



WAYNE STATE UNIVERSITY

FY2020-2024: 5-Year Capital Outlay Plan

Submitted to the Office of the State Budget

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A handwritten signature in black ink, appearing to read 'William Decatur', written over a light gray rectangular background.

Vice President for Finance and Business Operations

Table of Contents

Mission Statement	Page 1
Instructional Programming	Page 1
Existing Academic Programs	Page 1
Projected Academic Programming Changes	Page 2
Unique Characteristics of Wayne State’s Academic Mission	Page 3
Economic Development Impact of Current/Future Programs	Page 5
Wayne State University Research and Technology Park	Page 7
Staffing and Enrollment	Page 8
Enrollment	Page 8
Enrollment Patterns over the Past Six Years	Page 9
Extension Center Summary & Web Class Report	Page 10
Projected Enrollment over the Next Five Years	Page 10
Student-to-Faculty Ratios	Page 12
Current Class Size	Page 12
Facilities Assessment	Page 12
Campus Master Planning	Page 12
WSU Campus Housing Demand	Page 13
Functionality of Existing Structures, Deferred Maintenance and Facilities Condition	Page 14
Utilities and Energy Management	Page 14
Sustainability Efforts	Page 15
Facilities and Land Use	Page 17
Building and Classroom Utilization Rates	Page 17
Mandatory Facilities Standards	Page 18
Bond Status	Page 19
Implementation Plan	Page 19
Planned SBA Funded Projects	Page 19
Non-State Capital Outlay Projects in Progress	Page 20
Planned Non-State Capital Outlay Projects	Page 21

I. Mission Statement

As stated in the *Distinctively Wayne State University Strategic Plan 2016-2021*, our mission is to create and advance knowledge by preparing a diverse student body to thrive and positively impact local and global communities. To achieve our mission, strategic objectives and tactical action plans have been created and center around seven strategic focus areas: student success, teaching excellence, research, diversity and inclusion, entrepreneurship, financial sustainability and operational excellence, and community engagement.

II. Instructional Programming

Existing Academic Programs

Wayne State is a comprehensive research University with thirteen schools and colleges administering more than 380 academic programs, including 116 bachelor's, 116 master's, and 67 doctoral degree programs, three professional programs, and 57 certificate and specialist programs, many of which rank in the top tier nationally. The University currently enrolls 27,089 students. Six extension centers in the metropolitan area provide access for residents to a wide selection of off-campus courses. Wayne State is a significant and influential force in metropolitan Detroit's educational and cultural landscape, and TechTown, the 43 acre research and technology park that the University supports, has made it a major player in Michigan's economic turnaround.

Eighty-nine percent of the University's students are from Michigan, with 69 percent from the tri-county metropolitan Detroit area. With 86 percent of Wayne State graduates staying in Michigan after graduation, Wayne State graduates provide the highly educated workforce necessary to transform and power Michigan's economy in the twenty-first century.

Wayne State graduates serve the citizens of Michigan with advanced professional training in business; engineering; education; law; pharmacy and health sciences; medicine; nursing; social work; fine, performing and communication arts; liberal arts; and the basic sciences. Every day, Wayne State graduates play a critical role in Michigan life, from local physicians to scientists and engineers working in the latest high-tech spin-off companies.

Table 1 illustrates the University's fall 2018 enrollment by headcount and degrees awarded from July 1, 2016 to June 30, 2017. Note that the Library & Information Science program moved from the Graduate School in Spring/Summer 2009 and is now being reported separately. In addition, these Figures, and all subsequent Figures, exclude graduate medical education students.

Table 1: 2016-2017 Degrees Awarded and 2018 Enrollment by College

School or College	2016-17 Degrees Awarded	Fall Enrollment 2018
School of Business Admin.	737	4,242
College of Education	680	2,415
College of Engineering	777	3,637
College of Fine, Performing & Comm. Arts	426	1,968
Graduate School	0	24
Law School	149	445
Liberal Arts & Sciences	1,620	9,648
Library & Information Science	179	404
School of Medicine	364	1,575
College of Nursing	199	756
Pharmacy and Health Sciences	452	962
School of Social Work	502	977
TOTAL	6,085	27,053

Source: Office of Budget, Planning and Analysis

Projected Academic Programming Changes

Construction of the State supported Integrative Biosciences Center (IBio), formerly the Multidisciplinary Biomedical Research Building (MBRB), began during December 2012 and was completed in July 2015. This state-of-the-art facility will strengthen the University's ability to conduct basic, clinical, and translational research focused on diseases and quality-of-life issues associated with health disparities in urban areas, which the National Institute of Health identified as a key scientific need. IBio is essential in helping Wayne State bring additional research dollars to campus and providing students and research faculty with laboratories and the technology necessary for continued academic success and expanded scientific discovery.

The STEM Innovation Learning Center and the NSF grant project to increase the use of evidence-based teaching methods in foundational STEM courses will be transformational in terms of their contribution toward further improving the University's student enrollment, retention, time to degree, and graduation rates in STEM programs. The impact these two initiatives will have on job creation will be incredibly beneficial to Detroit's continued revitalization and the southeast Michigan economy.

The fact that the repurposed Science and Engineering Library is located adjacent to the A. Paul Schaap Chemistry Building, Science Hall, Biological Sciences, the Engineering complex, and Physics, which form the core of our non-medical research buildings, will provide our undergraduate STEM students with countless opportunities to engage and be involved with active research projects with principal investigators and research faculty. Undergraduate student involvement in active research is another effort that is central to the student success focus area of the University's mission and strategic plan. Creating greater opportunities for such involvement

and incorporating exposure to entrepreneurial development is another strategic focus that will yield positive outcomes for our urban communities going forward.

Unique Characteristics of Wayne State's Academic Mission

Wayne State is one of the nation's pre-eminent public research universities in an urban setting. Through our multidisciplinary approach to research and education, and ongoing collaboration with government, industry and other institutions including our University Research Corridor partners – the University of Michigan and Michigan State University – Wayne State University and our research and technology park, TechTown, seek to expand knowledge, enhance economic growth and improve the quality of life in the city of Detroit, state of Michigan, and throughout the world.

Through our dedication and leadership, Wayne State University is a nationally recognized center of excellence in research. Our faculty are leading the nation in many key research areas, and their groundbreaking discoveries make a difference in the everyday lives of others around the corner and around the world. We strive to continue making an impact by our innovative research.

Wayne State University is home to the Integrative Biosciences Center (IBio), a \$90 million facility dedicated to studying and eliminating the many health disparities that plague the city's residents. IBio is home to faculty with expertise in environmental sciences, bio and systems engineering, heart disease, diabetes, obesity, asthma and bio behavioral health.

The building, strategically positioned near TechTown, will move discoveries and technologies from the laboratory to the community, and will eventually house over 400 individuals within 200,000 square feet of lab and clinical space designed to foster a collaborative and flexible team science approach to research. These teams of researchers will create and share knowledge that contributes to improving the quality of life and eliminating the many health disparities that plague Detroit's residents and other communities around the world. All of the research teams will be working together toward discoveries that have a translational impact on the community. IBio was designed not only to give researchers world-class lab space but, more importantly, to engage broadly with communities through prevention, education, and partnering.

For decades, Wayne State has changed the face of modern medicine, with discoveries such as the invention of the world's first mechanical heart pump in 1952 – a development that made it possible to conduct lifesaving open heart surgery. Wayne State is also home to the only National Institutes of Health branch dedicated to the study of premature birth and infant mortality. Since locating to Detroit in 2000, the Perinatology Research Branch has produced lifesaving research and care for more than 20,000 at-risk mothers. The Barbara Ann Karmanos Cancer Institute at WSU is one of 69 National Cancer Institute-designated Cancer Centers in the United States. Karmanos is the only hospital in Michigan dedicated exclusively to fighting cancer. Caring for approximately 12,000 new patients annually and conducting more than 800 cancer-specific scientific investigation programs and clinical trials, the Karmanos Cancer Center is among the nation's best cancer centers. Karmanos offers access to more than 90 cancer treatments often not available elsewhere in Michigan.

Our expertise goes beyond medicine. Around the world, you'll find Wayne State faculty and students engaged in research in nearly every field. Our researchers are making discoveries in their urban environments that will affect diverse populations everywhere. Our Institute of Environmental Health Sciences is home to the Center for Urban Responses to Environmental

Stressors, a NIH-funded center that uses state-of-the-art technologies to identify the central mechanisms that lead to environmentally-linked disease, a major problem throughout the world. Researchers in the College of Engineering and College of Liberal Arts and Sciences are expanding our knowledge solving complex water-related problems through collaboration on public health, water use, technological innovation, and public policy. Partners include governmental agencies, industry, and community groups. They work on projects focused on pollution monitoring and impacts, invasive species, watershed-related public policies, dams, sediments, drinking and recreational water, ecosystem health, and waterborne diseases.

Our faculty are working to find cures for major degenerative conditions such as retinitis pigmentosa. With the help of technology developed by a faculty member in our School of Medicine, we are leading the way to restoring vision in patients with this condition that causes severe vision loss and blindness through a \$60 million acquisition of a Wayne State University startup, RetroSense Therapeutics LLC by Allergan plc, a leading global pharmaceutical company headquartered in Dublin, Ireland.

This important work and many more research accomplishments would not be possible without the valuable partnerships we have formed with universities, hospitals, businesses and organizations around the world. Collaboration is essential to innovation, and combining our expertise is critical to finding solutions that save lives and changing the world.

Examples of some of Wayne State University's larger research projects funded in the past year include:

- Jian-Ping Jin, M.D., Ph.D., professor and William D. Traitel Endowed Chair of Physiology in Wayne State University's School of Medicine, received a \$1.54 million grant from the National Heart, Lung and Blood Institute of the National Institutes of Health to establish a targeted approach to sustain cardiac function during an energetic crisis and heart failure. The study, "Modification of troponin T to improve cardiac function in heart failure," will use integrative research approaches to establish the underlying mechanism for the physiological modification of cardiac troponin T – proteins in the blood that are released when the heart muscle has been damaged that can differentiate between unstable angina and heart attack – with the ultimate goal of developing a new approach for the treatment of heart failure.
- Shawn McElmurry, Ph.D., associate professor of civil and environmental engineering in the College of Engineering, and Matthew Seeger, Ph.D., professor of communications and dean of the College of Fine, Performing and Communication Arts, received a \$1.57 million grant from the National Science Foundation for the project, "Water and Health Infrastructure Resilience and Learning." The award is part of a multi-institutional \$2 million collaborative project funded under NSF's Critical Resilient Interdependent Infrastructure Systems and Processes program. The project – which includes examining drinking water and public health systems – will provide new insights as to how these systems interact, with a focus on crisis events. The team will also explore how these systems learn about and adapt to changes and how the public engages with these systems.
- Karin List, Ph.D., associate professor of pharmacology in the School of Medicine, received a \$1.67 million grant from the National Cancer Institute of the National Institutes of Health for the project, "Tumor-promoting functions of Tmprss13 in breast cancer progression." Tumor-promoting functions of Tmprss13 in breast cancer remains the second leading cause of cancer-related death among women in the U.S., mainly due to the incurable

nature of metastatic disease. This project aims to understand the critical molecules involved in promoting primary tumor growth, invasion and metastasis to help pave the way to develop effective treatments. List and her research team will examine the biological and molecular bases through which the cell-surface protease, TMPRSS13 contributes to breast cancer progression and if it represents a novel target for therapy.

- Fei Chen, Ph.D., professor of pharmaceutical science in the Eugene Applebaum College of Pharmacy & Health Science, received a \$1.31 million grant from the National Institute of Environmental Health Sciences of the National Institutes of Health, for the project, “Arsenic-induced MiRNA-199 and MiRNA-214 deplete mitochondrial DNA for the generation of cancer stem-like cells.” Environmental exposure to carcinogenic metal arsenic has long been a major health concern. This project is aimed at increasing an understanding of how and why these induce the generation of cancer stem-like cells. Their goal is to identify new target-based strategies of cancer-therapy.
- Hien Nguyen, Ph.D., professor of chemistry in the College of Liberal Arts and Sciences, received a \$1.58 million grant from the National Institute of General Medical Sciences of the National Institutes of Health, for the project, “Catalytic methods for stereoselective 1,2-Cis Glycosylation. Nguyen and his research team have developed mild and simple techniques for attaining complex carbohydrate targets that exhibit a broad range of potent biological properties such as antiviral and antitumor activities, stimulation of growth factors and anticoagulant activity. These bioactive carbohydrate targets have also been investigated as a potential treatment of type-1 diabetes and in the development of cancer vaccine therapy.
- Vojko Kavcic, Ph.D., assistant professor of research in the Institute of Gerontology, received a \$3.3 million grant from the National Institute on Aging of the National Institutes of Health, for the project, “Community-based approach to early identification of transitions to mild cognitive impairment and Alzheimer’s disease in African Americans.” African American elders have faster rates of cognitive decline and are almost twice more likely to develop mild cognitive impairment or Alzheimer’s disease than older white Americans, but are less likely to be diagnosed or receive treatment in the early stages of the disorder. The project aims to better characterize at-risk African Americans and to develop new markers for detection of the earliest cognitive changes in healthy elders who may be at risk for the development of mild cognitive impairment or who may eventually develop Alzheimer’s disease.

Economic Development Impact of Current/Future Programs

As previously mentioned, Wayne State University’s impact on Southeast Michigan is substantial, estimated by the Anderson Economic Group to be over \$2.5 billion per year. The significant percentage of alumni who remain in the area after graduation contributes greatly to the region’s well-being through their professional and personal accomplishments, community activities and financial resources. Additionally, the University is the seventh largest employer in the City of Detroit with more than 7,500 full- and part-time faculty and staff.

In fiscal year 2017, Wayne State spent more than \$580 million for compensation, wages, and fringe benefits. The University awarded more than \$336 million in financial aid (federal, institutional, private, outside and state) to 22,573 undergraduate and graduate students in FY17,

which translates to an average of \$14,917 per award. Expenditures on supplies and services exceeded \$193 million. 69% of all invoices paid in FY17 were from Michigan-based companies.

The University spent over \$221.5 million in research and development during fiscal year 2016. In fiscal year 2017, 62 new patent applications were filed on technologies invented at Wayne State, and 29 total patents were issued. Furthermore, the university spent over \$1 million to file and maintain all of its patent applications and issued patents, and received \$663,600 in revenue from license and startup companies.

Through fiscal year 2018, the University's portfolio contained over 550 technologies, including more than 340 pending and issued patents. Over 120 of those technologies were licensed, 31 to Michigan-based companies. The University has assisted in the start-up of more than 40 companies based on university intellectual property with the majority of the startups located in Michigan.

Wayne State is committed to establishing infrastructure that supports the creation of new companies and encouraging an entrepreneurial culture. The Wayne State University Innovation Studio powered by TechTown has helped launch nearly 200 businesses that have generated revenue or hired employees since 2011, while the Goldman Sachs 10,000 Small Businesses program has graduated more than 400 second-stage small businesses from across Michigan, including roughly 120 Detroit-based businesses. 76% of Goldman Sachs graduates reported increased revenues six months after completion. TechTown Detroit has served more than 1900 companies, which leveraged more than \$130 million in start-up capital, and contributed more than 1400 jobs to the local economy from 2007 to 2016.

Transformations in the Wayne State neighborhood include:

- 98 new businesses have opened in the Midtown, TechTown and New Center districts since 2014 and another 30 are scheduled to open by 2018.
- The Live Midtown program has attracted 1,200 new residents to the area.
- The Stay Midtown incentive, designed to help cost-burdened households currently residing Midtown remain in the area, has provided assistance to 81 households since 2016.
- Residential occupancy for rental housing has been at or above 98 percent since 2014.
- 1,894 residential units were recently completed (\$787 million invested); 1,913 are under construction (\$720 million invested); and another 2,466 are in the construction pipeline (\$1.1 billion soon-to-be invested).
- Midtown has seen a 60% decline in major crime since 2009, due in large part to Wayne State University's Police Department and their community policing activities.

Wayne State is committed to being a catalyst for economic growth in the city. Initiatives include:

- Wayne State purchased the NextEnergy building in 2018 for \$6.6 million, which will become Wayne State's Industry Innovation Center (I2C).

- Wayne State completed construction on phase one of the Anthony Wayne Drive apartments in 2018. The second phase will open in spring of 2019, adding a total of 800 new dorm beds.
- The University broke ground on the Gateway Performance Complex in 2018, a new \$65 million performance complex for theatre, music, dance and arts-related events.
- Wayne State raised \$100,000 to add landscaping, seating and a welcome kiosk to Woodward and Warren Park. Improvements will be made in 2018 and help inform long-term plans.
- The University is one of 12 institutions partnering in an international design competition to help re-imagine the DIA Plaza and larger Cultural Center area.
- Wayne State continues to make investments in transportation and mobility solutions including the QLINE (opened in 2017), MoGo (launched in 2017), DDOT and SMART.
- Wayne State launched Innovation Hub in 2017 to coordinate and enhance its programs for entrepreneurship education, technology commercialization, and community partnerships, and to enhance the university's overall culture of innovation.

Wayne State University Research and Technology Park

TechTown is Detroit's entrepreneurship hub. As the city's most established business accelerator and incubator, TechTown provides a powerful connection to a broad network of resources, catalyzing entire communities of entrepreneurs to energize the local economy. It offers both tech and place-based economic development programs, as well as coworking, office, meeting and event space.

TechTown is a 501(c)(3) nonprofit and is located within the Woodward Technology Corridor SmartZone, on the northern edge the University's main campus. The TechTown building is located one block from Wayne State's Integrative Biosciences Center and across the street from the NextEnergy building, which the University acquired in 2017 for \$6.6 million. Wayne State is partnering with TechTown to transform the NextEnergy building into the Wayne State Industry Innovation Center (I2C), a facility for university and industry collaboration and research, with a focus on cyber physical systems including cyber security, connected and autonomous vehicles, and smart city technologies.

In this growing neighborhood, Wayne State students and faculty work alongside entrepreneurs at TechTown to refine new generations of businesses. TechTown not only contributes significantly to the University's research capital but also strengthens and diversifies the region's economy. The relationship with TechTown highlights one of Wayne State's greatest strengths, its ability to partner with industry and government for the good of the populations the University serves. TechTown fosters a community of engaged, connected, and better served entrepreneurs, who will accelerate the region's transition into an innovation-based economy.

III. Staffing and Enrollment

Enrollment

Several initiatives during the past few years have contributed to an increase in applications, including enhancements to the Honors and scholarship programs, aggressive enrollment management efforts, opening the Welcome Center and three new residence halls, and expanding the Comerica Charitable Foundation Academic Success Center.

Referring to Figure 1 below, fall 2018 enrollment is 27,053. This is 36 less students than fall 2017, a decrease of about one tenth of a percent. Undergraduate enrollment is up 280 students, 1.6 percent. Graduate enrollment decreased 286 students, a loss of 3.7 percent while Professional enrollment decreased by 30 students, 1.5 percent.

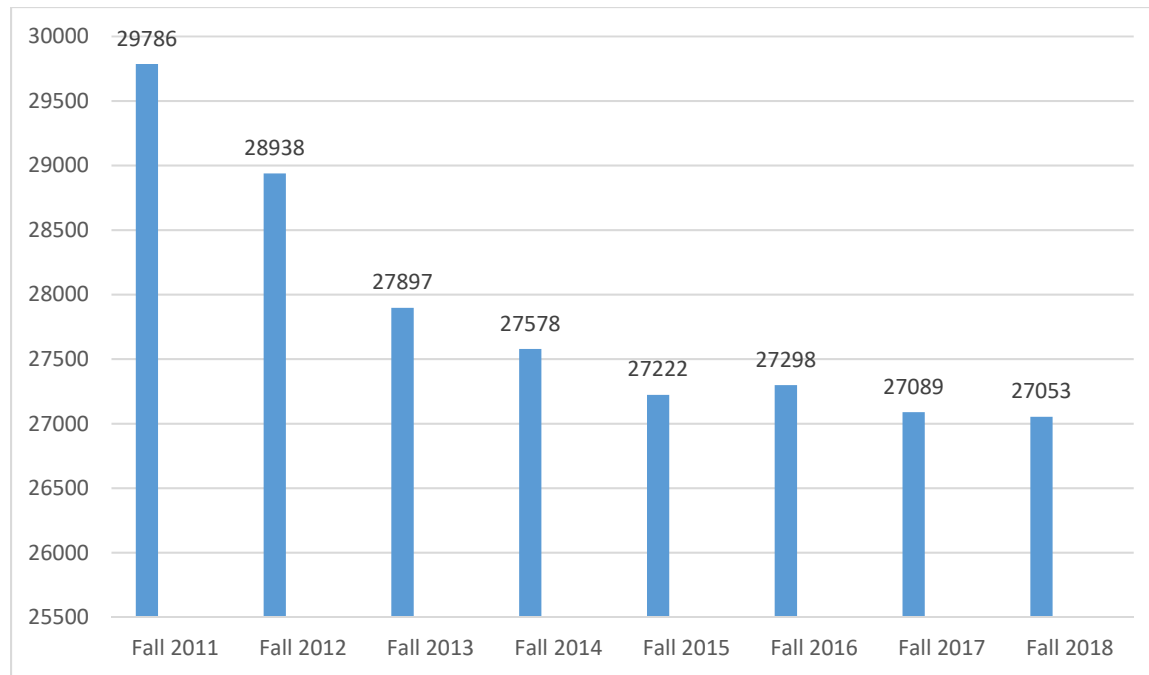
Enrollment of new freshmen increased by 385 students, 14.5 percent, and the returning freshmen retention rate decreased by 2.5 percentage points, compared to fall 2017. New transfer and other new students, inclusive of spring/summer term transfers, decreased by 35 students 1.6 percent. Total undergraduate enrollment is 17,602.

Full-time undergraduate students increased by 4.5 percent, and part-time undergraduates decreased by 281 students, a 5.7 percent drop. Full-time graduate and professional enrollment decreased by 119 students, or 2 percent. Part time graduate and professional enrollment also decreased by 5.1 percent, or 197 students. Total credit hours are 303,752, a 1 percent increase from fall 2017. Undergraduate credit hours are up 2.9 percent, while graduate and professional credit hours are down by 3 percent.

Michigan residents represent 90 percent of our student population, 4 percent are from other U.S. states, and 6 percent are international. There are 1,053 students from other U.S. states and 1,662 international students.

Enrollment Patterns over the Past Six Years

Figure 1: Total Headcount Enrollment by Year



Source: Office of Institutional Research and Analysis

In addition to courses held on the main campus in Detroit, Wayne State University offers instruction at six off-site locations in the tri-county area. In fall 2018 we had 1,282 students enrolled in courses at the extension centers, a 38.5 percent decrease from fall 2017 (Table 4). A substantial number of these students are enrolled in classes on main campus as well. Distance-learning initiatives have been launched in the College of Education, College of Fine, Performing, and Communication Arts, College of Liberal Arts and Science, College of Nursing, Mike Ilitch School of Business, School of Library and Information Science, School of Medicine, School of Social Work, Eugene Applebaum College of Pharmacy and Health Sciences, and College of Engineering; the number of web-based classes, in which all or most of the coursework may be completed online, is consistently increasing (Table 5). The University offered 448 web-based sections in fall 2018, up 59 sections from the 389 sections offered in fall 2017. Innovative course options, combined with campus residential choices, help position Wayne State as a desirable destination school.

Extension Center Summary & Web Class Report

	Section Count		Section Enrollment		Average Section Enrollment	
Class Section Enrollment	2017	2018	2017	2018	2017	2018
All Extension Centers TOTAL	181	112	2945	1823	16.3	16.3
Student Headcount and Credit Hours						
	Headcount		Credit Hours		Average Hours	Credit
Student Level	2017	2018	2017	2018	2017	2018
Undergraduate Totals	1,625	1,028	7,268	4,438	4.5	4.3
Graduate Totals	459	253	1,697	916	3.7	3.6
Professional Totals	1	1	3	3	3.0	3.0
TOTAL	2,085	1,282	8,968	5,357	4.3	4.2

Table 5: Web Class 2017:2018 Comparison

	Section Count		Section Enrollment		Average Section Enrollment	
Class Section Enrollment	2017	2018	2017	2018	2017	2018
TOTAL	389	448	10,591	12,875	27.2	28.7
Student Headcount and Credit Hours						
	Headcount		Credit Hours		Average Hours	Credit
Student Level	2017	2018	2017	2018	2017	2018
Undergraduate Totals	5,165	6,326	22,275	27,690	4.3	4.4
Graduate Totals	2,335	2,466	10,270	11,049	4.4	4.5
Professional Totals	7	20	18	64	2.6	3.2
TOTAL	7,507	8,812	32,563	38,803	4.3	4.4

Source: Office of Budget, Planning and Analysis

Projected Enrollment over the Next Five Years

For fall 2015, a slight overall decrease in student enrollment was reported. We did, however, have increases in the number of new FTIAC, new graduate, and new professional students, which projected a possible overall increase in enrollment. In fall 2016, this projected increase was accurate. The overall student enrollment was up 1 percent from 2015. Further, the six year graduation rate for full-time FTIACs has increased by 4 percentage points, to 39 percent. To

continue this progress, Wayne State has committed to a concerted and coordinated effort to improve student success and learning, to increase retention and graduation rates, and to narrow achievement gaps. This initiative has 12 major thrusts, which are described here.

The first six thrusts were funded and initiated as part of the *WSU Retention Implementation Plan*, launched in 2012.

Undergraduate Academic Advising Initiative. This initiative provided funding to hire 45 new professional academic advisors on campus, which allowed us to approximately double our institutional advising capacity and bring our student to advisor ratios into alignment with national best practices.

General Education Review. The purpose of this initiative is to streamline, simplify, and better communicate general education requirements.

Support for Teaching and Learning. In 2013, Wayne State University began to restructure and reinvigorate the Office for Teaching and Learning (OTL). An Associate Provost and Director, who has extensive experience and a national reputation for faculty and instructional development, was hired for the OTL. The staffing and resources of the Office for Teaching and Learning were increased to enable expansion of both services and impact.

Readiness for College. Nationally, as access to college becomes a national priority, fewer students are coming to college ready to meet college readiness benchmarks and prepared for the rigor of a post-secondary education. Increasingly, remediating this gap is the challenge of colleges and universities who must simultaneously meet retention and graduation rate goals. This challenge has become particularly acute at Wayne State University, where we have enduringly had a mission of equal access and opportunity. To address this challenge, we have enhanced and expanded many of our support programs. In particular, the Academic Pathways to Excellence (APEX) Scholars program now offers a Summer Bridge Program that provides an opportunity for 132 students to earn up to eight college credits in a free, supported, and residential environment before joining Wayne State University in the fall, which increases their college readiness and gives them a head start on academic success.

Expanded First Year Experiences. The transition into the first year of college is critically important to student success. In the form of learning communities, enhanced orientation programs, curriculum enhancements, and other forms of support, WSU has made investments into the first year experience for many years.

Expansion of Financial Aid. For students in need of financial assistance, Wayne State University increased its financial aid by \$6.2 million, or 11 percent for the 2013-2014 year. More than 80 percent of all Wayne State undergraduate students receive some form of need or merit-based financial aid. We are exploring and piloting various approaches to use financial aid to support degree attainment in more direct ways, while maintaining our mission of access.

GRAD: Greater Retention and Achievement through Diversity. To build on our historical commitment to educational opportunity, WSU committed in July 2013 to launch the Greater Retention and Achievement through Diversity initiative, which aims to increase our retention and graduation rates for students of color and other underrepresented groups and to advance a mission of inclusive excellence. This strategic initiative led to the creation of a chief diversity officer position and an Office of Diversity and Inclusion. It also created a multicultural student success center as well as a campus diversity and culture study.

Big Data and Student Success. WSU has embarked on a program to use “big data,” analytics and machine learning to disclose patterns in data that influence desired outcomes. Early results have been interesting and are helping us discover student success factors that had not been considered before.

Community College/Transfer Student Initiative. Various initiatives have successfully increased the number of students transferring to Wayne State University from community colleges.

High Impact Educational Experiences. Wayne State University has made many investments in High Impact Educational Experiences – learning practices and environments that have been shown to be most effective in contributing to student engagement, motivation, deep learning, and long-term student success.

Pre-College Collaborative. Wayne State University has more than 50 programs that provide educational experiences for pre-college students. These programs are delivered by a variety of units, schools and colleges, and programs throughout WSU. During 2013, the providers of these programs organized into a pre-college collaborative to share best practices and develop the capacity of these programs to support college access, readiness, and success within our local communities.

Strategic Graduation Action Project. Direct intervention and other initiatives designed to help students graduate.

Student-to-Faculty Ratios

The published student to faculty ratio is based on full-time equivalent students (full time plus 1/3 part time) and full-time equivalent instructional faculty (full time plus 1/3 part time) and excluding students and faculty in stand-alone graduate programs. The fall 2017 student to faculty ratio is 16 to 1, which is on par with the national average.

Current Class Size

Class size varies depending on the program and class level. Of all undergraduate classes (excluding subsections), 50% have fewer than 20 students. Class sizes of 20 to 49 students make up 37%.

IV. Facilities Assessment

Campus Master Planning

During the past few years President M. Roy Wilson, Vice President of Research, Dr. Stephen Lanier; Vice President of Health Affairs, David Hefner; and Vice President for Finance and Business Operations, William Decatur have joined the University’s executive leadership team. Since their arrival, the University has established new institutional priorities, and *Distinctively Wayne State University, Strategic Plan 2016 – 2021* has been published. Our vision, mission, and values have been updated, and the strategic focus areas of student success, teaching excellence, research, diversity and inclusion, entrepreneurship, community engagement, financial sustainability and operational excellence will drive all that we do. With this has come the realization that the University’s Campus Master Plan needs to be renewed, accordingly.

The 2020 Campus Master Plan, which provided the framework for improving and expanding the physical facilities of Wayne State, grew out of a University strategic planning process that concluded in 2001. The 2020 Campus Master Plan has served as a flexible document, written to provide direction and accommodate unanticipated conditions. The 2020 plan produced a clear depiction of the limitations and opportunities for expanding the main campus. It placed the University's highest priority on facilities that support our academic and research mission and many of its high priority recommendations have since been implemented. The plan was updated in 2008, revisited via a number of focused studies, in order to incorporate the University's evolving priorities.

In August 2018, the University commenced a new Campus-Wide Space Utilization and Master Plan process to respond to the current opportunities facing Wayne State, the City of Detroit and the Southeastern Michigan region. Over the next 12-18 months, many constituent groups from across the University will spend time responding to goals, themes and findings. The comprehensive master plan will examine several areas including:

- Analysis of the condition and suitability of Wayne State's current building inventory.
- Optimizing the use of space.
- Enhancing the experience of the university's diverse student population.
- Planning around issues of sustainability, resilience, urban design, land use, transportation and parking.
- Providing a means for the university to strengthen its relationship with the broader Midtown community of businesses, residents, neighborhood organizations and other anchor institutions.

We expect this effort will significantly inform the content of future Wayne State University Capital Outlay Plans and Project Requests for several years to come. For the fiscal year 2020 capital planning cycle, Wayne State University is not submitting a Capital Outlay project request. This is due to the University's current campus-wide space utilization and master plan process that commenced in August 2018 and will continue through summer 2019. The university feels that future Capital Outlay requests should be fully vetted internally through a comprehensive process that utilizes the campus master plan framework and the University's strategic plan as guides for future development.

WSU Campus Housing Demand

Demand for on-campus housing by WSU students continues to be strong. WSU's 40-year partnership with Corvias, LLC, a novel implementation of a Public-Private Partnership (P3) began on December 1, 2017. The partnership incorporates the Housing Facilities Master Plan 2016-2026, with the following projects in planning, completed or under current construction: Fall 2017 opening of The Thompson, a 55-bed living/learning community for the College of Fine, Performing and Communication Arts; Fall 2018 opening of the 400-bed Phase I of the new Anthony Wayne Drive Apartments; Summer 2019 opening of the 443-bed Phase II of the Anthony Wayne Drive Apartments and the demolition of the Helen L. DeRoy Apartments. The exterior renovation of the Chatsworth Apartments began in May 2018 to be followed by the closure of this apartment building in May 2019 for a 14-month "gut and rebuild" with a scheduled re-opening as the

Chatsworth Suites, 360 new suite-style beds in August 2020. By fall 2020, WSU's on-campus housing population will grow from 3000 to 3750 beds.

Functionality of Existing Structures, Deferred Maintenance and Facilities Condition

Wayne State owns and operates 111 buildings and leases space in another 14. The University delivers its programs and conducts research from over 12.7 million gross square feet of space. Over the years, the University has used a number of methods to estimate and quantify its deferred maintenance backlog.

When Wayne State previously reported its current replacement value and deferred maintenance backlog, the data was from studies conducted over a decade ago, thus the data accuracy came into question. In 2017, the University retained the services of Sightlines, a nationally renowned company the works with institutional members to benchmark data, identify opportunities to optimize capital resources and quantify campus sustainability performance. Over the course of the three year contract, Sightlines will work with Wayne State to collect and verify facilities data in order to inform strategic decision-making related to deferred maintenance and facilities condition. Using measurements of annual stewardship, asset reinvestment, operational effectiveness and service, Sightlines recently completed an initial analysis through FY17 of the University's return on physical assets or ROPA.

The bulk of the University's physical infrastructure was constructed prior to 1980, the majority of which was constructed in the post-WWII era of 1951-1975. Even after renovation, 47% of the campus is considered to be over 50 years old which places a significant risk of failure on the University's operations. Since 2012, an average of \$90 million has been spent on capital investment, 50% of which was spent on renovation of existing space and 3% spent on standalone infrastructure improvements. Overall, 73% of space is considered to be "high-risk" by Sightlines' standards. High risk space has more costly mechanical life cycles coming due, which if not addressed, create operational strain. Based on this profile, Sightlines has estimated that Wayne State's 10-year facilities need is \$142 per gross square foot for an estimated \$1.1 billion.

As the University continues to work with Sightlines and our master planning consultant, we are continuously evaluating this assessment. Initial findings by both efforts indicate the University look for opportunities to strategically disinvest from buildings in poor condition and with low institutional value while increasing utilization of more desirable buildings. We believe one result from master planning will be a recommendation to further investigate a "no net new square footage" policy that will further reinforce efforts to think strategically and intentionally about space utilization and capital investment.

Utilities and Energy Management

Energy Curtailment Committee

Facilities Planning and Management employees, including directors, managers, engineers and trades participate in quarterly meetings to discuss the best way to conserve energy around campus for the General Fund accounts. This committee has identified well over \$1M in energy conservation measures (ECMs), with priority given to the items with the lowest payback period. The most recent funding request totaled roughly \$200,000 with an annual savings totaling over

\$160,000, thus a simple payback of less than 2 years. Some of the recent items identified and completed by this committee are:

- Air Handling Unit Variable Frequency Drive at Biological Science Building
- Various AHU's were running in "hand", now running in "auto"
- Steam Trap repair and replacement- Across campus
- LED lighting initiatives- Across Campus

The committee is investigating funding opportunities to initiate these energy conservation measures.

LED Lighting Retrofits

The T12 Fluorescent lighting retrofit project was completed in 2017. Focus is now on the campus mall lighting. These lights are metal halide with 175 watt bulb plus the ballast. This technology has short bulb life with very quick lumen depreciation and frequent ballast replacement. With the poles and fixture heads being in good condition, a retrofit kit was sought. A suitable kit was found and a pilot sample of 100 lamps are underway. It is anticipated that this pilot project will be completed in the spring of 2019. This will result in improved lighting which will enhance campus safety and reduce ongoing maintenance.

Building HVAC Analytics (Big Data)

Building analytics typically gather continuous data on HVAC systems. This is over and above data that the building automation systems (BAS) uses. This software overlays on the existing BAS to gather additional information and data. By analyzing this data with software, the analytics software can determine where there are inefficiencies in the HVAC systems and produce reports to identify them. Corrective measures can then be taken. The University's newest research facility is a good candidate for this technology since the energy profile indicates it should be using less energy than what it is currently using. Awaiting funding to initiate this building as a pilot project for this technology.

P3 Energy Partnership

Senior management has started an initiative to search for a P3 energy partner. Having just completed a successful long-term P3 Housing partnership, which now manages all of the University's housing portfolio, it is now seeking to initiate something similar for energy. The goal is to lower energy costs over the long term, raise capital and address deferred maintenance issues. A request for qualifications is being developed and should be issued in the fall of 2018.

Sustainability Efforts

The Office of Campus Sustainability, located within Facilities Planning and Management, works to reduce the environmental impacts created by the University's operation while also engaging the entire campus community in sustainable actions, initiatives, and opportunities that lead to enhancing sustainability-related outcomes within the learning environment. A five-year sustainability plan has been developed to guide campus sustainability efforts in academics, research, operations, and campus life. The sustainability plan also aligns with Wayne State University's Strategic Plan to help ensure organizational objectives are being met within an environmental framework. This cascading focus has helped bolster sustainability efforts

throughout the university. Wayne State University's Office of Campus Sustainability works in collaboration with various departments and colleges, to initiate academic projects that will train current and next generation sustainability students who will move environmental theory into practical application while addressing urban sustainability issues.

An additional focus of the Office of Campus Sustainability is to advance environmental education around the campus community by increasing awareness of social, global, economic, and cultural sustainability that will have societal impacts into the future. This has been accomplished by increasing awareness of university impacts through an annual Greenhouse Gas Inventory that examines Scope 1, Scope 2, and Scope 3 emissions. This exercise to conduct a GHG inventory has helped further understanding across the campus community of university environmental impacts. The Office of Campus Sustainability is currently working with a multi-disciplinary group to research the effectiveness of a campus bioswale in mitigating stormwater runoff in a university parking lot. It is hoped that this endeavor will help Wayne State realize cost savings through a reduction in drainage charges from the local water utility. Through these types of efforts, the Office of Campus Sustainability seeks to reduce its impact on the triple bottom line of environmental, economic, and social sustainability.

The Office of Campus Sustainability was established in 2011 and has either implemented and/or assisted with numerous operational and green building initiatives, including:

- Installation of water bottle filling stations around campus to help divert over 2.5 million plastic bottles from the waste stream;
- Green cleaning policy sets guidelines for environmentally-friendly cleaning products and equipment;
- Three, LEED Silver certified buildings awarded;
- Two, LEED Gold certified buildings awarded;
- The Green Ride (sustainability bike tour, held annually) allows the campus community to explore city sustainability sites;
- Solar Compactors placed around campus for waste and recycling;
- Warrior Exchange developed to give the campus a web-based classified section to facilitate reuse of campus property;
- Toner Cartridge Recycling allows departments to recycle used printer cartridges for remanufacturing;
- A green tote office supply program that reduces the amount of cardboard used for office supply delivery by utilizing reusable containers for delivery;
- And, a scrap metal recycling program has captured over 110,000 lbs. of ferrous and non-ferrous metals from the traditional campus waste stream.

The dedicated Wayne State University faculty, staff and student leaders have launched various initiatives designed to advance knowledge, raise awareness and change behavior as it relates to the university's impact on the environment. Guided by the Sustainability Plan through 2022, Wayne State will continue to be a good environmental steward and through its actions will develop leaders and a talent pool that will help ensure the world's resources are sustainable for generations to come

Facilities and Land Use

The overall distribution of academic and research space is expected to continue changing during the next several years. Currently, approximately 33% of the assignable square feet of space¹ is dedicated to classroom facilities (FICM 100 – 329,000 ASF) and laboratory facilities (FICM 200 – 1,050,000 ASF). Increases in technology and distance learning will further redefine and shape future classroom space allocations and development. As the current master planning effort continues, areas of optimization will include classroom utilization as well as office utilization which encompasses 33% of the assignable square feet (FICM 300 – 1,346,000 ASF).

Along with facility optimization opportunities, the current master planning process is also considering land use. Of the approximately 118 acres of the core-campus land coverage², over 75% consists of impervious surfaces including buildings, surface parking, streets, driveways and sidewalks. Not only does this pose a significant impact to stormwater retention and drainage but it reduces the availability for high-performing civic space available to the university and community at large. As an urban campus, Wayne State has an opportunity to be a leader in both sustainable water management practices but also in creating multi-functional and innovative public spaces. These themes will be further investigated in the master plan.

Building and Classroom Utilization Rates

To measure utilization of Wayne State University's existing facilities, the university utilizes Ad Astra Information Systems, which is a data software that more than 1,000 higher education institutions use. In conjunction with this software, the University of North Dakota's 2013 utilization report, *University of North Dakota: Space Utilization and Planning*, is used as an established benchmark to compare Wayne State University's space utilization efficiencies.

Since fall 2014, Wayne State University has used Ad Astra more intensely to manage the 192 (currently 185) general purpose classroom spaces. Recently, WSU began using the software to auto assign rooms based off of departmental preferences and to set maximum capacities. This, along with working to move to a new scheduling matrix, will help remove potential barriers from students who need to graduate, and bring WSU to obtain higher classroom utilization.

Beginning winter 2017, the Registrar's Office shifted focus from inputting data to reporting. A new scheduling matrix will allow the office to run utilization reports to determine how much improvement has been made in scheduling general purpose classrooms at WSU. The data allows the Registrar's Office to offer suggestions to departments on increasing room utilization, thereby improving their programs. These reports will help departments better understand how to spread class offerings out over the entire scheduling week, reduce unused seats in rooms by scheduling classes into appropriately sized rooms, minimize class offerings that use non-standard meeting patterns, and reduce the offering of unnecessary sections.

The Registrar has pioneered the use of Ad Astra for general purpose classrooms, and other WSU schools, colleges, and divisions have begun migration of their departmentally assigned spaces to

¹ For the purposes of this analysis, assignable square foot totals exclude residential (FICM 900 – 1,017,000 ASF), parking (FICM 700 – 2,640,000 ASF) and unclassified space.

² Excludes athletics campus, health affairs campus, TechTown, IBio and Mike Ilitch School of Business

Ad Astra. Those schools, colleges, and divisions include the College of Engineering, School of Business, College of Pharmacy, and University Libraries.

In 2013, the University of North Dakota (UND) comprehensively analyzed their utilization rates in their University of North Dakota: Space Utilization Analysis and Planning report. Similar to UND, Wayne State University offers courses from 8:00am through 10:00pm, Monday through Saturday. Known for being a university that caters to the nontraditional student, the majority take advantage of this schedule flexibility to allow them to have full-time or part-time jobs, to participate in internships, or to take care of family members and other personal commitments. Although the university does teach courses on Saturdays, these were not analyzed in order to keep some consistency with the UND benchmark, which analyzed course offerings Monday through Friday, from 8:00am to 4:00pm.

In applying the hourly and daily parameters of 8:00am to 10:00pm, Monday through Friday, a total of 75 hours per week in which classrooms, auditoriums, lecture halls, labs, computer labs, seminar rooms, and auditoriums could be scheduled for classroom use were analyzed. On average, actual classroom time is scheduled for about 27 hours of the 75 available, or 36.37 percent of the week. In comparison, the University of North Dakota only analyzed their classroom data for a core 40 hours. Their utilization rates totaled 80 percent of the 40 hours available during the week, but the report notes that many institutions use a target of 40 percent and that reaching 80 percent is extremely difficult. In using the target of 40 percent, WSU is using their current classroom spaces well. Further, the wide timeframe allows the university to continue to cater to the nontraditional student, but additional attention can now be provided to understand how this impacts the university's support services, such as audio-visual assistance, custodial maintenance, etc.

In addition, the rooms that are loaded into Ad Astra were also analyzed for their average seat fill rate. Wayne State's average seat fill for a 75 hour week is 70.55 percent. In comparison, the University of North Dakota only had an average seat fill of 65 percent for their 40 hour week. This shows that WSU students are taking advantage of the courses that are offered across campus, to the point that each class, on average, is at 70.55 percent capacity.

As stated previously, WSU continues to optimize Ad Astra in order to provide better data, create better efficiencies, and deliver the courses that students need. WSU is expected to increase utilization percentages as this technology is further taken advantage of, which will also allow support services to tailor their availability.

Mandatory Facilities Standards

As a "Carnegie Research University, Very High Activity" institution, Wayne State complies with required facilities standards.

- Animal research facilities are distributed throughout the main and medical campus buildings. Facility standards for laboratory research animals are rigorous and regulated by the national accrediting agency, the Assessment and Accrediting of Laboratory Animal Care.
- The University's offices of Environmental Health and Safety and Health Physics and Radiation Control are responsible for the collection, short-term storage and disposition of hazardous waste materials. These activities are regulated nationally by the Environmental

Protection Agency, Nuclear Regulatory Commission, and locally by the State Department of Environmental Quality.

- Chemical and biological laboratories that contain fume hoods and store chemicals and/or reagents are spread throughout the main and medical campuses. These facilities are regulated by Occupational Safety and Health Administration standards (OSHA).
- Specialized facilities such as laser laboratories, large testing equipment and laboratories, and biohazard laboratories exist in the colleges of Liberal Arts and Sciences, Engineering, the Eugene Applebaum College of Pharmacy and Health Sciences, and the School of Medicine. These laboratories have special OSHA regulations and requirements and often need significant modification to the buildings and utility systems.
- The clinical behavioral science laboratories used for conducting research on human subjects are regulated by the National Institutes of Health. The University’s Institutional Review Board is responsible for implementing these regulations.

Bond Status

The University has five building projects with obligations to the State Building Authority.

<u>Building</u>	<u>Lease Began</u>	<u>Lease Ends Expiration</u>
Old Main Renovation	November 1997	2032
Undergraduate Library	February 1998	2033
Pharmacy and Health Sciences	September 2002	2037
Welcome Center	December 2002	2037
Engineering Development Center	December 2009	2044
Integrative Biosciences Center	August 2015	2050

V. Implementation Plan

Throughout this document, Wayne State University has presented comprehensive information regarding its capital project plans. The STEM Innovation Learning Center is the current State Capital Outlay funded project in progress for the University. In addition, the University has in progress plans to advance several other capital projects as described below. As steps are taken during the next 12 months to move projects and fundraising efforts forward, current plans may be modified.

Planned SBA Funded Projects

STEM Innovation Learning Center (\$49.5 million) will renovate the seven-story, 110,000 square feet former Science and Engineering Library to contain undergraduate lab classrooms, a maker space, hacker space and collaboration spaces designed to support and expand STEM education across campus. A request has been submitted to the Joint Capital Outlay Subcommittee

requesting an increase to the construction appropriation awarded to the university in Public Act 207 of 2018 to encompass a project budget of \$49.5 million.

Non-State Capital Outlay Projects In Progress

Campus-Wide Facilities Master Plan (\$1.5 million) will review previous master plans, completed in 2001 and updated in 2008, in terms of the University's current facilities and academic needs. The master plan will be a comprehensive, data-driven effort. Planned projects that follow will be evaluated through the lens of this master plan effort.

Electrical Utility Conversion (\$6.0 million) will provide new electrical services to all former Detroit Public Lighting buildings. This project provides the scope and necessary upgrades that Detroit Edison (DTE) will not provide. Phase I has been completed and Phase II construction is currently underway.

New Data Center (\$16.9 million) is currently completing construction and will provide approximately 12,500 square feet of current and best-practice environments to support the University's technology and services while offering flexibility for future growth.

Anthony Wayne Drive Housing (\$119.1 million) will provide 800 new beds of on-campus apartment style options to satisfy growing and unmet demand. The project is currently in construction. Phase I of the project was completed in August 2018 and Phase II is on track to be completed in spring 2019.

Biological Sciences Building Infrastructure Improvements (\$2.5 million) will replace the domestic hot water boiler with a new hot water exchanger. The project will also replace the existing steam boiler with a smaller, high-pressure steam boiler to provide humidification for the vivarium, equipment sterilization and greenhouse and comfort controls. The project is currently in design.

University Services Building Infrastructure Upgrades and Repairs (\$3.3 million) is currently under construction and will provide roof replacement, structural concrete repairs, heating and air conditioning component replacement and provision of a new fire alarm system.

Prentis Building Computer Lab Classroom Relocations (\$2.4 million) is currently under construction and is renovating approximately 11,400 square feet to accommodate the relocation of computer science and math lab classrooms. These classrooms are being relocated from the Science and Engineering Library to allow for the renovation of the STEM Innovation Learning Center.

Prentis Building Façade Repairs (\$.8 million) is completing construction and consists of the replacement of deteriorated concrete and reinforcing steel as well as patches and repairs existing cracks in the façade.

Prentis Heating Pipe Replacement (\$1.3 million) is currently in construction and replaces the balance of hot water piping in the building not currently being replaced in the Computer Lab Classroom Renovation project.

Rackham Building Relocation to Prentis and Rands Buildings (\$1.2 million) is currently in design and renovates portions of the Prentis Building and Rands House to accommodate departments currently located in the Rackham Building. The University's lease at the Rackham Building will conclude in June 2019.

Old Main HVAC Controls (\$2.2 million) replaces existing pneumatic components of fan control units with digital devices to provide synchronized controls, energy savings and a monitored digital control system for heating and cooling. This project is currently in design.

Elliman Research Building Air Handling Unit Improvements (\$2.5 million) is currently out to bid and will upgrade three existing air handling units, install a new control system and modify existing ductwork to accommodate the new units.

Social Work Roof Replacement (\$.95 million) is starting construction and replaces approximately 10,000 square feet of existing roof not addressed in prior renovations to the School of Social Work building.

Hilberry Gateway Performance Complex (\$65.0 million) is currently in design and will provide new construction of a full service, 350-seat theatre, a 150-seat “black box” performance space and full “back of house” production support spaces. The project will also renovate the existing Hilberry Theatre to create a state of the art jazz performance space, assisted by a philanthropic donation.

Chatsworth Residence Hall Renovation (\$28.0 million) is currently out to bid and will provide renovation of this historic, 1920’s era residential building. The project will completely renovate the building to create 368 beds in a total of 96 units. The project will also include upgrades to mechanical and electrical systems as well as accessibility improvements.

Campus Health Center Relocation (\$2.11 million) is currently under construction and will build out 7,600 square feet of tenant space for the relocation of the campus health center to the new Anthony Wayne Drive Housing complex.

University Towers Fire Alarm Replacement (\$2.86 million) is currently in construction and includes the replacement and upgrade of existing, outdated fire alarm system to include a new main headend and backbone as well as new devices throughout this 356,000 square foot building.

University Towers Deferred Maintenance Improvements (\$1.1 million) is currently under construction and includes replacement of toilets and HVAC units in all residential units, the installation of a new supply air handler, refurbishment of the chiller and cooling tower and exterior glass and sidewalk repair.

Thompson Home Exterior Improvements (\$.725 million) is currently under construction and includes roof replacement, exterior painting and cooling tower replacement.

University Deferred Maintenance Program (\$5.5 million) is an annual, campus-wide initiative and includes regular investments in deferred maintenance beyond the projects listed previously.

Planned Non-State Capital Outlay Projects

Class Lab Back-fill Renovations for STEM and Research (\$10.0 million) will renew existing teaching laboratories or convert them to new research space following the completion of the STEM Innovation Learning Center.

Parking Structure and Related Improvements (\$10.0 million) will continue a multi-year initiative to structurally repair and upgrade various parking structures. The program also includes important

surface parking lot improvements such as paving, site lighting, gate and control equipment, and surface water drainage systems.

Recently Completed Non-State Capital Outlay Projects

Mike Ilitch School of Business (\$59.0 million) was completed in June 2018. The project includes approximately 127,000 gross square feet to replace the current use of Prentis Hall and the Rands House on the main campus. The project was developed on a site off the main campus, in the burgeoning downtown business district of Detroit. A substantial philanthropic gift provided the funding for this building.

Weight Room Addition to Matthaei (\$2.3 million) was completed in August 2018 and provides an 11,000 square foot addition to the Matthaei athletic complex to provide comprehensive weight room facilities for student athletes.

Harwell Field Bleachers and Press Box (\$2.5 million) was completed in August 2018. The 226 grandstand adjacent to the Harwell Field will provide ADA accessibility and includes a two tier press box with guest suite. The press box also includes space for an announcer, scoreboard control and streaming equipment.