, and executive education—its programs consistently rank high nationally and internationally. In 2004, Stephen M. Ross made a historic gift to the school, and it was renamed in his honor. The gift supported the construction of a new Ross School of Business academic building, which opened in 2009, and provided modern instructional and research space to support the school's core mission. Stephen M. Ross continued his generous support of the school with another gift in 2013. The gift, along with other donor gifts, supported the renovation of the Kresge Business Administration Library and construction of a new academic building, all connected to the main Ross School of Business academic building. The new academic building is named Jeff T. Blau Hall in recognition of Blau's generous financial contributions. Opened for the fall 2016 term, the new and renovated facilities house modern and innovative spaces for instruction, study and collaboration, and student and career services spaces, which will enable the school to continue its long-standing history of excellence in business education into the future. A recent additional gift from Stephen M. Ross enabled the school to make exterior enhancements that unify the Stephen M. Ross School of Business complex, completed in 2019. While this series of capital projects has addressed many of the school's highest priority needs, the school continues to lease nearby off-campus space for some core functions. We expect the school to want to address this through an on-campus space solution at some point in the future.

School of Dentistry

Established in 1875, the School of Dentistry is one of only two schools of dentistry in the State of Michigan and continues to be a top-ranked program nationally. It offers bachelor's, master's, and doctoral degrees, as well as certification and continuing education, in a variety of dental fields including dental hygiene, pediatric dentistry, orthodontics, periodontics, oral and maxillofacial pathology, and surgery. The school's dedication to health and wellness extends well beyond the

research lab and classroom. The school provides clinical services to patients on campus and around the State of Michigan and is particularly dedicated to providing care to underserved, at-risk, and special needs patients.

Through its community-based dental education program, the school's faculty, students, and staff are serving these patients throughout the state in federally qualified health centers, community clinics, and in private offices. The school occupies two adjoined buildings that are in serious need of attention and limit the school from fully achieving its core mission. Addressing this need has been a high priority for the university, which is why the university submitted the School of Dentistry project to the state for fiscal years 2015, 2016 and 2017 capital outlay funding consideration. The university received construction authorization from the state in 2017 for a project that will construct a modest addition and partially renovate the building to improve the school's research and clinic spaces and to improve patient access to the building. The university is very appreciative of the state's recognition of this high priority need. Construction began in 2018 and will conclude in 2022. This project will address the school's most pressing needs; however, the remaining areas not being renovated will still require attention and investment sometime in the future.

School of Education

The School of Education was formally founded in 1921; however, teacher diplomas were first offered at the university in 1874 with master's and doctoral degrees added in the decades following. The school prepares students for professional careers in teaching and administration and offers advanced training and certification for researchers and practitioners at all levels of education. The school is housed in a 1920s building (a former elementary and high school) and has had only modest renovations over the past several years. The renovations included remodeling a large auditorium and constructing the Brandon Professional Resource Center and Archive in 2011. Made possible by a generous gift from Jan and David Brandon, this space houses digital records of professional practice and other important resources for professional study and use and offers student-focused study and collaboration areas. In 2015, the university completed a renovation project that addressed the building's aging infrastructure and made modest improvements to the teaching and learning environment. The project addressed only some of the school's needs. The school has identified additional needs for renovations and a building addition to better support its mission.

College of Engineering

The College of Engineering, established in 1895 is renowned, both nationally and internationally, for delivering high-quality education and cutting-edge research to help solve the world's problems. Today, nearly all of the college's undergraduate and graduate programs rank in the top 10 nationally, enabling its students to experience academic excellence at its best. The college occupies over 30 buildings on the university's North Campus, many of which were built over 40 years ago when engineering program requirements were much different than they are today. Further, given the student demand, many programs lack sufficient classroom and research space. While the college and university make every effort to maintain and improve the college's

facilities, they are challenged to keep up with demands for state-of-the-art space to support ever-changing fields of engineering study and research.

In 2014, the college completed a 62,500 square foot addition to the G. G. Brown Memorial Laboratories, which houses the Center for Excellence in Nano Mechanical Science and Engineering. In 2016, with a combination of university and state capital outlay funding, the college completed a deep renovation of the G. G. Brown Building to accommodate the growing needs of the Departments of Mechanical Engineering and Civil and Environmental Engineering. Thanks to the support from the state, the college was able to renovate the entire building, creating state-of-the-art academic and instructional spaces and upgrading much of the building's mechanical, electrical, and life safety systems. In 2015, the college began a major renovation of the former Ford Nuclear Reactor with a generous gift from long-time donors Bob and Betty Beyster. Opened in spring of 2017, the newly named Nuclear Engineering Laboratory building repurposed the former nuclear reactor space into modern research labs, offices, and student collaboration space to support the growing needs of the Department of Nuclear Engineering and Radiological Sciences. The Ford Motor Company Robotics Building, currently in the process of opening, aims to better support its programs and research in robotics and autonomous systems, including autonomous vehicles. This new facility brings together faculty and students from across departments and schools under one roof and will house state-of-the-art research labs, teaching labs, classrooms, machine shops and garages, and robot test facilities both indoors and outdoors. In a unique and exciting arrangement, the university formalized a long-term lease of space within the Robotics Laboratory for researchers from Ford Motor Company. In addition to a generous gift to name the building, Ford contributed funding to the project to provide additional space for its needs. This building is a prime example of industry engagement and interdisciplinary research, teaching, and application at the university.

While the projects noted above address many of the college's needs for modern teaching and research space, the college still has a number of departments and programs in inadequate spaces that hinder their academic and research missions. The college recently completed a strategic facilities master plan to identify its capital project needs and priorities across its many departments, with particular focus on Computer Science and Engineering (CSE), Biomedical Engineering, Chemical Engineering, Civil Engineering, and Naval Architecture and Marine Engineering (NAME). The study indicated that the college's most urgent need is to provide additional space to accommodate its continually growing CSE department. CSE is currently housed in the Bob and Betty Beyster Building, which was designed to meet the department's needs more than a decade ago when its combined undergraduate and graduate enrollment was less than a quarter of its current student enrollment. Due in large part to the program's reputation and significant demand for computer science graduates in the job market, the program today has over 2,400 students. Despite experiencing such substantial growth, the department's physical space has not changed. CSE has been at 100 percent capacity for the past several years and the space constraints are preventing it from growing its program further to meet market demands and from providing CSE students with the quality experience that they deserve. The college anticipates that the demand for its CSE graduates will continue to grow for the foreseeable future, aligning with national and state trends in this field. As a result, addressing

CSE's space need is the university's highest priority capital project need and the reason it was submitted for consideration of State capital outlay funding in 2017, 2018, and in 2019. The proposed solution combines CSE's capital project needs with those of the School of Information (described in the School of Information section), since both have similar types of space needs and would benefit from being co-located.

School for Environment and Sustainability

The university is making significant, highly innovative changes to its environmental education and research programs. Building on more than a century of leadership in environmental science, management, policy, and design, the School of Natural Resources and Environment (former name) became a new school, the School for Environment and Sustainability (SEAS) in 2017. The original school was founded in the late 1880s and was the first of its kind in the country. Since its founding, the school has been a pioneer in developing a scientific understanding of ecosystems, including their conservation, management, and restoration; and trains leaders, assists in policy-making, and teaches the skills necessary to manage and conserve the earth's resources. The school offers degrees at the master's and doctoral levels, as well as certification in fields like conservation ecology, environmental informatics, geographic information system (GIS) and modeling, environmental policy and planning, and sustainable systems. The school's historic home, the Samuel Trask Dana Building, underwent a series of renovations in the 2000s, thanks in large part to capital outlay funds from the state. At the time of completion in 2004, it was the first major academic renovation to receive a LEED Gold certification rating for sustainable design and construction in the state of Michigan and among the first in the country. The school is strengthening and expanding its partnerships with other schools and programs on the Ann Arbor campus focused on the environment and sustainability issues. The school anticipates needing more space to accommodate its broader mission.

School of Information

A formal program in library and information studies began in 1926 when the Department of Library Science was created within the College of Literature, Science, and the Arts. The department became a fully independent school in 1969. In response to rapid changes brought on by technology, the school broadened its teaching and research significantly in the 1990s and was renamed the School of Information. Its focus is offering a highly interdisciplinary and collaborative approach education to those who will serve as leaders in the information professions. The School of Information occupies space in the North Quadrangle Residential and Academic Complex (North Quad), which was built in 2010. Since 2010, the school has added three new programs (a Master of Health Informatics, a Bachelor of Science in Information, and a new online Master of Applied Data Science) and experienced significant growth in student enrollment and faculty hires. In 2011, the school's enrollment was 425 students. Today, the school's on-campus enrollment (excluding the new online degree) is 1,100 students with plans to grow enrollment to ~1,500 students by 2023, more than tripling its enrollment since it first occupied the North Quad building. With its significant growth in programs and enrollment, it is increasingly pressed for space to meet its needs. The school is currently leasing space in four nearby off-campus locations as a temporary solution, but this is costly and will not meet the school's space needs as it continues to grow. The space and enrollment challenges faced by the School of

Information and College of Engineering Computer Science and Engineering (CSE) department are similar, and both units would benefit programmatically by having a joint solution. As a result, the university submitted a combined CSE and School of Information project to the state for capital outlay funding consideration in 2017, 2018 and. The university received planning authorization from the state in 2018 and project planning is underway.

School of Kinesiology

Kinesiology has been part of the University of Michigan curriculum since the turn of the twentieth century. In 1984, a Division of Kinesiology was created and was later designated as the School of Kinesiology in 2008. The school offers bachelor's, master's and doctoral degrees in a variety of subject areas, including athletic training, health and fitness, movement science, and sport management. In 2008, a State of Michigan Capital Outlay project for the renovation and upgrade of Observatory Lodge, now called the Kinesiology Building, was completed which provided classrooms, office, and research space for the school. The project also addressed deferred maintenance, code and accessibility requirements for the building. The school has since experienced tremendous growth and now has programs distributed across multiple on-campus buildings and off-campus leased spaces, which makes it very challenging to foster collaboration and community. In response to the growth in enrollment, faculty hires, and research and the need to collocate these functions, the university approved a complete renovation of and addition to the historic Edward Henry Kraus Natural Sciences Building. This 1915 building previously housed the university's recently relocated biological sciences programs. The university is very proud to be able to renovate this historically significant Albert Kahn building, while enabling the school to consolidate its programs and accommodate its growth. The university is also using this complete renovation to plan for the next generation of modern, flexible team-based learning spaces that will serve both Kinesiology and campus at large. This project is expected to be complete by the end of this year (2020).

Law School

Since its founding in 1859, the Law School has been a national and international leader in the field of law and educational access—in 1870, the school was the nation's second university to award a law degree to an African American and, in 1871, the first in the nation to award a law degree to a woman. The school's graduates work in every state and all over the world in business, as practitioners and professors, as legislators and members of Congress, and as distinguished civil servants and members of the judiciary. In recent years, the Law School was able to significantly improve and expand its historic and iconic facilities through a series of renovations and construction projects. The school now houses modern student interaction and study spaces, improved classrooms, multi-purpose and clinical spaces, and offices for faculty and administrators in the new Jeffries Hall building (opened in 2012 as South Hall, and renamed in 2018 after donors Lisa and Christopher Jeffries), the new Aikens Commons, and the partially renovated Hutchins Hall. A gift from Robert and Ann Aikens helped fund the school's recent building and renovation projects. In 2013, the university reopened the newly renovated Charles T. Munger Residences in the Lawyers' Club building, a residence hall adjacent to the Law School. This significant renovation to the historic 1923 building was made possible in large part by a donation from Charles T. Munger. In early 2020, the Board of Regents approved a project to

renovate the Law School's aging Hutchins Hall auditorium to update the space to meet ADA, infrastructure, and contemporary teaching and learning needs while maintaining the auditorium's historic qualities.

University Library System

The University Library system can trace its history to 1838, one year after the university's relocation to Ann Arbor, with the purchase of John James Audubon's *Birds of America* books that are still on display. Much has changed since the library's founding, but its central role in advancing the university's research and teaching missions continues. Today, the University Library is one of the largest university library systems in the United States, with over 14 million volumes stored in various buildings around the Ann Arbor campus. The library is also leading the university's efforts in materials digitization, online, distance, and digital education, looking at ways to enhance the effectiveness and efficiency of on-campus teaching and educational technology and at ways to expand the university's outreach to new audiences. Such technological advancements and a general shift in how students and the community interact with collection materials have significantly changed the responsibilities and operations of the library, and as a result, the library has begun to transform the way its buildings are used to provide new ways for the university community to interact with its materials.

The University Library's main operations are housed in the Harlan Hatcher Graduate Library (Hatcher) and Shapiro Undergraduate Library (Shapiro)--two interconnected buildings that form one complex in the heart of Central Campus. Hatcher, one of our iconic Albert Kahn-designed campus buildings, is 100 years old and Shapiro is nearly 65 years old, and although these buildings are heavily used (with 2.2 million visitors each year); they no longer adequately meet campus needs. Both buildings were designed and built at times when libraries' missions were primarily to house stacks of books and to provide places for quiet study and research. Like many leading institutions with aging libraries (Duke University, University of California Berkeley, University of Virginia, Princeton University, and more), our vision is to transform Hatcher and Shapiro from antiquated libraries that house books to modern facilities that offer information, services, and spaces that better modern support teaching, learning, and research. In recent years, the university has been looking at options to relocate a large portion of the Hatcher and Shapiro materials elsewhere. The ultimate goal would be to repurpose these prime campus spaces into a destination that improves access to digital and print collections and offers a variety of flexible spaces and services to discover, learn, create and collaborate in one location.

College of Literature, Science, and the Arts

The College of Literature, Science, and the Arts (LSA), founded in 1841, was the first duly constituted college of the university. Distinguished in the humanities since its earliest years, the college became preeminent in the natural sciences during the early twentieth century and went on to become a leader in social science research. As the largest college on campus serving the greatest number of undergraduates, the college's departments and centers are housed in several buildings on Central Campus. The university is continually making improvements to these spaces to keep up with its ever-changing fields of study and research. In 2017, a generous donation from Ambassador Ronald Weiser and Eileen Weiser enabled LSA to transform the former Dennison

Building, now Weiser Hall into an academic center for programs and institutes with international and interdisciplinary themes. The collocation of these programs, previously housed in numerous buildings across campus, provides students, faculty, and staff with a single location for these academic centers and services and enhances programmatic synergies and overall operational efficiencies for the college.

In 2018, the university completed construction on a new 300,000 gross square foot Biological Sciences Building that collocated research, teaching, administrative, and exhibit space for its programs in Ecology and Evolutionary Biology; Molecular, Cellular and Developmental Biology; and the Museums of Natural History, Paleontology, and Zoology. LSA recently opened an addition to the Literature, Science, and the Arts Building which created a gateway for students to explore the connection between their liberal arts education and their goals and aspirations in the real world. The new space primarily houses services for a variety of experiences and opportunities, including internships, study and work abroad options, funding and employment opportunities, and connections to college alumni.

Looking ahead, LSA has identified two facilities that are hindering their academic and research mission: the Chemistry Building and the Modern Languages Building. The Chemistry Building was built in 1908 with additions in 1948 and 1988 and today is 544,000 gross square feet. The building is used for chemistry research and foundational chemistry and natural science classes that are required by several schools and colleges on campus, but the research and teaching labs are antiquated, costly to renovate individually, and no longer reflect modern science needs. The Modern Languages Building is over 50 years old and houses a number of language departments, over 40 classrooms, and 4 auditoria. The building has the most classrooms of any building on the Ann Arbor campus, but all of the classrooms are small and no longer support modern teaching and learning needs.

Medical School

Since opening its doors in 1850, the Medical School has been a leader in medical education, biomedical research, and patient care. In addition to its professional Doctor of Medicine program, the school offers master's and doctoral degrees in the basic medical sciences. The school is renowned for its many firsts in medicine, including establishing the nation's first university-owned and operated teaching hospital and creating the first departments of pharmacology and human genetics in the United States. The Medical School was also among the first major American medical schools to admit and graduate women and minorities. In an effort to maintain its excellence in all areas of its mission, the Medical School continues to renovate and modernize instructional and research facilities as priorities dictate and funds allow. The school's ongoing activation and renovation of the North Campus Research Complex (NCRC, formerly the Pfizer research and development headquarters) has provided faculty and staff immediate opportunities to expand interdisciplinary research and programs and translational research programs, such as emergency medicine. The university is proud to have activated and leveraged the NCRC campus and the complex is now home to more than 3,000 faculty, staff and external partners.

In 2015, the school renovated and transformed the A. Alfred Taubman Health Sciences Library building from a traditional library building to a facility that houses high quality, contemporary teaching, clinical simulation, student services, and study space. The school continues to renovate space throughout the Medical Campus to create more modern, modular, and flexible research labs. Shifting from traditionally dedicated, smaller labs to the modular configuration has been a priority for the school in all lab renovations in recent years, and it allows them to accommodate growth for existing and new research and to manage operational costs more effectively. The school recently completed a significant renovation of four interconnected buildings at NCRC for their pathology department. Previously, the Department of Pathology was spread across five campus buildings plus a number of off-campus leased spaces. The project allows the school to co-locate Pathology faculty, students, staff, and researchers and the associated clinical and research labs into one efficient and flexible facility. In 2019, the Medical School received Board of Regents approval to finish approximately 20,000 gross square feet of shelled space in the A. Alfred Taubman Biomedical Science and Research Building to expand the existing vivarium for current and future research needs.

As science and clinical care models continually change in the healthcare industry, it is important that our top-ranked Medical School be nimble to position itself for the future of medical education. The school recently completed a study for a medical education building as a new front door to the Medical School that would replace its traditional lecture halls with a variety of flexible, reconfigurable classrooms, simulation labs that support immersive and active learning, and spaces that encourage student well-being.

School of Music, Theatre & Dance

As one of the oldest and largest schools of music in the United States, the School of Music, Theatre & Dance ranks among the top conservatories and schools of music in the country. Degrees are offered at the bachelor's, master's, and doctoral levels in nearly all fields of music, dance, and theater. The school's academic programs are distributed across six buildings on North and Central Campuses. In 2015, the school completed a significant facilities project to partially renovate and expand the school's principal building, the Earl V. Moore Building, made possible by a generous donation from William K. and Delores S. Brehm. The project included new and updated rehearsal halls, new modern classrooms, a performance technology suite, more student practice rooms, and improved faculty space. While the Moore project addressed the school's most pressing needs, the remaining areas that were not renovated (older practice rooms, some classrooms, and administrative spaces) still require attention and investment sometime in the future. Having programs and operations distributed across multiple buildings on two campuses continues to be a challenge for the school. This includes the dance, musicology, and music education departments, as well as other key administrative functions for the school. Of these needs, the university identified relocating the Dance program as a high priority. In 2019, construction began on a new on a new Dance building on North Campus, adjacent to the Moore Building. Expected to open in 2021, this 24,000 gross square foot building will house the Dance department and include modern dance studios, a large performance studio theater, physical training and student support spaces, and the department's administrative space.

School of Nursing

The School of Nursing has maintained a reputation of excellence for more than 100 years and has been a national leader in the advancement of nursing knowledge and the promotion of trends in health care since its founding. The school offers bachelor's, master's, doctoral, and certification programs in a wide variety of nursing fields, such as pediatrics, gerontology and midwifery. In 2015, the school completed construction of a new 78,000 gross square foot building adjacent to their current building. The new building provides active-learning classrooms, a technology rich clinical learning center with simulation and skills labs and simulated patient suites, offices for student services and a few faculty offices. The original Nursing Building, which is over 100 years old and still houses a number of core functions for the school, will eventually need attention or be replaced.

College of Pharmacy

Established first as a department in 1868, Pharmacy became an independent college in 1876, the first at any university in the United States. Today, Pharmacy is the oldest college of pharmacy in the country and is a top three-ranked program nationally, offering a number of bachelor's, master's, and doctoral degrees in fields such as pharmaceutical sciences, pharmaceutical engineering, and medicinal chemistry. The college currently occupies space in six buildings on campus, excluding clinical space, five of which were built prior to 1960, so they have aging infrastructure and science research labs and classrooms that reflect a bygone era. For a small college like Pharmacy, being physically distributed across so many locations in aging facilities significantly challenges its ability to meet its core academic, research, and clinical mission, to operate efficiently, and to maintain its high ranking. In May 2019, the Board of Regents approved a project to design a 130,000 gross square foot building that will co-locate and modernize Pharmacy's core functions, including research, administration, and instructional spaces. In 2020, the university paused this project in light of the COVID pandemic and the university's need to preserve financial capital at this time.

School of Public Health

Though formally established in 1941, the School of Public Health can trace its beginning to 1887 when the first professor of hygiene was appointed, and to 1897 when the university awarded its first degree in that field. Today, the school offers master's and doctoral degrees in fields such as biostatistics, environmental health sciences, epidemiology, health behavior and health education, nutritional sciences, and health management and policy, and health informatics. For fall 2015, the college began offering undergraduate courses for the first time, and in fall 2017, it formally launched two undergraduate degree programs. Over the past decade, the university made a series of renovations and an expansion to the school's existing buildings to provide higher quality research, classroom, and administrative space, as well as to make significant infrastructure improvements to its research-heavy facilities.

Gerald R. Ford School of Public Policy

The Gerald R. Ford School of Public Policy traces its history to the founding of the Institute of Public Administration in 1914, the first university program in the United States to provide a systematic course of study in municipal administration. Today, named in honor of Gerald R. Ford,

the 38th President of the United States and an alumnus of the University of Michigan, the school prepares graduates for distinguished careers in policy analysis and management and promotes improved public policy through research. Its graduates work in government and in the private and nonprofit sectors all over Michigan, the United States, and throughout the world. Traditionally a graduate and professional school, the school launched a highly successful undergraduate degree program in 2007. Thanks to a generous gift from Joan and Sanford Weill, the school was able to consolidate into a single building, named Weill Hall, in 2006. The school has experienced changes in its research and pedagogy and has expressed the need for an addition to the building in the future.

Horace H. Rackham School of Graduate Studies

The Horace H. Rackham School of Graduate Studies oversees and coordinates graduate education, bringing together graduate students and faculty from across the institution to experience and take full advantage of the university as a scholarly community. In 2003, a major renovation of the historic Horace H. Rackham Building, originally constructed in 1938, was completed. Additional infrastructure improvements to the facility were completed in 2015. Given the iconic building's age, historic significance, and its prime location as an event and study facility on Central Campus, it is a building that will require on-going upkeep.

School of Social Work

The program in Social Work began in 1921 and was granted the status of a school in 1951. The School of Social Work consistently ranks as one of the top programs in the nation and offers master's and doctoral level degrees and continuing education that prepare practitioners, researchers, and academics in the fields of interpersonal therapy, community organization, management of human services, and social policy and evaluation. Its graduates work throughout Michigan, the U.S., and the globe, with individuals, children and their families, organizations, and communities in such fields as substance abuse, aging, mental health, education, child and public welfare, and public policy. In 2011, the school completed a renovation of the lower level of its building, which repurposed space previously housing a small library into areas that enable students to practice and observe clinical approaches, accommodate expanded continuing education programs, and provide much needed student collaboration and study space. In 2018, the school completed a minor renovation of spaces that were previously occupied by a number of non-social work functions. This project was able to address some of Social Work's most pressing needs for administrative, faculty, instructional, and student service spaces.

Other Initiatives Impacting Facilities and the Economic Development Impact of Current/Future Programs

As one of the top-ranked public and research institutions in the world, the University of Michigan is fully committed to its role of stewardship and contributing to the state's economy. The university supports students and faculty well beyond the traditional walls of studies and research by creating an environment that fosters innovation, robust collaborations and partnerships, and by providing resources to transfer education and research into applications. Several endeavors

are underway that impact current and future facilities usage, and also spur economic development in Michigan and beyond.

Leadership in Transportation, Automotive and Autonomous Systems Research

The University of Michigan has historically held a leadership role in automotive and transportation research and continues to view its strong partnerships with the state government, federal government, and the private sector, particularly automakers, as essential to the application of the university's research and to the state economy.

The College of Engineering has a strong portfolio dedicated to automotive and transportation research with national and local institutions and businesses in finding solutions to real world problems. Its research and outreach activities on these topics take place mainly in its Mechanical Engineering department and in a variety of centers, such as U-M Transportation Research Institute (UMTRI), the Automotive Research Center (ARC), GM/U-M Smart Materials & Structures Collaborative Research Laboratory; and GM/UM Advanced Battery Coalition for Drivetrains.

In 2013, the university established the Mobility Transformation Center (MTC), a university-government-industry partnership formed at U-M to transform global mobility by dramatically improving transportation safety, sustainability, and accessibility. Mcity, a cityscape designed expressly for testing connected and automated (including driverless) vehicle systems was launched in 2015. The MTC draws on U-M's broad strengths in engineering, urban planning, energy technology, and information technology to accelerate progress in diverse areas such as connected-vehicle systems, driverless or autonomous vehicles, shared vehicles, and advanced propulsion systems. The MTC collaborates closely with its state and federal government founding partners as well as private sector partners including auto manufacturers and suppliers, insurance, telecommunications, data management, and mobility services companies.

In 2019, the College of Engineering's Automotive Research Center (ARC) received an additional $50M in funding from the U.S. Army to study autonomous technologies for military ground vehicles. This funding extends the center's 25-year partnership with the Army through 2024. Since its 1994 launch, the ARC has served a source of technology, modeling and simulation for the Army's fleet of vehicles - the largest in the world. In previous decades, the ARC has focused on vehicle energy and powertrain issues. That work led to advances such as accurate modeling of soldiers and their gear to assist with vehicle design, engine designs and performance simulations, blast modeling and simulation techniques, and a better understanding of lithium ion battery performance and design. The impacts of some of these cross over from military applications to wider use.

Lightweight Materials Manufacturing Research and Application

Founded in 2014 with U-M as a founding partner, the consortium Lightweight Innovations for Tomorrow (LIFT) is a public-private partnership headquartered in Detroit with a mission to develop and deploy advanced lightweight materials manufacturing technologies and to implement education and training programs to prepare the workforce. LIFT serves the U.S. manufacturing sector by supporting innovative manufacturing technologies, and enabling cost-

effective light weighting of components used in transportation systems. Target manufacturing sectors include automotive, aerospace, defense, over the road truck, and rail. The institute's partners identify priorities for technology, workforce, and supply chain development, as well as provide financial support for pre-competitive research. This effort aims to yield results in technology insertion, maturation, and opportunities for commercialization. LIFT also develops relevant manufacturing workforce, education, and apprenticeship programs that can reach students at all levels of the education system. Earlier this year, LIFT signed a 5-year agreement with the U.S. Army to develop ground vehicles using more lightweight materials for better fuel efficiency and to look at ways to improve manufacturing processes.

Leadership in Data Science Research and Application

The University of Michigan launched the Data Science Initiative (DSI) in fall 2015 to enhance opportunities for student and faculty researchers across the university to research and develop the enormous potential of big data. Progress in a wide spectrum of fields ranging from medicine to transportation relies critically on the ability to gather, store, search and analyze big data—collections of information so vast and complex that they challenge traditional approaches to data processing and analysis.

The DSI supports interdisciplinary data-related research initiatives to foster new methodological approaches to big data. Industry engagement is also central to the initiative, with a particular focus on the automotive, advanced manufacturing, chemical, finance, health care and pharmaceutical sectors, and the DSI supports existing and future research that have practical applications in all of these fields. In one project at U-M's Transportation Research Institute, for example, researchers have collected a continuous stream of data at a rate of 10 times per second from each of nearly 3,000 private cars, trucks and buses on the streets of Ann Arbor to test the operation of connected vehicles. The DSI helps collect, store and analyze the huge amount of data being generated as researchers expand the number of vehicles to more than 20,000 across Southeast Michigan. In medicine and public health, U-M researchers seek to use big data to boost the effectiveness of data-driven biomedical and health research to accelerate the translation from basic research to patient care. By sifting through the massive amount of data generated from DNA sequencing, medical histories and other sources, for example, the DSI helps researchers looking to more precisely diagnose or assess an individual's risk for certain types of cancer and to formulate the most effective personalized therapies.

Economic Growth Institute

The Economic Growth Institute leverages the University of Michigan's resources, research, technologies, and expertise to foster innovation with small and medium-sized enterprises that are considered strategically critical to the economy and create positive economic impact for local, state, national, and global communities.

During the great recession, the institute worked with 200 Midwest manufacturing companies, important to automotive supply chains, which were predicted to declare bankruptcy within six months. The institute also works with companies that are launching their first technical product, or an existing technical product into a new market. For example, the institute worked with a small rural company that had developed a waterproof fabric and was selling outdoor clothing. The

institute's team of project managers searched for and found faculty to develop a flame retardant fabric treatment at a university and helped the company integrate the technology into their design. The institute then found a customer that needed a waterproof, flame-retardant fabric to manufacture military tents. Lastly, the institute works with communities that would like to improve their economy. With funding from the U.S. Department of Commerce Economic Development Administration (EDA) in response to the automotive crisis, U-M Economic Growth Institute formed and led rapid response teams at the University of Michigan, Ohio State University, Cleveland State University, Purdue, and the University of Wisconsin-Whitewater. These teams worked with communities experiencing the adverse impacts of major manufacturing plant closings. One site was the General Motors Willow Run plant in Michigan. The institute was part of the team that facilitated a transaction that transferred ownership of the site to the American Center for Mobility (ACM). ACM is now located on the 350-acre site and transforming into the nation's premier research facility, certification site, and test and development location for connected and autonomous vehicles.

Technology Transfer and Business Engagement

The U-M Office of Technology Transfer is the organization responsible for bringing university research to the marketplace by encouraging licensing and broad deployment with existing businesses and newly formed U-M start-ups. The office includes the Michigan Venture Center, which opens the university to entrepreneurs and venture partners interested in start-up opportunities based on U-M technology, and the Venture Accelerator, which provides space to start-ups that leverage the expertise and services of the Michigan Venture Center. In addition to these programs, the Office of Technology Transfer provides patenting, licensing, legal, and general decision-making and business advice to the U-M community. Tech Transfer reported 163 issued patents in fiscal year 2020, and signed a record 268 license and option agreements with companies seeking to commercialize the discoveries of university researchers during this time. In fiscal year 2020, Tech Transfer reported that 31 startups were launched at the university, surpassing last year's record of 22. The startups raised $237 million during the year which also marked four "exits" via mergers, acquisitions or initial public offerings. The startups brought in revenues from licensing totaling $14.5 million, much of which are invested in university research and innovation. Notable startups this year included:

- BlueConduit: A water infrastructure analytics company that uses data and machine learning to help cities do service line inventories and replacement. The team pioneered this use of predictive modeling to help Flint save tens of millions of dollars and accelerated the removal of dangerous infrastructure. BlueConduit is doing the same in water systems covering more than 30 cities.
- LynxDx: The company that launched with a promising prostate cancer test, found its work grind to a halt when the COVID-19 pandemic struck. The team marshaled its tools, talent and capacity to pivot to COVID-19 testing and help address a growing public health need. In the past 14 weeks, LynxDx has grown from four employees to more than 30 and has supported the Michigan community by performing more than 30,000 COVID-19 tests from all across the state.

- Refraction AI: The company began delivering food late last year in Ann Arbor with autonomous REV-1 delivery robots. The battery-powered robots have a top speed of about 15 miles per hour and operate mainly in bike lanes. Their low speed enables them to use inexpensive camera-based navigation systems, making their cost feasible for a delivery service.

The Business Engagement Center, which is collocated with the Office of Technology Transfer, has a mission to strengthen the university's ties to business and community partners and to help revitalize and diversify Michigan's economy. Acting as a gateway to the university, the Business Engagement Center assists business and community partners in maximizing their growth potential by identifying and accessing the university's vast resources, including research discoveries, new technology, high-tech facilities, student and alumni talent, continuing education programs, and strategic giving opportunities.

Precision Health

In 2017, the university launched a new initiative to harness campus-wide research aimed at finding personalized solutions to improve the health and wellness of individuals and communities. Precision Health brings together researchers from across campus and combines biomedical expertise with big data and social science approaches to tailor health solutions for the population. This initiative is about more than traditional personalized medicine and includes three complementary components: discovery, treatment, and implementation. An initial Precision Health project focuses on opioid prescriptions to manage pain from surgery. For this project, researchers will identify risk factors that might increase the likelihood of someone becoming a chronic opioid user – based on each patient's health, genetics, social, environmental and lifestyle factors. From there, they can create guidelines to tailor pain management plans and reduce opioid prescriptions. In 2018, the university received a $6.8 million grant from the National Cancer Institute to fund research to create new bioinformatics resources and identify new cancer biomarkers to improve diagnosis and to develop new therapies. In 2019, U-M teams receive $25.5M from the National Institutes of Health (NIH) for opioid-related prevention and treatment research as part of the NIH's Helping to End Addiction Long-term Initiative. These teams cover a wide range of efforts such as chronic back pain interventions, opioid risk screening and counseling for teens and young adults, and telehealth-based treatment.

Poverty Solutions

The university launched Poverty Solutions in 2016, an initiative dedicated to the prevention and alleviation of poverty. While rooted in an understanding of the causes and consequences of poverty, Poverty Solutions engages multiple disciplines and extends beyond basic research. It drives change by focusing on collaborative, action-based research partnerships with communities, policymakers, and stakeholders. U-M students at every level have opportunities to work and learn with real-world practitioners, testing strategies to change the trajectory of poverty in a meaningful and lasting way. Projects within the initiative include a summer youth employment program and research on housing instability and the employment of a less educated workforce. In 2018, the university launched a partnership with Harvard University and created the Equality of Opportunity Project. The goal of the project is to spur economic mobility and

reduce poverty in the City of Detroit, as well as combine resources and expertise in response to the national opioid crisis. The universities will collaborate with the City of Detroit and local partners on an action plan to identify promising, results-based interventions for improving the livelihoods of low-income Detroit residents.

Sustainability and Great Lakes Research

The University of Michigan has long been engaged in many aspects of sustainability, and in recent years has begun focusing resources to spur progress in this critical arena. Through a number of research centers and initiatives, the university is finding realistic solutions to many major sustainability problems—whether related to energy, water conservation, air pollution, or transportation. In the coming years, we expect research, application, and partnerships in these areas to increase significantly with the recent announcement by the university of a new school of sustainability.

The Great Lakes Integrated Sciences and Assessments Center (GLISA) is a collaboration of the University of Michigan, Michigan State University, and Michigan Sea Grant. GLISA's focus is mainly the watersheds of Lake Huron and Lake Erie in Michigan, Ohio, and Ontario, but also encompasses the broader Great Lakes basin. Its research and outreach spotlight critical sectors in the region—agriculture, watershed management, urban management, water quality, and natural resources-based tourism.

The University of Michigan Water Center, part of the university's Graham Sustainability Institute, was established in 2012 to bolster freshwater ecosystem restoration and protection efforts. The center engages researchers, practitioners, policymakers, and nonprofit groups, and its initial efforts are focused on the Great Lakes with an emphasis on working closely with academic colleagues and practitioners in the region to improve restoration outcomes. The U-M Water Center extends its reach beyond the Upper Midwest and is a partner with the National Oceanic and Atmospheric Administration. Together, they oversee research at a nationwide network of coastal reserves. The Center also coordinates the National Estuarine Research Reserve System's collaborative science program. This program supports water quality monitoring and long-term research on the impacts of land-use change, pollution and habitat degradation in the context of climate change trends. The overarching goal is improved stewardship of these economically significant estuaries. In 2019, this agreement was extended by 5 years, and U-M was awarded a $20 million cooperative agreement to continue this valuable research and oversight.

Academic and Practical Training Programs in Entrepreneurship

The university is committed to fostering and nurturing the entrepreneurial spirit with faculty and students through academic programs and incubator-like centers across campus:

- The Zell Lurie Institute, part of the Stephen M. Ross School of Business, is a globally recognized academic program in entrepreneurial studies. The program provides curriculum, program initiatives, community involvement, and alumni outreach activities that deliver exclusive resources for future entrepreneurs at the university. The institute's innovative real-world approach, combined with the Ross School of Business's traditional management

excellence encourages, nurtures, and prepares students for entrepreneurial careers and to be leaders for new venture creation and growth.

- The Center for Entrepreneurship, part of the College of Engineering, connects current students with Michigan alumni in the start-up community; provides grants for students to pursue their own ideas for companies and products; supports, simplifies and clarifies intellectual property transfer processes for students and the broader community; and develops entrepreneurship-focused programming on campus. The Center for Entrepreneurship is responsible for launching brand new courses and formal academic programs focused on entrepreneurship and for co-managing the TechArb student startup accelerator, described below.

- TechArb, supported by the Center for Entrepreneurship and the Zell Lurie Institute, is a student venture accelerator program at the university. TechArb provides community space in Ann Arbor for students to interact with each other and with mentors, who include experienced entrepreneurs, investors, venture capitalists, accountants, and lawyers—often U-M alumni. Mentors and TechArb staff hold regular office hours with students to help them work through their ideas with the goal of building and growing actual companies. TechArb also provides students with summer grants so they can work full time on their venture. Numerous companies have been founded by students and cover a wide range of areas from the development of software applications for mobile devices to a clothing manufacturing company that uses recycled and eco-friendly materials.

- The Desai Accelerator was founded in 2013 to expand the growing Ann Arbor technology startup community. Equipped with resources from both the University and the city of Ann Arbor, the Desai Accelerator is able to help entrepreneurs build their businesses and maximize their potential. Its programming unites entrepreneurs who want to tap into Michigan's vast network and resources, including those in Ann Arbor's rich entrepreneurial community and at U-M. Startups receive funding, tailored mentorship opportunities, national visibility, and other resources that help them achieve successful sustainability.

- OptiMize is the College of Literature, Science, and the Art's signature initiative for social innovation and entrepreneurship. The program, which started as a student-led initiative, has served 2,500 students and developed a national reputation, resulting in features in Forbes 30 Under 30, Crain's 20 in their 20s, and many other press outlets. OptiMize supports students in finding solutions to real-world problems through funding challenges and awards, social innovation programs, summer fellowships, and mentorship programs.

- Innovate Blue, launched in 2014, is the university's academic home for entrepreneurial activities for undergraduate students, and it connects them to many of the programs and opportunities noted above. Innovate Blue is home to an actual minor in entrepreneurship that equips undergraduate students from any background or area of study with the necessary skills and experience to translate ideas into real impact in the arts, sciences, commercial, and social areas.

Energy Institute
Established in 2006 and building on the legacy of the Michigan Memorial Phoenix Project, which began in 1948, the Energy Institute builds on a strong energy research heritage at the heart of the nation's automotive and manufacturing industries. The Energy Institute develops and integrates science, technology and policy solutions for the world's pressing energy challenges, in order to address the demand for economically and environmentally sound energy solutions that are urgent and global. In 2013, an addition to and renovation of the Michigan Memorial Phoenix Laboratory was completed for the Energy Institute. This project replaced building systems and created state-of-the-art laboratory spaces for energy-related research. The institute recently opened its Battery Fabrication and Characterization User Facility, a space developed in cooperation with the Michigan Economic Development Corporation and Ford Motor Company, to enable industry and university researcher collaboration on developing cheaper and longer lasting energy-storage devices.

University Research Corridor
One example of the university's commitment to the state's economy is its role in the University Research Corridor (URC), a collaboration between the University of Michigan, Michigan State University and Wayne State University that focuses on stimulating economic development in the state and region by leveraging the collective research assets of these three institutions. The URC is an umbrella organization that disseminates information to key stakeholders, including the business community, researchers and students, policymakers, and other investors. In doing so, the URC enhances outreach and collaborative efforts, speeds up technology transfer and development, and communicates the advantages of doing business in Michigan. In 2017 alone, the URC contributed $18.7 billion in state economic activity. The URC also generated over 78,000 jobs in 2017. Since 2002, the URC has cultivated hundreds of start-up companies in the state.

A 2019 benchmark report with similar university research clusters (e.g. California's Silicon Valley, Massachusetts' Route 128, and North Carolina's Research Triangle) noted that State of Michigan is a top ten state nationally in terms of academic research and development, conducting 92 percent of total academic R&D and 94 percent of federally-funded R&D in the state. Among the eight peer clusters in the benchmark study, the URC ranks third on the Innovation Index that measures how research universities are performing in talent development, R&D and technology commercialization.

University Engagement and Programs in the City of Detroit
The University of Michigan's footprint in the City of Detroit is deep and broad, dating to our founding there in 1817. Our work involves collaborations that support many of our state's and communities' needs, including K-12 education, college readiness, community engaged research, service learning, public health, and economic development. The foundations for many of these collaborations began years, or even decades, ago with local leaders, public school teachers, businesses and community advocates.

A few examples of the university's Detroit partnerships and connections include:

- Sponsored and non-sponsored research projects with Wayne State University, Henry Ford Health System, the Karmanos Cancer Institute, the Automotive Research Center, the Detroit Schools Higher Education Consortium, and various local community groups. A recent example comes from the School of Public Health, which is working to combat health issues like asthma and cardiovascular disease through a $2.8 million grant from the National Institute of Health and Environmental Sciences. To implement the grant, U-M researchers partnered with academic peers and Detroit community organizations to form Community Action to Promote Healthy Environments, a collaborative initiative to help improve air quality and resident health in Detroit.

- Engaged learning opportunities and arrangements that enable U-M students to apply what they have learned in the classroom to real life, such as student teaching assignments in the Detroit Public Schools and clinical placements in Detroit-based hospitals, clinics, medical practices, and schools.

- Community service and outreach that immerses U-M students, faculty, and staff in the Detroit community through programs. Examples include the Michigan Engineering Zone, which exposes Detroit middle, and high school students to science, engineering, and technology through hands-on learning experiences and the Semester in Detroit program where U-M students live, study, and work in Detroit, interning with Detroit-based community and cultural organizations to strengthen and transform themselves and to make a positive impact on the Detroit region.

- Educational partnerships that contribute to community revitalization. Led by our School of Education (SOE), the university is part of a consortium that is creating a new, innovative educational partnership on the campus of Marygrove College and is contributing to neighborhood revitalization efforts in northwest Detroit. When fully realized, the Marygrove campus will house early childhood/preschool education, a preK-12 school, and post-secondary and graduate education. This unique model is also known as a P-20 or "cradle to career" campus. The school officially launched an inaugural 9th grade class in 2019 -- with a new high school class being added each subsequent year. Preschool, kindergarten, and 1st grades will be rolled out in the coming years. In parallel the inaugural 9th grade class, SOE launched an aspect of the post-secondary/graduate program with the start of the Teaching School. This is an innovative approach to preparing newly certified teachers that is modeled on medical residency programs. The overall Marygrove vision is a truly unique partnership between the university; the Kresge Foundation; the Detroit Public Schools Community District; Starfish Family Services; IFF, a Chicago-based nonprofit community development financial institution with an office in Detroit; the Detroit Collaborative Design Center of the University of Detroit Mercy; and the Marygrove Conservancy.

To support and strengthen our engagement efforts and partnerships within the city, the university recently deepened its physical footprint in the City of Detroit with the following facilities:

- In 2017, the university purchased approximately one third of the Horace H. Rackham Education Memorial Building located in Midtown and not previously owned by the university. A study is currently underway to identify how to best renovate the facility to support U-M's programs and partnerships within the City of Detroit.

- In 2019, Michigan Governor Gretchen Whitmer, City of Detroit Mayor Mike Duggan, and Wayne County Executive Warren Evens joined together with Stephen M. Ross, Bedrock CEO Matt Cullen, and U-M President Mark Schlissel to announce plans for a world-class, 190,000 square-foot research and education center operated by U-M and located in downtown Detroit. The academic building will be the centerpiece of the first phase of a planned multi-building development, referred to as the Detroit Center for Innovation (DCI), and will offer programs that focus on high-tech research, education and innovation. The university's role as the center's anchor is to provide a pipeline of talent and a platform for research collaboration to help grow and attract businesses and entrepreneurs, while positioning the future workforce for success in a dynamic and diversified economy.

III. STAFFING AND ENROLLMENT

The University of Michigan – Ann Arbor enrollment is just over 47,900 today, down slightly from last fall and representing annual modest growth from 33,600 students in 1969. In the next several years, modest enrollment growth is being planned, particularly for undergraduates in summer classes and some graduate programs, as well as through growth in online course and program offerings. Detailed fall enrollment data by school and college for the most recent five years follows this page.

Average class size varies by discipline. In fall 2019, 55 percent of the primary sections taught to undergraduate students contained fewer than 20 students. Some sections are taught to large groups where appropriate; primary sections with 50 or more students represented about 18 percent of the undergraduate sections taught in fall 2019.

Total headcount enrollment has grown by about 1.4 percent per year since fall 2009, and the volume of research expenditures, the total from grant and university sources, has increased 4.8 percent a year over the same time span. The full-time equivalents (FTEs) of faculty and staff supported by the General Fund displayed a compound annual growth rate of 1.7 percent from fall 2009 through fall 2019. The pandemic led the U-M to institute a hiring freeze starting in the spring of 2020 and that continues today.

Impact of Distance Learning

Seven of the university's schools and colleges are using or plan to use distance learning to expand the reach of their academic programs to non-residential students with growth in courses offered online and the establishment of new online degree programs. These include the College of Engineering; the College of Literature, Science, and the Arts; the School of Nursing; the School of Public Health; the Stephen M. Ross School of Business; the School of Information; and School of Social Work.

Last year, the U-M launched three new online degree programs and in the 2020-21 academic year, adds two new programs – an online M.S. program in population and health sciences through the School of Public Health and an M.S.W. in the School of Social Work. Other programs are in development – some will award degrees, others will lead to certificates or "micromasters", and still others will provide courses in the vein of lifelong learning.

In addition, U-M moved a large portion of its courses to online instruction in response to the pandemic. Online instruction supports nearly 80 percent of the credit hours for fall 2020, supported in large part by the U-M Center for Academic Innovation.

University of Michigan-Ann Arbor

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	28,964	29,821	30,318	31,266	31,329
Graduate	13,014	13,415	13,492	13,861	13,862
Professional	2,740	2,766	2,906	2,963	2,716
Total	44,718	46,002	46,716	48,090	47,907

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	27,884	28,653	29,414	30,031	31,177
Graduate	13,644	14,170	14,531	14,745	14,932
Professional	2,858	2,931	2,948	3,046	3,145
Total	44,386	45,754	46,893	47,822	49,254

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts (Includes non-School/College units and Hospital)

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	5,097.5	5,219.6	5,346.1	5,545.5	5,620.9
Primary Faculty *	935.4	943.3	947.9	944.3	939.7
Supplemental *	4,065.0	4,159.5	4,288.9	4,377.7	4,482.3
Staff	29,594.5	30,837.0	32,291.4	33,360.3	34,363.8
Total	39,692.4	41,159.5	42,874.3	44,227.8	45,406.7

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemental

Research Grants and Contracts ($000)

	2015-16	2016-17	2017-18	2018-19	2019-20
Schools & Colleges	930,534	985,072	1,018,166	1,065,848	1,083,734
Hospital, Acad., & Resrch. Units	152,133	158,845	183,744	174,189	286,290
Total	1,082,668	1,143,917	1,201,911	1,240,037	1,370,024

Source: U-M Financial Data Warehouse

Fall Term Student to Faculty Ratio

2016	2017	2018	2019	2020
15:1	15:1	15:1	15:1	*Avail. Jan 2021*

Source: Common Data Set

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

A. Alfred Taubman College of Architecture and Urban Planning

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	145	162	184	184	177
Graduate	495	490	479	479	403
Professional	--	--	--	--	--
Total	640	652	663	663	580

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	168	167	186	212	203
Graduate	634	619	633	617	566
Professional	--	--	--	--	--
Total	802	786	819	829	769

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	72.3	87.1	89.5	90.3	85.1
Primary Faculty *	0.0	0.0	0.1	0.0	0.0
Supplemental *	15.1	15.2	14.7	13.8	15.7
Staff	44.0	43.9	47.4	46.8	45.4
Total	131.5	146.2	151.7	150.9	146.2

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplem

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
1,037	1,150	758	1,654	1,500

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
15	17	17	17	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Penny W. Stamps School of Art and Design

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	535	540	582	603	616
Undergraduate Joint Program	15	11	12	9	17
Graduate	19	18	19	20	7
Professional	--	--	--	--	--
Total	569	569	613	632	640

Source: Dashboard 04. Student Enrollment | Enrollment Trends
Note: Art/Music Joint Program count is reported here and with Music/Theater/Dance, but unduplicated in the Summary.

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	442	423	456	468	511
Graduate	20	24	21	24	23
Professional	--	--	--	--	--
Total	462	447	477	492	534

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	54.5	56.3	57.8	62.5	62.0
Primary Faculty *	0.0	0.0	0.0	0.0	0.0
Supplemental *	4.1	4.9	3.9	4.6	4.6
Staff	33.5	34.0	35.3	37.7	40.6
Total	92.1	95.3	97.0	104.8	107.1

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemer

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
94	125	-2	232	252

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
14	14	15	13	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Stephen M. Ross School of Business

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	1,733	2,330	2,385	2,404	2,377
Graduate	1,752	1,814	1,838	1,902	1,788
Graduate Joint Program	--	--	--		--
Professional	--	--	--		--
Total	3,485	4,144	4,223	4,306	4,165

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Note: Business/Engineering Joint Program (ended 2014) count reported here and with Engineering, but unduplicated in the Summary.

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	1,270	1,518	1,653	1,698	1,755
Graduate	2,150	2,109	2,213	2,251	2,211
Professional	--	--	--		--
Total	3,420	3,627	3,866	3,949	3,966

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	160.4	164.6	161.3	170.2	169.4
Primary Faculty *	10.9	9.0	10.0	9.0	9.0
Supplemental *	24.3	24.3	23.9	24.7	24.9
Staff	330.6	357.8	383.8	379.6	394.6
Total	526.2	555.8	579.0	583.5	597.9

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemer

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
3,092	1,109	2,750	2,180	2,185

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
47	50	49	49	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

School of Dentistry

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	111	110	102	102	83
Graduate	98	110	121	121	115
Professional	460	471	469	469	471
Total	669	691	692	692	669

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	74	80	84	84	92
Graduate	89	109	148	166	163
Professional	661	680	695	688	695
Total	824	869	926	938	950

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	140.9	133.1	132.8	136.7	141.1
Primary Faculty *	14.8	11.0	9.8	11.5	11.9
Supplemental *	21.1	20.8	23.6	29.0	33.7
Staff	323.5	325.2	339.7	335.6	349.4
Total	500.2	490.1	505.9	512.9	536.1

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemen

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
15,700	14,680	19,369	21,292	22,683

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020

Not Available

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

School for Environment and Sustainability

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	--	--	--	--	1
Graduate	301	284	283	358	473
Professional	--	--	--	--	--
Total	301	284	283	358	474

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	2	4	6	226	263
Graduate	256	270	238	281	357
Professional	--	--	--	--	--
Total	258	274	245	507	620

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	33.7	36.6	41.0	52.7	57.7
Primary Faculty *	6.3	6.5	7.3	6.9	10.0
Supplemental *	37.7	35.2	38.8	42.8	55.6
Staff	78.9	85.7	78.5	95.1	99.3
Total	156.5	163.9	165.7	197.5	222.5

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemen

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
14,702	13,209	14,704	15,543	17,328

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
15	16	14	20	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Note: starting in FY2018-19, students enrolled in Program in the Environment are assigned to SEAS rather than LSA.

Section III

Staff and Enrollment - Detailed Data

School of Education

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	113	118	130	130	126
Graduate	357	379	383	383	310
Professional	--	--	--	--	--
Total	470	497	513	513	436

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	190	190	170	161	188
Graduate	425	451	447	452	387
Professional	--	--	--	--	--
Total	615	641	617	613	575

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	64.0	63.2	60.5	59.4	60.7
Primary Faculty *	3.7	3.9	2.9	3.0	5.1
Supplemental *	47.1	45.5	43.7	35.4	41.5
Staff	84.7	90.5	87.9	92.3	91.2
Total	199.5	203.2	195.0	190.1	198.5

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemen

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
9,454	10,175	11,036	8,892	7,767

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
11	11	13	11	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

College of Engineering

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	6,231	6,442	6,648	6,648	6,841
Graduate	3,515	3,637	3,537	3,537	3,368
Professional	--	--	--	--	--
Total	9,746	10,079	10,185	10,185	10,209

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	4,613	4,844	5,091	5,427	5,692
Graduate	2,892	3,051	3,126	3,130	3,115
Professional	--	--	--	--	--
Total	7,505	7,895	8,217	8,557	8,807

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	424.2	438.3	447.1	471.1	470.1
Primary Faculty *	116.2	103.4	101.7	113.0	112.4
Supplemental *	822.6	846.8	855.5	858.9	877.2
Staff	616.9	645.4	666.4	735.9	771.9
Total	1,979.9	2,033.9	2,070.7	2,178.8	2,231.6

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Suppleme

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
247,876	246,530	225,315	228,912	234,665

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
32	31	35	36	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

School of Information

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	206	252	313	322	295
Graduate	410	472	507	725	986
Graduate Joint Program	73	75	71	86	74
Professional	--	--	--	--	--
Total	689	799	891	1,133	1,355

Source: Dashboard 04. Student Enrollment | Enrollment Trends
Note: Information/Public Health Joint Program count is reported here and with Public Health, but unduplicated in the Summary.

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	224	282	343	415	447
Graduate	342	395	460	494	658
Professional	--	--	--	--	--
Total	566	677	803	909	1,105

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	39.5	45.6	47.3	50.6	55.2
Primary Faculty *	0.7	1.2	1.8	2.2	1.5
Supplemental *	37.0	39.0	49.3	66.6	80.4
Staff	54.0	61.6	67.3	66.6	76.9
Total	131.2	147.3	165.6	185.9	213.9

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source
* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemen

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
2,563	3,711	4,385	5,819	6,498

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
31	36	41	40	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

School of Kinesiology

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	947	973	965	997	1,003
Graduate	79	94	108	118	93
Professional	--	--	--	--	--
Total	1,026	1,067	1,073	1,115	1,096

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	579	572	602	597	618
Graduate	55	60	64	80	92
Professional	--	--	--	--	--
Total	634	632	666	677	710

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	43.7	44.6	45.6	44.9	47.1
Primary Faculty *	3.7	3.4	0.8	0.8	0.0
Supplemental *	16.0	18.6	11.8	20.1	16.7
Staff	61.1	55.8	45.6	50.3	52.8
Total	124.4	122.3	103.7	116.1	116.6

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemer

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
11,059	9,231	7,391	8,601	8,911

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
19	19	21	22	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III

Staff and Enrollment - Detailed Data

Law School

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	--	--	--	--	--
Graduate	--	--	--	--	--
Professional	973	967	1,051	1,051	1,027
Total	973	967	1,051	1,051	1,027

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	--	--	--	--	--
Graduate	8	7	10	15	22
Professional	974	983	955	1,015	1,012
Total	982	990	965	1,030	1,034

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	82.4	86.2	90.1	85.3	89.3
Primary Faculty *	11.0	10.0	11.0	10.0	10.0
Supplemental *	7.0	9.0	8.0	10.3	10.3
Staff	153.8	153.8	150.8	151.6	149.9
Total	254.2	259.0	259.9	257.2	259.5

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemen

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
1,925	788	594	406	331

Source: U-M Financial Data Warehouse

Weighted Average Class Size

2016	2017	2018	2019	2020
23	24	24	24	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

College of Literature, Science, and the Arts

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	17,216	17,075	17,149	17,837	17,796
Graduate	2,452	2,513	2,524	2,751	2,656
Professional	--	--	--	--	--
Total	19,668	19,588	19,673	20,588	20,452

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	18,417	18,601	18,825	18,691	19,208
Graduate	3,024	3,101	3,128	3,118	3,199
Professional	--	--	--	--	--
Total	21,441	21,702	21,954	21,809	22,407

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	1,295.5	1,340.6	1,343.8	1,319.2	1,332.5
Primary Faculty *	56.2	53.1	44.8	40.7	44.0
Supplemental *	910.7	943.6	986.2	1,017.8	1,023.7
Staff	955.9	1,012.9	1,072.5	1,148.3	1,201.4
Total	3,218.3	3,350.1	3,447.3	3,526.0	3,601.6

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemen

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
79,862	88,015	91,052	91,978	89,225

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
27	27	28	27	*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Medical School

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	30	25	28	25	34
Graduate	451	469	521	713	732
Professional	909	909	923	923	732
Total	1,390	1,403	1,472	1,661	1,498

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	267	281	249	250	251
Graduate	705	722	755	841	878
Professional	813	824	805	801	870
Total	1,785	1,827	1,809	1,892	1,999

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	2,118.5	2,125.5	2,198.7	2,334.9	2,383.8
Primary Faculty *	327.8	357.5	364.4	373.3	359.4
Supplemental *	632.9	634.5	678.8	684.0	700.7
Staff	3,380.7	3,625.3	3,649.6	3,855.2	4,023.1
Total	6,459.9	6,742.8	6,891.5	7,247.4	7,467.0

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemer

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
441,812	479,411	517,539	559,833	560,916

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020

Not Available

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

School of Music, Theatre and Dance

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	820	825	808	834	837
Undergraduate Joint Program	15	11	12	9	266
Graduate	281	303	316	292	7
Professional	--	--	--	--	--
Total	1,116	1,139	1,136	1,135	1,110

Source: Dashboard 04. Student Enrollment | Enrollment Trends
Note: Art/Music Joint Program count is reported here and with Art, but unduplicated in the Summary.

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	850	850	870	884	949
Graduate	353	362	389	407	391
Professional	--	--	--	--	--
Total	1,203	1,212	1,259	1,291	1,340

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	160.1	165.4	168.0	170.5	169.7
Primary Faculty *	0.0	0.0	0.0	0.0	0.0
Supplemental *	30.3	32.5	30.8	32.4	33.5
Staff	91.1	94.0	98.5	97.4	94.4
Total	281.5	291.9	297.3	300.3	297.6

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source
* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplem

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
124	79	285	156	115

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
17	17	17		*Avail. Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

School of Nursing

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	706	672	630	642	678
Graduate	351	293	249	251	295
Professional	54	85	122	146	154
Total	1,111	1,050	1,001	1,039	1,127

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	544	591	530	523	576
Graduate	236	274	215	197	195
Professional	43	72	118	157	187
Total	823	937	864	877	958

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	89.7	95.3	103.3	105.8	104.5
Primary Faculty *	1.2	2.4	3.2	5.3	4.4
Supplemental *	2.5	2.5	2.0	2.3	5.3
Staff	96.8	106.6	117.9	125.1	139.5
Total	190.3	206.8	226.4	238.5	253.6

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Suppleme

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
8,920	9,874	11,550	11,864	11,413

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
10	11	13	11	*Avail Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

College of Pharmacy

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	33	41	56	74	91
Graduate	91	83	90	85	93
Professional	312	334	341	340	332
Total	436	458	487	499	516

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	5	11	24	29	37
Graduate	106	122	107	120	100
Professional	367	374	375	385	381
Total	478	507	506	534	518

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	36.7	39.6	42.2	46.4	43.1
Primary Faculty *	23.0	22.4	24.4	20.1	23.1
Supplemental *	45.6	49.8	65.5	66.8	67.1
Staff	59.1	65.1	67.0	75.0	74.7
Total	164.4	177.0	199.1	208.4	208.0

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplem

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
14,187	17,597	16,353	16,718	15,288

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
43	49	46	43	*Avail Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

School of Public Health

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	--	95	172	170	204
Graduate	942	998	998	960	903
Graduate Joint Program	73	75	71	86	74
Professional	--	--	--	--	--
Total	1,015	1,168	1,241	1,216	1,181

Source: Dashboard 04. Student Enrollment | Enrollment Trends
Note: Information/Public Health Joint Program count is reported here and with Information, but unduplicated in the Summary.

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	104	104	178	204	214
Graduate	1,096	1,190	1,228	1,181	1,148
Professional	--	--	--	--	--
Total	1,200	1,294	1,405	1,385	1,362

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	116.7	124.9	130.8	137.3	139.5
Primary Faculty *	30.5	32.9	33.8	35.4	33.4
Supplemental *	103.7	105.3	110.2	112.7	124.4
Staff	285.4	321.8	338.9	338.0	371.6
Total	536.4	585.0	613.8	623.3	668.9

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source
* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemen

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
69,425	81,421	84,999	82,064	95,982

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
31	33	34	36	*Avail Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

Gerald R. Ford School of Public Policy

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	142	150	154	161	163
Graduate	186	194	192	215	206
Professional	--	--	--	--	--
Total	328	344	346	376	369

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	87	90	97	110	119
Graduate	225	238	231	244	267
Professional	--	--	--	--	--
Total	312	328	328	354	386

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	32.4	33.4	35.2	39.1	40.5
Primary Faculty *	1.0	0.0	0.2	0.0	0.0
Supplemental *	12.9	13.8	12.6	9.5	9.1
Staff	39.8	39.7	45.0	55.1	68.4
Total	86.0	86.8	92.9	103.7	117.9

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplem

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
4,176	3,260	4,979	5,411	3,981

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
31	30	31	32	*Avail Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

Horace H. Rackham School of Graduate Studies

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	--	--	--	--	--
Graduate	488	495	545	303	333
Professional	--	--	--	--	--
Total	488	495	545	303	333

Source: Dashboard 04. Student Enrollment | Enrollment Trends
Note: In 2019, several programs previously listed under Rackham were assigned to other schools.

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	1	1	0	0	0
Graduate	80	93	95	99	94
Professional	--	--	--	--	--
Total	81	94	96	99	94

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	0.0	0.5	0.5	0.5	0.5
Primary Faculty *	0.0	0.0	0.2	0.0	0.0
Supplemental *	17.9	14.3	16.9	17.1	20.3
Staff	94.8	88.2	97.9	100.4	105.2
Total	112.6	103.0	115.5	118.0	125.9

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source
* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemen

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
751	617	539	98	161

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
14	20	18	19	*Avail Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

Section III
Staff and Enrollment - Detailed Data

School of Social Work

Fall Term Headcount Enrollment by Level

	2016	2017	2018	2019	2020
Undergraduate	--	--	--	--	--
Graduate	686	694	711	726	751
Professional	--	--	--	--	--
Total	686	694	711	726	751

Source: Dashboard 04. Student Enrollment | Enrollment Trends

Fiscal Year Equated Students

	2015-16	2016-17	2017-18	2018-19	2019-20
Undergraduate	26	20	28	30	31
Graduate	948	970	1,022	1,026	1,065
Professional	--	--	--	--	--
Total	974	990	1,050	1,056	1,096

Source: Dashboard 05. Student Credit Hours | Student Credit Hours and FYES Crosstabs

FTE Faculty and Staff Counts

	2015-16	2016-17	2017-18	2018-19	2019-20
Instructional Faculty	71.9	69.8	66.3	73.2	75.7
Primary Faculty *	1.0	1.4	1.1	2.9	2.5
Supplemental *	11.1	12.0	18.7	17.3	20.8
Staff	66.2	62.4	69.2	78.6	78.0
Total	150.1	145.6	155.3	172.0	176.9

Source: Dashboard 02. Faculty and Staff | FTE Distribution by Funding Source

* Primary includes Regular and Supplemental Primary; Supplemental includes Research Fellows, House Officers, Graduate Student Services, and other Supplemer

Research Grants and Contracts

($000)

2015-16	2016-17	2017-18	2018-19	2019-20
3,775	4,090	4,571	4,195	4,533

Source: U-M Financial Data Warehouse

Fall Term Weighted Average Class Size

2016	2017	2018	2019	2020
19	20	21	19	*Avail Jan 2021*

Source: Dashboard 06. Student Class Size | Class Size - Weighted Average

Differences between values in these tables and the applicable source dashboards might occur due to rounding.

IV. FACILITY ASSESSMENT

Space Management

The university has campus-wide policies, processes, and reporting tools to support a culture of agile space management, more efficient utilization, and coordinated planning. The policies and tools address all types of space, including instructional, research, office, and food operations, and reinforce a culture where space is considered more of an institutional resource that is to be shared and managed effectively for the good of the institution.

Our campus better utilizes existing General Fund space overall and emphasizes renovating and repurposing space to meet campus needs first, before considering building expansion. Through more disciplined practices and culture change, the university has slowed the growth of new General Fund space in the past decade. This would not have been possible without the campus-wide policies and tools.

Examples of creative repurposing include renovating:

- A decommissioned research facility at the North Campus Research Complex that houses library, art, and other historical collections.
- Weiser Hall, an aging and outdated 1960s classroom building, to house international programs and other centers and institutes currently housed in numerous buildings around campus.
- A number of lesser-used classrooms in the Modern Languages Building into a testing center for students with special test-taking needs.
- A previously vacant university-owned warehouse, the Varsity Drive Building, into a multi-use facility that houses research labs and specimen collections for the College of Literature, Science, and the Arts.
- The former Ford Nuclear Reactor into the Nuclear Engineering Laboratory building – a project that increased overall space utilization, resulting in a 20 percent increase in the total building square footage.

Physical Properties

The university owns approximately 3,200 acres of property within the Ann Arbor area and approximately 21,000 acres overall (most within the State of Michigan). The approximate replacement value of the Ann Arbor area campus facilities is $9.1 billion. A summary of the university's land holdings is included in this section. Also included is a building report for the Ann Arbor area. The report includes the following attribute data: building number, building name, building type, gross square feet, original construction date, and (where available) the deferred maintenance backlog for the building.

University of Michigan
Land Holdings
(Land Holdings Expressed as Acreage)

	2016	2017	2018	2019	2020
Ann Arbor Area:					
Properties Supported by General Fund	1,709	1,709	1,705	1,711	1,711
Auxiliary Activities:					
Student Residences	32	32	32	32	32
University Hospitals Group	448	448	448	430	429
Other	1,019	1,019	1,018	1,018	1,018
Total Ann Arbor Area	**3,207**	**3,207**	**3,202**	**3,191**	**3,189**
Outside the Ann Arbor Area:					
Dearborn Campus	228	228	228	228	228
Flint Campus	51	51	51	51	51
Other Michigan Properties:					
Biological Station	10,329	10,329	10,329	10,329	10,329
Osborn Preserve	3,188	3,188	3,188	3,188	3,188
Willow Run	156	156	156	156	156
Other	3,934	3,647	3,649	3,649	3,649
Out-State Land	**17,886**	**17,599**	**17,600**	**17,600**	**17,600**
Camp Davis - Wyoming	120	120	120	120	120
Grand Total	**21,212**	**20,925**	**20,922**	**20,911**	**20,910**

Campus Parking Assessment

While planning for parking on campus, the university has continued to enhance and explore new commute strategies, including bicycle and ride share programs, shuttles, mopeds, and study of high-capacity transit. The existing parking system provides approximately 28,000 total parking spaces, serving members of the university community as well as patients and visitors. The university has 16 parking structures, and joint ownership with the City of Ann Arbor of another structure, providing approximately 13,000 parking spaces.

Every five years, a parking restoration consultant is engaged to assess the condition of U-M parking structures. The assessments are used to develop a system-wide maintenance program that serves as a guide for future repairs and includes cost estimates (adjusted for inflation). An update to this Capital Improvement and Protection Plan (CIPP) will be completed in fall 2021. A similar assessment of parking lots is used to establish repair and construction priorities.

Projects completed in 2020 include Church Structure concrete and stair tower repairs, Catherine Structure concrete and waterproofing repairs, expansion joint repairs at Thompson and NCRC Structures. Traffic coating was completed at the Fletcher Structure on level 2 and the plaza level was completed as part of the Dental School renovation project. Critical repair needs were also addressed at Simpson, Glen and North Entrance Structures. (NOTE: Due to the uncertainty imposed by the novel coronavirus pandemic construction repairs have been scaled back and the focus has been on critical needs).

Several surface parking lots received asphalt repair maintenance resulting in improved traffic flow, parking capacity, lighting, pedestrian circulation, and stormwater management. The annual asphalt maintenance program completed patchwork, surface milling and overlay, concrete repairs, and crack filling at several locations throughout campus. At lot NC16, a project to resurface an existing parking lot was completed. With the acquisition of property on South Fifth Avenue, three new lots provide over 300 temporary parking spaces and work was completed to expand one of the lots where an existing building was demolished.

Phase III of the North Campus Research Complex (NCRC) improvement plan was completed in July 2019 and included resurfacing of the southwest roadway. Phase IV projects planned for 2020 include reconstruction of two lots located on the east side of the complex. A project to construct an asphalt lot on the west side of North Campus with access from Hubbard Road is in design and planned for 2020 construction. This lot will provide additional parking and will serve as a snow storage area for the region. (NOTE: Due to the uncertainty imposed by the novel coronavirus pandemic the plan to reconstruct lot NC82/83 at the NCRC east campus has been deferred. This is the final parking location in the 5-year site improvement plan for NCRC).

On South Campus, a project to reconstruct portions of the S. State Street Park & Ride lot including restoration of the detention pond used for regional snow storage will complete design and be construction-ready in 2021. The project will also include a new section of University roadway around the Stephen M. Ross Athletics South Competition and Performance Center. On North Campus, a project was opened for the design of a new, approximately 350-space lot on Hubbard St. (NC7). The lot allows for expansion up to 500 spaces and includes a regional snow storage area. Additional construction and repair projects planned for 2021 include carryover work from 2020 and critical repair needs identified through the CIPP process.

Improving the sustainability features of the university's parking facilities continues to be an important goal. In 2020, Wall Street East was upgraded with new LED lighting and integrated controls that enable power sharing with the new Wall Street West parking structure. NCRC parking structure lighting was also upgraded with LED fixtures, new security cameras and electric vehicle charging stations. Light fixtures at several parking lots also received LED fixture upgrades.

Construction of the Wall Street West parking structure began in June 2019 and will be completed late 2020-early 2021. Upon completion, it will provide a net gain of approximately 900 new spaces and feature the distinctive exterior design of the Wall Street East structure. Power will be provided from the East structure, using untapped capacity and saving cost by eliminating the need for separate electrical substations and generators.

Utilities Assessment

Utilities master planning assessments are routinely updated to ensure the necessary production, distribution and collection systems for steam, natural gas, compressed air, potable water, electricity, chilled water and sanitary and storm sewer systems are in place to support the facilities needed to accomplish the university's academic and research missions. Projects are identified and implemented annually from these assessments. Currently, the university is

working toward expanding the electric generating capacity of the Central Power Plant by 15 MW. Gas turbine technology will provide additional power. This will assure adequate capacity of heating steam to the Central and Medical Campuses. Implementation of this arrangement will reduce university scope two emissions by approximately 80,000 MT of CO2 yearly and provide capacity for future load growth. Projects to replace aging electrical switchgear in the Central Power Plant and at several central campus switching stations are underway or planned to occur over the next several years.

The steam tunnel system is being reinforced in select areas to accommodate the weight of fire trucks that need to drive over the tunnels to access buildings. Near term, projects are planned along South University Avenue near Shapiro Library, in the area of the Medical School, and along East University Avenue. Various condensate return projects are planned to increase system efficiency and reliability.

Water, sewer, and stormwater master planning efforts have routinely been conducted over the years. In response to these efforts, several water main replacement projects are underway or in planning over the next several years. One such project, a joint project between the university and the city of Ann Arbor will provide infrastructure upgrades and site improvements in and around South University Avenue between South State Street and East University Avenue. Work will include water main replacement, a new electrical duct bank, tunnel restoration and reinforcement, and sanitary sewer and stormwater management improvements. Water main and electrical duct bank replacement is planned to take place along Catherine Street and the Medical Science utility corridor. This will replace aging infrastructure and provide for future expansion at the medical campus.

Facility Condition Assessment Program

The university's Facility Condition Assessment (FCA) program evaluates buildings on campus in an effort to identify infrastructure deficiencies and establish a priority for funding renovations and repairs. The objective of the program is to develop and maintain a 5-year model for buildings showing facility related needs (projects) and track the status of each project through completion. The model considers the highest priority needs and spreads such needs over a 5-year period. Needs addressed in the database include building components and systems: architectural, structural, civil, mechanical, electrical, occupational safety and security, life safety and fire protection, environmental health, and building accessibility. The database provides a good baseline of the overall condition of General Fund buildings. Overall, the FCA program provides a platform to implement an ongoing system of identification and prioritization of capital repair projects at the U-M. A more detailed description of the FCA program is located later in this section.

The FCA Program includes a comprehensive database on the physical condition of the building portfolio. The database addresses the condition of most major building components and systems, including architectural, structural, civil, mechanical, electrical, life safety and fire protection, environmental health and occupational safety, and building accessibility. Deficiencies and anticipated needs are listed in the database as independent projects and assigned a priority, estimated budget, and classification. Costs related to the presence of environmental hazards

(asbestos and lead-based paint) are not included. While the university has attempted to make the FCA Program as comprehensive as possible, it is a policy-neutral, technical assessment of existing conditions. It does not include costs related to programs and/or the reconfiguration of building spaces.

The FCA building condition and cost data are intended to serve the university community by: (1) identifying near-term needs to maintain standards and assure the service integrity of aging systems and building components; and (2) providing an information base to support the institution's process for shaping the future of its campus. The FCA Program, therefore, is not a comprehensive capital plan for building renewal.

Recommended scope of work is aimed at restoring the existing buildings, as they presently exist, with some upgrades to meet codes, such as accessibility, and social norms, such as air-conditioning.

Program Benefits

The FCA Program provides the platform that is used to implement an ongoing system of identification and prioritization of capital repair projects within the U-M. The FCA Program has a wide range of benefits to several different departments within the university and provides:

- A central location for storing of facility condition data.
- A useful tool for organizing and prioritizing all deficiency corrective measures using standardized criteria. FCA reports can be viewed and printed using a wide variety of criteria.
- A facility condition needs index (FCNI) value. The FCNI is the cost required to correct all deficiencies in a building divided by the total replacement cost of that building. This indicator is useful in determining which buildings should be considered for major renovations or upgrades.
- A useful tool in the development of a five-year capital renewal model.

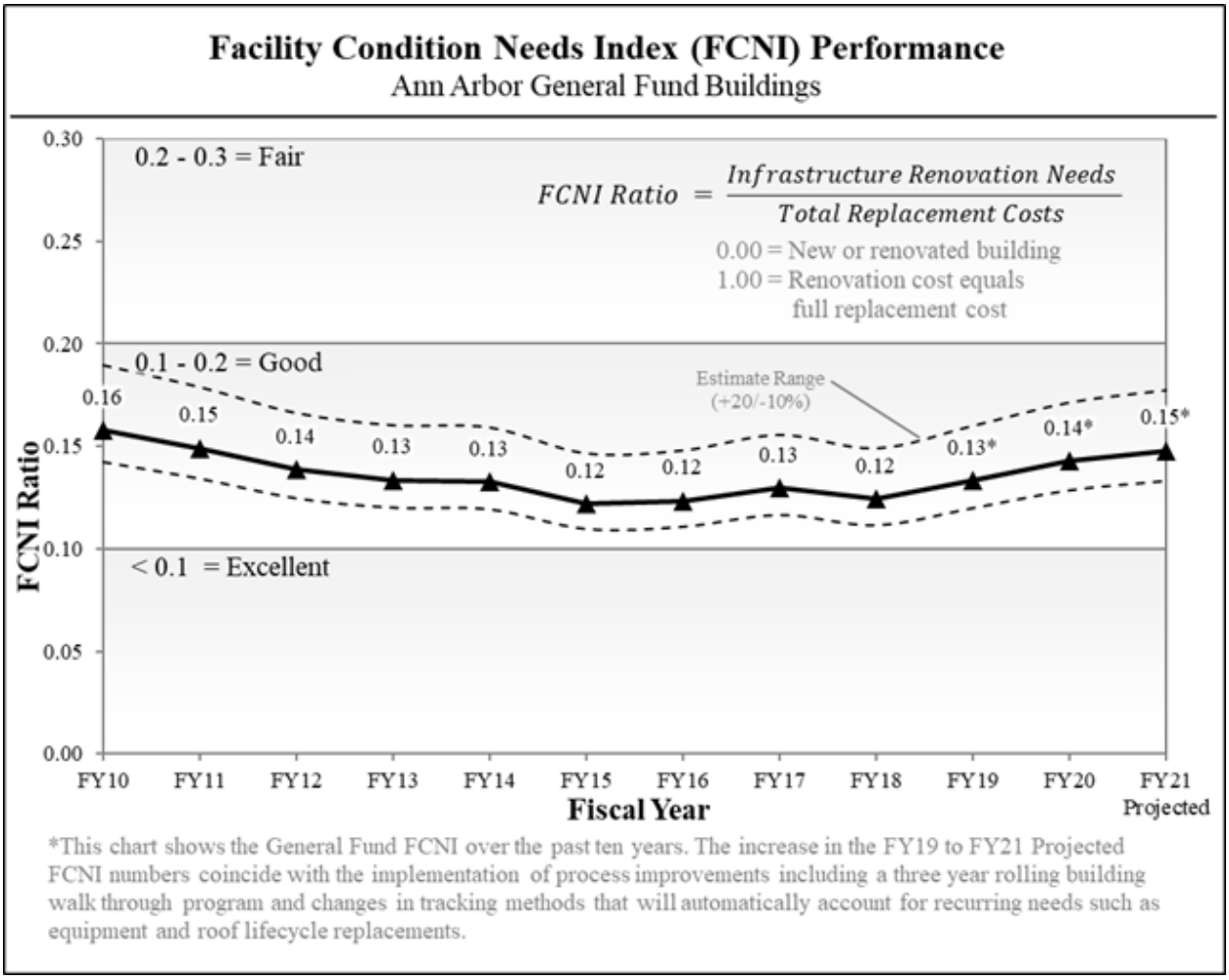
FCA Priority Classification System

The following system was developed to help clarify priorities and assist with consistency in planning and decision-making:

Priority		Definitions
Necessary	**Priority #1** **Critical**	Needed work that requires near-term action to accomplish one or more of the following: (1) restore building occupancy due to natural disaster or catastrophic failure (2) address cited or known life-threatening safety hazard
	Priority #2 **High Priority**	Needed work that requires near-term action to accomplish one or more of the following: (1) avoid situation from becoming a priority #1 (2) prevent accelerated deterioration of building component or system (3) replace component that has worn out or is no longer in service (4) avoid loss of critical system that would significantly affect services, impact occupancy, or create a safety hazard (5) address existing non-life-threatening safety hazard (6) maintain, restore, or upgrade conditions to minimum acceptable university standards (7) reduce unacceptably high maintenance, energy and/or other operating costs (economically justified via payback) (8) meet program requirements
Deferrable	**Priority #3** **Necessary**	Needed work that is expected to become a priority #1 or #2 within the next 10 years.
	Priority #4 **Deferrable until Building Renewal**	Needed work that can probably wait more than 10 years. This work will be completed during a building renewal.

Overall FCA Program Impact

The chart below shows the General Fund FCNI over the past ten years. The increase in the FY19 FCNI coincides with the implementation of a three-year rolling building walk through program and changes in our tracking software that now automatically populates a new deficiency in the database when a recurring deficiency item, such as a roof that needs replacement every 25 years, is completed.



The university maintains a database of all buildings, including size and use. Deferred maintenance estimates are included here when the information is available. This information allows comparisons of buildings and trends over time with respect to overall condition. Deferred maintenance information is continually updated and sometimes with detailed needs and specific cost estimates to implement projects. The summary information provided here is a planning tool. It is not intended to accurately reflect all costs listed and should not be used for cost estimates. *Denotes building is in planning or under construction.

Bldg #	Building Name	Gross Sq.Ft.	Original Construction	Building Type	Deferred Maintenance Backlog
1005200	1009 CORNWELL PLACE	3,340	1886	Income Properties	
1008039	1011 CORNWELL PLACE	2,879	1951	Income Properties	
1000327	1018 FULLER BUILDING	8,349	1965	Clinical Delivery System	
1000205	1027 EAST HURON BUILDING	6,066	1896	Administration & Support	$1,980,411
1000816	1032 GREENE BUILDING	5,903	1975	Administration & Support	$1,373,855
1000188	1100 NORTH UNIVERSITY BUILDING	187,416	1925	Teach, Research, Support	$83,311,186
1000886	1443 WASHTENAW AVENUE BUILDING	13,799	1943	Student Services	$3,915,630
1000891	1736 BROADWAY GARAGE	480	1965	Income Properties	
1000885	1736 BROADWAY HOUSE	2,970	1965	Income Properties	
1005179	202 SOUTH THAYER BUILDING	59,825	2006	Teach, Research, Support	$28,090,316
1000335	300 400 N INGALLS BOILER HSE	9,908	1955	Administration & Support	$26,111,881
1000332	300 N INGALLS BUILDING	325,677	1955	TeachResSupport/CDS	$134,531,854
1000333	400 NORTH INGALLS BUILDING	141,977	1913	Teach, Research, Support	$39,681,937
1005347	426 NORTH INGALLS BUILDING	80,301	2015	Teach, Research, Support	$61,273,790
1005327	439 S DIVISION STREET	3,210	1900	Income Properties	
1005287	523 SOUTH DIVISION BUILDING	9,315	2010	Administration & Support	
1000815	ADMINISTRATIVE SERVICES	91,653	1963	Administration & Support	$11,172,992
1000423	AERO ENG LAB PUMPING STATION	2,456	1955	Teach, Research, Support	
1000426	AERO ENG POWER PLANT	697	1955	Teach, Research, Support	
1000425	AEROSPACE ENGINEERING LAB PLASMA RESEARCH	25,941	1961	Teach, Research, Support	$1,087,531
1000422	AEROSPACE ENGINEERING LAB PROPULSION LAB	8,067	1955	Teach, Research, Support	$4,275,922
1000421	AEROSPACE ENGINEERING LAB WIND TUNNEL LAB	14,171	1955	Teach, Research, Support	$3,307,502
1000192	ALUMNI CENTER	34,447	1983	Administration & Support	$1,544,910
1005123	ALUMNI FIELD	12,209	2008	Intercollegiate Athletics Bldg	
1000151	ALUMNI MEMORIAL HALL	99,304	1910	Teach, Research, Support	$1,323,012
1000206	ANGELL HALL AUDITORIUMS	29,293	1952	Teach, Research, Support	$2,414,088
1000152	ANGELL JAMES B HALL AND TISCH HALL	209,256	1924	Teach, Research, Support	$4,833,690
1000168	ANIMAL RESEARCH FACILITY	15,591	1963	Teach, Research, Support	$2,973,997
1005132	ANN STREET PARKING STRUCTURE	189,202	2009	Parking Structure	
1008079	ARBOR LAKES 1	39,867	1976	AdminSupport/CDS	$7,098,631

1008080	ARBOR LAKES 2	89,277	1979	AdminSupport/CDS	$11,307,520
1008081	ARBOR LAKES 3	84,893	1981	AdminSupport/CDS	$12,798,188
1000831	ARGUS BUILDING II	69,214	1941	Teach, Research, Support	$9,015,416
1000432	ART ARCHITECTURE BUILDING	264,419	1974	Teach, Research, Support	$7,182,118
1000803	ATHLETIC CAMPUS SWITCH STATION	2,467	1973	Switching Stations	
1005371	ATHLETIC DEPARTMENT OPERATIONS CENTER	18,674	2015	Intercollegiate Athletics Bldg	
1005402	ATHLETICS FACILITY SUPPORT BUILDING	2,976	2015	Intercollegiate Athletics Bldg	
1005195	ATHLETICS MAINTENANCE BUILDING	1,473	1985	Intercollegiate Athletics Bldg	
1005168	AUTO LAB FUEL STORAGE BUILDING	427	2005	Teach, Research, Support	
1002501	AUXILIARY SERVICES BUILDING 1	80,622	1968	Administration & Support	$12,467,954
1002502	AUXILIARY SERVICES BUILDING 2	2,893	1983	Administration & Support	
1000395	BAGNOUD FRANCOIS-XAVIER BUILDING	101,812	1991	Teach, Research, Support	$7,996,744
1005236	BAHNA WRESTLING CENTER	22,072	2009	Intercollegiate Athletics Bldg	
1000510	BAITS VERA I EATON HOUSE	36,148	1966	Resident Hall	$57,430,641
1000511	BAITS VERA I LEE HOUSE	33,017	1966	Resident Hall	included in above
1000512	BAITS VERA I PARKER HOUSE	34,411	1966	Resident Hall	included in above
1000513	BAITS VERA I SMITH HOUSE	29,190	1966	Resident Hall	included in above
1000514	BAITS VERA I STANLEY HOUSE	32,600	1966	Resident Hall	included in above
1000515	BAITS VERA II COMAN HOUSE	48,603	1967	Resident Hall	$45,417,796
1000516	BAITS VERA II CONGER HOUSE	26,929	1967	Resident Hall	included in above
1000517	BAITS VERA II CROSS HOUSE	35,118	1967	Resident Hall	included in above
1000518	BAITS VERA II THIEME HOUSE	25,219	1967	Resident Hall	included in above
1000519	BAITS VERA II ZIWET HOUSE	33,931	1967	Resident Hall	included in above
1000051	BARBOUR BETSY HOUSE	33,925	1920	Resident Hall	$11,015,182
1005290	BAXTER ROAD MONITORING SHED	49	2010	Administration & Support	
1000439	BENTLEY ALVIN M & ARVELLA D HISTORICAL LIBRARY	66,537	1973	Library Building	$5,654,194
1005092	BEYSTER BOB AND BETTY BUILDING	104,132	2006	Teach, Research, Support	$179,645
1005169	BIOLOGICAL SCIENCES BUILDING	312,211	2018	Teach, Research, Support	
1005370	BLAU JEFF T HALL	106,172	2016	Teach, Research, Support	
1000402	BONISTEEL INTERDISCIPLINARY RESEARCH BUILDING	21,993	1954	Teach, Research, Support	$2,661,476
1000880	BOYER BUILDING	15,472	1969	Administration & Support	$1,223,655
1005102	BREHM TOWER	252,234	2009	TeachResSupport/CDS	$18,265
1008076	BRIARWOOD 1	17,699	1993	TeachResSupport/CDS	$2,386,961
1008130	BRIARWOOD 10	17,435	1996	Clinical Delivery System	$229,228
1008030	BRIARWOOD 2	15,924	1988	TeachResSupport/CDS	$453,922
1008065	BRIARWOOD 3	10,611	1991	Clinical Delivery System	$322,695
1008042	BRIARWOOD 4	14,063	1991	Clinical Delivery System	
1008016	BRIARWOOD 5	9,378	1986	Clinical Delivery System	$117,682
1008142	BRIARWOOD 9	5,287	1998	Clinical Delivery System	$496,675
1000407	BROWN GEORGE GRANGER MEMORIAL LABORATORIES	290,501	1957	Teach, Research, Support	$1,713,313

1000210	BUHL LAWRENCE D RESEARCH CEN FOR HUMAN GENETICS	18,971	1964	Teach, Research, Support	$417,832
1000799	BUHR BUILDING	187,245	1952	Administration & Support	$7,009,492
1000010	BURNHAM HOUSE	3,482	1837	Teach, Research, Support	$727,016
1000555	BURSLEY JOSEPH A & MARGUERITE K HALL	341,587	1967	Resident Hall	$82,228,867
1000155	BURTON MEMORIAL TOWER	20,103	1936	Teach, Research, Support	$3,391,240
1000139	BUSINESS ADMIN EXECUTIVE DORM	50,734	1985	Teach, Research, Support	$2,958,723
1000742	CAMPUS SAFETY SERVICES BUILDING	108,241	1978	Administration & Support	$5,880,120
1000718	CANHAM DONALD B NATATORIUM	77,639	1988	Intercollegiate Athletics Bldg	$55,195
1005146	CARDIOVASCULAR CENTER PARKING STRUCTURE	168,596	2009	Parking Structure	
1000258	CATHERINE ST PARKING STRUCTURE	140,168	1959	Parking Structure	
1005126	CENTRAL CAMPUS AND UM HOSPITAL LOAD CENTER	3,884	2006	Switching Stations	
1005451	CENTRAL CAMPUS CLASSROOM BUILDING		*	Teach, Research, Support	
1000226	CENTRAL CAMPUS REC BLD BELL MARGARET POOL	194,261	1954	Recreational Sports Building	$20,474,844
1005042	CENTRAL CAMPUS REC BLD STORAGE FACILITY	739	2000	Recreational Sports Building	
1005379	CENTRAL CAMPUS SUPPORT FACILITY	88	2014	Administration & Support	
1005421	CENTRAL CAMPUS SWITCHING STATION	1,002	1984	Switching Stations	
1000260	CENTRAL POWER PLANT	123,112	1914	Administration & Support	$52,828,376
1000158	CHEMISTRY & DOW WILLARD H LABORATORY	544,628	1909	Teach, Research, Support	$28,445,922
1000443	CHRYSLER CENTER CONTINUING ENGINEERING EDUCATION	45,310	1968	Teach, Research, Support	$3,002,851
1000257	CHURCH ST PARKING STRUCTURE	228,214	1957	Parking Structure	$4,064,098
1000159	CLEMENTS WILLIAM L LIBRARY	27,257	1923	Library Building	
1000441	CLIMATE AND SPACE RESEARCH BUILDING	105,521	1965	Teach, Research, Support	$15,035,559
1005440	CLINICAL INPATIENT TOWER		*	Clinical Delivery System	
1000710	COLISEUM	38,404	1926	Recreational Sports Building	$2,026,123
1000230	COLLEGE OF PHARMACY BUILDING	56,772	1960	Teach, Research, Support	$4,710,793
1000109	COOK JOHN P BUILDING	63,906	1930	Resident Hall	
1000052	COOK MARTHA BUILDING	71,925	1915	Resident Hall	$20,536,749
1000184	COOK WILLIAM W LEGAL RESEARCH LIBRARY	212,255	1931	Library Building	$11,662,982
1000403	COOLEY MORTIMER E BUILDING	46,129	1953	Teach, Research, Support	$6,299,390
1000053	COUZENS HALL	185,523	1925	Resident Hall	$501,804
1000498	CRAM PLACE COMMUNITY CENTER	7,298	1958	Residence	$36,864,073
1000700	CRISLER CENTER	265,276	1968	Intercollegiate Athletics Bldg	$4,969,332
1000189	DANA SAMUEL TRASK BUILDING	117,139	1904	Teach, Research, Support	$504,408
1000225	DANCE BUILDING	12,042	1977	Teach, Research, Support	$1,349,729
1005289	DAVIDSON WILLIAM PLAYER DEVELOPMENT CENTER	70,705	2011	Intercollegiate Athletics Bldg	
1005491	DEAN ROAD TRANSPORTATION FACILITY		*	Administration & Support	
1000162	DENTAL BLDG AND W K KELLOGG FOUNDATION INSTITUTE	380,514	1940	Teach, Research, Support	$31,671,365
1000447	DOW HERBERT H BUILDING	154,419	1983	Teach, Research, Support	$11,942,440
1000396	DUDERSTADT JAMES AND ANNE CENTER	240,256	1996	Teach, Research, Support	$9,453,768
1005038	EAST ANN ARBOR AMBULATORY SURGICAL CENTER	49,906	2006	Clinical Delivery System	

1000350	EAST ANN ARBOR HEALTH AND GERIATRICS CENTER	97,158	1996	Clinical Delivery System	$4,566,296
1000166	EAST HALL	338,897	1923	Teach, Research, Support	$12,475,585
1000306	EAST HOSPITAL MECHANICAL BLDG	8,182	1964	Clinical Delivery System	$7,158,633
1000054	EAST QUADRANGLE	333,036	1940	Resident Hall	$1,381,119
1000221	EDUCATION SCHOOL OF	215,010	1923	Teach, Research, Support	$12,262,419
1008072	EISENHOWER CORPORATE PARK WEST	76,726	1990	Clinical Delivery System	$2,791,510
1000728	ELBEL FIELD LOCKER BUILDING	5,943	1951	Recreational Sports Building	$1,122,664
1000448	ELECTRICAL ENGINEERING AND COMPUTER SCIENCE BLD	305,021	1986	Teach, Research, Support	$16,928,414
1000435	ENGINEERING RESEARCH BUILDING 1	36,033	1964	Teach, Research, Support	$9,197,086
1000436	ENGINEERING RESEARCH BUILDING 2	28,332	1964	Teach, Research, Support	$5,686,850
1002505	ENGINEERING RESEARCH SUPPORT BLD	1,432	1997	Teach, Research, Support	$5,136,859
1000414	ENVIRONMENTAL AND WATER RESOURCES ENGINEERING BL	37,129	1975	Teach, Research, Support	$72,469
1000269	EQUIPMENT MAINTENANCE SHOP	2,151	1914	Administration & Support	$15,648,536
1000800	FACILITIES SERVICES BUILDING A	92,981	1929	Administration & Support	$7,394,243
1000801	FACILITIES SERVICES BUILDING B	44,682	1929	Administration & Support	$4,570,477
1000802	FACILITIES SERVICES BUILDING C	37,309	1929	Administration & Support	$1,733,135
1000706	FERRY FIELD PUMP HOUSE	216	1968	Intercollegiate Athletics Bldg	
1005358	FIELD HOCKEY STADIUM	2,247	2014	Intercollegiate Athletics Bldg	
1005357	FIELD HOCKEY TEAM CENTER	14,683	2014	Intercollegiate Athletics Bldg	
1005359	FIELD HOCKEY TICKET OFFICE	1,977	2014	Intercollegiate Athletics Bldg	
1005387	FIELD HOCKEY TICKET OFFICE WEST	142	2014	Intercollegiate Athletics Bldg	
1000409	FIRE SERV INSTR RES CENTER	21,528	1959	Teach, Research, Support	$1,733,135
1000733	FISHER RAY BASEBALL STADIUM	30,275	1950	Intercollegiate Athletics Bldg	
1000149	FLEMING ROBBEN W & ALDYTH ADMINISTRATION BUILDING	78,759	1968	Administration & Support	$23,600,441
1000055	FLETCHER HALL	17,985	1923	Resident Hall	$7,521,007
1000254	FLETCHER ST PARKING STRUCTURE	387,276	1968	Parking Structure	
1005418	FORD MOTOR COMPANY ROBOTICS BUILDING	144,115	2020	Teach, Research, Support	
1000252	FOREST SWITCHING STATION	6,089	1988	Switching Stations	
1000234	FRANCIS THOMAS JR PUBLIC HEALTH	171,437	1971	Teach, Research, Support	$16,233,594
1000198	FRANKEL JUDY AND STANLEY DETROIT OBSERVATORY	5,370	1854	Teach, Research, Support	$464,420
1005109	FRANKEL SAMUEL AND JEAN CARDIOVASCULAR CENTER	429,289	2007	Clinical Delivery System	
1000810	GAS PAD STORAGE BUILDING	1,442	1990	Administration & Support	
1000437	GERSTACKER CARL A BUILDING	61,692	1964	Teach, Research, Support	$5,270,646
1000331	GLEN AVE PARKING STRUCTURE	332,918	1987	Parking Structure	$299,259
1005121	GLICK AL FIELD HOUSE	107,253	2009	Intercollegiate Athletics Bldg	
1000747	GOLF COURSE COMFORT STATION A	533	1994	Intercollegiate Athletics Bldg	
1000748	GOLF COURSE COMFORT STATION B	467	1994	Intercollegiate Athletics Bldg	
1000741	GOLF COURSE GARAGE	3,585	1956	Intercollegiate Athletics Bldg	
1005100	GOLF COURSE MAINTENANCE BUILDING	5,555	2007	Intercollegiate Athletics Bldg	
1000749	GOLF COURSE PRACTICE RANGE BLDG	720	1994	Intercollegiate Athletics Bldg	

1000739	GOLF COURSE PUMP HOUSE II	336	1992	Intercollegiate Athletics Bldg	
1000424	GORGUZE FAMILY LABORATORY	29,155	1972	Teach, Research, Support	$2,449,314
1000201	HARTWIG MARIE DOROTHY ADMINISTRATION BUILDING	14,649	1912	Intercollegiate Athletics Bldg	$1,271,265
1000185	HATCHER H NORTH GRADUATE LIBRARY	194,942	1920	Library Building	$6,704,377
1000181	HATCHER HARLAN H SOUTH GRADUATE LIBRARY	147,674	1970	Library Building	$7,263,934
1000175	HAVEN HALL	123,488	1952	Teach, Research, Support	$1,146,382
1000897	HEALTH MANAGEMENT RESEARCH	12,792	1906	Teach, Research, Support	
1000176	HEALTH SERVICE	79,177	1940	Student Services	$5,895,831
1000057	HENDERSON MARY BARTRON HOUSE	9,329	1892	Resident Hall	$3,387,340
1000177	HILL AUDITORIUM	105,813	1913	Recreational Sports Building	$5,147,598
1000253	HILL ST PARKING STRUCTURE	151,175	1970	Parking Structure	
1000804	HOOVER ANNEX	1,905	1929	Administration & Support	$103,860
1000805	HOOVER AVE HEATING PLANT	7,121	1929	Administration & Support	
1000179	HUTCHINS HALL	119,856	1933	Teach, Research, Support	$9,473,902
1005398	INDOOR TRACK BUILDING	123,539	2018	Intercollegiate Athletics Bldg	
1000703	INDOOR TRAINING CENTER	69,183	1974	Intercollegiate Athletics Bldg	$3,224,655
1000429	INDUSTRIAL AND OPERATIONS ENGINEERING BUILDING	50,214	1963	Teach, Research, Support	$2,722,255
1000145	INSTITUTE FOR SOCIAL RESEARCH	226,082	1965	Teach, Research, Support	$18,791,273
1000814	INSTITUTE OF CONTINUING LEGAL ED	12,592	1987	Teach, Research, Support	$1,053,681
1005247	INTERCOLLEGIATE SOCCER STADIUM	17,382	2009	Intercollegiate Athletics Bldg	
1000719	INTRAMURAL SPORTS BUILDING	108,676	1928	Recreational Sports Building	$3,751,485
1000434	IST GAS STORAGE BUILDING	200	1964	Teach, Research, Support	
1005235	JEFFRIES HALL	103,128	2011	Teach, Research, Support	$215,872
1005160	JUNGE FAMILY CHAMPIONS CENTER	11,638	2006	Intercollegiate Athletics Bldg	
1000732	KEEN CLIFFORD P ARENA	37,261	1956	Intercollegiate Athletics Bldg	$3,772,616
1000324	KELLOGG W K EYE CENTER	81,556	1985	TeachResSupport/CDS	$6,254,239
1000851	KINESIOLOGY BUILDING	30,964	1930	Teach, Research, Support	$5,644
1000211	KRAUS EDWARD HENRY BUILDING	182,966	1915	Teach, Research, Support	$27,888,167
1000137	KRESGE HALL	76,731	1985	Teach, Research, Support	$4,661,626
1005395	LACROSSE STADIUM	26,467	2018	Intercollegiate Athletics Bldg	
1005396	LACROSSE TICKET BUILDING	238	2018	Intercollegiate Athletics Bldg	
1000183	LANE HALL	39,993	1917	Teach, Research, Support	$538,841
1000419	LAUNDRY	48,521	1969	Clinical Delivery System	$3,489,158
1000108	LAWYERS CLUB AND MUNGER CHARLES T RESIDENCES	93,805	1924	Resident Hall	$16,779,073
1000400	LAY WALTER E AUTOMOTIVE ENGINEERING LABORATORY	63,295	1955	Teach, Research, Support	$11,373,305
1005036	LIFE SCIENCES INSTITUTE BUILDING	298,399	2003	Teach, Research, Support	$527,212
1000105	LIPSEY STANFORD STUDENT PUBLICATIONS BUILDING	14,829	1932	Recreational Sports Building	$0
1000150	LITERATURE SCIENCE AND THE ARTS	156,119	1948	Teach, Research, Support	$196,424
1000059	LLOYD ALICE CROCKER HALL	176,615	1949	Resident Hall	$8,807,992
1000154	LORCH HALL	89,572	1928	Teach, Research, Support	$8,813,837

1000214	LSA ADMINISTRATION ANNEX	10,907	1891	Teach, Research, Support	$29,349
1000406	LURIE ANN AND ROBERT H BIOMEDICAL ENGINEERING BLD	65,028	1957	Teach, Research, Support	$1,500,200
1000394	LURIE ANN AND ROBERT H TOWER	11,452	1996	Teach, Research, Support	$1,016,692
1000397	LURIE ROBERT H ENGINEERING CTR	53,878	1996	Teach, Research, Support	$1,241,961
1000858	MADISON BUILDING	22,318	1883	Administration & Support	$95,203
1005419	M-AIR	11,235	2018	Teach, Research, Support	`
1000060	MARKLEY MARY BUTLER HALL	285,877	1959	Resident Hall	$59,957,514
1000197	MASON HALL	136,012	1952	Teach, Research, Support	$5,620,111
1000976	MATT BOT GNDS HOUSE	3,650	1825	Income Properties	
1000986	MATTHAEI BOT GDNS ENVIRONMENT	2,762	1962	Teach, Research, Support	
1000991	MATTHAEI BOT GDNS EXHIB GRN HSE	18,747	1966	Teach, Research, Support	$9,707,166
1000983	MATTHAEI BOT GDNS GREENHOUSE #1	6,197	1962	Teach, Research, Support	
1000984	MATTHAEI BOT GDNS GREENHOUSE #2	6,344	1960	Teach, Research, Support	
1000988	MATTHAEI BOT GDNS GREENHOUSE #3	6,195	1960	Teach, Research, Support	
1000989	MATTHAEI BOT GDNS GREENHOUSE #4	2,819	1962	Teach, Research, Support	
1000990	MATTHAEI BOT GDNS GREENHOUSE #5	2,817	1962	Teach, Research, Support	
1000994	MATTHAEI BOT GDNS INSTR SHELTER	168	1978	Teach, Research, Support	
1000979	MATTHAEI BOT GDNS NORTH BARN #1	4,241	1880	Teach, Research, Support	
1000978	MATTHAEI BOT GDNS NORTH BARN #2	1,212	1870	Teach, Research, Support	
1000992	MATTHAEI BOT GDNS REPTILE HSE	3,205	1969	Teach, Research, Support	
1000982	MATTHAEI BOT GDNS RESEARCH-ADMIN	21,811	1960	Teach, Research, Support	
1000987	MATTHAEI BOT GDNS SCREENHOUSE #1	399	1962	Teach, Research, Support	
1000980	MATTHAEI BOT GDNS STORAGE BLDG	1,920	1975	Teach, Research, Support	
1000985	MATTHAEI BOT GDNS SUPT RESIDENCE	2,928	1961	Administration & Support	
1000981	MATTHAEI BOT GDNS UTILITY-BOILER	12,248	1960	Teach, Research, Support	
1005381	MCITY	4,463	2015	Teach, Research, Support	
1005442	MCITY STORAGE	3,305	2019	Teach, Research, Support	
1000300	MED CTR N ENTRANCE PARKING STRUCTURE	340,052	1994	Parking Structure	
1000323	MEDICAL CAMPUS SWITCH STATION SE	2,746	1983	Switching Stations	
1000315	MEDICAL CENTER DR PARKING STRUCT	684,123	1984	Parking Structure	
1000319	MEDICAL PROFESSIONAL BUILDING	37,298	1977	Clinical Delivery System	$7,855,014
1000190	MEDICAL SCIENCE UNIT I	298,913	1958	Teach, Research, Support	$37,410,578
1000200	MEDICAL SCIENCE UNIT II	333,207	1969	Teach, Research, Support	$21,027,637
1000223	MEDICAL SCIENCES RESEARCH BLDG I	144,646	1985	Teach, Research, Support	$8,007,078
1000213	MEDICAL SCIENCES RESEARCH BLDG II	163,757	1989	Teach, Research, Support	$13,910,805
1000229	MEDICAL SCIENCES RESEARCH BLDG III	217,894	1994	Teach, Research, Support	$10,741,979
1000308	MED-INN	119,437	1952	Clinical Delivery System	$16,161,868
1000191	MICHIGAN LEAGUE	130,518	1929	Teach, Research, Support	$23,565,575
1000404	MICHIGAN MEMORIAL PHOENIX PROJECT LABORATORY	47,171	1955	Teach, Research, Support	$1,420,956
1000222	MICHIGAN NEWS BUILDING	7,811	1955	Administration & Support	$2,545,680

1000711	MICHIGAN STADIUM	570,378	1927	Intercollegiate Athletics Bldg	
1005242	MICHIGAN STADIUM NORTH PLAZA BUILDING A	9,029	2009	Intercollegiate Athletics Bldg	
1005243	MICHIGAN STADIUM NORTH PLAZA BUILDING B	9,337	2009	Intercollegiate Athletics Bldg	
1000120	MICHIGAN UNION	262,717	1919	Recreational Sports Building	$46,573,273
1002500	MITCHELL FIELD BUILDING	1,440	1981	Recreational Sports Building	
1005380	MITCHELL FIELD RECREATION BUILDING	3,661	2014	Recreational Sports Building	
1000207	MODERN LANGUAGES BUILDING	135,367	1972	Teach, Research, Support	$10,265,390
1005125	MODULAR ATHLETICS MAINTENANCE	506	2002	Intercollegiate Athletics Bldg	
1005348	MODULAR MRI BUILDING	824	2012	Teach, Research, Support	
1000100	MOLECULAR & BEHAVIORAL NEUROSCIENCE INSTITUTE	49,956	1960	Teach, Research, Support	$8,577,172
1000440	MOORE EARL V BLDG	172,639	1964	Teach, Research, Support	$11,670,045
1000061	MOSHER ELIZA M HALL & JORDAN MYRA B HALL	191,152	1930	Resident Hall	
1005173	MOTT CHILDRENS VON VOIGTLANDER WOMENS HOSPITALS	1,126,305	2011	Clinical Delivery System	
1005369	MUNGER GRADUATE RESIDENCES	390,215	2015	Resident Hall	
1000415	NAVAL ARCHITECTURE AND MARINE ENGINEERING	28,207	1962	Teach, Research, Support	$4,916,041
1002518	NC BEAL-CRAM SWITCH GEAR	1,804	1995	Switching Stations	
1005205	NC GROUNDS GARAGE 1	1,692	2007	Administration & Support	$3,292
1000220	NC GROUNDS STORAGE BUILDING # 1	3,373	1953	Administration & Support	$236,224
1005111	NC GROUNDS STORAGE BUILDING # 2	2,008	1987	Administration & Support	
1005116	NC GROUNDS STORAGE BUILDING # 3	2,008	1987	Administration & Support	
1005131	NC STORAGE BUILDING #4	4,792	2003	Administration & Support	
1005445	NEW CENTRAL CAMPUS RECREATION BUILDING		*	Recreational Sports Building	
1005439	NEW DANCE BUILDING		*	Teach, Research, Support	
1005492	NEW PHARMACY BUILDING		*	Teach, Research, Support	
1000178	NEWBERRY HALL	40,574	1891	Teach, Research, Support	$2,051,915
1000062	NEWBERRY HELEN H RESIDENCE	31,304	1915	Resident Hall	$9,747,800
1000007	NICHOLS ARBORETUM GAR WORKSHOP	1,354	1963	Teach, Research, Support	
1000005	NICHOLS ARBORETUM RESIDENCE	2,259	1908	Teach, Research, Support	
1000006	NICHOLS ARBORETUM STORAGE SHED	308	1908	Teach, Research, Support	
1000399	NORTH CAMPUS ADMINISTRATIVE COMPLEX	129,114	1987	Clinical Delivery System	$3,567,849
1005223	NORTH CAMPUS AUXILIARY SUPPORT BUILDING	54,428	2009	AdminSupport/CDS	
1005018	NORTH CAMPUS CHILDRENS CENTER	14,426	1999	Teach, Research, Support	$563,014
1005139	NORTH CAMPUS CHILLER PLANT	17,246	2005	Administration & Support	
1002506	NORTH CAMPUS FACILITIES SERVICES BUILDING	48,588	1999	Administration & Support	$27,437
1002514	NORTH CAMPUS GROUND SVC FACILITY	28,246	1990	Administration & Support	$1,200,950
1005140	NORTH CAMPUS GROUND SVC FACILITY ANNEX	112	2003	Administration & Support	
1005297	NORTH CAMPUS GROUNDS STORAGE SHED	256	2009	Administration & Support	
1000449	NORTH CAMPUS HOUSING SERVICE BLD	31,855	1978	Administration & Support	$1,233,625
1002517	NORTH CAMPUS MICROWAVE TOWER	279	1991	Administration & Support	
1000427	NORTH CAMPUS RECREATION BUILDING	67,512	1976	Recreational Sports Building	

1005253	NORTH CAMPUS RESEARCH COMPLEX BUILDING 10	66,940	1959	Teach, Research, Support	$10,294,961
1005276	NORTH CAMPUS RESEARCH COMPLEX BUILDING 100	10,492	1964	Teach, Research, Support	$1,712,385
1005254	NORTH CAMPUS RESEARCH COMPLEX BUILDING 14	53,718	1987	Teach, Research, Support	$7,266,054
1005255	NORTH CAMPUS RESEARCH COMPLEX BUILDING 15	4,623	1959	Administration & Support	$481,685
1005256	NORTH CAMPUS RESEARCH COMPLEX BUILDING 16	121,832	1991	Teach, Research, Support	$6,512,848
1005258	NORTH CAMPUS RESEARCH COMPLEX BUILDING 18	92,349	2000	Teach, Research, Support	$3,115,377
1005259	NORTH CAMPUS RESEARCH COMPLEX BUILDING 20	182,996	1959	Teach, Research, Support	$35,455,737
1005277	NORTH CAMPUS RESEARCH COMPLEX BUILDING 200	26,648	1964	Teach, Research, Support	$2,528,049
1005260	NORTH CAMPUS RESEARCH COMPLEX BUILDING 22	21,270	1999	Teach, Research, Support	$2,983,556
1005261	NORTH CAMPUS RESEARCH COMPLEX BUILDING 23	10,517	2002	Teach, Research, Support	$121,347
1005262	NORTH CAMPUS RESEARCH COMPLEX BUILDING 25	103,877	1984	Teach, Research, Support	$38,318,369
1005263	NORTH CAMPUS RESEARCH COMPLEX BUILDING 26	192,689	2000	Teach, Research, Support	$6,585,567
1005264	NORTH CAMPUS RESEARCH COMPLEX BUILDING 28	131,407	1992	Teach, Research, Support	$27,675,618
1005265	NORTH CAMPUS RESEARCH COMPLEX BUILDING 30	34,632	1965	Teach, Research, Support	$8,840,313
1005278	NORTH CAMPUS RESEARCH COMPLEX BUILDING 300	39,513	1964	Teach, Research, Support	$3,782,325
1005432	NORTH CAMPUS RESEARCH COMPLEX BUILDING 32	7,027	1992	Teach, Research, Support	
1005266	NORTH CAMPUS RESEARCH COMPLEX BUILDING 35	93,162	1985	Teach, Research, Support	$52,928,661
1005267	NORTH CAMPUS RESEARCH COMPLEX BUILDING 36	116,835	2006	Teach, Research, Support	$4,233,158
1005279	NORTH CAMPUS RESEARCH COMPLEX BUILDING 400	27,571	1982	Teach, Research, Support	$2,701,958
1005280	NORTH CAMPUS RESEARCH COMPLEX BUILDING 500	14,775	1998	Administration & Support	
1005281	NORTH CAMPUS RESEARCH COMPLEX BUILDING 520	199,850	1998	Teach, Research, Support	$8,815,558
1005282	NORTH CAMPUS RESEARCH COMPLEX BUILDING 550	236,634	1998	Teach, Research, Support	$4,175,158
1005270	NORTH CAMPUS RESEARCH COMPLEX BUILDING 60	25,380	1983	Teach, Research, Support	$4,541,711
1005271	NORTH CAMPUS RESEARCH COMPLEX BUILDING 70	773	1959	Teach, Research, Support	$50,491
1005272	NORTH CAMPUS RESEARCH COMPLEX BUILDING 73	231,655	1991	Parking Structure	$568,529
1005273	NORTH CAMPUS RESEARCH COMPLEX BUILDING 80	52,404	1959	Administration & Support	$15,333,310
1005283	NORTH CAMPUS RESEARCH COMPLEX BUILDING 800	20,250	2001	Administration & Support	$1,058,759
1005274	NORTH CAMPUS RESEARCH COMPLEX BUILDING 85	5,132	2005	Administration & Support	$342,174
1005335	NORTH CAMPUS RESEARCH COMPLEX BUILDING 86	1,034	2006	Switching Stations	
1005275	NORTH CAMPUS RESEARCH COMPLEX BUILDING 90	35,767	1999	Teach, Research, Support	$2,162,300
1000418	NORTH CAMPUS SERVICE BLDG #1	23,191	1965	Administration & Support	$965,070
1000430	NORTH CAMPUS STORAGE BUILDING	45,750	1967	Administration & Support	$2,082,411
1005334	NORTH CAMPUS SUPPORT FACILITY	2,529	2011	Administration & Support	
1000408	NORTH CAMPUS SWITCH STATION	10,161	1957	Switching Stations	$88,675
1005177	NORTH QUADRANGLE RESIDENTIAL AND ACADEMIC COMPLEX	388,357	2010	Resident Hall	$657,686
1000600	NORTHWOOD COMMUNITY CENTER	13,744	1991	Recreational Sports Building	$969,348
1000450	NORTHWOOD I SVC BUILDING 450	3,168	1955	Residence	$19,546,570
1000451	NORTHWOOD I APTS 451	11,744	1955	Residence	included in above
1000452	NORTHWOOD I APTS 452	5,312	1955	Residence	included in above
1000453	NORTHWOOD I APTS 453	14,412	1955	Residence	included in above

1000454	NORTHWOOD I APTS 454	14,412	1955	Residence	included in above
1000455	NORTHWOOD I APTS 455	5,312	1955	Residence	included in above
1000456	NORTHWOOD I APTS 456	11,744	1955	Residence	included in above
1000462	NORTHWOOD II APTS 462	4,246	1957	Residence	included in above
1000464	NORTHWOOD II APTS 464	5,645	1957	Residence	included in above
1000465	NORTHWOOD II APTS 465	5,645	1957	Residence	included in above
1000466	NORTHWOOD II APTS 466	4,246	1957	Residence	included in above
1000467	NORTHWOOD II APTS 467	4,246	1957	Residence	included in above
1000468	NORTHWOOD II APTS 468	4,246	1957	Residence	included in above
1000469	NORTHWOOD II APTS 469	12,405	1957	Residence	included in above
1000470	NORTHWOOD II APTS 470	5,645	1957	Residence	included in above
1000471	NORTHWOOD II APTS 471	5,645	1957	Residence	included in above
1000472	NORTHWOOD II APTS 472	5,645	1957	Residence	included in above
1000473	NORTHWOOD II APTS 473	12,405	1957	Residence	included in above
1000474	NORTHWOOD II APTS 474	3,738	1957	Residence	included in above
1000475	NORTHWOOD II APTS 475	3,738	1957	Residence	included in above
1000476	NORTHWOOD II APTS 476	3,738	1957	Residence	included in above
1000477	NORTHWOOD II APTS 477	3,738	1957	Residence	included in above
1000478	NORTHWOOD II APTS 478	3,738	1957	Residence	included in above
1000479	NORTHWOOD II APTS 479	5,645	1957	Residence	included in above
1000480	NORTHWOOD II APTS 480	5,645	1957	Residence	included in above
1000481	NORTHWOOD II APTS 481	5,645	1957	Residence	included in above
1000482	NORTHWOOD II APTS 482	3,738	1957	Residence	included in above
1000483	NORTHWOOD II APTS 483	3,738	1957	Residence	included in above
1000484	NORTHWOOD II APTS 484	3,738	1957	Residence	included in above
1000485	NORTHWOOD II APTS 485	3,738	1957	Residence	included in above
1000486	NORTHWOOD II APTS 486	3,738	1957	Residence	included in above
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1000491	NORTHWOOD II APTS 491	3,738	1957	Residence	included in above
1000492	NORTHWOOD II APTS 492	3,738	1957	Residence	included in above
1000493	NORTHWOOD II APTS 493	3,738	1957	Residence	included in above
1000494	NORTHWOOD II APTS 494	3,738	1957	Residence	included in above
1000495	NORTHWOOD II APTS 495	3,738	1957	Residence	included in above
1000496	NORTHWOOD II APTS 496	3,738	1957	Residence	included in above
1000497	NORTHWOOD II APTS 497	3,738	1957	Residence	included in above
1000457	NORTHWOOD II SVC BUILDING 457	5,400	1957	Residence	$42,067,769
1000458	NORTHWOOD II SVC BUILDING 458	2,760	1957	Residence	included in above

1000459	NORTHWOOD II SVC BUILDING 459	2,879	1957	Residence	included in above
1000460	NORTHWOOD II SVC BUILDING 460	5,270	1957	Residence	included in above
1000461	NORTHWOOD II SVC BUILDING 461	2,879	1957	Residence	included in above
1000501	NORTHWOOD III APTS 501	27,371	1958	Residence	included in above
1000502	NORTHWOOD III APTS 502	17,585	1958	Residence	included in above
1000503	NORTHWOOD III APTS 503	17,585	1958	Residence	included in above
1000504	NORTHWOOD III APTS 504	25,068	1958	Residence	included in above
1000505	NORTHWOOD III APTS 505	17,585	1958	Residence	included in above
1000506	NORTHWOOD III APTS 506	17,585	1958	Residence	included in above
1000507	NORTHWOOD III APTS 507	17,585	1958	Residence	included in above
1000508	NORTHWOOD III APTS 508	17,585	1958	Residence	included in above
1000499	NORTHWOOD III SVC BUILDING 499	2,471	1958	Residence	included in above
1000500	NORTHWOOD III SVC BUILDING 500	2,471	1958	Residence	included in above
1000601	NORTHWOOD IV APTS 601	8,029	1969	Residence	$66,429,772
1000602	NORTHWOOD IV APTS 602	4,061	1969	Residence	included in above
1000603	NORTHWOOD IV APTS 603	3,066	1969	Residence	included in above
1000604	NORTHWOOD IV APTS 604	4,899	1969	Residence	included in above
1000605	NORTHWOOD IV APTS 605	10,708	1969	Residence	included in above
1000606	NORTHWOOD IV APTS 606	3,117	1969	Residence	included in above
1000607	NORTHWOOD IV APTS 607	6,763	1969	Residence	included in above
1000608	NORTHWOOD IV APTS 608	5,425	1969	Residence	included in above
1000609	NORTHWOOD IV APTS 609	5,425	1969	Residence	included in above
1000610	NORTHWOOD IV APTS 610	4,123	1969	Residence	included in above
1000611	NORTHWOOD IV APTS 611	7,181	1969	Residence	included in above
1000612	NORTHWOOD IV APTS 612	6,726	1969	Residence	included in above
1000613	NORTHWOOD IV APTS 613	4,442	1969	Residence	included in above
1000614	NORTHWOOD IV APTS 614	5,399	1969	Residence	included in above
1000615	NORTHWOOD IV APTS 615	3,159	1969	Residence	included in above
1000616	NORTHWOOD IV APTS 616	10,707	1969	Residence	included in above
1000617	NORTHWOOD IV APTS 617	7,967	1969	Residence	included in above
1000618	NORTHWOOD IV APTS 618	7,082	1969	Residence	included in above
1000619	NORTHWOOD IV APTS 619	6,727	1969	Residence	included in above
1000620	NORTHWOOD IV APTS 620	6,727	1969	Residence	included in above
1000621	NORTHWOOD IV APTS 621	3,117	1969	Residence	included in above
1000622	NORTHWOOD IV APTS 622	5,876	1969	Residence	included in above
1000623	NORTHWOOD IV APTS 623	8,065	1969	Residence	included in above
1000624	NORTHWOOD IV APTS 624	6,727	1969	Residence	included in above
1000625	NORTHWOOD IV APTS 625	4,061	1969	Residence	included in above
1000626	NORTHWOOD IV APTS 626	5,741	1969	Residence	included in above
1000627	NORTHWOOD IV APTS 627	3,117	1969	Residence	included in above

1000628	NORTHWOOD IV APTS 628	5,425	1969	Residence	included in above
1000629	NORTHWOOD IV APTS 629	5,425	1969	Residence	included in above
1000630	NORTHWOOD IV APTS 630	11,534	1969	Residence	included in above
1000631	NORTHWOOD IV APTS 631	4,442	1969	Residence	included in above
1000632	NORTHWOOD IV APTS 632	2,821	1969	Residence	included in above
1000633	NORTHWOOD IV APTS 633	6,727	1969	Residence	included in above
1000634	NORTHWOOD IV APTS 634	4,123	1969	Residence	included in above
1000635	NORTHWOOD IV APTS 635	4,123	1969	Residence	included in above
1000636	NORTHWOOD IV APTS 636	3,159	1969	Residence	included in above
1000637	NORTHWOOD IV APTS 637	7,034	1969	Residence	included in above
1000638	NORTHWOOD IV APTS 638	5,775	1969	Residence	included in above
1000639	NORTHWOOD IV APTS 639	8,029	1969	Residence	included in above
1000640	NORTHWOOD IV APTS 640	5,425	1969	Residence	included in above
1000641	NORTHWOOD IV APTS 641	4,478	1969	Residence	included in above
1000642	NORTHWOOD IV APTS 642	4,061	1969	Residence	included in above
1000643	NORTHWOOD IV APTS 643	5,363	1969	Residence	included in above
1000644	NORTHWOOD IV APTS 644	8,348	1969	Residence	included in above
1000645	NORTHWOOD IV APTS 645	6,279	1969	Residence	included in above
1000646	NORTHWOOD IV APTS 646	5,425	1969	Residence	included in above
1000647	NORTHWOOD IV APTS 647	4,123	1969	Residence	included in above
1000648	NORTHWOOD IV APTS 648	3,159	1969	Residence	included in above
1000649	NORTHWOOD IV APTS 649	4,442	1969	Residence	included in above
1000650	NORTHWOOD IV APTS 650	4,123	1969	Residence	included in above
1000651	NORTHWOOD IV APTS 651	5,425	1969	Residence	included in above
1000652	NORTHWOOD IV APTS 652	6,701	1969	Residence	included in above
1000653	NORTHWOOD IV APTS 653	4,442	1969	Residence	included in above
1000654	NORTHWOOD IV APTS 654	5,425	1969	Residence	included in above
1000655	NORTHWOOD IV APTS 655	11,099	1969	Residence	included in above
1000656	NORTHWOOD IV APTS 656	10,080	1969	Residence	included in above
1000657	NORTHWOOD IV APTS 657	6,727	1969	Residence	included in above
1000658	NORTHWOOD IV APTS 658	8,480	1969	Residence	included in above
1000659	NORTHWOOD IV APTS 659	9,269	1969	Residence	included in above
1000660	NORTHWOOD IV APTS 660	8,348	1969	Residence	included in above
1000661	NORTHWOOD IV APTS 661	5,744	1969	Residence	included in above
1000662	NORTHWOOD IV APTS 662	3,159	1969	Residence	included in above
1000663	NORTHWOOD IV APTS 663	9,650	1969	Residence	included in above
1000664	NORTHWOOD IV APTS 664	8,348	1969	Residence	included in above
1000665	NORTHWOOD IV APTS 665	3,159	1969	Residence	included in above
1000666	NORTHWOOD IV APTS 666	4,442	1969	Residence	included in above
1000667	NORTHWOOD IV APTS 667	6,665	1969	Residence	included in above

1000668	NORTHWOOD IV APTS 668	9,331	1969	Residence	included in above
1000669	NORTHWOOD IV APTS 669	8,348	1969	Residence	included in above
1000670	NORTHWOOD IV APTS 670	7,095	1969	Residence	included in above
1000671	NORTHWOOD IV APTS 671	10,858	1969	Residence	included in above
1000672	NORTHWOOD IV APTS 672	5,425	1969	Residence	included in above
1000673	NORTHWOOD IV APTS 673	9,779	1969	Residence	included in above
1000674	NORTHWOOD IV APTS 674	8,029	1969	Residence	included in above
1000675	NORTHWOOD IV APTS 675	10,679	1969	Residence	included in above
1000676	NORTHWOOD IV APTS 676	6,727	1969	Residence	included in above
1000677	NORTHWOOD IV APTS 677	8,104	1969	Residence	included in above
1000678	NORTHWOOD IV APTS 678	7,046	1969	Residence	included in above
1000679	NORTHWOOD IV APTS 679	3,159	1969	Residence	included in above
1000680	NORTHWOOD IV APTS 680	7,967	1969	Residence	included in above
1000681	NORTHWOOD IV APTS 681	8,348	1969	Residence	included in above
1000682	NORTHWOOD IV APTS 682	11,045	1969	Residence	included in above
1000683	NORTHWOOD IV APTS 683	6,727	1969	Residence	included in above
1000684	NORTHWOOD IV APTS 684	1,479	1996	Residence	included in above
1002701	NORTHWOOD V APTS 2701	5,603	1972	Residence	$68,424,803
1002702	NORTHWOOD V APTS 2702	10,695	1972	Residence	included in above
1002703	NORTHWOOD V APTS 2703	9,393	1972	Residence	included in above
1002704	NORTHWOOD V APTS 2704	5,603	1972	Residence	included in above
1002705	NORTHWOOD V APTS 2705	9,393	1972	Residence	included in above
1002706	NORTHWOOD V APTS 2706	9,393	1972	Residence	included in above
1002707	NORTHWOOD V APTS 2707	5,603	1972	Residence	included in above
1002708	NORTHWOOD V APTS 2708	8,091	1972	Residence	included in above
1002709	NORTHWOOD V APTS 2709	6,218	1972	Residence	included in above
1002710	NORTHWOOD V APTS 2710	9,393	1972	Residence	included in above
1002711	NORTHWOOD V APTS 2711	8,091	1972	Residence	included in above
1002712	NORTHWOOD V APTS 2712	6,789	1972	Residence	included in above
1002713	NORTHWOOD V APTS 2713	5,603	1972	Residence	included in above
1002714	NORTHWOOD V APTS 2714	6,789	1972	Residence	included in above
1002715	NORTHWOOD V APTS 2715	5,603	1972	Residence	included in above
1002716	NORTHWOOD V APTS 2716	8,091	1972	Residence	included in above
1002717	NORTHWOOD V APTS 2717	6,218	1972	Residence	included in above
1002718	NORTHWOOD V APTS 2718	6,218	1972	Residence	included in above
1002719	NORTHWOOD V APTS 2719	5,603	1972	Residence	included in above
1002720	NORTHWOOD V APTS 2720	5,603	1972	Residence	included in above
1002721	NORTHWOOD V APTS 2721	5,603	1972	Residence	included in above
1002722	NORTHWOOD V APTS 2722	9,393	1972	Residence	included in above
1002723	NORTHWOOD V APTS 2723	5,603	1972	Residence	included in above

1002724	NORTHWOOD V APTS 2724	6,789	1972	Residence	included in above
1002725	NORTHWOOD V APTS 2725	6,789	1972	Residence	included in above
1002726	NORTHWOOD V APTS 2726	6,218	1972	Residence	included in above
1002727	NORTHWOOD V APTS 2727	6,218	1972	Residence	included in above
1002728	NORTHWOOD V APTS 2728	5,603	1972	Residence	included in above
1002729	NORTHWOOD V APTS 2729	6,789	1972	Residence	included in above
1002730	NORTHWOOD V APTS 2730	5,603	1972	Residence	included in above
1002731	NORTHWOOD V APTS 2731	6,789	1972	Residence	included in above
1002732	NORTHWOOD V APTS 2732	8,091	1972	Residence	included in above
1002733	NORTHWOOD V APTS 2733	9,393	1972	Residence	included in above
1002734	NORTHWOOD V APTS 2734	8,091	1972	Residence	included in above
1002735	NORTHWOOD V APTS 2735	5,603	1972	Residence	included in above
1002736	NORTHWOOD V APTS 2736	5,603	1972	Residence	included in above
1002737	NORTHWOOD V APTS 2737	6,218	1972	Residence	included in above
1002738	NORTHWOOD V APTS 2738	5,603	1972	Residence	included in above
1002739	NORTHWOOD V APTS 2739	6,789	1972	Residence	included in above
1002740	NORTHWOOD V APTS 2740	8,091	1972	Residence	included in above
1002741	NORTHWOOD V APTS 2741	8,091	1972	Residence	included in above
1002742	NORTHWOOD V APTS 2742	9,393	1972	Residence	included in above
1002743	NORTHWOOD V APTS 2743	5,603	1972	Residence	included in above
1002744	NORTHWOOD V APTS 2744	8,091	1972	Residence	included in above
1002745	NORTHWOOD V APTS 2745	9,393	1972	Residence	included in above
1002746	NORTHWOOD V APTS 2746	5,603	1972	Residence	included in above
1002747	NORTHWOOD V APTS 2747	5,603	1972	Residence	included in above
1002748	NORTHWOOD V APTS 2748	5,603	1972	Residence	included in above
1002749	NORTHWOOD V APTS 2749	6,789	1972	Residence	included in above
1002750	NORTHWOOD V APTS 2750	6,789	1972	Residence	included in above
1002751	NORTHWOOD V APTS 2751	5,603	1972	Residence	included in above
1002752	NORTHWOOD V APTS 2752	8,091	1972	Residence	included in above
1002753	NORTHWOOD V APTS 2753	5,603	1972	Residence	included in above
1002754	NORTHWOOD V APTS 2754	6,789	1972	Residence	included in above
1002755	NORTHWOOD V APTS 2755	5,603	1972	Residence	included in above
1002756	NORTHWOOD V APTS 2756	9,393	1972	Residence	included in above
1002757	NORTHWOOD V APTS 2757	5,603	1972	Residence	included in above
1002758	NORTHWOOD V APTS 2758	9,393	1972	Residence	included in above
1002759	NORTHWOOD V APTS 2759	9,393	1972	Residence	included in above
1002760	NORTHWOOD V APTS 2760	5,603	1972	Residence	included in above
1002761	NORTHWOOD V APTS 2761	5,603	1972	Residence	included in above
1002762	NORTHWOOD V APTS 2762	9,393	1972	Residence	included in above
1002763	NORTHWOOD V APTS 2763	5,603	1972	Residence	included in above

1002764	NORTHWOOD V APTS 2764	6,789	1972	Residence	included in above
1002765	NORTHWOOD V APTS 2765	6,789	1972	Residence	included in above
1002766	NORTHWOOD V APTS 2766	6,218	1972	Residence	included in above
1002767	NORTHWOOD V APTS 2767	5,603	1972	Residence	included in above
1002768	NORTHWOOD V APTS 2768	6,789	1972	Residence	included in above
1002769	NORTHWOOD V APTS 2769	6,789	1972	Residence	included in above
1002770	NORTHWOOD V APTS 2770	8,091	1972	Residence	included in above
1002771	NORTHWOOD V APTS 2771	6,218	1972	Residence	included in above
1002772	NORTHWOOD V APTS 2772	9,279	1972	Residence	included in above
1002773	NORTHWOOD V APTS 2773	9,279	1972	Residence	included in above
1002774	NORTHWOOD V APTS 2774	9,279	1972	Residence	included in above
1002775	NORTHWOOD V APTS 2775	6,218	1972	Residence	included in above
1002776	NORTHWOOD V APTS 2776	9,279	1972	Residence	included in above
1002777	NORTHWOOD V APTS 2777	6,218	1972	Residence	included in above
1002778	NORTHWOOD V APTS 2778	6,218	1972	Residence	included in above
1002779	NORTHWOOD V APTS 2779	9,279	1972	Residence	included in above
1000405	NUCLEAR ENGINEERING LABORATORIES	20,565	1955	Teach, Research, Support	$500,000
1000040	OH MARY ALICE AND LILLIAN GODDARD HALL	21,995	1964	Resident Hall	$32,080,080
1000042	OH ADELIA CHEEVER RESIDENCE	9,413	1964	Resident Hall	included in above
1000041	OH ARTHUR AND HAZEL VANDENBERG HALL	20,117	1964	Resident Hall	included in above
1000043	OH GEDDES RESIDENCE	11,204	1964	Resident Hall	included in above
1000044	OH JULIA ESTHER EMANUEL RESIDENCE	8,984	1964	Resident Hall	included in above
1000046	OH LAUREL HARPER SEELEY HALL	36,375	1964	Resident Hall	included in above
1000045	OH PAMELA NOBLE RESIDENCE	9,413	1964	Resident Hall	included in above
1000047	OH PLANT SERVICE	3,341	1964	Administration & Support	included in above
1000704	OOSTERBAAN BENNIE FIELD HOUSE	89,001	1981	Intercollegiate Athletics Bldg	$761,394
1005047	PALMER COMMONS	106,471	2005	Teach, Research, Support	$1,505,267
1000263	PALMER DRIVE PARKING STRUCTURE	389,120	2004	Parking Structure	$15,734
1005399	PERFORMANCE CENTER	147,863	2018	Intercollegiate Athletics Bldg	
1000890	PERRY BUILDING	123,632	1902	Teach, Research, Support	$67,431
1000807	PHYSICAL PROPERTIES BUILDING	7,183	1920	Administration & Support	$618,706
1000442	PIERPONT WILBUR K COMMONS	90,488	1965	Recreational Sports Building	$7,265,858
1008050	PLANT STORAGE BUILDING #1	3,087	1987	Administration & Support	
1008051	PLANT STORAGE BUILDING #2	2,577	1987	Administration & Support	
1008052	PLANT STORAGE BUILDING #3	2,577	1987	Administration & Support	
1005385	POSTMA RICHARD L FAMILY CLUBHOUSE	25,268	2017	Intercollegiate Athletics Bldg	
1000186	POUND MADELON HOUSE	7,571	1898	Teach, Research, Support	$1,979,050
1000187	POUND MADELON HOUSE GARAGE	527	1951	Teach, Research, Support	
1000180	POWER CENTER FOR PERFORMING ARTS	73,088	1971	Teach, Research, Support	$3,806,415
1000203	PRESIDENTS RESIDENCE	13,781	1840	Administration & Support	$987,073

1000172	RACKHAM HORACE H SCHOOL OF GRADUATE STUDIES	157,957	1938	Teach, Research, Support	$807,512
1000416	RADIATION SCIENCES LABORATORY 1	7,708	1962	Teach, Research, Support	$531,713
1000417	RADIATION SCIENCES LABORATORY 2	10,660	1962	Teach, Research, Support	$418,532
1000972	RADRICK FARMS BARN #1	4,902	1962	Administration & Support	
1000955	RADRICK FARMS CARETAKERS HOUSE	2,874	1962	Administration & Support	
1000958	RADRICK FARMS CHICKEN HOUSE	200	1962	Administration & Support	
1000970	RADRICK FARMS COMFORT STATION	251	1987	Administration & Support	
1005331	RADRICK FARMS COMFORT STATION #2	253	1987	Administration & Support	
1000959	RADRICK FARMS CORNCRIB #1	105	1962	Administration & Support	
1000918	RADRICK FARMS DRIVE RANGE SHELT	128	1989	Administration & Support	
1000962	RADRICK FARMS FIRE BARN	792	1962	Administration & Support	
1000960	RADRICK FARMS FOOD SERVICE BLDG	408	1995	Administration & Support	
1000974	RADRICK FARMS GOLF CART BUILDING	2,909	1976	Administration & Support	
1000963	RADRICK FARMS GOLF CLUBHOUSE	10,725	1940	Administration & Support	
1000971	RADRICK FARMS GOLF STORAGE BLDG	6,458	1966	Administration & Support	
1000954	RADRICK FARMS PUMP HOUSE	168	1976	Administration & Support	
1000956	RADRICK FARMS SHED-GARAGE	2,370	1962	Administration & Support	
1005048	RADRICK FARMS STORAGE	4,055	2003	Administration & Support	
1000957	RADRICK FARMS TACKROOM-BARN	2,855	1962	Administration & Support	
1000953	RADRICK RECREATION FACILITY	2,459	1994	Recreational Sports Building	$5,487
1000208	RANDALL HARRISON M LABORATORY	217,169	1924	Teach, Research, Support	$5,269,539
1000812	RESEARCH MUSEUMS CENTER	153,375	1969	Teach, Research, Support	$3,184,101
1005426	REVELLI TEMPORARY STORAGE BUILDING	475	2018	Teach, Research, Support	
1000813	REVELLI WILLIAM D BAND REHEARSAL HALL	15,620	1973	Teach, Research, Support	$2,217,535
1000301	ROGEL CANCER CENTER	278,072	1997	TeachResSupport/CDS	$34,782,090
1005188	ROSS SCHOOL OF BUSINESS BUILDING	292,008	2009	Teach, Research, Support	$181,346
1005120	ROSS STEPHEN M ACADEMIC CENTER	45,356	2006	Teach, Research, Support	
1000193	RUTHVEN ALEXANDER G BUILDING	183,694	1928	Administration & Support	$22,737,380
1003542	SAGINAW FOREST GARAGE	682	1903	Teach, Research, Support	
1003541	SAGINAW FOREST RESIDENCE	567	1903	Teach, Research, Support	
1000268	SALT STORAGE BUILDING	2,385	1984	Administration & Support	$73,982
1000705	SCHEMBECHLER GLENN E HALL	90,891	1971	Intercollegiate Athletics Bldg	$1,366,889
1000420	SCHOOL OF INFORMATION NORTH	30,930	1971	Teach, Research, Support	$6,678,754
1000219	SCHOOL OF SOCIAL WORK BUILDING	143,675	1997	Teach, Research, Support	$4,484,870
1000999	SEISMOGRAPH STATION	576	1963	Teach, Research, Support	
1000227	SHAPIRO HAROLD T AND VIVIAN B LIBRARY	175,900	1957	Library Building	$6,901,352
1000944	SHEEP RESEARCH FAC EAST BARN	2,016	1983	Teach, Research, Support	
1005406	SHEEP RESEARCH FAC HOOP BARN	2,038	2002	Teach, Research, Support	
1000942	SHEEP RESEARCH FAC PORTAL VISTA	3,744	1993	Teach, Research, Support	
1000943	SHEEP RESEARCH FAC SQUARE DOME	1,280	1985	Teach, Research, Support	

1005405	SHEEP RESEARCH FAC TRACTOR SHED	680	1994	Teach, Research, Support	
1000947	SHEEP RESEARCH FACILITY HAY BARN	280	1976	Teach, Research, Support	
1000973	SHEEP RESEARCH FACILITY OLD BARN	1,153	1962	Teach, Research, Support	
1000946	SHEEP RESEARCH FACILITY P BARN 1	4,575	1976	Teach, Research, Support	
1005349	SHEPHERD DONALD R SOFTBALL CENTER	10,500	2014	Intercollegiate Athletics Bldg	
1005077	SHEPHERD DONALD R WOMENS GYMNASTIC CENTER	22,837	2002	Intercollegiate Athletics Bldg	
1000320	SIMPSON CIRCLE PARKING STRUCTURE	467,374	1968	Parking Structure	$78,303
1000212	SIMPSON THOMAS H MEMORIAL INST MEDICAL RESEARCH	17,769	1927	Teach, Research, Support	$6,088,290
1005401	SOCCER TICKET BUILDING	238	2015	Intercollegiate Athletics Bldg	
1000063	SOUTH QUADRANGLE	371,519	1951	Resident Hall	$69,548,620
1000714	STADIUM PUMPING STATION	6,746	1927	Intercollegiate Athletics Bldg	
1005224	STAMPS AUDITORIUM	13,488	2008	Teach, Research, Support	
1000445	STEARNS FREDERICK BUILDING	18,261	1955	Teach, Research, Support	$1,750,189
1000064	STOCKWELL MADELON LOUISA HALL	145,204	1940	Resident Hall	$480,805
1000215	STUDENT ACTIVITIES	119,626	1957	Student Services	$7,754,563
1000216	TAPPAN HALL	37,576	1894	Teach, Research, Support	$2,250,546
1005378	TAPPAN STREET AUXILIARY BUILDING	14,827	2014	Teach, Research, Support	
1005037	TAUBMAN A ALFRED BIOMEDICAL SCIENCE RESEARCH BLDG	593,717	2006	Teach, Research, Support	$1,127,796
1000317	TAUBMAN A ALFRED HEALTH CARE CTR	405,003	1986	Clinical Delivery System	$34,782,192
1000209	TAUBMAN A ALFRED HEALTH SCIENCES LIBRARY	143,974	1980	Library Building	$408,919
1002515	TELECOMMUNICATIONS BLDG I	311	1985	Administration & Support	
1000259	THAYER ST PARKING STRUCTURE	165,419	1962	Parking Structure	
1000255	THOMPSON ST PARKING STRUCTURE	365,996	1963	Parking Structure	
1000738	TISCH PRESTON ROBERT TENNIS BLD	89,026	1997	Intercollegiate Athletics Bldg	
1000313	TOWSLEY CENTER FOR CONTINUING MEDICAL EDUCATION	52,332	1969	Teach, Research, Support	$7,702,549
1005240	TOWSLEY CHILDRENS HOUSE	25,428	2010	Teach, Research, Support	$305,800
1005400	TRACK AND FIELD AUXILIARY BUILDING	2,325	2018	Intercollegiate Athletics Bldg	
1005397	TRACK AND FIELD STADIUM	512	2018	Intercollegiate Athletics Bldg	
1000808	TRANSPORTATION SERVICES BUILDING	40,611	1964	Administration & Support	$2,064,750
1005413	TROTTER WILLIAM MONROE MULTICULTURAL CENTER	20,719	2019	Student Services	
1002519	UM TRANS RES FLAMMABLE STOR BLDG	192	1996	Teach, Research, Support	
1000444	U-M TRANSPORTATION RESEARCH INST	77,883	1969	Teach, Research, Support	$10,351,302
1005338	UM TRANSPORTATION RESEARCH TESTING BUILDING	3,454	2012	Teach, Research, Support	
1005051	UMH MODULAR OFFICE A	2,050	2000	Clinical Delivery System	
1005046	UNDERGRADUATE SCIENCE BUILDING	141,517	2005	Teach, Research, Support	$266,442
1000390	UNIV HOSPITALS CHILD CARE CENTER	14,850	1991	Clinical Delivery System	$466,002
1000316	UNIVERSITY HOSPITAL	1,713,623	1986	Clinical Delivery System	$185,755,485
1000309	UNIVERSITY HOSPITAL SOUTH UNIT 1	67,494	1950	Clinical Delivery System	$3,969,296
1000312	UNIVERSITY HOSPITAL SOUTH UNIT 2	266,038	1969	Clinical Delivery System	$59,730,975
1000314	UNIVERSITY HOSPITAL SOUTH UNIT 3	19,988	1972	Clinical Delivery System	$1,325,072

1000318	UNIVERSITY HOSPITAL SOUTH UNIT 4	158,938	1990	Clinical Delivery System	$8,380,445
1005012	UNIVERSITY HOSPITALS HELIPAD	5,397	2001	Clinical Delivery System	
1005117	UPJOHN RACHEL BUILDING	117,097	2006	Clinical Delivery System	
1000261	UTILITIES SERVICE BUILDING	15,183	1973	Administration & Support	$2,082,376
1000204	VAUGHAN HENRY FRIEZE PUBLIC HEALTH BUILDING	210,906	1942	Teach, Research, Support	$923,609
1000065	VAUGHAN VICTOR C HOUSE	51,518	1939	Teach, Research, Support	$4,895,653
1005059	WALGREEN CHARLES R JR DRAMA CENTER	84,149	2007	Teach, Research, Support	$15,408
1005193	WALL STREET EAST PARKING STRUCTURE	249,962	2014	Parking Structure	
1005430	WALL STREET WEST PARKING STRUCTURE		*	Parking Structure	
1008067	WALLACE MIKE AND MARY HOUSE	7,863	1909	Teach, Research, Support	
1000731	WEIDENBACH JOHN P HALL	23,229	1955	Intercollegiate Athletics Bldg	$523,686
1005101	WEILL JOAN & SANFORD HALL	97,989	2006	Teach, Research, Support	$1,003,864
1000165	WEISER HALL	144,701	1963	Teach, Research, Support	$13,084,108
1005319	WEISFELD FAMILY GOLF CENTER	11,307	2011	Intercollegiate Athletics Bldg	
1005388	WEST ANN ARBOR HEALTH CENTER NEW	75,260	2017	Clinical Delivery System	
1000167	WEST HALL	166,528	1904	Teach, Research, Support	$468,099
1000066	WEST QUADRANGLE	386,311	1937	Resident Hall	$1,554,537
1008090	WOLVERINE TOWER	224,981	1973	Administration & Support	$9,188,702
1000135	WYLY SAM HALL	82,855	2000	Teach, Research, Support	$815,466
1000709	YOST ICE ARENA	125,259	1924	Intercollegiate Athletics Bldg	$2,150,726

V. IMPLEMENTATION PLAN

NOTE: The implementation plan below describes the university's plan as anticipated under routine circumstances. However, due to the uncertainty imposed by the novel coronavirus pandemic planning for capital projects not currently under construction has been effectively paused to preserve financial resources and to allow the university time to focus on our pandemic response. The project charts have been revised to indicate which projects are paused while the narrative text associated with those projects remain unchanged.

The university consistently ranks in the top ten of public universities in the United States, according to the U.S. News and World Report. Strategic facility investments allow the university to provide exemplary spaces serving a wide range of needs from classroom and research spaces, student residences and patient care, to athletics and the performing arts.

Several years ago, an integrated planning effort brought together major campus units into one comprehensive master plan. Integrated planning supports efficient resource allocation and identifies immediate, short-term and longer-term needs and planning opportunities to guide future land use planning and capacity targets, functional use requirements, transportation and pedestrian circulation, open space and recreational resources, and utility support. The comprehensive nature of this process ensures alignment between all units and prudent investment decisions.

As the university continues to experience new growth and expansion of existing programs and facilities, our commitment to making strategic facility investments remains a high priority. The U-M has maintained a strategic focus on transforming and enriching the student experience, resulting in a rigorous building renewal program for its residential halls and dining facilities. The university has also executed a significant renovation and expansion program for athletic and recreational facilities to address the aging condition of heritage structures, and to provide new amenities needed to remain competitive with U-M peers. The university continues to focus on ways to improve the quality of campus life with emphasis on locations and adjacencies, the selection and organization of programs and services, housing facilities, retail, and other amenities. The university also continues to identify ways to support and strengthen our engagement efforts and partnerships within the City of Detroit. In 2017, the university purchased approximately one-third of the Horace H. Rackham Education Memorial Building located in Midtown and not previously owned by the university. A study is currently underway to identify how to best renovate the facility to support U-M's programs within the city.

With an anticipated increase of activity on Central, Medical and North Campus, improved connectivity between campuses is essential to supporting academic, research and clinical missions. The university continues to explore opportunities to increase capacity, improve reliability, enhance sustainability, and provide greater efficiency that may help reduce travel time between campuses. One such opportunity being explored is a rapid transit system, such as a bus, train or monorail, to better connect the campuses.

The university's housing system serves as home to approximately 10,000 undergraduate students in a typical year. Facilities include 18 residence halls as well as 1,480 apartments on North Campus that accommodate undergraduates, students with families and graduate students. Many years ago, the university implemented a comprehensive capital plan to address significant building renewal of existing residence halls as well as new facilities for housing and dining. This included renovation of several heritage facilities as well as the construction of the first undergraduate residence hall in more than forty years, the North Quadrangle Residential and Academic Complex. The Munger Graduate Residences opened its doors in 2015. Made possible by a generous donation from philanthropist and alumnus Charles T. Munger, the facility houses 630 graduate students from multiple disciplines and provides opportunities for living and learning. A new housing development is being considered in the area of South Fifth Avenue area as a successor to the existing Mary Markley Hall located in the Hill Neighborhood. Also being considered is a potential housing redevelopment on North Campus to replace a portion of the Northwoods Housing.

Infrastructure planning continues as a critical component of the university's master plan. As the university continues to refine short-term and long-term facility needs, requirements for additional power, chilled water, domestic water, and stormwater will evolve. The university continues to explore ongoing regional stormwater management strategies to support new facilities and impacts from renovation and maintenance projects. Recently, a new stormwater infiltration system was installed on Central Campus to help protect university buildings from potential floods and to free-up capacity in the university and city of Ann Arbor's stormwater systems.

Major projects (over $5 million) in various stages of planning, design or construction are detailed in this section. These projects support student life, collaboration and interdisciplinary learning, preservation of knowledge, international studies, and the university's commitment to nourish the arts and cultural activities on campus. Over the next five years, a wide variety of infrastructure projects or programmatic changes will emerge that will require the development of projects not on the lists. Although the university brings a consistent set of planning principles to all areas of campus, each campus has a unique set of dynamics. A brief description of the planning emphasis of each campus is provided.

Central Campus and Medical Center Campus

The development of Central Campus remains consistent with university planning principles that promote renovating and re-purposing existing facilities while maintaining the character of the historic core. Medical Center Campus planning continues to focus on redevelopment opportunities, as well as transportation and site improvements to support existing facilities. Longer-term space needs to grow and improve inpatient clinical care may play a significant role in revisiting master planning assumptions. In addition, Michigan Medicine's ongoing strategic facilities master planning effort may have significant impact on planning for the future of the Medical Center Campus core area as well as the Wall Street district and the North Ingalls area.

A significant number of projects, some highlighted below, are planned or underway in response to growth pressures by academic and research initiatives as well as patient care needs.

- Construction is underway on a new 100,000-square-foot classroom building on Central Campus that will serve up to 10,000 students each day. The classroom building will include 1,400 classroom seats in a variety of learning spaces and other team-based learning rooms. The project's design accommodates the university's evolving academic needs, as more courses and instructors require large, modern, team-based and active-learning classrooms. The project also includes a renovation and reuse of the historic Alexander G. Ruthven Museums building to house space for academic and research initiatives as well as administrative functions.

- Construction is nearing completion on a project to renovate and add to the Edward Henry Kraus Building to consolidate the School of Kinesiology and allow for future growth in programs. The renovation will address the building's deferred maintenance needs including full replacement of the mechanical, electrical and plumbing systems.

- Construction has been completed on an addition to the Literature, Science and the Arts (LSA) building for the LSA Opportunity Hub. The Hub has created new space to connect LSA undergraduates with opportunities such as internships and mentoring.

- Renovations to the iconic 97-year-old Michigan Union have been completed. Upgrades to the historic student center include creating social space on the main level, improved space for counseling and student support services and replacement of the roof and windows.

- Plans are moving forward to build a new teaching and research facility to address the College of Pharmacy's need to consolidate and modernize its space. The new building will house active learning-style classrooms, laboratories and associated support spaces. (NOTE: Project is on temporary pause).

- The School of Dentistry's renovation and addition project is underway. This project is part of the FY17 Capital Outlay Request with State providing $30 million in funding. The renovation and expansion will create a more welcoming, accessible facility with an improved patient entrance, modern teaching clinics and open, flexible research space. A new special needs and inter-professional care clinic will treat patients with complex medical conditions and disabilities.

- The Board of Regents recently approved a project to replace the university's largest recreational sports center. The Central Campus Recreation Building will be replaced by a new 200,000-square foot facility to allow greater access and opportunity for students, faculty and staff to improve their health and well-being. The project follows recent extensive renovations to the North Campus Recreation Building and the Intramural Sports Building. (NOTE: Project is on temporary pause).

- A new adult inpatient tower is planned for the Medical Center Campus in response to high demand for patient rooms and surgical suites. The 690,000-square-foot project will

accommodate an inpatient care program with single-occupancy patient rooms and surgical/interventional radiology suites. Specifically, the patient program emphasizes improved access to clinical neurosciences and cardiac care services. Relocation of existing clinical services from University Hospital will allow for future redesign and growth for patient programs remaining in that facility. (NOTE: Project is on temporary pause).

Current and Planned Major Projects Central and Medical Center Campuses (>$5M) FY20-FY24

PROJECT/BUILDING & STATUS	PROJECT TYPE	GROSS SQUARE FEET	ESTIMATED $ (MILLIONS)
Alumni Center [in construction]	Renovation	25,000	$8.9
Central Power Plant Expansion [in construction]	Addition	12,000	$80
Central Campus Recreation Building Replacement [paused]	New Construction	200,000	$150
Central Campus Classroom Building and Alexander Ruthven Museums Building [in construction]	Renov/Addition	150,000 renov 100,000 addition	$150
Michigan Medicine Clinical Inpatient Tower [paused]	New Construction	690,000	$920
College of Pharmacy – New Building [paused]	New Construction	130,000	$121
A. Alfred Taubman Biomedical Science Research Building Vivarium Expansion [in design]	Renovation	20,000	$19
Detroit Observatory [in construction]	Addition	6,000	$10
Wall Street West Parking Structure [in construction]	New Construction	N/A	$39.5
Central Power Plant Switchgear Upgrade [in Construction]	Renovation	N/A	$23
Dental Building/Kellogg Institute– FY17 Capital Outlay Request [in construction]	Renov/Addition	176,000 renov 48,000 addition	$140
Edward Henry Kraus Building [in construction]	Renov/Addition	159,600 renov 62,000 addition	$120
Kinesiology Building	Renovation	TBD	TBD
Residential	Replacement/ Demolition	TBD	TBD

North Campus

With the greatest capacity for future growth and development, North Campus continues to be a high priority planning focus. Efforts to strengthen and reinforce connections internally on North Campus, as well as between campuses, and strategies to further enliven and enrich student life remain a primary focus of ongoing planning activities. Currently, about one third of students who live in U-M housing reside on North Campus. A future residential development is being considered for the southeast corner of Murfin Avenue and Plymouth Road, where the Northwoods Apartments are located.

The demand for large, flexible, modern classrooms to support active and team-based learning continues to grow. We are currently constructing a new classroom building on Central Campus to address the growing need for these flexible classrooms and have identified the same pressing need to construct a similar building on North Campus. North Campus is located two miles from Central Campus and is home to the College of Engineering; A. Alfred Taubman College of Architecture and Urban Planning; Penny W. Stamps School of Art and Design; School of Music, Theatre and Dance; and soon, the School of Information. All of these units have identified the need for new classrooms to support not only modern teaching and learning needs, but also to meet the demand for more classrooms in general. Enrollment for these five units (particularly the College of Engineering and School of Information) has grown 20 percent over the last decade and is estimated to grow further (up to 33 percent) in the next five years. This significant enrollment growth has placed tremendous pressure on the existing North Campus general-purpose classrooms. A new classroom building will address the need for more classrooms to accommodate both the growing North Campus enrollment and the need for modern teaching and learning spaces.

The College of Engineering recently completed a review of its facilities to identify capital needs and to prioritize a number of potential projects that, if approved, would address projected growth over the next 10-15 years. The space and enrollment challenges faced by the College of Engineering and the School of Information are similar, and both units would benefit programmatically by having a joint solution. As a result, the university submitted a combined CSE and School of Information project to the state for capital outlay funding in 2017 and received planning authorization in 2018.

Other current or planned projects for North Campus include:

- Construction is underway on a new building for the School of Music, Theatre and Dance. The building will provide much-needed rehearsal and performance space for the Department of Dance, which has outgrown its current space on Central Campus. In joining the other creative disciplines on North Campus, the new building will foster more innovation and collaborations with music, theatre, the visual arts, architecture, and engineering.

- Construction on the new Ford Motor Company Robotics Building is nearing completion. The project will bring faculty and students together from across multiple disciplines and will house research laboratories in an open plan to allow for greater collaboration and

increased flexibility of space utilization. Ford will occupy space in the building and work side-by-side with university researchers to accelerate autonomous vehicle research. Several key testing spaces include a robot-walking lab, a flight-testing lab, and labs for electronics and software development.

- Construction is underway to renovate the last two empty buildings at the North Campus Research Complex (NCRC) to create more than 50 modern research laboratories. Comprising more than 2.1 million square feet of space, NCRC is home to approximately 3,500 occupants and brings together people and activities for research in health, biomedical sciences and other disciplines.

Current and Planned Major Projects North Campus (>$5M) FY20–FY24

PROJECT /BUILDING & STATUS	PROJECT TYPE	GROSS SQUARE FEET	ESTIMATED $ (MILLIONS)
Computer Science and Engineering and School of Information [paused]	Renovation/ Addition	TBD renov 163,000 addition	$145
Dean Road Transportation Facility [paused]	New Construction	70,000	$39
Dance Building, New [in construction]	New Construction	24,000	$19
Ford Motor Company Robotics Building [in construction]	New construction	140,000	$75
Naval Architecture and Marine Engineering	Renovation/Addition	TBD	TBD
Residential	Replacement/ Demolition	TBD	TBD

Stephen M. Ross Athletic Campus

The Ross Athletic Campus is primarily a venue for the Athletics Department, with numerous athletic fields and facilities. Recent facility improvements by the Athletics Department has resulted in a number of projects that improved student recreation and enriched the experience for student athletes. The Athletics Department is reviewing potential future uses for the Ferry Field area as facility needs within the historic core of the Ross Athletic Campus are being re-evaluated in response to the shift of indoor and outdoor track to their new venues.

Current and Planned Major Projects Ross Athletic Campus (>$5M) FY20–FY24

PROJECT/BUILDING & STATUS	PROJECT TYPE	GROSS SQUARE FEET	ESTIMATED $ (MILLIONS)
Ferry Field Improvements	TBD	TBD	TBD

East Medical Campus

East Medical Campus is primarily an outpatient clinical care complex that includes associated research and medical education activities. Any plans for future facilities at this location would fit within the framework of plans for Michigan Medicine and the university at large. Stormwater management, transit and non-motorized transportation strategies, parking, and infrastructure improvements are all campus components that would be considered with any future proposals.

Michigan Medicine Off-Campus

The volume of ambulatory care and specialty care visits continue to grow and the need for strategically located outpatient facilities is core to the Michigan Medicine's plan to improve access to patient care. The Northville Health Center opened in 2014 and is being used near capacity. Construction was completed on two additional off-campus facilities, the West Ann Arbor Health Center in 2017 and Brighton Health Center South in 2018. We are currently exploring the expansion of Northville to meet current and projected care for that area. These new outpatient facilities are part of Michigan Medicine's overall strategy to deliver enhanced and comprehensive services in the communities where patients are located. Thereby allowing outpatient clinical space on the Medical Center Campus to be repurposed for increased acuity care.

Infrastructure and Deferred Maintenance

Each year a significant number of infrastructure projects are prioritized through the Facility Condition Assessment program as described in Section IV. A planning priority is to adapt existing facilities to meet current and future program needs for the campus by updating building infrastructure and re-programming/reconfiguring existing buildings. Re-programming and reconfiguring addresses building density, program and organization adjacencies, open site use, building addition or replacement options, and redistribution of the density to other areas.

In order to support a healthy and strong campus infrastructure for future generations, the university had a policy on fundraising related to facility endowments from 2009 to 2015 for newly named buildings. All such endowed funds are managed by the Executive Vice President and Chief Financial Officer (CFO). The CFO's office works closely with the users of the building to prioritize the facility needs and the uses of the endowment distributions to support capital maintenance and upkeep of the facility.

Status of State Building Authority Projects (Ann Arbor)

Completed Projects	Lease Start Date	Lease Termination Date
G.G. Brown Memorial Laboratories Renovation	September 2017	September 2052
Student Activities Building Renovation	December 2009	December 2044
Michigan Memorial Phoenix Laboratory Renovation	December 2009	December 2044
Observatory Lodge Renovation	November 2008	November 2043
Literature, Science and the Arts Building Renovation	August 2007	August 2042
West Hall Renovation	January 2005	January 2040
Mason Hall and Haven Hall Renovations and Addition	November 2005	November 2040
S. T. Dana Building Renovation	November 2003	November 2038
Perry Building Renovation	November 2003	November 2038

Sustainability Initiatives

Just as the University of Michigan is committed to breadth and depth of research, teaching, and health care, the U-M is also committed to campus sustainability. Significant resources are required to support the university's physical plant, justifying the development of a comprehensive strategy to minimize the U-M's environmental impact.

As important as it is for U-M physical operations to reduce its own impact on the environment, the most fundamental contribution that the university will make will come from the research of faculty and education of students that creates a future path for environmental progress. What links both together is the opportunity for the campus to serve as both a model for advanced sustainability practices, and a laboratory for students and faculty to test new ideas and approaches. The living-learning laboratory theme leads the U-M to focus on strategies that decrease the university's environmental footprint in measurable ways while creating hands-on experiences for students.

2025 Sustainability Goals and Strategies

The 2025 goals are based on a 2006 baseline for all goals with exception of the Sustainable Food Goal (as no baseline data was available). The goals for greenhouse gas (GHG) reduction, waste reduction, and culture were re-evaluated beginning in the fall of 2014 in an effort to stimulate progress. Goal evaluation and adjustment was based on many variables including, but not limited to, changes in technology, the State of Michigan energy platform, economics, and competing university priorities.

Goal 1: Decrease campus scope 1 and 2 carbon dioxide emissions by 25 percent by 2025. This goal focuses on reducing U-M's scope I and II greenhouse gas emissions for the Ann Arbor campus.

Strategies include:

- Design guidelines and standard practices that outline the university's detailed requirements related to energy efficiency as well as sustainable design and environmental stewardship, and challenge projects to exceed the minimum baseline energy performance mandated by codes. Typical energy saving measures employed include: new building orientation; additional insulation; energy efficient windows/glazing; occupancy sensors to reduce lighting levels; variable water flow controls; resetting of space temperatures based on occupancy sensors; and exhaust heat recovery.
- Continued evaluation of energy and GHG reduction strategies, including photovoltaics, wind and geothermal generation technologies, the purchase of additional Renewable Energy Credits (REC's), building automation improvements, and continuous monitoring and tuning of building systems.
- Expansion of the electric generating capacity of the Central Power Plant, with additional power provided by gas turbine technology. Implementation of this upgrade will reduce the university's overall GHG emissions by an estimated 60,000 MT of CO2 yearly and ensure we maintain reliable and redundant heat and electricity.
- Agreement to purchase 200,000-megawatt hours from DTE Energy through a wind-energy Power Purchase Agreement (PPA).

Successes to date:

- Planet Blue Operations Team addresses the growth in building energy demands by actively engaging the university community to conserve utilities thereby saving money and benefiting the environment.
- Expansion of building specific energy conservation projects throughout General Fund buildings of the institution.
- Funding of two renewable energy demonstration initiatives linking renewable energy technology to active research and curriculum on campus: 1) solar panels for the straw bale structure at the Matthaei Botanical Gardens, and 2) a bioreactor demonstration project designed to stabilize municipal solid waste (MSW) in less than a year, generating energy and reducing up to 50 percent of the volume of mixed campus waste sent to MSW landfills.
- Ongoing work of the President's Commission on Carbon Neutrality (PCCN) that will identify strategies and submit recommendations to put U-M on a path toward carbon neutrality.

Goal 2: Decrease carbon intensity of passenger trips on U-M transportation options by 30 percent.

The university aims to reduce emissions associated with transportation by modeling and promoting sustainable transportation alternatives, such as public mass transit, car and van pools, and bike programs.

Successes to date:

- Campus bus ridership (total passengers) has increased 57 percent since 2006.
- U-M sponsored vanpool system has 770 employees participating, accounting for more than 9 million shared-passenger miles annually.
- The university operates a large alternative fuel fleet with alternative fuel vehicles comprising more than 54 percent of the fleet. Of those that do not use alternative fuel, 30 are hybrid electric and three are fully electric.
- Of the 55 vehicles in the bus class, 96 percent run on alternative fuel, 29 of which are biodiesel hybrid electric.

Goal 3: Reduce waste tonnage diverted to disposal facilities by 40 percent.

Strategies include:

- Promote reuse, leverage new technologies, and reduce the use of disposable products such as plastic non-recyclable outer packaging.
- Establish and install university wide recycling, composting, waste bin, and related signage/labeling standards.
- Implement a university-wide organics-composting program based on and expanding current programs.
- Pursue medical waste diversion opportunities as identified by Michigan Medicine.
- Develop purchasing and procurement strategies to increase the purchase of environmentally friendly products and decrease products that contribute to the solid waste stream.
- Continue to expand the sustainable laboratory program reducing chemical waste disposal.
- Work with university vendors to reduce packaging materials and minimum volume orders to reduce waste.

Successes to date include:

- One-hundred percent complete with implementation of the new bin standardization rollout for consistent bin, signage and placement. To date, with the exception of two buildings, implementation in all buildings on campus is complete.
- 1,300 tons of compostable material have been diverted from the landfill. This is a combination of all compostable waste collected, including pre and post-consumer composting programs in all 9 residence hall dining facilities, Student Life cafes, the conversion of over 650 staff kitchens to “zero waste” and continued growth of zero waste events.
- OCS directly supported 1,200 individual staff events, with over 50,000 people engaged. Many more Zero Waste events were indirectly supported through trained departmental ambassadors.

- Fall 2019 zero-waste program for the Michigan Stadium with a diversion rate that included 30 tons of compostable waste and 44 tons of recycled material from football games with an overall diversion rate of 89 percent. In addition, the catering kitchen in the stadium introduced full scale pre-consumer composting for all daily food-prep.
- Establishing a new waste reduction program to reduce non-regulated medical waste from University Hospital and the Frankel Cardiovascular Center.

Goal 4: Protect Huron River water quality by reducing runoff from impervious surfaces and reducing the volume of land management chemicals used on campus by 40 percent.

The campus landscape is a critical part of the university's commitment to responsible environmental stewardship. The U-M has a legacy of landscape planning that is sensitive to water-use and inputs to the regional Huron River Watershed.

Strategies include:
- Apply an integrated landscaping approach that recognizes vegetation, soils, pavement systems, and stormwater management as interlinked, and helps to restore the quality and capacity of the regional Huron River watershed.
- Minimize use of potable water for irrigation, prioritize the use of drought resistant plantings, increase water retained for beneficial purposes on campus, and improve the quality of water outflow.
- Reduce water use for infrastructure to the maximum extent possible.
- Reduce stormwater runoff through on-site mitigation techniques such as rain gardens, stormwater retention basins, or green roofs, when appropriate.

Successes to date:
- University-wide certification in the Michigan Turfgrass Environmental Stewardship Program (MTESP) for practices which protect waste quality through best management practices.
- Since 2006, the amount of synthetic chemicals used on campus grounds has been reduced by 37 percent. Most of the reduction is due to a campus-wide effort to switch to organic fertilizer. At this time, it is estimated that 80 percent of fertilizer used on campus is organic.
- Grounds Services piloting a low-impact weed control regime on much of the campus, including going glyphosate-free on the Central Campus Diag and Ingalls Mall.

Goal 5: Purchase 20 percent of U-M food in accordance with the U-M Sustainable Food Purchasing Guidelines.

The university purchases food for a variety of on-campus dining areas such as Residential Dining Services and MCatering and patient meals within the hospitals. Food is also purchased for retail areas including campus eateries and University Unions. MDining purchases represent 2/3 of on-campus dining spend and has made significant strides by engaging with new vendors that will help U-M meet this goal.

Successes to date:

- Contracted with a local coffee roaster to provide Fair Trade/Organic coffee for the residential retail and dining halls.
- Transitioned main contract to a supplier that provides aggregation of produce from farmers in Southeast Michigan.
- Expanded local meat purchases.
- The Palmer Commons café operates a Farm-to-Table concept called Field's café.

While not always the case, the sustainability of food generally increases as the distance it travels from the point of harvest to consumption decreases. Minimizing transportation and refrigeration generally reduces fossil fuel consumption and carbon dioxide emissions. Local food also requires fewer preservatives and less packaging. In addition, local production often employs a more diverse crop strategy, which reduces pest susceptibility and the need for pesticide and chemical fertilizer use. Finally, supporting local farmers and growers keeps money circulating within the community longer and directly profits local producers.

Action Item: Community Awareness – The university will pursue stakeholder engagement, education, and evaluation strategies toward a campus-wide ethic of sustainability. The success of achieving the goals in the plan will require the active contribution of every member of the university community. The U-M cannot delegate responsibilities to a handful of departments, but rather must change behaviors as well as policies and practices. The president's committees took a hard look at this effort and made a number of recommendations around communication and marketing activities that can help improve community awareness and work toward faster goal implementation.

Successes to date:

- The latest data from the Sustainability Culture Indicators Program shows the following indicators have increased:
    - Waste Prevention Behavior
    - Sustainable Food Awareness
    - Sustainability Commitment
    - Sustainability Engagement at U-M
    - Awareness of Health Environments (for staff)