

Central Michigan University
Fiscal Year 2016 Capital Project Request
Recommended 5-Year Master Plan Components

I. University Vision Statement

Central Michigan University, an inclusive community of scholars, is a national leader in higher education, inspiring excellence and innovation.

– Adopted by the CMU Board of Trustees, December 6, 2012

Mission Statement

At Central Michigan University, we are a community committed to the pursuit of knowledge, wisdom, discovery and creativity. We provide student-centered education and foster personal and intellectual growth to prepare students for productive careers, meaningful lives and responsible citizenship in a global society.

– Adopted by the CMU Board of Trustees, December 2, 2010

Core Values

To achieve our mission, we adhere to the core values of integrity, respect, compassion, inclusiveness, social responsibility, excellence and innovation.

– Adopted by the CMU Board of Trustees, December 2, 2010

II. Instructional Programming

A. Existing Academic Programs and Projected Changes:

CMU has grown from a teachers' college founded in 1892 to a robust, tier-one university — one of the top 200 U.S. universities, according to U.S. News & World Reports. CMU is one of the 90 largest universities in America and offers more than 200 academic programs at the undergraduate, masters, specialist and doctoral levels. Its nationally acclaimed degrees include programs ranging from the health professions and biosciences to business and communications.

The proposed capital project would further the university's mission of addressing great need and would enhance CMU's ability to deliver several programs in the health care area. First and foremost is expansion of existing programs within The Herbert H. and Grace A. Dow College of Health Professions — programs that have reached maximum facility capacity and therefore no longer can grow despite significant demand. These are:

- Physician Assistant
- Doctor of Physical Therapy
- Audiology
- Communication Disorders
- Speech-Language Pathology
- Community Health Education
- Health Administration
- Athletic Training

More than 1,725 CMU students, including 1,331 on campus this fall are majoring in programs such as those cited above. About 20 percent of students admitted to CMU for the Fall 2014 new freshman class indicated an interest in health careers. Interest in a number of these majors has more than doubled in the past five years.

It should be noted that CMU graduates in the PA, PT, audiology, speech-language pathology, and athletic training programs have a nearly 100 percent, first-time pass rate on their national certification exams. Job placement in most programs is 100 percent, and students commonly receive multiple job offers.

During the next five and 10 years, CMU is confident of growth in a number of fields within The Herbert H. and Grace A. Dow College of Health Professions *if the proposed capital outlay project is approved and provides the required space.* These include:

1. Physician Assistant — This existing master's level program is completely at capacity until larger spaces for classroom and laboratory activities are secured. The PA program also presents an opportunity to leverage distance-learning sites.
2. Doctor of Physical Therapy — This current program could be expanded but is totally maxed out until further classroom and laboratory space is constructed. CMU offers a joint PT program with Michigan Technological University in Houghton, in an arrangement that could be expanded to other universities if space in Mount Pleasant allowed.
3. Master of Public Health — This program is in development through the curricular pipeline and would serve 15 to 40 students per cohort. Once operating on campus, CMU would expand it to online offerings to meet the demand of more students and fill a greater need within the state and across the nation for expertly trained public health professionals.
4. Health Sciences — This major is in the conceptual stage; high demand at universities nationwide indicates a significant need for this program, with a focus that includes environmental health.

5. Communication Disorders — This current program could offer more non-major courses and more sections of the five prerequisite courses.
6. Health Administration — This current major has experienced incredible enrollment growth in recent years. If it continues to grow, CMU will explore use of online courses.

With additional space, CMU has other degree programs that could be created or expanded through the Center for Integrative Health Studies with tremendous results for students and the state. These would positively impact access to health care and our understanding of medical treatment, while modeling the academic integration that has been shown to be most transformative in delivering positive results. Such programs could be created only with the development of new class and laboratory facilities. They include:

- Biomedical Engineering. This specialized area within CMU's mechanical engineering program in the College of Science and Technology is linked to biomechanics. The understanding of the way human bodies work and the importance of structure on function make this an important cognate program in health professions.
- Health Information Management. Information systems management is an exciting, growing program in CMU's College of Business Administration. With the impetus of the Affordable Care Act, electronic medical records are rapidly expanding and evolving. CMU's goal is to train students to become leading professionals in the health care arena.
- Other possible programs include clinical laboratory sciences, occupational therapy and respiratory therapy.

Beyond health care, new programs in development at CMU — whether in preliminary discussion or in some stage of approval or implementation — include:

- Master of Engineering
- Master of Information Technology
- Applied Biostatistics
- Engineering Science
- Technology Management Concentration
- Applied Environmental Geoscience
- Computational Math
- Master in Applied Statistics and Analytics
- Medical Physics Minor
- Ph.D. in Earth and Ecosystem Science

- Ph.D. in Cellular-Molecular Biology/Biochemistry/Biomedical, a collaboration among biology, chemistry and the College of Medicine

These programs would be a mixture of on-campus and online programs and in some cases, have the potential for implementation in collaboration with other colleges and universities.

CMU's current degree listing is:

Bachelor of Arts
Bachelor of Applied Arts
Bachelor of Science in Electrical Engineering
Bachelor of Science in Engineering Technology
Bachelor of Fine Arts
Bachelor of Individualized Studies
Bachelor of Science in Mechanical Engineering
Bachelor of Music
Bachelor of Music Education
Bachelor of Science
Bachelor of Science in Athletic Training
Bachelor of Science in Business Administration
Bachelor of Science in Computer Engineering
Bachelor of Science in Education
Bachelor of Social Work
Master of Arts
Master of Arts in Teaching
Master of Business Administration
Master of Music
Master of Public Administration
Master of Science
Master of Science in Administration
Specialist in Education
Specialist in Psychological Services
Doctor of Audiology
Doctor of Education
Doctor of Health Administration
Doctor of Medicine
Doctor of Philosophy
Doctor of Physical Therapy

The university's academic planning process involves an analysis of the needs of students and demands of public and private sector employment markets. Thus, the potential for new and/or revised academic programs reflects a continuous feedback cycle in the university's planning system.

- B. Unique Characteristics: Central Michigan University is classified as a doctoral/research university with degree programs that serve 27,069 on-campus and Global Campus students.

The mission of CMU relies heavily on community engagement, hence the predominance of professional doctorates. Indeed the use of education to serve the public is a hallmark of our university. Not only was CMU started to increase the number of professionally educated teachers, we also have the longest-standing audiology program in the country. CMU has Michigan's only undergraduate meteorology program, the first entrepreneurship minor and the only undergraduate leadership minor.

In fact, CMU students have access to more leadership programming than their peers at any other university in the nation – through the five-day Leadership Safari immersion experience before the start of the school year, guest lectures, leadership scholarships, and more.

CMU's online undergraduate programs and its online programs for veterans are ranked No. 1 in the nation. Its online graduate teacher and administrator programs are ranked third in the country, and its online M.B.A. is ranked in America's top 20 by U.S. News and World Reports.

CMU is the nation's leader in SAP Terp10 certification for the business enterprise software used by more than 38,000 companies worldwide. Its undergrad engineering program, started just a decade ago, is named among the 100 best.

CMU leads the way in research to sustain and manage the world's largest supply of fresh water, directing a \$10 million EPA grant to monitor and assess Great Lakes coastal wetlands. The grant involves nine other universities and three governmental agencies. Notably, a CMU biology researcher first discovered evidence of Asian carp in the Great Lakes, and CMU team members now are leading the way in mussel research. Nearly 1,000 CMU students major in biological and biomedical sciences and there were just over 7,000 enrollments in biology courses.

Within the health professions (The Herbert H. and Grace A. Dow College of Health Professions and America's 137th College of Medicine), the thrust has been service to people in our region. The Carls Center for Clinical Care and Education, for example, provides services such as state-of-the-art hearing and balance diagnostics, hearing aid sales and service, a cochlear implant clinic, speech and language therapy, and world-renowned summer speech clinics. Its new privately

funded Mobile Health Central motor coach takes medical services on the road to serve residents and families who lack access to certain medical services.

Going further, the College of Humanities and Social and Behavioral Sciences has just opened a Center for Children, Families and Communities to help improve the mental health and well-being of children and families in our region. Further, two CMU psychology faculty are using a \$500,000 grant from the State of Michigan to train students in the leading treatments for children with autism. In addition, a neuroscience researcher is conducting a study with the potential to reduce cognitive deficits after stroke. CMU's undergraduate neuroscience program is ranked No. 1 in the nation.

Central Michigan University awards the fourth-highest number of education degrees and remains key to the preparation of educators to meet the needs of Michigan. The university also is one of six in the nation to offer a sociology degree with a concentration in youth studies.

CMU is one of seven institutions to enroll students from every county in Michigan last year. Nearly 90 percent of CMU on-campus students are from the state.

CMU's Global Campus offers online programs to students around the world as well as degree programs at nearly 50 locations in the United States, Canada, Mexico and China. Twenty-two of those locations are on military bases, continuing CMU's long-standing commitment to serving those who serve our country.

Notably, CMU student volunteers go on the nation's fourth most Alternative Break trips each year, volunteering to help others during the holidays and spring/summer breaks rather than relaxing on vacation.

- C. Other Initiatives and Their Impact on Facilities Usage: Central Michigan University this summer broke ground on a Biosciences Building, which will add essential wet lab research and classroom space in the biosciences area — another of CMU's premier educational and research focuses. CMU also continues to repurpose facilities as new academic programs/initiatives are implemented. For example, CMU has installed state-of-the-art active learning classrooms in the Dow Sciences Building and a Bloomberg financial trading floor for the College of Business Administration. It also completed a \$14 million renovation and upgrading of its busiest academic space, Anspach Hall, which serves 25,000 students a week.
- D. Economic Development Impact: The state of health care in Michigan is undergoing significant change due to the aging of our population and continued changes at national and state levels in health care delivery. As a consequence, there is greater importance than ever in training professionals to provide preventative and

remedial health care services. These are precisely the professionals who are alumni of CMU's College of Health Professions and who would graduate in even greater numbers if the CMU Center for Integrative Health Studies were built.

The economic impact of these new health care professionals would be significant for two major reasons:

- (a) More than 76 percent of CMU graduates choose to live and work in Michigan. With an average salary of \$90,000 for a physician assistant (based on data from Salary.com) the new center would have a direct fiscal impact on the regional economy.
- (b) The improved health of the general population resulting from the care provided by CMU's additional graduates in many fields would indirectly raise the income of other Michigan residents while also decreasing health costs of employers and the state.

In addition to the impact of our health care graduates, the new construction would enable CMU to further grow the economy through other university activities.

A report released in December 2013 by the Anderson Economic Group shows Central Michigan University contributed more than \$940 million in regional and statewide economic activity in 2012. Key findings include:

- Wages and benefits for CMU's 2,707 faculty and staff total \$243.9 million.
- CMU's non-payroll spending for items such as instruction, research and operations equals \$167.5 million.
- Spending by CMU students on- and off-campus for room and board, books and supplies, apparel, and meals and entertainment totals \$380.5 million.

Beyond health care, the Michigan Economic Development Corp. has designated CMU's Center for Applied Research and Technology a Michigan SmartZone. The City of Mount Pleasant and CMU have developed a 300-acre technology park that includes an incubator and business accelerator, called CMURC, which houses 17,000 square feet of wet laboratories and 12,000 square feet of offices. CMURC leverages CMU's diverse capabilities to assist start-up businesses.

Designed to advance economic development by accelerating the success of entrepreneurs, startups and growing companies, CMURC offers hands-on expertise and CoWork opportunities to connect like-minded individuals. CMURC services include a competitive, three-phased scholarship program for early stage entrepreneurs, industry, market and feasibility analysis; product, manufacturing and supply chain development; business strategy and implementation; marketing services; and investor relations and

partnerships. More than 30 companies are active between feasibility and launch in this Right Choice Program.

III. Staffing and Enrollment

A. Full- and Part-Time Student Enrollment (Fall 2014):

Central Michigan University is one of the 90 largest universities in America. It is the fourth-largest university in Michigan, is within 1,000 students of the third largest.

Classification of Instructional Program (CIP)	Mount Pleasant Campus		Off Campus (MI)	
	Full time	Part time	Full time	Part time
Area, Ethnic & Cultural & Gender Studies	3	1	0	0
Biological & Biomedical Sciences	636	117	49	5
Business Management, Marketing & Related Support Services	2276	207	437	1393
Communication, Journalism & Related Programs	808	93	72	31
Computer & Information Sciences & Support Services	435	69	36	33
Education	1422	226	58	538
Engineering	226	11	10	2
Engineering Technologies/Technicians	150	15	25	13
English Language & Literature/Letters	117	48	13	6
Family & Consumer Sciences/Human Sciences	298	50	41	45
Foreign Languages & Literatures & Linguistics	51	17	1	0
History	96	27	6	2
Legal Professions & Studies	28	1	5	2
Liberal Arts & Sciences, General Studies & Humanities	5	5	0	1
Mathematics & Statistics	47	43	3	0
Multi/Interdisciplinary Studies	5	4	0	1
Natural Resources & Conservation	165	25	12	3
Health Professions & Related Programs	1259	72	119	275
Parks, Recreation, Leisure & Fitness Studies	658	150	87	62

10/30/2014

Philosophy & Religious Studies	25	4	1	0
Physical Sciences	160	83	4	3
Psychology	654	100	204	196
Public Administration & Social Service Professions	194	29	184	557
Social Sciences	538	62	68	30
Visual & Performing Arts	332	52	18	10
Undecided / Unsigned	7442	317	162	312
Total	18030	1828	1615	3520

B. Future Enrollment:

If one considers ONLY the size of Michigan’s high school graduating class, CMU’s overall enrollment would gradually decrease through the next five years:

<u>Year</u>	<u>Enrollment</u>
2015	23,945
2016	23,585
2017	23,420
2018	23,256
2019	23,187

However, CMU has completed a thorough enrollment management planning process and is implementing a number of strategies to maintain and grow its student population to benefit students, employers and the state as a whole. For example, with an original “stretch” goal of 3,300 for its fall 2014 freshman class, CMU actually enrolled 3,811 students, thanks to the whole-campus, collective efforts of its faculty and staff.

On behalf of students and families who invest in college, CMU is committed to maintaining a high caliber of students who have demonstrated an ability to be successful in college. CMU’s mean ACT score is 22.7; the mean high school GPA is 3.34. Both are slightly above the 2013 student profile.

Further, CMU has implemented several measures to increase retention and four-year graduation rates. These include a new Office of Student Success, additional academic advisors, and an online Advising Workbench that allows faculty and students to see how well they’re progressing toward graduation and what classes they still need to take.

CMU’s latest, six-year graduation rate, for fiscal year 2013, was 59.5 percent – up from 57.7 percent. That nearly 60 percent graduation rate is well above the 50.4

percent average of CMU’s Carnegie peers and the 50 percent graduation rate predicted for CMU students by U.S. News and World Report.

CMU was a national pioneer in distance learning, offering its first off-campus programs in 1971. At first, most of its programs were at the graduate level. Today, CMU’s Global Campus serves 3,029 undergraduate students, compared to 1,967 a decade ago. Many of these students take classes online, as today’s CMU Global Campus also is a recognized leader in classes available anytime, anywhere — delivering the flexibility students need.

C. Enrollment History: (Michigan Students Only)

Central Michigan University’s total enrollment has remained relatively stable for the past decade. As the data below show for Michigan-based enrollment, the range between CMU’s highest and lowest enrollments is 1,708 students — about 6.5 percent. Ninety percent of CMU’s on campus students today are from the state of Michigan.

Fiscal Year	FYES*	Fall Headcount		
		Mount Pleasant	Off Campus-MI	Unduplicated Total
2001-02	20,961	19,188	5,466	24,492
2002-03	21,307	19,380	5,384	24,594
2003-04	21,447	19,402	5,195	24,496
2004-05	21,431	19,792	4,929	24,550
2005-06	21,579	19,917	4,787	24,562
2006-07	21,356	20,025	4,177	24,033
2007-08	21,142	19,867	4,511	24,083
2008-09	21,529	20,246	4,507	24,348
2009-10	21,888	20,444	4,875	24,799
2010-11	22,522	21,290	5,169	25,583
2011-12	22,510	21,220	5,842	25,473
2012-13	21,694	20,504	6,196	24,744
2013-14	20,891	19,634	6,618	23,875
2014-15		19,858	6,691	24,138

* Based on 30 SCH for undergraduates

D. Staff/Student Ratios:

Classification of Instructional Program (CIP)	Student/Instr. Staff Ratio	Student/Admin. Staff Ratio
Area, Ethic & Cultural & Gender Studies	6.9	286.5
Biological & Biomedical Sciences	13.7	32.7
Business Management, Marketing & Related Support Services	21.1	99.7
Communication, Journalism & Related Programs	16.1	80.9
Computer & Information Sciences & Support Services	12.1	86.7
Education	15.0	67.8
Engineering	8.9	
Engineering Technologies& Engineering-Related Fields	11.5	26.4
English Language & Literature/Letters	12.5	116.5
Family & Consumer Sciences/Human Sciences	21.1	59.5
Foreign Languages, Literatures, & Linguistics	12.8	247.2
History	12.2	127.2
Legal Professions & Studies	19.0	81.4
Liberal Arts & Sciences, General Studies & Humanities	16.7	109.5
Mathematics & Statistics	17.7	124.8
Reserve Officer Training Corps		16.0
Multi/Interdisciplinary Studies	31.2	21.0
Natural Resources & Conservation	22.9	147.9
Health Professions & Related Programs	16.7	36.6
Parks, Recreation, Leisure & Fitness Studies	19.6	118.4
Philosophy & Religious Studies	22.1	172.8
Physical Sciences	15.6	58.5
Psychology	14.7	124.0
Public Administration & Social Service Professions	17.7	
Social Sciences	17.8	98.9
Visual & Performing Arts	10.9	61.9
Total	16.4	78.5

E. Future Staffing Needs:

Year	Fall Enrollment Changes	Additional Staffing Needs
2015	-193	0
2016	-360	0
2017	-165	0
2018	-164	0
2019	-69	0

This chart reflects staffing needs with current academic programs and projected enrollments based on Michigan high school graduating class sizes only. As noted earlier, the entire CMU campus is engaged in recruitment and retention efforts that are showing significant success. Additional academic programs would require instructional and administrative staff levels to be adjusted upward. For example, an occupational therapy program would require about seven full-time faculty and three staff. A respiratory therapy program would require about three faculty and two staff members; a master’s in public health will require three faculty and one staff member.

Average Class Size:

At CMU, class sizes remain small, giving students optimal opportunity to interact directly with their professors. Nearly 95 percent of CMU classes are taught by professional faculty rather than teaching assistants or graduate students. Students at CMU are more than a number; they’re known by name.

According to the annual National Survey of Student Engagement, 61 percent of CMU seniors say they have worked with faculty members on activities other than coursework. This compares to 53 percent of seniors at peer institutions and 35 percent of seniors at universities within our Carnegie class.

In many cases, even undergraduate students are able to do research in concert with their instructors. At larger universities, this hands-on experience typically is reserved for graduate-level students.

Course Level	2013-2014 Average Class Size			2014-15 Projected
	On Campus Avg. # of Stu.	Off Campus- MI	Overall Avg. # of Stu.	
<100	16	0	16	16
100-299	29	19	27	28

300-499	24	20	23	23
500-599	20	11	16	16
600 +	16	16	16	16

IV. Facility Assessment

A. A comprehensive Campus Master Plan, which addresses facilities condition, space utilization, utility infrastructure, land use, telecommunications infrastructure and capital planning, was completed July 2013. The comprehensive plan for the physical campus reflects and upholds the vision, priorities and initiatives established for CMU in its strategic plan. Attached is a summary description of CMU facilities. The university plans to further update the document to match the DTMB categories and have buildings with more than one 'type' of space broken down by percentage. This update will be incorporated into our next space utilization analysis.

B. Building and/or Classroom Utilization Rates:

A comprehensive utilization and space needs analysis was completed by Paulien and Associates as part of the master planning process in 2013. This study was completed in accordance with the Postsecondary Education Facilities Inventory and Classification Manual.

- Classroom Utilization: CMU's 180 classrooms are utilized an average of 34 hours per week, with an average student station occupancy of 63 percent. The average space per student station is 21 ASF.
- Teaching Laboratory Utilization: CMU's 102 teaching laboratories are utilized an average of 24 hours per week, with average student station occupancy of 77 percent. The average space per student is 54 ASF.
- Classroom utilization rates were studied for peak (M-F, 10-3) and off peak (M-F, 8-10 a.m., 3-9 p.m.) time frames as shown in the following charts:

Scheduled Classroom Use by Day and Time (Fall 2011)

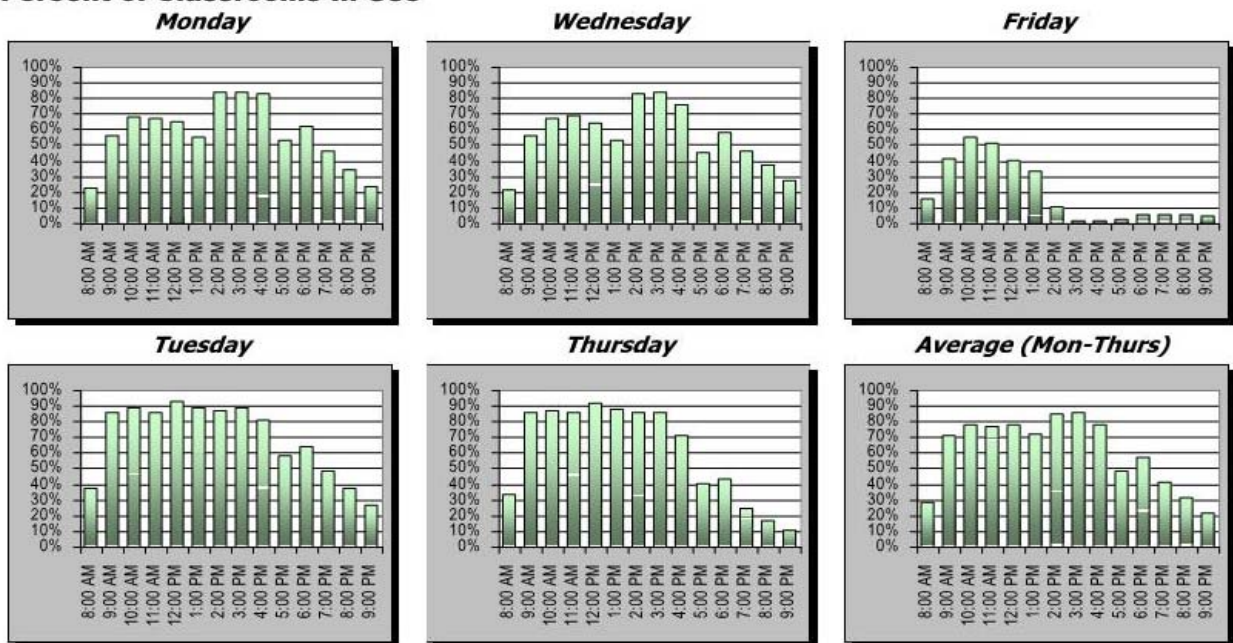
(Darker colors indicate a large percentage of rooms are scheduled.)

Time of Day	Monday		Tuesday		Wednesday		Thursday		Friday		Average*	
	Rooms in Use	% In Use	Rooms in Use	% In Use	Rooms in Use	% In Use	Rooms in Use	% In Use	Rooms in Use	% In Use	Rooms in Use	% In Use
8:00 AM	41	23%	68	38%	39	22%	62	34%	28	16%	53	29%
9:00 AM	100	56%	154	86%	100	56%	154	86%	75	42%	127	71%
10:00 AM	122	68%	160	89%	121	67%	156	87%	99	55%	140	78%
11:00 AM	121	67%	155	86%	124	69%	155	86%	91	51%	139	77%
12:00 PM	117	65%	167	93%	116	64%	165	92%	73	41%	141	78%
1:00 PM	99	55%	161	89%	96	53%	159	88%	61	34%	129	72%
2:00 PM	151	84%	157	87%	150	83%	154	86%	19	11%	153	85%
3:00 PM	152	84%	160	89%	152	84%	154	86%	4	2%	155	86%
4:00 PM	149	83%	146	81%	137	76%	128	71%	4	2%	140	78%
5:00 PM	96	53%	104	58%	82	46%	74	41%	6	3%	89	49%
6:00 PM	112	62%	115	64%	105	58%	80	44%	10	6%	103	57%
7:00 PM	84	47%	89	49%	84	47%	45	25%	10	6%	76	42%
8:00 PM	63	35%	69	38%	69	38%	30	17%	10	6%	58	32%
9:00 PM	43	24%	48	27%	50	28%	20	11%	9	5%	40	22%

Total classrooms = 180

* Based upon the consultant's experience, Friday is typically underutilized, therefore the average is calculated on Monday thru Thursday use.

Percent of Classrooms In Use

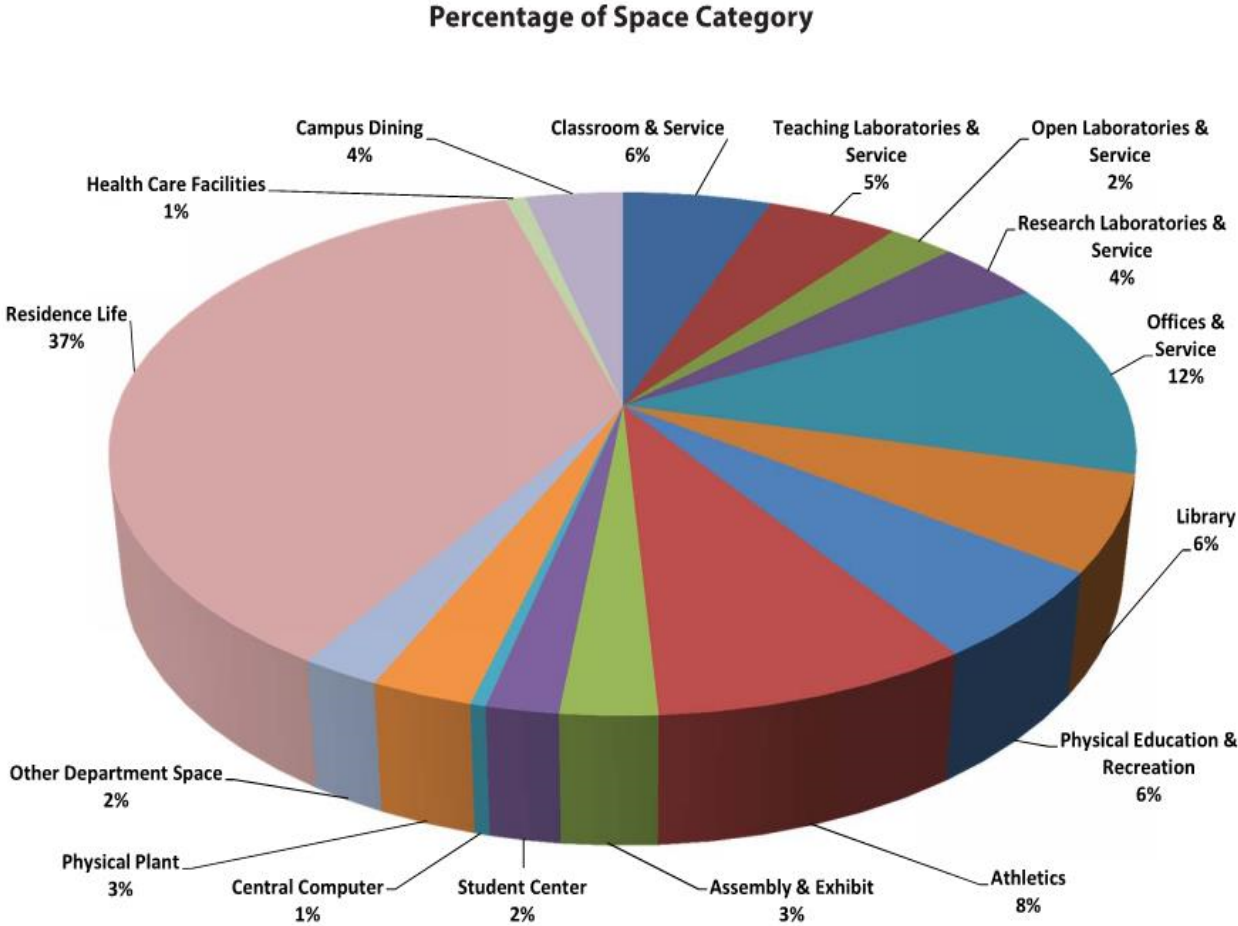


- C. Mandated Facility Standards: CMU meets general and minimum space requirements as noted in federal accreditation standards. This includes successfully meeting higher levels of space and equipment standards for specialized programs such as the physician assistant and physical therapy programs, biology and chemistry laboratories, speech and hearing clinics, performance spaces, library collections, and art exhibit spaces. Programs also meet the stringent, mandated facility standards of the National Association of Industrial Technology. In programs such as those in the health professions area,

CMU is at capacity as allowed by the standards and must add physical space in order to grow to serve more students and meet the increasing needs of Michigan residents and employers.

D. Functionality and Space Allocation:

Found in the Campus Master Plan, the following chart depicts the percentage of space on campus by category:



<i>Average age of buildings:</i>	General Fund	36.9 years
	Auxiliary	39.8 years
	All buildings	<hr/> 38.0 years

E. Replacement Value of Existing Facilities (Insured Value):

General Fund	\$901,183,008
Auxiliary	367,132,969
Total	<u>\$1,268,315,977</u>

F. Utility System Condition:

The 2013 campus master plan includes a facilities infrastructure assessment that evaluated each of the major systems in all of the buildings on CMU's main campus. Systems assessed included HVAC, electrical and domestic hot water.

The majority of CMU buildings have served the campus for more than 40 years. The buildings have been well maintained, are structurally sound and functioning reasonably well. In a number of cases, mechanical and electrical systems are functioning successfully beyond their projected useful lives. The Facilities Condition Index for the campus is 0.096.

The deferred maintenance needs identified as part of the Facilities Condition Assessment total \$129 million in repair, upgrade and replacement costs over the next 10 years for building assets valued at \$1.5 billion.

CMU has campus utility distribution system assets totaling approximately \$125 million.

1. City Water: CMU is working with the city of Mount Pleasant to improve on documentation of system age and our shared responsibilities for maintaining the distribution system.
2. Sanitary Sewage System: The 12.7 miles of sanitary sewer collection system, which is integrated with the city of Mount Pleasant system, is sufficient for the existing and future needs of CMU in Mount Pleasant.
3. Storm Sewer System: The 21 miles of storm sewer on CMU's campus are in generally good condition. CMU has completed maintenance of manholes and catch basins across campus as identified in the 2007 storm sewer assessment. Inspection of the 54" storm sewer, owned by the city of Mount Pleasant that passes under and near buildings in the campus core will require \$460,000 in maintenance in the next one to four years.
4. Electrical Distribution System: Ongoing assessments during planned electrical shutdowns have identified immediate repair and long-term repair requirements. A short circuit analysis and an arc flash study have been

completed. The campus electric distribution system is in generally good condition. The campus has a redundant electricity supply from Consumers Energy.

5. Steam and Condensate System: The campus has 7.05 miles of steam and condensate lines located both within our 3.5 miles of utility tunnels and direct-buried. These lines are generally in good shape. In 2014 a second steam and condensate connection to campus was made to provide redundant supply and to increase capacity to the southern portion of campus. A 16 inch steam and an 8 inch condensate line were installed.
6. Chilled Water System: The 9.7 miles of chilled water lines, supply and return, are in generally good condition.
7. Central and Satellite Energy Facilities: These facilities house 1 wood boiler, 3 gas boilers, 1 steam turbine, 1 gas turbine, 6 electric chillers and 5 steam absorption chillers and are in generally good condition. The Central Energy Facility has a Facilities Condition Index of 0.02 and the Satellite Energy Facility, which was built in 2006 has a Facilities Condition Index of 0.00.

G. Facility Infrastructure Condition:

1. Roads: Roads are generally adequate. Repairs are made on a planned basis. An all-campus pavement condition study was completed in 2004, with follow-up annual inspection by CMU personnel. Several campus roads, particularly West Campus Drive, serve significant city and county/state traffic.
2. Parking lots: Central Michigan University has 92 acres of parking lots with 11,058 spaces. Parking lots were inspected and condition rated in 2007; lots are on a specific schedule for sealing, crack filling and overlayment.
3. Parking structures: None
4. Sidewalks: Central Michigan University has nearly 29 miles of sidewalks, and work occurs every year to replace and repair designated portions. With increasing reliance on bicycles, the university recognizes that bike paths are needed to separate pedestrians and bicyclists.
5. Bridges: None

6. Computer and telephone lines: There are two infrastructure components:
 - a. A new CMU Data Center began operations in July of 2013. The facility was designed to address vulnerabilities and inefficiencies in the present data center and should serve the university's needs well into the future. Many of the university's IT assets have already been moved to the new facility, and work continues to transition the remaining assets. Networking, electrical and physical security systems will be augmented and enhanced during the current fiscal year.
 - b. The university's network infrastructure has been strengthened in order to transition the existing Cable TV and traditional voice telephone systems to Voice and Video over Internet Protocol (VOIP) solutions. Initial phases of a plan for converting traditional telephone and cable technologies to Internet Protocol-based ones are funded and proceeding.

H. Adequacy of existing utilities and infrastructure systems to current and 5-year projected programmatic needs:

As part of the 2013 campus master plan, the overall facilities condition assessment, utility infrastructure assessment, land use, and capital planning work products have identified the following utility and infrastructure upgrades that are required to support current and 5-year project programmatic needs.

1. East Utility Loop: Detailed modeling of the existing steam and condensate systems, including future campus needs, determine that 16" steam and 8" condensate lines to connect South Main and Center Main Tunnels are required. This connection is needed for system redundancy and reliability and to provide capacity for current and future buildings included in the five- and 10-year capital plan. This \$5.4 million project was approved by CMU's Board of Trustees in July 2013. Construction was completed in October 2014 with an actual cost of \$4.2 million.
2. Cooling Tower Addition: Install an additional cooling tower to satisfy the load of the existing 1,250-ton absorption chiller located in the Central Energy Facility. This \$560,000 project has been approved and will be on-line in time to support peak 2015 demands.
3. Storm System Upgrade: Ongoing observation of the storm system during periods of intense rain and associated engineering studies has determined a section of the storm sewer on campus is undersized and requires a \$1,390,000 upgrade.

4. Although the campus network is currently running well and reliably, IT strategic planning has determined a need for approximately \$10 million in deferred maintenance investment across the CMU network before FY 19.

The rest of the utility and infrastructure systems have the capacity necessary to support current and five-year needs.

I. Enterprise-wide energy plan:

Central Michigan University takes great pride in being a national leader in sustainability and the conservation of energy and other resources. The Princeton Review's 2013 Guide to Green Colleges ranks CMU in the top 15 percent of universities in the U.S. The ranking recognizes CMU's energy conservation initiatives, which save the university nearly \$3 million annually.

A few examples of CMU's commitment to sustainability include:

- CMU since 2006 has upheld a firm policy that all new buildings, additions and major renovations would be designed, constructed and certified under the LEED Green Buildings Rating system.
- The newly opened Graduate Student Housing complex has been awarded LEED Platinum certification, the first such homes project in the Midwest, with cost savings of \$52,000 or 36 percent energy savings annually.
- Solar panels installed on CMU's Education and Human Services Building, which received CMU's first LEED certification, provide 60 percent of the facility's heat. The building was granted gold LEED status and has received numerous awards including the 2011 Green Building of the Year award from CAM Magazine, 1st place Regional Technology Award for Outstanding Design Innovations and Successful Achievements of 2011 from the American Society of Heating, Refrigerating and Air Conditioning Engineers, and the 2010 Sustainability and Innovation Award —Educational Design Showcase Award from College Planning and Management.
- CMU residence halls have been retrofitted with 4,681 radiator valves, resulting in savings of \$227,500 annually.
- Campus ponds retain storm water used for irrigation.
- 99 percent of CMU's lighting fixtures use energy-efficient bulbs and exterior fixtures are being replaced with energy-efficient LED fixtures.
- CMU has received more than \$626,000 in combined rebate checks from Consumers Energy and DTE Energy since 2009.

- CMU ranked 47 out of 180 schools nationwide in waste minimization during the 2012 Recyclemania competition.
- CMU’s utility budget has been static for six years, with the bulk of savings coming from energy-conservation measures.

The list of energy reduction projects at CMU is endless. In the academic setting, environmental studies and programs related to conservation of natural resources are offered in biology, business, chemistry, physics and outdoor recreation among others.

CMU has established an Institute of Sustainable Systems and a Campus Sustainability Advisory Committee that help advance sustainability on campus through a number of initiatives. At least three other student groups have formed to promote and help create a university-wide culture of sustainability and conservation. Under their guidance, programs such as composting, a campus garden and an expansion of recycling have been launched.

Facilities Management has played a significant role in shifting conservation consciousness at CMU. Geothermal energy is used to heat and cool the university’s academic center on Beaver Island. All diesel fuel on campus has been converted to B20 biodiesel, and water-conserving aerators and discs have been installed on 4,500 faucets across campus.

In addition, CMU has undertaken an effort to Retro Commission HVAC systems in existing buildings. To date, 22 buildings have been retro commissioned with improvements delivering more than \$427,000 in annual energy savings.

From cleaning supplies used to the approximately 2,700 small- to mid-size recycling containers and more than 30, 18-yard roll-off recycling containers, CMU is at the forefront of the sustainability movement.

J. Land Owned by the University:

Improved (landscaped)	579.58 acres
Unimproved	1,179.15 acres
`Total	<u>1,758.73 acres</u>

The Land Use Study completed as part of the 2013 Campus Master Plan confirmed that capacity exists to meet immediate and long-range (100 year) future demands. CMU may need to change some of its land use strategies such as migrating to parking structures or increasing building density, however there is currently

sufficient land to support the university’s needs for the next 100 years. Furthermore, understanding the long-term land use plan will allow CMU to make short-term building decisions with the confidence that we are doing what’s right for the future of CMU.

- K. State Building Authority: Central Michigan University has three buildings obligated to the State Building Authority. The buildings include: Park Library, The Herbert H. and Grace A. Dow Health Professions, and Education and Human Services Building. The expiration dates of the State Building Authority leases are shown in the table below:

Building	Proposed Lease Expiration Date
Library	04/01/2037
Health Professions	11/01/2040
Education and Human Services	12/01/2044

V. Implementation Plan

- A. Prioritized Major Capital Projects Requested:

As part of the campus master plan, a 10-year capital plan project list was approved by the CMU Board of Trustees in July 2013. This list was developed by a cross-campus team of faculty and staff based on input from thousands of on-campus and community stakeholders. The CMU Center for Integrative Health Studies is on that 10-year capital plan and was selected as CMU’s Fiscal Year 2015 Capital Outlay Project based on student and state needs. Student demand for these programs is high and is not met by Michigan’s higher education system. This, in turn, leaves critical gaps in the delivery of health services across the state. What’s more, expanded and new health care academic programs can be facilitated by space constructed with a moderate investment. For more detail, please see the attached Capital Outlay Project Request Form.

- B. Impact of Addressing Deferred Maintenance and Structural Repairs: The 2013 Facilities Condition Assessment of buildings on CMU’s main campus identified \$129 million in projected repair, upgrade and replacements costs ideally implemented during the next 10 years. In addition, deferred maintenance funds will be required to maintain the utility distribution systems valued at \$125 million and site infrastructure valued at \$45 million.

- C. Status of Ongoing SBA Projects: Construction of the \$89.4 million Biosciences Building began in July 2014 with substantial completion scheduled in September 2016. With classes beginning January 2017, this project takes a significant step in addressing CMU's 54 percent space deficit for academic research laboratories and services as identified in the 2013 utilization and space needs analysis.
- D. Rate of Return on Planned Capital Expenditures: Increased enrollments through the CMU Center for Integrative Health Studies would generate tuition and auxiliary service dollars across campus, through University Program required courses as well as major courses. Most importantly, the new programs would add critically needed health care providers across the state, improving the health and well-being of Michigan residents as well as contributing to the state's economy.
- E. Alternatives to New Infrastructure: Addressing health care education specifically, the traditional method for course delivery has been face-to-face. This type of instruction requires great amounts of classroom and laboratory space. During the last decade, a number of CMU health care disciplines have shifted gradually toward a hybrid model in which some of the content also is delivered using distance learning technologies. When considering the programs that CMU believes will fit best in the new Center for Integrated Health Studies, the hybrid face-to-face and online model will be used. Indeed, in considering space for the requested infrastructure, we are planning the dual delivery. CMU's plan at this point is to introduce new programs as face-to-face and then, over time, migrate content to an online mode. Under all circumstances, laboratory sessions will be delivered face-to-face. In the health care education world, this has been shown to be the best delivery mode.

As indicated in previous sections, CMU anticipates including infrastructure space for components of information science (specifically for health care informatics) and, possibly, biomedical engineering in the biomechanics realm. The intent is to leverage interaction between students and faculty involved in direct health care delivery (from physical therapists to audiologists to physician assistants) and those in informatics and engineering. By establishing these links in the education venue, CMU will build the connectivity that fuels excellence among health care teams in hospitals and in community health. This type of team formation requires face-to-face interaction at least at the initiation, and hence the requested infrastructure is critical for optimal program success.

F. Maintenance Schedule for Major Items:

As defined in the 2013 facilities condition assessment, priority areas for major maintenance are:

- Repair/improve life safety systems (all meet code; this work would take us forward voluntarily)
- Protect the building envelope
- Mechanical, electrical, plumbing, including HVAC
- Utility infrastructure

Therefore major maintenance spending projections are as follows:

	2015	2016	2017	2018	2019
Life Safety	\$2,900,000	\$1,000,000	\$2,900,000	\$1,000,000	\$1,000,000
Building Envelope	\$1,500,000	\$1,500,000	\$1,500,000	\$1,000,000	\$1,000,000
MEP	\$800,000	\$1,800,000	\$800,000	\$2,300,000	\$2,300,000
Utility Infrastructure	\$400,000	\$900,000	\$400,000	\$1,000,000	\$1,000,000
Other	\$100,000	\$500,000	\$100,000	\$400,000	\$400,000
Total	\$5,700,000	\$5,700,000	\$5,700,000	\$5,700,000	\$5,700,000

G. Non-Routine Maintenance:

For 2010 - 2013, CMU allocated \$5.7 million toward deferred maintenance. In fiscal year 2014, an additional \$1.3 million in one-time funds was budgeted for roof replacement, making the total budget for deferred maintenance \$7 million. Funding for deferred maintenance comes from the institution's capital budget, which is funded by Auxiliary Services, Parking Services and a general fund allocation of \$2.8 million. Since 2008, CMU also has invested \$5.2 million renovating and upgrading 88 individual classrooms and five auditoriums.

Lewiston, MI - Elk Hill									Public Broadcasting	1975								
Lincoln, MI - WCMB-FM									Public Broadcasting	1997								
Mt. Pleasant, MI #1 - South Campus									Public Broadcasting									
Mt. Pleasant, MI #2 - South Campus									Public Broadcasting	1996								
Mt. Pleasant, MI #3 - PBC Monopole									Public Broadcasting	2008								
Mt. Pleasant, MI #4 - Chippewa River			64						Public Broadcasting	1980								
Saint Helen, MI - Indian Springs	6137 N. Quarterline Rd.	384	21.57	\$	8,282.88				Public Broadcasting	1975	39		Off Campus	F				
Sault Saint Marie, MI - WCMZ-FM	Sugar Island	384	99.72	\$	38,292.48			529	Public Broadcasting	1966	48	1972, 1979	F	F				
Freesoil, MI - WCMW-TV/Manistee									Public Broadcasting									
Sterling, MI - WWCW-FM			288						Public Broadcasting	1989								
Manistee,TV 21 Building 1 (PBS)		384	21.57	\$	8,282.88													
Manistee,TV 21 Building 2 (PBS)		288	21.57	\$	6,212.16													
Manistee,TV 21 Building 3 (PBS)	600 N. Hubbard Lake	2	123.23	\$	246.46				Public Broadcasting Sites(off-campus)	1998	16		Off Campus					
Oscoda WCMB 95.7 (PBS)		576	46.58	\$	26,830.08			463	Miscellaneous	1987	27		H	F		No		1
PBS Generator Building			524															
Bay City, WUCX 90.1-FM (PBS)			288															1
T.V. Antenna & Equip. Bldg. (PBS)	8513 E. Traverse Hwy.	576	190.92	\$	109,969.92				Public Broadcasting Sites(off-campus)	1981	33	1981	Off Campus	F				1
Traverse City, Ch 46 (PBS)		96	16.53	\$	1,586.88			2,272	Miscellaneous	1994	20		H	F				
Biology/PBS Storage Facility			2,315															
PBS Bldgs/Towers Leased by CMU																		
Baldwin, MI	7584 US23 North	180	Leased						Public Broadcasting Sites(off-campus)									
Cheboygan, MI			Leased						Public Broadcasting Sites(off-campus)									
University Center, MI	Traynor Rd.		Leased						Public Broadcasting Sites(off-campus)									
Goetzville, MI	3399 Wressell Rd.		Leased						Public Broadcasting Sites(off-campus)									
Harbor Springs, MI FM 103.9			Leased						Public Broadcasting Sites(off-campus)									
Harrison, MI		80	Leased						Public Broadcasting Sites(off-campus)									
Kalkaska, MI		800	Leased						Public Broadcasting Sites(off-campus)									
Guilford Twp., MI			Leased						Public Broadcasting Sites(off-campus)									

BUILDINGS UNDER CONSTRUCTION

East Campus - Saginaw Site Covenant Education Building - 1632
 Anspach Hall Student Lounge Addition 3,358
 Biosciences Bldg. 1455 Calumet Ct. 50,107

Barstow Property Art Studio	3321 W. Chippewa River	1,150	217.39	\$	250,000.00
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LAND DATA	
Main Campus	
Improved (Landsaped and maintained)	564 acres
Total Main Campus	871 acres (more or less)
Beaver Island	
Biological Station	130 acres (more or less)
Egbert Property (adjacent to Biological)	80 acres (more or less)
Miller's Marsh	230 acres (more or less)
New Property (next to Miller's Marsh)	40 acres (more or less)
Hindes House	4.01 acres
Boathouse	0.2 acres (more or less)
Viets Woods	45.79 acres
Barstow Property	3.9 acres (more or less)
President's Residence -1214 Forest La	0.47 acres
Neithercut	252 acres (more or less)
Sterling	5 acres (improved)
Barryton	40 acres (unimproved)
Barryton	2 acres (improved)
SW corner Broomfield & Crawford (N	54.36 acres (unimproved)