

# Northwestern Michigan College



## Five-Year Capital Outlay Plan Fiscal Year 2026

**Approved by the**  
NMC Board of Trustees  
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**NORTHWESTERN MICHIGAN COLLEGE  
FIVE-YEAR CAPITAL OUTLAY PLAN  
FISCAL YEAR 2026**

Northwestern Michigan College (NMC) was the first comprehensive community college chartered in the state of Michigan in 1951. Since its founding, NMC has provided quality, affordable access to higher education for learners of all ages and backgrounds. NMC is integrally woven into the economic, social and cultural fabric of the region, providing leadership and support for key initiatives that shape our communities and prepare our learners for rich and meaningful lives.

NMC provides programming at five principal sites in Traverse City:

- **Front St. Campus** located in Traverse City on East Front Street at the base of the Peninsula
- **Great Lakes Campus** located at the base of West Grand Traverse Bay
- **Aero Park Campus** located in the Traverse City airport industrial park
- **University Center Campus** located on Boardman Lake off of South Cass Street
- **Rogers Observatory** site located in Garfield Township a few miles South of Main Campus

## **I. Mission Statement**

### **Mission**

Northwestern Michigan College delivers lifelong learning opportunities to transform lives and enrich our communities.

### **Vision**

We aspire to be a global community where all learners unlock their full potential.

### **Values**

Our individual and collective efforts create the legacy of NMC. In order to achieve our mission, we are individually committed and responsible to live these values:

- **Learning:** We are lifelong learners; learning is foundational to a thriving community and is at the center of all we do.
- **Integrity:** We act with the highest degree of ethics, personal responsibility, fairness and openness ensuring that we match our actions with our words.
- **Collaboration:** We embrace co-creative solutions and celebrate the joy of working together, empowering each other and nurturing community partnerships for the benefit of our learners.
- **Respect:** We demonstrate mutual regard and appreciation for one another to assure a culture of trust.
- **Inclusion:** We foster belonging and build organizational capacity that celebrates diversity and promotes equity.
- **Innovation:** We are agile, imaginative and forward thinking, taking risks to meet future needs of the college and our communities.
- **Stewardship:** We practice stewardship by investing responsibly in the human, physical, financial and environmental resources entrusted to our care.
- **Excellence:** We commit to the highest standards of quality and service, and to exceeding the expectations of our learners and communities through continuous improvement.

## Purposes

To meet our mission, we are fully engaged in each of the following purposes, with the result that our learners meet their goals of being college-ready, transfer-ready, career-ready, and ready for lifelong-learning:

- Associate degree, certificate, and transfer education in liberal arts and sciences and occupational studies
- Career/occupational education and workforce development
- Bachelor degrees in select programs
- Cultural and personal enrichment
- Baccalaureate and graduate program facilitation
- Regional economic development

## Strategic Plan Initiatives

In order to accomplish NMC's stated Mission, Vision, and Purposes, organizational activities focus on achieving the following strategic goals:

- **Future-Focused Education:** Enhance offerings through flexible academic pathways, innovative instructional delivery models and relevant, hands-on educational experiences to empower global learners for the future.
- **Student Engagement and Success:** Develop and deliver comprehensive support services, robust engagement opportunities and a vibrant collegiate experience to foster learner success, goal completion and employability.
- **Diversity, Equity and Inclusion:** Cultivate an inclusive environment that fosters a sense of belonging and delivers equitable opportunities so all are able to thrive and succeed.
- **Community Partnerships and Engagement:** Enhance collaborations that advance community engagement, economic and workforce development and innovative opportunities for lifelong learning.
- **Institutional Distinction and Sustainability:** Leverage distinctive programs that strengthen institutional sustainability and expand global connections for our learners and communities.

## II. Instructional Programming

At NMC, you'll find more than 60 areas of academic study, all of which feature dedicated faculty, small classes and personal attention. NMC offers transfer courses, bachelor's degrees in select areas, two-year associate degrees and professional certificates, with access to BA and advanced degrees through our University Center partners. To provide flexible learning options and more accessibility for our students, we offer a variety of traditional in-person, online, and hybrid courses.

As part of our capital outlay planning process, we assess our current academic programs, ongoing College initiatives, regional and national workforce needs, and trends in delivery to help determine our academic facilities and infrastructure needs. Section II-A addresses current academic programming and future growth.

**II-A. Describe existing academic programs and projected programming changes in the next 5 years in so far as academic programs are affected by specific structural considerations (i.e. laboratories, classrooms, current and future distance learning initiatives, etc.)**

See this link for an A-Z listing of NMC's current programs: <https://catalog.nmc.edu/programs-az/>

### **New and Projected Programming Changes**

Changes to NMC's programming and other offerings are influenced by the following factors:

- Current and projected enrollment and industry trends
- Community workforce needs
- Contributing to the economic development of our region
- Improving the success rates of our learners
- Ensuring the fiscal stability of the College

NMC has developed the following certificates and programs during the last five years:

- Culinary-Baking and Pastry Arts—Level II Certificate (Fall 2022)
- Engineering, Associates of Science in Engineering (Fall 2021)
- Surveying—AAS (Fall 2019)
- Maritime Culinary Certificate (Fall 2023)
- Uncrewed Aerial Systems (UAS) - AAS (Fall 2023)
- Water Quality and Environmental Technology—AAS (Fall 2023)
- Nursing Articulation Agreement—ADN to BSN (Fall 2023)
- Esports Management - Level I Certificate (Spring 2024)
- Computer Support Specialist - Level I Certificate (Spring 2024)
- Sports Performance Nutrition Certificate (Fall 2024)

As the College assesses current and future programming, we consider the related capital, structural, and technology needs to ensure we can deliver every program effectively on our campus facilities and/or virtually. Our Strategic Plan contains five Strategic Plan Initiatives (See Section I) and twenty-three underlying strategic objectives. The following are examples of objectives relevant to the College's capital planning considerations:

#### **Future-Focused Education**

- To increase the College's proportion of online courses from 28% to 35% by 2024.
- Create six accelerated course pathways in multiple academic disciplines by 2024.

#### **Student Engagement and Success**

- To Increase the percentage of area high school graduates attending NMC by 3% by 2024.
- To increase enrollment by 10% in age categories 21+ by Spring 2024.
- Enhance student completion support to increase the 3-year completion success rates by 2025
- Increase the percentage of students using success coach services by 3% by 2025.

**Institutional Distinction and Sustainability**

- Aviation will execute its multi-phase expansion plan to increase program enrollment by 25% by 2026. The multi-phase expansion plan includes a large expansion of our hangar.
- Our Great Lakes Maritime Academy and Great Lakes Culinary Institute have instituted a maritime culinary certificate. The first cohort graduated in 2024.
  - We intend to use the galley aboard our maritime vessel *T/S State of Michigan* as our primary learning lab. As this program grows to its potential, we plan to construct a simulation galley lab in our Great Lakes Building.

**II-B. Identify the unique characteristics of each institution’s academic mission.**

Northwestern Michigan College is recognized by members of its service district and various accrediting agencies for unique characteristics and special programming that are a part of the fabric of the college.

*These include:*

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|--|---|
| ● Aviation Division (Pilot Training Program) | ● International Partnerships                |
| ● Audio Technology Program                   | ● Joseph H. Rogers Observatory              |
| ● Center for Instructional Excellence        | ● Math Center                               |
| ● Child Care Center on Campus                | ● Michigan Energy Demonstration Center      |
| ● Commitment Scholarship Program             | ● Military and Veteran Services             |
| ● Construction Technology Program            | ● Marine Center                             |
| ● Denno's Museum Center (DMC)                | ● NMC Foundation                            |
| ● Dental Assisting Program                   | ● Online Nursing                            |
| ● Early Colleges                             | ● Outdoor Sculpture Collection              |
| ● Engineering Technology                     | ● Phi Theta Kappa                           |
| ● Entrepreneurial Studies                    | ● Remote Operated Vehicle Training (Marine) |
| ● Esports                                    | ● Service Learning                          |
| ● Extended Educational Services              | ● Student Success Center                    |
| ● Global Endorsement                         | ● Surgical Technology Program               |
| ● Great Lakes Culinary Institute             | ● Tutoring Center                           |
| ● Great Lakes Maritime Academy               | ● Uncrewed Aerial Systems Training          |
| ● Great Lakes Water Studies Institute        | ● University Center                         |
| ● Health Education Institute                 | ● Writing and Reading Center                |
| ● International Affairs Forum                | ● WNMC-FM Radio Station                     |
| ● International Services                     |   |

Below are brief descriptions for some of these unique characteristics and special programs.

**Aviation Division**

Established in 1967, Northwestern Michigan College has a proven background in delivering safe and effective flight training to generations of pilots. Today, the Aviation Division operates an FAA approved Part 141 training facility, has established exclusive training agreements with (5) international universities to provide flight training in Traverse City, and offers extensive hands-on training on several different uncrewed Aerial Systems platforms.

The professional pilot program currently operates at maximum student capacity, training 125 full time students in a diverse fleet of 15 aircraft valued at more than \$7.5 million. The Aviation Division has

established numerous hiring partnerships with regional airlines, allowing graduates direct routes to employment opportunities.

In 2011, the Aviation Division launched Michigan's first uncrewed Aerial Systems (UAS) program, with focus on preparing UAS operators to meet the needs of a rapidly growing industry. In 2015, NMC was named one of the *15 Best Drone Training Colleges in America* and was the only community college listed in the top 10.

One of the 2015 recipients of the Community College Skilled Trades Equipment Fund (CCSTEF), the UAS Department now maintains a fleet of commercial-grade uncrewed aircraft designed to meet the training and experience demands of today's (and tomorrow's) employers.

### **Great Lakes Maritime Academy**

Established in 1969, the Great Lakes Maritime Academy (GLMA) is one of only seven maritime academies in the United States that is federally regulated under 46 Code of Federal Regulations 310. These regulations allow for a holistic approach which allows GLMA to accept a cadet with no prior seagoing experience and within four years he or she can complete both a bachelor's degree and earn a merchant mariner's credential valid for service on large tonnage vessels which are in ocean or Great Lakes service.

All GLMA cadets must complete one course in Naval Science which is delivered by active duty Naval personnel. Those cadets that are accepted into the U.S. Navy's Strategic Sealift Officer's program complete an additional two classes in Naval Science, earn a commission as a Naval Officer, and are awarded \$32,000, by the U.S. Navy, over the course of their four years at the academy.

In August 2002 the U. S. Maritime Administration (MARAD), at the request of Michigan's Governor, transferred operation of the *USNS Persistent (T-AGOS-6)* to GLMA where she was rechristened the *T/S State of Michigan*. Since that time the vessel has been an integral part of the Academy's training program. The following are just a few examples of the value-added by the *T/S State of Michigan* vessel:

- Having the use of the training ship ensures that GLMA cadets can accrue requisite sea service required for graduation and licensure.
- GLMA has been able to ensure the curriculum meets both the U.S. law as described in 46 CFR, and also be in full compliance with the complex international treaty Standards for Training, Certification and Watchkeeping for Seafarers (STCW Code).
- By having cadets complete their first sea project on the *T/S State of Michigan*, they are fully versed in shipboard culture prior to being assigned a berth on a commercial vessel as part of subsequent sea project (cadets must complete three sea projects). This has greatly improved retention.
- The *T/S State of Michigan* serves as a dockside laboratory for courses of instruction in diesel engines, shipboard auxiliary systems, air conditioning and refrigeration, firefighting and damage control, stability, and navigation, just to name a few.
- Interdisciplinary uses of the ship being studied include collaboration with the Great Lakes Culinary Institute (GLCI). These collaborations have resulted in several graduates from GLCI earning Merchant Marine Credentials in addition to their Associate's degree, thus greatly expanding employment opportunities. The vessel's galley will also be used to provide a training lab for the College's maritime culinary certificate program launching in Fall 2023.

The Michigan Legislature passed House Bill 4496 enabling Michigan community colleges to offer a select number of baccalaureate degrees, among them a Bachelor of Science degree in Maritime Technology on December 13, 2012. The Governor signed the bill into law on December 27, 2012.

In April 2013, the NMC Board of Trustees authorized the college to offer the Bachelor of Science degree in Maritime Technology program and supported the administration to seek approval of the Higher Learning Commission to authorize the college to offer the degree.

In December 2023 , the United States Coast Guard reapproved the Academy's programs. It is now approved through January 2029 , and certified as meeting the requirements of the international treaty STCW Code. This includes the most recent amendment to the STCW Code.

### **Great Lakes Water Studies Institute**

The Great Lakes Water Studies Institute (GLWSI), located on the Great Lakes campus, delivers programs and conducts research directly related to the area's most important natural resource. Students may focus on multiple areas of water technology and science including water quality, environmental remediation, or may focus in marine technology including applied technical work in support of the marine industries involving the calibration, deployment, operation, maintenance, and management of marine technology assets, including data collection, processing and mapping, for use in the marine environment both offshore and onshore.

In fall 2015, the GLWSI officially launched NMC's third Bachelors of Science in Maritime Technology major in the area of Marine Technology. This program is unique to the United States and one of the only in the world and builds directly on the AAS marine technology program. Specific training emphasis includes remotely operated vehicles (ROV) and marine platforms, marine acoustics and sonar, marine data processing and project management. Multiple industry collaborations allow graduates a broad range of career opportunities. To date, all graduates of this program have found direct employment in the Marine Industry immediately upon graduation. The Great Lakes Water Studies Institute also offers professional development opportunities in sonar training for industry and government partners including the United States Army Corps of Engineers, Office of Naval Intelligence, and the National Oceanographic & Atmospheric Administration. Since 2015, ROV training at NMC has been certified through the Association of Diving Contractors International (ADCI).

The Great Lakes Campus site includes a water analysis laboratory for student experiments/labs, qualified environmental research organizations and university partners. Students work aboard the 56-foot *R/V Northwestern* or the 21-foot *R/V Hawk Owl* in Grand Traverse Bay, Lake Michigan and the inland waters of Michigan. The Great Lakes campus harbor also serves as a year-round laboratory where training occurs from NMC's pier. The GLWSI is also home to two advanced Remotely Operated Vehicle systems, multiple sonar systems, advanced GPS and water quality sampling equipment. Additionally, there is a 60,000 gallon indoor training tank located at NMC's Aeropark campus for year-round, climate-controlled operations.

In 2014, collaboration with Western Michigan University (WMU) led to the joint development of a bachelor's degree completion program in Freshwater Science and Sustainability. In September 2015, Northwestern Michigan College officially started delivery of the third Bachelor's Degree in Maritime Technology major in Marine Technology.

The GLWSI is involved in multiple Great Lakes research projects with university and government partners and also collaborates globally with multiple institutions in many areas of water and the marine environment. MOU's with institutions in China, Colombia, Costa Rica, Indonesia have generated additional water opportunities for students.

In 2023, GLWSI launched an AAS in Water Environmental Quality Testing technology designed to meet the growing workforce needs for supporting the restoration and remediation of impacted groundwater and other environmentally compromised sites.

### **Great Lakes Culinary Institute**

This program provides rigorous and concentrated study for those students who plan careers in the rapidly growing food service industry. The program's main emphasis is to prepare students for positions as entry-level chefs and kitchen managers. Consideration is given to the science and techniques associated with the selection, preparation and serving of foods to large and small groups. Students further develop their knowledge of food and guest service through internships at area restaurants, hotels and resorts. The program includes an Institute-run training restaurant, Lobdell's, which greatly enhances the level of restaurant experience of graduates. The facility provides five kitchen "laboratories" including Lobdell's, a training restaurant, which is a critical component of a top quality culinary program.

The GLCI is also pursuing collaboration with other learning opportunities. In an effort to enhance student retention, culinary certificate programs have been implemented. For years, the Culinary Institute has provided lifelong learning and professional development offerings in collaboration with other areas of the College. The expanded facilities, with its lakefront location, have been leveraged to create world-class food and wine events, open to the public. All events have served to showcase Michigan agricultural and value-added agricultural products.

The American Culinary Federation Education Foundation Accrediting Commission accredits Great Lakes Culinary Institute programs, one of only approximately 400 such schools to receive this program accreditation in the United States. In 2018, the Great Lakes Culinary Institute received a five-year program accreditation by the American Culinary Federation Education Foundation. Upon completion of the Great Lakes Culinary Institute program, students are eligible for certification through the American Culinary Federation.

The GLCI has also developed a maritime culinary certificate in partnership with our Great Lakes Maritime program. The certificate program became available in Fall 2023, and will provide high-earning opportunities for culinary professionals in the maritime industry.

### **Construction Technology**

During the 2009-2010 academic year, NMC received authorization to offer four new level I certificates and one AAS degree in Construction Trades. These certificates include HVAC/R installation and service, Electrical, Plumbing and Carpentry. For students that complete any one of these four certificates, we have developed appropriate construction trades courses to customize their degree requirements for the remainder of the trades courses and infuse the required general education courses to achieve the sixty four credits required to complete an AAS degree. In January of 2022, an audit of the construction technology program by the NCCER established a third party credential available to students enrolled in



the Electrical and HVAC programs. This credential is recognized nationally as both academic and experiential progress in the applicable trade. Additional trade areas, like carpentry, are being slated to also be included in this accredited NCCER program. Students in this program have the option to include a specialization in renewable energy with options in residential and light commercial solar PV, solar thermal, wind installation, including both net-metered and independent installations. A certificate in Programmable Logic Controls (PLC) has been developed and available to students since Fall 2014.

### **Engineering Technology**

In 2011, a new associate degree in Engineering Technology offered students a broad-based curriculum across all areas of technical education, preparing the graduates for emerging job markets and highly technical fields. The program is designed to allow students to focus on areas of interest or specialize in one of five technical specializations: Computers, Electronics, Marine, Robotics & Automation, and uncrewed Aerial Systems. In 2018, a new specialization was added to the degree pathway that is focused on Biomedical Equipment Technologies. Partnering with Leica Geosystems, an AAS degree in Surveying was added in 2019 to serve the growing demand for surveying technicians in the region.

Engineering technology education focuses primarily on the applied aspects of science and engineering aimed at preparing graduates for practice in that portion of the technological spectrum closest to product improvement, manufacturing, robotics, uncrewed systems, and engineering operational functions.

### **Parson-Stulen Building**

In 2015 Northwestern Michigan College was awarded a \$2.8MM grant from the State of Michigan in support of the Community College Skilled trades Program Fund (CCSTEP). \$2.1 MM dollars from the grant was used to purchase equipment and renovate facilities in support of the Colleges Engineering Technology, Marine Technology and Computer Technology programs. This included an advanced electronics lab and marine technology, 60,000 gallon indoor test tank, a state of the art remote operated vehicles, three uncrewed aerial platforms, and flight simulators.

### **Aero-Park Laboratories**

In 2011, NMC opened the Aero-Park Laboratories (APL) building at the Aero-Park Campus as a companion facility housing laboratories for construction technology, renewable energy, engineering technology and welding. APL is a 29,600 sq. ft. facility which allows a variety of configurations to accommodate large group lectures as well as individualized student space or small team project areas. The facility is LEED certified and equipped to support a high level of instructional technology requirements and welding facilities.

### **Audio Technology**

An associate program in applied audio technology/technician was approved in July 2012 to meet the needs of students entering the recording, editing, and live music engineering specializations of the music industry. At the core of the degree program are training and certifications in Logic-Pro (Apple) and Pro Tools (Avid) - the industry standard software for recording and editing. Students also have practical real-world experience in studio and live recording, sound design, composing, mixing, mastering, and live sound. All of the Audio Tech instructors are certified on various software, and also bring to their instruction their vast experience as performers and professionals in the music industry. NMC's Audio

Tech program remains on the cutting-edge of technology as the first program in the U.S. to possess new mixing and routing hardware.

### **Commitment Scholarship Program**

The NMC Commitment Scholarship Program was developed to encourage academically promising students with financial need to successfully complete high school and enter college. The program began in 1993, and has included more than 1,000 first-generation college students from 19 participating high schools. Each fall, 40-50 new students are inducted from the region to engage in activities that support successful educational attainment. The students, in partnership with the parents and high schools, commit to regular participation in the program activities, demonstration of good citizenship, and completion of high school with a minimum of a 2.5 grade point average.

### **On-Campus Residence Life Opportunities**

The Residence Hall Living/Learning program at NMC is one of ten residence hall programs offered at the community college level in Michigan. Student and professional staff provide peer social programs, educational seminars, and community service opportunities. The Residence Halls are alcohol/drug free zones except for designated suites in North Hall where all residents are over 21 and agree to special restrictions. Affordable housing is limited in the Traverse City area which is reflected in our growth in the number of students living in the halls and apartments in the past several years. Having reached capacity in three consecutive years, the college opened a new residence Hall in August of 2017 expanding overall capacity to 370. There are also 36 apartments on NMC's main campus which are consistently full with a waiting list.

### **Extended Education & Training**

Extended Education & Training provides three major programs to the community - Work & Career; Life Enrichment; College for Kids. Additionally, they provide four large areas of support to the college - recruitment, engagement with donors, cross-listed academic classes for the community, and college initiatives. On an annual basis, Extended Education & Training offers nearly 1000 continuing education, adult enrichment, and youth learning opportunities in multiple formats - online, hybrid and in-person, and annually serves nearly 3500 individual students.

Continuing Education Certificate programs available include Northern Naturalist and Global Certificates for Life Enrichment. For Work & Career programming, they offer certificates in Business Development, Eldercare, Google Data Analytics, Personal Trainer, Microsoft Office, Adobe Creative Suite, Quickbooks/Bookkeeping, Paralegal, Medical Assistant, Medical Billing & Coding, and Certified Nurse Assistant program which are in high demand with area employers. They also offer MIOSHA safety training, training in various computer/technology areas, and soft skills for professional development. Extended Education & Training engages with area employers to fill their custom training and retreat needs for a variety of topics including leadership, management, nutrition, culinary, and manufacturing skills.

- Work & Career
  - Skill-credentials & Certifications
  - Professional Development
  - Custom Training & Retreats
  
- Life Enrichment
  - Culinary
  - Fitness, Dance, Wellness, Yoga, Recreation
  - Global Certificate, Culture, Religion
  - International Tours
  - Music
  - Northern Naturalist Certificate
  - Writing & Communications
  
- College for Kids
  - Summer programs
  - School year programs
  - NMC Children's Choir

Extended Education & Training Provides College-wide Support:

- Recruitment
  - Offer “stepping stone” non credit classes like Welding Fundamentals, that can bring students over into credit programs
  - 12% of NMC students were College for Kids students
  - Marketing
    - Over 12K Enews subscribers
    - Over 2,500 social media followers
    - Catalog delivered 3X year to over 45,000 households each time
  
- Fundraising
  - 14% of Extended Education & Training students are donors to the college
  - Provide programming such as international tours to NMC's donor audience
  
- Cross-listed Class
  - Offer over 40 academic credit classes annually for community non credit enrollment
  - Contributes to the cost to educate model and enriches classrooms with diverse students
  
- College Initiatives
  - Benzie Annexation Process (expired in Sept. 2024)
  - College wide initiative grant writing & special programming

### **University Center**

The mission of NMC's University Center is to facilitate the delivery of high quality programs and course offerings beyond the associate degree to northwest Michigan residents as deemed desirable by the citizens of the region. The University Center is a unique partnership between Northwestern Michigan College and five participating universities. NMC offers associate degrees in over 40 liberal arts, health, business, education, and technical programs. The partnering universities offer courses required for the completion of the final two years of selected bachelor degree programs, complete master's degree programs in selected areas, post-bachelor and graduate certificates, specialized endorsements, and one doctorate. University Center partners include: Central Michigan University, Davenport University, Ferris State University, Grand Valley State University, and Michigan State University.

### **Global Endorsement**

Beginning in the fall of 2014, the college developed a cross-curricular endorsement for students who complete a variety of curricular and extra-curricular experiences that are recorded on an official college transcript. In part funded by the NMC Global Opportunity Fund, students take coursework, attend the college's Window on the World Week, Passport Student Lecture Series, and International Affairs Forum and even travel to international educational sites to receive credit towards this endorsement.

### **Dennos Museum Center**

The Dennos Museum Center builds community, sparks conversation, and inspires change for audiences of all ages through its exhibitions, programs, and the collection and preservation of art. The museum serves as the region's premier cultural center for NMC students and faculty, K-12 school groups, and the general public through a diverse exhibition and program schedule.

The Museum cares for and curates a selection of semi-permanent exhibitions drawn from more than 3,000 works of art, with strong holdings in [Canadian Inuit sculpture and prints](#), Midwestern regionalism, and Chinese and Korean contemporary artwork. Museum staff also oversee over one dozen outdoor sculptures installed throughout the NMC campuses.

Traveling exhibitions and loans from museums across the nation provide additional opportunities to connect faculty and students with object-based teaching and learning opportunities. Museum staff work with an advisory committee to curate exhibitions that directly support college initiatives connected to diversity and inclusion, interdisciplinary teaching and learning, global perspectives, contemporary socio-political issues of our time, and more. The museum—in the truest sense—is an opportunity for visitors to engage with artworks and artifacts that help us think about our role as globally minded citizens in the 21st century.

Additional facilities include the 367 seat Milliken Auditorium, which hosts a diverse series of lectures and performances throughout the year. The auditorium serves as a home base for the NMC Music Department, the International Affairs Forum, New Student Orientation, and College-wide programs and training opportunities.

### **Joseph H. Rogers Observatory**

The primary function of the Northwestern Michigan College's Joseph H. Rogers Observatory is to serve as the laboratory facility for NMC astronomy students. It also provides educational opportunities for the community. The 1,500 square foot building, with two observing domes, stands as an example of this area's commitment to education. Constructed completely with donated funds, the Observatory houses astronomical equipment utilized for both education and research. The Observatory hosts Open Houses for the general public throughout the year with over 5,000 visitors annually. The Joseph H. Rogers Observatory is one of fifteen sites in the National Network of Project ASTRO™, a K-12 science education outreach program, and one of three sites chosen to host Family ASTRO™.

### **Marine Center – Professional Development**

The Marine Center at Northwestern Michigan College provides comprehensive training solutions for the surveying and remote sensing industries. The focus of the programs is on the technical areas directly related to geospatial academic programs at the College: marine technology, surveying, engineering technology, and uncrewed aerial systems (UAS) programs. The Marine Center's focus is to meet workforce development needs within the targeted industry sectors (i.e. micro-credentialing, industry certifications, and competency-based training) using existing core technical capabilities and connections to the technical academic programs. Professional development and technical services associated with the NMC Marine Center programs continue to be an opportunity to raise awareness on key existing technical and academic programs at NMC, as well as provide a strong future revenue source.

### **The Hagerty Conference Center**

The Great Lakes Campus is also home to the Hagerty Conference Center. The Center provides a flexible, technology-equipped space to accommodate seminars, classes, and specialized training in support of all NMC programs. The site also serves as a venue for professional development seminars for regional, national, and international businesses in addition to weddings and other private events. This enables NMC to increase its role in bringing new learning opportunities and new visitors to the region, thus providing economic growth and quality of life improvements. It also promotes further integration of programs within NMC, and enables NMC programs to draw on resources from outside the area to augment its own program offerings.

### **Child Care Center**

In the summer of 2014, NMC partnered with Munson Healthcare to open a childcare center at the Oleson Center on NMC's main campus. NMC is a member of the 5toOne Initiative of the Great Start Traverse Bay Collaborative which has been working to create a comprehensive regional system for early childhood development programs. Munson Healthcare and Traverse Bay Area Intermediate School District (TBAISD) have also been included in these discussions and have been aware of our on-going concerns for NMC students as it relates to children's educational services. By partnering with Head Start and GSRP students who qualify are able to access free quality preschool services.

Key factors in this arrangement are two grant opportunities that provide a source of funding to pay for daycare services. The two grants awarded by the State of Michigan and available through TBAISD are the Great Start Readiness Program and Headstart. Munson allows families to call one week in advance to schedule time.

### **II-C. Identify other initiatives which may impact facilities usage.**

The College has a unique opportunity to renovate its Osterlin Building into an innovative student services hub and welcome center. The College's library was recently relocated from the Osterlin Building to its new home on the 2nd floor of the Timothy J. Nelson Innovation Center. The vacancy of the library in Osterlin creates space to move the College's admissions, financial aid, health services, experiential learning, and other student activities into a centralized space. Consolidating those services into the Osterlin Building would create a "Student Services Hub", allowing students to access all academic and financial support services in one building. We believe this strategy would have a positive impact on student retention and completion.

The College's Strategic Plan also specifically calls for the expansion of our Aviation Division. This distinctive program, one of two major flight schools in the State, is currently at capacity with a waiting list of over 100 students. The only key barrier to its growth is lack of hangar space and training planes. A 10,000 square foot expansion of the hangar space could accommodate 8 additional training planes; each new training plane can accommodate 7-10 students. The College recognizes this unique opportunity to help immediately address a looming workforce shortage in the air travel industry.

In the next five-year period, the College expects to significantly expand programming for nursing and other health occupations. Continued growth in this area will require investment in additional simulation and teaching facilities. As the College continues projects designed to increase persistence and credential completion, it is adding instructional support activities that have an impact on experiential and supplemental instructional space. Finally, the College is embedding within the curriculum a multi-disciplinary approach to learning desired by employers. These initiatives require large interactive space that can be reconfigured for multiple uses. The College's current buildings do not accommodate this demand; renovation and additions to existing college buildings are necessary to stay agile as an institution.

The current priorities for facilities planning are focused on the following:

- Addressing deferred maintenance on existing buildings
- Increasing flexible and accessible classroom space
- Increasing flexible and accessible office spaces
- Reducing energy usage and creating sustainable infrastructure
- Creating housing opportunities to attract students

#### **II-D. Demonstrate economic development impact of current/future programs.**

According to a 2024 study by the economic modeling firm Lightcast, NMC creates a significant positive impact on the business community and generates a return on investment to its major stakeholder groups – students, taxpayers, and society.

- The analysis shows that in FY2021-FY2022, operations and student spending of NMC together with the enhanced productivity of its alumni, generated \$204.5 million in added income, approximately equal to 2% of the GRP of the NMC Service Area, which is nearly as large as the Transportation and Warehousing Industry in the region.
- The impact of \$204.5 million is equivalent to supporting 3,106 jobs
- Average annual rate of return for NMC students is 20.3%. This equates to \$5.20 in higher future earnings for every \$1 students invest in their education at NMC.
- Taxpayers provided \$25.8 million of state and local funding to NMC in FY2021-FY2022. In return, taxpayers will receive an estimated present value of \$32.8 million in add tax revenue streaming from students' higher lifetime earnings

See **Appendix A** for an executive summary of our 2024 Economic Impact Study. Some specific examples of NMC initiatives directed at regional economic improvement are highlighted below.

### **Technical Workforce and Career Development**

NMC's Parson-Stulen Building houses a range of credit and non-credit programs that directly support training for key skills of high value to the region. Each major program area facilitates employer and community feedback through program Advisory Boards. In addition, faculty and staff participate in state, regional, and national organizations, and are directly engaged in research to help with development of appropriate programs and courses.

In collaboration with other workforce agencies and organizations, NMC has been able to respond to the need for incumbent worker training directly in the workplace, and in areas customized to employer needs. In addition, the technical workforce areas have prepared programs that can be quickly delivered to area communities where there is an identified need to prepare individuals for a specific labor pool. Recognized by the Governor's office in 2012, NMC is host to the Regional Entrepreneurial Collaborative – a partnership among NW Michigan Council of Governments, Small Business Technology Development Center, Score, Michigan Works, PTAK, Grand Traverse County Economic Development, Traverse Area Chamber of Commerce that supports collaboration between organizations to facilitate service for business development and expansion.

As part of the Extended Education Services department, NMC has been awarding industry recognized credentials meeting the demand of local employers. Custom training, designed specifically for the industry, has increased with EES educating over 200 employees of a local manufacturing facility. In addition, NMC has been working to blend credit and noncredit training making certificate achievement more attainable.

### **Michigan Manufacturing Technology Center**

NMC is home to the Northwest regional office of the Michigan Manufacturing Technology Center. The purpose of the MMTC is to strengthen the competitiveness of small to mid-sized manufacturers through training and consulting services primarily through Lean Manufacturing and strategy assistance. The MMTC is part of a national network through the Department of Commerce's Manufacturing Extension Partnership and part of a statewide network of five offices.

### **Michigan New Jobs Training Program**

Since authorization in 2009, NMC has been an active participant in the use of this economic development tool for community colleges. To date, NMC has developed contracts representing close to \$10.7M in associated training, with over 1148 jobs in sectors including advanced manufacturing, value-added agriculture (food processors, distribution and retail), healthcare, insurance and construction.

### **Great Lakes Maritime Academy**

The Great Lakes Maritime Academy (GLMA) cadets continue to experience 100% employment. This is partially due to the age of the maritime workforce on the Great Lakes which has resulted in numerous vacancies due to retirements. During the fall semester, recruiters from vessel operators and maritime unions visit the Academy weekly. Additionally, each cadet will complete three internships, two of which



will be on commercial vessels. These internships expose the cadets to different options, and allow the operators to see the quality of the cadets first hand.

### **Great Lakes Water Studies Institute**

GLWSI officially launched NMC's third Bachelors of Science in Maritime Technology major in the area of Marine Technology. This program is unique to the United States and one of the only in the world. Specific training emphasis includes remotely operated vehicles and marine platforms, marine acoustics and sonar, marine data processing and project management. Multiple industry collaborations allow graduates a broad range of career opportunities. The GLWSI also offers professional development opportunities in sonar training for industry and government partners who travel from around the world to participate in these training programs. ROV training at NMC is certified through the Association of Diving Contractors International (ADCI) which will draw additional personnel to our programs.

The Great Lakes Campus site includes a water analysis laboratory for student experiments/labs, qualified environmental research organizations and university partners. The GLWSI is involved in multiple Great Lakes research projects with university and government partners and also collaborates globally with multiple institutions in areas of water and the marine environment.

### **Tourism and Hospitality Industries**

Tourism and the hospitality industry are among the largest economic sectors in NMC's five county service area. The Great Lakes Culinary Institute directly supports that sector. There is a significant shortage of skilled professionals in this area. The Culinary Institute's ability to expand the programs that it offers is important to the area's economy.

### **Agribusiness**

Agriculture and viticulture are significant parts of the region's economy, eco-structure and quality of life. NMC has developed a successful and long-standing partnership with Michigan State University's Institute of Agricultural Technology to provide a series of technical specialties within NMC's associate of applied plant science. Students may select areas in applied horticulture, turf management, nursery management, and viticulture. In 2013, NMC and MSU's Institute of Agricultural Technology established a shared position, in collaboration with MSU's Department of Horticulture, as an innovative approach toward collaboration in employer outreach, student recruitment, and internship development. In 2014, this shared approach expanded NMC's capacity to provide specialized programming related to precision agriculture. This program continues today.

### **Healthcare**

The health industry is of critical importance to the citizens of the region and hosts the largest regional employer, Munson Healthcare. NMC's Health Occupation programs are critical suppliers to this industry, especially in the preparation of associate degree nurses and potential pathways to partnering with universities for a BSN program. Most recently, NMC has partnered with Munson Medical Center to offer Associate of Applied Science Degrees in Surgical Technology.

A successful strategy has been the development of the Health Education Institute, a partnership between Munson HealthCare and NMC that supports the coordination of community learning resources,

delivers continuing professional development to staff, and identifies areas for future collaboration in the preparation of health care professionals.

HEI has completed an extensive internal assessment of program impact with the recommendation to continue and expand the relationship as a shared approach to improving efficiency in professional development for staff, career program planning in the nursing program and related allied health areas. This relationship and collaboration continues with semi-annual meetings between the entities.

### **III. Staffing and Enrollment**

The following section responds to questions related to staffing and enrollment trends for NMC.

#### **III-A. Describe current full and part-time student enrollment levels and define how the programs are accessed by the student.**

Enrollment by program for the five previous fall semesters is provided in **Appendix B**.

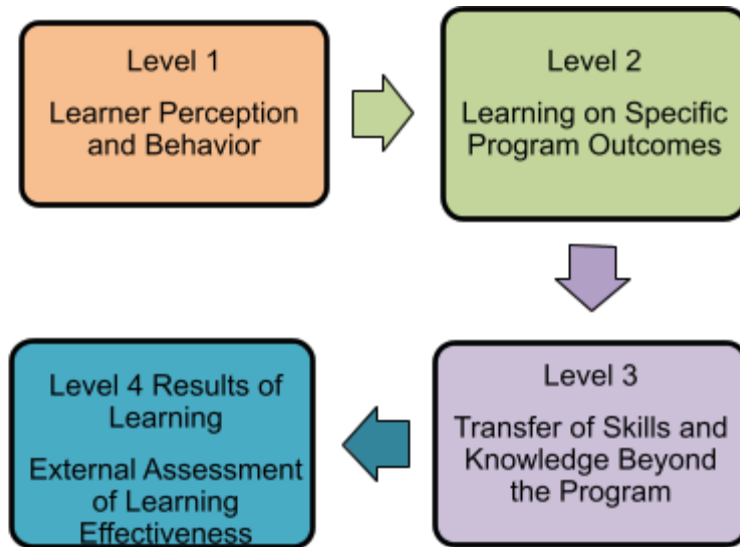
NMC uses multiple measures for student assessment of programs. NMC's annual program review process is the way in which we ensure that our programs and courses are up to date and effective. The premise of the program review is an annual evaluation of quantitative metrics and qualitative reflection on the prior year's activities. From this, goals for the program are set and action plans identified for the coming year. The program review documents and institutional metrics are made available to the college community on the College's internal website.

The metrics tracked in program review are categorized in four phases of evaluation: Learner Perception and Behavior, Learning of Program Outcomes, Skill Transfer, and Results (Figure 1.1).

- For Level One, Learner Perception and Behavior, the college measures learner assessment of the quality of the course instruction and of the course itself, and learner satisfaction with the program as a whole. Enrollment tracking and participation of non-traditional students in the program are measured.
- For Level Two, Learning and Program Outcomes, the program areas track course completion rates, enrollee success rates, graduation rates, student retention or transfer rates, and non-traditional student completion rates.
- For Level Three, Skill Transfer, NMC assesses student success on industry tests, such as licensure, and student placement in employment.
- Finally for Level Four, Results of Learning, program managers query their industry advisory groups for feedback on the curriculum, equipment, graduates, and program administration. NMC has targets or state baselines to measure progress for improvement. When any of these measures fall short of the college targets or state baselines, the program establishes goals and activities designed to improve its performance in these areas. Program areas create action plans to address deficiencies as part of the institutional annual planning and budgeting process.

#### **Figure 1.1. Outcome Framework for Academic Program Review**

(see next page)



(Source: Kirkpatrick, D.L. 1994. *Evaluating Training Programs: The Four Levels*. San Francisco, CA: Berrett-Koehler.

### III-B. Evaluate enrollment patterns over the last five years

The pandemic had a negative impact on College enrollments across the country. NMC had seen mostly flat enrollment since Fall 2020 and addressed this negative trend by seeking to increase flexible learning options, increase marketing efforts focused on our distinctive programs, and adapt our programs to the needs of our communities. Starting in Fall of 2023, NMC has had four consecutive semesters of increased enrollment.

See **Appendix B** for enrollment by program over the last five years.

### III-C. Project enrollment patterns over the next five years (including distance learning initiatives).

The College has experienced four consecutive semesters of enrollment growth but many factors influencing enrollment are still waivering following the pandemic. Census data indicates that the traditional age student population (18-20) will continue to decline through 2030. Community colleges may see an increase in enrollment if we experience a recession, and students return to higher education to learn new skills or trades. A variety of factors, including the state's new Community College Guarantee, may also spur enrollment growth.

We continue to promote the strong academic foundation that Northwestern Michigan College provides students as they complete select bachelor's degrees offered by NMC and their associate degrees for transfer to 4-year colleges and universities, while also highlighting the cost benefit and value students and families realize by attending a community college. Enrollment remains very strong in a number of key programs (i.e. aviation, maritime). In addition, we are promoting two additional Bachelor of Science degrees in Maritime Technology; Marine Technology and Power Systems. As the State focuses on economic growth, new and enhanced job skills and transfer education will remain as key objectives.

We believe one of the largest potential for increases in enrollment growth is through dual enrollment and adult students seeking to enhance their job prospects. NMC is well positioned to offer courses and programs which will capture these audiences. **NMC currently has early college partnerships with Traverse City Area Public Schools and Northwest Educational Services, and The Greenspire School in addition to dual enrollment agreements with a variety of high schools in the area.**

**High School Student Enrollment Comparison**

| <b>Academic Year</b> | <b>High School Students Enrolled</b> | <b>% of Total Enrollment</b> | <b>% change from PY</b> |
|----------------------|--------------------------------------|------------------------------|-------------------------|
| Fall 2020            | 426                                  | 13.1                         | +0.6                    |
| Fall 2021            | 412                                  | 12.5                         | -0.6                    |
| Fall 2022            | 387                                  | 12.5                         | 0.0                     |
| Fall 2023            | 465                                  | 14.7                         | +2.2                    |
| Fall 2024            | 470                                  | 14.4                         | -.3                     |

To strategically support these efforts NMC has participated in the Michigan College Access Network (MCAN) and Local College Access Networks (LCAN). We collaborate with these organizations providing presentations and face to face support for students and their parents or guardians in order to assist them as they complete college applications, the Free Application for Federal Student Aid (FAFSA) and college scholarship applications.

NMC also continues to expand existing and new relationships with colleges and universities in other countries such as China, Costa Rica, South Africa and the UK for the purpose of program expansion and student exchange opportunities.

**III-D. Provide instructional staff/student and administrative staff/student ratios for major academic programs or colleges**

NMC has a standing practice of evaluating all position vacancies for opportunities to distribute work differently, assess the relevance of a service level, and to identify areas in which partnerships may provide options for joint appointments or other creative approaches to management of personnel costs.

As an example, NMC and Michigan State University's Institute of Agricultural Technology (IAT) developed an MOU to share equally in a replacement position serving NMC's Applied Plant Science degree program, which uses IAT's specialty agriculture certificates. This has allowed funding for a full-time position.

Based on fall student, faculty and staff headcounts, ratios were as follows:

| Semester  | Headcount | Full-Time Faculty & Adjunct Headcount | Ratio of Student to Faculty |
|-----------|-----------|---------------------------------------|-----------------------------|
| Fall 2020 | 3,278     | 226                                   | 16:1                        |
| Fall 2021 | 3,285     | 221                                   | 14:1                        |
| Fall 2022 | 3,100     | 201                                   | 15:1                        |
| Fall 2023 | 3,148     | 170                                   | 18:1                        |

| Semester  | Headcount | Admin. & Professional Headcount | Ratio of Student to Staff |
|-----------|-----------|---------------------------------|---------------------------|
| Fall 2020 | 3276      | 118                             | 32:1                      |
| Fall 2021 | 3,285     | 108                             | 28:1                      |
| Fall 2022 | 3,100     | 106                             | 29:1                      |
| Fall 2023 | 3,148     | 115                             | 27:1                      |

Based on the structure at NMC some administrative positions include teaching as part of their responsibilities. **Appendix C** provides faculty and staff headcounts for the previous five years.

**III-E. Projected staffing needs based on five-year enrollment estimates and future programming changes.**

NMC has approached a number of staffing questions through the development of a multi-year project-based approach toward talent recruitment, development, retention, and succession. The project has produced new employee orientation programs, the NMC Leadership Institute, and multiple professional development modules ranging from compliance training, supervisor training, wellness initiatives, and self-directed learning opportunities related to workplace improvement.

The College is committed to aligning its workforce to support its strategic direction and establish a values-based framework to provide sustainable and competitive compensation. Further, the College continues to offer and maintain flexible working options allowing employees to work from home and design their schedule within parameters of operational needs. Due to declining enrollments, during fiscal year 2018 we offered an early separation incentive to faculty and staff at the top of their pay scale. This gave us an opportunity to restructure the institution. The College was able to reduce 12 positions with this incentive program to help control labor costs.

**III-F. Identify current average class size and projected class size needs**

NMC manages its section sizes based on an efficiency model with a college goal of 90% efficiency. **Appendix D** contains course efficiency data by academic division for the previous six academic years. Class sizes are driven primarily by pedagogical factors related to the subject matter being taught.

#### **IV. Facilities Assessment**

NMC completed its most recent campus master plan in 2024. The College contracts with Sodexo for facilities management services. Sodexo prepares a comprehensive facilities assessment every 3 years to help the College identify and prioritize deferred maintenance needs. The most recent assessment can be found at **Appendix E**.

##### **IV-A. Summary description of each facility.**

A summary of buildings, their ages, and square footage is included as **Appendix F**.

##### **IV-B. Building and classroom utilization rates.**

Virtually all College events and classes are scheduled through the College's R25 scheduling system. **Appendix G** is produced from R25 and provides information on the utilization, functionality and allocation of organizational facilities.

##### **IV-C. Mandated facility standards for specific programs, where applicable.**

NMC's facilities fully comply with all applicable laws and safety standards for specific programs. The College continues to monitor all applicable Federal, State, and local laws impacting our property.

##### **IV-D. Functionality of existing structures and space allocation to program areas served.**

Existing buildings and facilities are often repurposed to meet the evolving needs of the College. One of the biggest opportunities for the College to improve functionality across the campus is the implementation of a "one-stop shop" hub for student services in our Osterlin Building. The consolidation of our student services into one building would improve operational efficiency of the College, but more importantly would improve the student experience and related retention efforts.

**IV-E. Replacement value of existing facilities (insured value of structure to the extent available).**

The replacement value of our buildings is assessed at \$294,034,200 as of November 1, 2023. The Fall 2024 appraisal was not available at the time of this submission. We've included the Fall 2023 appraisal report in **Appendix H**.

**IV-F. Utility system condition (i.e. heating, ventilation, and air conditioning (HVAC), water and sewage, electrical, etc.).**

Each item identified in the Facilities Condition Assessment (**Appendix E**) is listed by category (i.e. electrical, mechanical, plumbing, etc.) Of the College's estimated \$22.1 million in deferred maintenance over the next five years, 22% is categorized as HVAC, 18% as Electrical, and 31% as Interior Construction and Finishes. Utility needs are adequately considered as part of the annual budgeting process. The following table summarizes the College's utility providers and needs:

**Campus Utilities**

| <b>Utility</b> | <b>Notes</b>  |
|----------------|---|
| Electric       | Traverse City Light and Power (Traverse City Campuses). Sufficient city capacity appears to be available to meet projected college needs.   |
| Water          | Traverse City and Garfield Township provide water.  |
| Sewage         | City of Traverse City and Garfield Township.  |
| Storm Sewers   | Limited access to Traverse City storm sewers is available. The Front Street campus is equipped with numerous dry wells into which storm water drains. Main campus includes a large stormwater retention system. |
| Natural Gas    | Campus heating systems are natural gas. Adequate capacities currently exist.  |

**IV-G. Facility infrastructure condition (i.e. roads, bridges, parking structures, lots, etc.)**

The majority of lots, roads and walks on and off Main Campus are in good shape. An annual schedule for the repair and replacement of sidewalks and the repair/seal/replacement of parking lots and campus roads has been allocated and incorporated in the College's capital and operating budgets as applicable.

**Appendix I** shows a map of the Front Street (Main) campus.

**IV-H. Adequacy of existing utilities and infrastructure systems to current and 4-year projected programmatic needs.**

Based on our current and five year projections NMC utilities and infrastructure systems are sufficient. As a means to reduce utility costs NMC continues to investigate ways to provide alternative energy solutions to our campus. The college board authorized a geothermal energy system for the West Hall Innovation Center project (recently renamed the Timothy J. Nelson Innovation Center). The intention is to use the data from this building as a starting point for an overall campus alternative energy project.

Further studies are underway to assess the cost and viability of implementing a larger geothermal system on the main campus to power six central buildings.

**IV-I. Does the institution have an enterprise-wide energy plan? What are its goals? Have energy audits been completed on all facilities and, if not, what is the plan/timetable for completing such audits?**

See section above regarding our exploration of sustainable energy systems on campus. We engaged an engineering firm to complete an energy study in October 2021 covering six key buildings on campus: Health & Science Building, Biederman Building, Tanis Building, Osterlin Building, Scholars Hall, the Powerhouse Building. The key recommendation from this study was to replace our current aging boiler system with a distributed geothermal energy system including HVAC upgrades on the six buildings listed.

In 2021, the College finished implementing a campus-wide LED lighting upgrade as recommended in our 2015 and 2010 energy audits. The estimated annual savings from this campus wide project is over \$50,000 per year. Other projects considered were related to water conservation, low flow aerators, and variable frequency drivers in some of our buildings. The College also takes full advantage of an energy rebate program through our local provider, Traverse City Light and Power. This program has enabled us to complete several lighting upgrades on campus and explore the use of solar energy.

All projects are evaluated for energy savings. As roofs are replaced, additional insulation measures are included in those projects. Other areas of savings include insulated glass overhead doors in our power house, replacement of old boilers with more efficient ones, and new cooling towers to improve the energy efficiency of our HVAC systems.

**IV-J. Land owned by the institution, including a determination of whether capacity exists for future development, additional acquisitions are needed to meet future demands, or surplus land can be conveyed for a different purpose.**

Under current assumptions for future growth, there is existing capacity for future development on land owned by the college. The College will explore our greatest needs and consider development opportunities as described in our board approved campus master plan.

**IV-K. What portions of existing buildings, if any, are currently obligated to the State Building Authority and when these State Building Authority leases are set to expire.**

The table below outlines the statistics on the three NMC buildings that are obligated to the State Building Authority.

| <b>Building Description</b>   | <b>Primary Use</b>   | <b>Date of Retirement</b> |
|---|--|---------------------------|
| Health & Science Building (Integrated Science & Tech Learning Center) | Classrooms and labs  | 2042                      |
| Great Lakes Campus (West Bay)   | Specialized classrooms and conferencing facility             | 2043                      |
| Oleson Center   | Childcare  | 2042                      |
| Timothy J. Nelson Innovation Center (West Hall Innovation Center)     | Classrooms, study spaces, cafeteria, flexible meeting spaces | 2055                      |



**V. Implementation Plan**

**V-A. Prioritize major capital projects requested from the State, including a brief description and estimated cost, in the format provided. (Adjust previously developed or prior years’ figures utilizing industry standard CPI indexes where appropriate).**

Northwestern Michigan College continues evaluating its academic programming and related facilities needs, including how current buildings can be improved and leveraged to increase quality, efficiency, and effectiveness of course delivery.

The College’s Administration identified our top capital projects based on the prioritization criteria listed in the table below. We also considered the following questions:

1. Is the project aligned with our Strategic Plan?
2. Is there data to demonstrate an immediate or future need?
3. Is there a business model that demonstrates financial sustainability?

| Project               | Supports Strategic Plan | Meets Current Capacity Need | Growth Opportunity | Safety Issue | Cosmetic Appeal | Learner Expectation | Time Sensitive |
|-----------------------|-------------------------|-----------------------------|--------------------|--------------|-----------------|---------------------|----------------|
| Osterlin Building     | X                       | X                           | X                  | X            | X               | X                   | X              |
| Aviation Hangar       | X                       | X                           | X                  | X            | X               | X                   | X              |
| Energy Infrastructure |                         | X                           |                    | X            | X               | X                   | X              |
| Student Housing       | X                       | X                           | X                  |              | X               | X                   | X              |
| Founder’s Hall        |                         | X                           | X                  |              | X               | X                   |                |
| Physical Ed           |                         | X                           |                    |              | X               | X                   |                |
| Outdoor Classroom     |                         | X                           | X                  |              | X               | X                   |                |

| <u>Project</u>   | <u>Total Cost</u> |
|--|-------------------|
| Osterlin Building (Student Services Hub)                   | \$ 8.0 million    |
| Aviation Hangar (hangar expansion and modernization)       | \$ 7.5 million    |
| Energy Infrastructure Upgrade (geothermal for 6 buildings) | \$ 16.0 million   |
| Student Housing (new facility)                             | \$ 10.0 million   |
| Founder’s Hall (renovation)                                | \$ 5.0 million    |
| Physical Education / Recreational Building                 | \$ 12.0 million   |
| Outdoor Classroom (and event space)                        | \$ 0.5 million    |

We continue assessing the capital priorities of the College and related financing options. In addition to these facility building projects, we see an escalated need for investment in technology to support evolving learning environments. During recent years, the college invested over a million dollars to upgrade its firewall and expand wireless infrastructure to improve web accessibility, reliability, and internet safety across campus. The College also installed secure remote key access for all buildings. This investment allows NMC security to lock down buildings remotely if required during an emergency. The

College continues to invest in security cameras and qualified security professionals to provide the safest possible environment on our campuses

As noted in the table above, NMC continues to identify the renovation of the Osterlin Building as our top priority capital project. This 60-year old building would be renovated and remodeled to provide our students a one-stop shop / student service hub. The updated space would provide a holistic approach to student services. The estimated cost of this project is \$7.0 million.

**V-B. If applicable, provide an estimate relative to the institution's current deferred maintenance backlog. Define the impact of addressing deferred maintenance and structural repairs, including programmatic impact, immediately versus over the next five years.**

See Facilities Condition Assessment at **Appendix E**. Northwestern Michigan College recognizes the importance of addressing deferred maintenance in its operating budget. Beginning in 2009 the College began providing funding through the General Fund to address deferred maintenance backlog.

The facilities assessment identified approximately \$22.1 million in deferred maintenance required over the next five years. Funding for certain identified items has been included in the College's plant fund budget. Addressing deferred maintenance is critical for the college to carry out its mission of providing a state of the art quality program to its students. However, given limited financial resources the College must prioritize the most critical projects within the scope of its budget.

**V-C. Include the status of on-going projects financed with State Building Authority resources and explain how completion coincides with the overall Five-Year Capital Outlay Plan.**

As of October 2023, there are no current or on-going projects at NMC that are financed with State Building Authority resources. Northwestern Michigan College hosted a groundbreaking ceremony on September 24, 2018 for the West Hall Innovation Center (#332/16282), officially renamed the Timothy J. Nelson Innovation Center. This building was completed in July 2021 with support from SBA.

**V-D. Identify, to the extent possible, a rate of return on planned expenditures. This could be expressed as operational savings that a planned capital expenditure would yield in future years.**

The College evaluates each major building project to determine a rate of return. This is accomplished by a reduction in operating costs such as utility savings along with any staffing reductions that could be attributed to the redesign of a facility.

**V-E. Where applicable, consider alternatives to new infrastructure such as distance learning.**

The College continues to assess the future of learning and future of work in its capital planning process. Although distance and flexible learning options will continue to drive changes in higher education, there is still a role for innovative and functional learning facilities. Our proposed building projects enhance current learning by engaging students and faculty in an interactive learning environment.

**V-F. Identify maintenance schedule for major maintenance items in excess of \$1 million for fiscal year 2024-2028.**

Currently, there are no single identified maintenance items over \$1 million.

**V-G. Identify the amount of non-routine maintenance the institution has budgeted for in its current fiscal year and relevant sources of financing.**

Northwestern Michigan College completes a comprehensive Facility Condition Assessment every three years to determine the key maintenance needs of every building on campus. Every budgeting year, we review and compile this data to prioritize our top facility needs. The College's twenty-six (26) active buildings represent approximately 850,000 square feet of space. The College's General Fund provides over \$1.2 million in annual funding for critical deferred maintenance.

See **Appendix E** for our facilities condition assessment. NMC strives to maintain an overall facilities rating of "Good". The cumulative FCI percentage for our campus as of November 2021 is 6%, which falls into the category of "Good" per this report.

**Appendix A**  
**NMC Economic Impact**







**Main Report**  
FEBRUARY 2024



# The Economic Value of Northwestern Michigan College

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# Preface

Lightcast is a leading provider of economic impact studies and labor market data to educational institutions, workforce planners, and regional developers in the U.S. and internationally. Since 2000, Lightcast has completed over 3,000 economic impact studies for educational institutions in three countries. Along the way, we have worked to continuously update and improve our methodologies to ensure that they conform to best practices.

The present study reflects the latest version of our model, representing the most up-to-date theory for conducting human capital economic impact analyses. Some changes are due to our efforts to conform to best practices for economic impact analyses. For example, the economic impact guidelines set by the Association for Public Land-Grant Universities discourage the inclusion of depreciation and interest expenses in operations spending impacts. Previous iterations of our model have used this measure as a proxy for capital maintenance. However, in an effort to provide more conservative and defensible results, we now exclude those expenditures from the operations spending impact.

The model is consistently being updated as more data becomes available. For example, in prior studies the alumni impact only included the alumni served over the past 30 years. Historical headcount data beyond 30 years oftentimes did not exist and estimates were unreliable. However, historical headcount data reliability has increased over the years, making the historical headcount estimates by Lightcast more accurate. Therefore, the impact from alumni has been expanded to include all alumni active in the regional workforce who have not reached the average retirement age of 67.

This model, as with previous versions, has various external data inputs which reflect the most current economic activity and data. These data include (but are not limited to): the taxpayer discount rate; the student discount rate; the consumer savings rate; the consumer price index; national health expenditures; state and local industry earnings as a percent of total industry earnings; income tax brackets and sales tax by state; and unemployment, migration, and life tables. All data sets are maintained quarterly, although most updates occur only once a year.



These and other changes mark a considerable upgrade to the Lightcast economic impact model. Our hope is that these improvements will provide a better product for our clients – reports that are more transparent and streamlined, methodology that is more comprehensive and robust, and findings that are more relevant and meaningful to today’s audiences.

While this report is useful in demonstrating the current value of Northwestern Michigan College (NMC), it is not intended for comparison with NMC’s previous study conducted by Lightcast in 2017. Due to the extent of external data updates and improvements in Lightcast’s model since 2017, differences between results from the 2017 study and the present study do not necessarily indicate changes in the value of the college. For example, the source of migration data has been updated to the Internal Revenue Service, which provides more granular and reliable data on migration, making the regional and state outmigration rates used in the study reflective of actual historical migration patterns.

Lightcast encourages our readers to approach us directly with any questions or comments they may have about the study so that we can continue to improve our model and keep the public dialogue open about the positive impacts of education.

### **A note on comparing studies**

It is important to note that the changes outlined above represent important improvements to our methodology, ultimately providing more accurate and robust results. However, these changes make it difficult to directly compare past studies to the current study, with the effectiveness of the comparison decreasing as the age of the previous study increases.

Additionally, in general Lightcast discourages comparisons between individual institutions and between educational systems since many factors, such as regional economic and political conditions, institutional differences, and student demographics are outside of the institution’s control. In addition, every institution is unique, meaning the results and types of impact or investment measures are tailored to the specific institution or educational system.

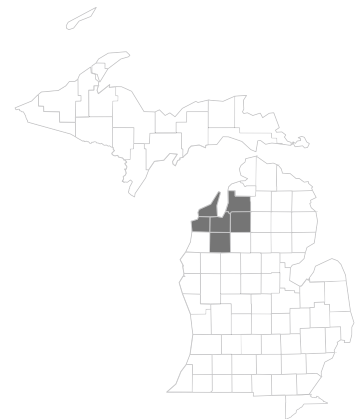


# Executive summary

*This report assesses the impact of Northwestern Michigan College (NMC) on the regional economy and the benefits generated by the college for students, taxpayers, and society. The results of this study show that NMC creates a positive net impact on the regional economy and generates a positive return on investment for students, taxpayers, and society.*



# Economic impact analysis



The NMC Service Area

During the analysis year, NMC spent \$30.4 million on payroll and benefits for 672 full-time and part-time employees and spent another \$23.8 million on goods and services to carry out its day-to-day and construction operations. This initial round of spending creates more spending across other businesses throughout the regional economy, resulting in the commonly referred to multiplier effects. This analysis estimates the net economic impact of NMC that directly accounts for the fact that state and local dollars spent on NMC could have been spent elsewhere in the region if not directed toward NMC and would have created impacts regardless. We account for this by estimating the impacts that would have been created from the alternative spending and subtracting the alternative impacts from the spending impacts of NMC.

This analysis shows that in fiscal year (FY) 2021-22, operations and student spending of NMC, together with the enhanced productivity of its alumni, generated **\$204.5 million** in added income for the NMC Service Area<sup>1</sup> economy. The additional income of **\$204.5 million** created by NMC is equal to approximately **2.0%** of the total gross regional product (GRP) of the NMC Service Area. For perspective, this impact from the college is nearly as large as the entire Transportation & Warehousing industry in the region. The impact of **\$204.5 million** is equivalent to supporting **3,106 jobs**. For further perspective, this

The additional income of **\$204.5 million** created by NMC is equal to approximately **2.0%** of the total gross regional product of the NMC Service Area.

<sup>1</sup> For the purposes of this analysis, the NMC Service Area is comprised of Antrim, Benzie, Grand Traverse, Kalkaska, Leelanau, and Wexford Counties.

means that **one out of every 42 jobs** in the NMC Service Area is supported by the activities of NMC and its students. These economic impacts break down as follows:

## Operations spending impact



Payroll and benefits to support NMC's day-to-day operations amounted to \$30.4 million. The college's non-pay expenditures amounted to \$23.8 million, \$12.1 million of which was spent directly in the NMC Service Area. The net impact of operations spending by the college in the NMC Service Area during the analysis year was approximately **\$37.4 million** in added income, which is equivalent to supporting **749 jobs**.

## Student spending impact



Around 14% of students attending NMC originated from outside the region. Some of these students relocated to the NMC Service Area to attend the college. In addition, some students are residents of the NMC Service Area who would have left the region if not for the existence of NMC. The money that these students, referred to as retained students, spent toward living expenses in the NMC Service Area is attributable to NMC.

The expenditures of relocated and retained students in the region during the analysis year added approximately **\$3.2 million** in income for the NMC Service Area economy, which is equivalent to supporting **51 jobs**.

## Alumni impact



Over the years, students gained new skills, making them more productive workers, by studying at NMC. Today, thousands of these former students are employed in the NMC Service Area.

The accumulated impact of former students currently employed in the NMC Service Area workforce amounted to **\$163.9 million** in added income for the NMC Service Area economy, which is equivalent to supporting **2,305 jobs**.

## Important note

When reviewing the impacts estimated in this study, it is important to note that the study reports impacts in the form of added income rather than sales. Sales includes all of the intermediary costs associated with producing goods and services, as well as money that leaks out of the region as it is spent at out-of-region businesses. Income, on the other hand, is a net measure that excludes these intermediary costs and leakages and is synonymous with gross regional product (GRP) and value added. For this reason, it is a more meaningful measure of new economic activity than sales.





Investment analysis is the practice of comparing the costs and benefits of an investment to determine whether or not it is profitable. This study evaluates NMC as an investment from the perspectives of students, taxpayers, and society.

## Student perspective



Students invest their own money and time in their education to pay for tuition, books, and supplies. Many take out student loans to attend the college, which they will pay back over time. While some students were employed while attending the college, students overall forewent earnings that they would have generated had they been in full employment instead of learning. Summing these direct outlays, opportunity costs, and future student loan costs yields a total of **\$18.4 million** in present value student costs.

In return, students will receive a present value of **\$95.0 million** in increased earnings over their working lives. This translates to a return of **\$5.20** in higher future earnings for every dollar that students invest in their education at NMC. The corresponding annual rate of return is **20.3%**.

## Taxpayer perspective



Taxpayers provided **\$25.8 million** of state and local funding to NMC in FY 2021-22. In return, taxpayers will receive an estimated present value of **\$32.8 million** in added tax revenue stemming from the students' higher lifetime earnings



and the increased output of businesses. Savings to the public sector add another estimated **\$3.1 million** in benefits due to a reduced demand for government-funded social services in Michigan. Total taxpayer benefits amount to **\$35.9 million**, the present value sum of the added tax revenue and public sector savings. For every tax dollar spent educating students attending NMC, taxpayers will receive an average of **\$1.40** in return over the course of the students' working lives. In other words, taxpayers receive an annual rate of return of **2.1%**.

For every tax dollar spent educating students attending NMC, taxpayers will receive an average of **\$1.40** in return over the course of the students' working lives.

## Social perspective



People in Michigan invested **\$55.9 million** in NMC in FY 2021-22. This includes the college's expenditures, student expenses, and student opportunity costs. In return, the state of Michigan will receive an estimated present value of **\$402.1 million** in added state revenue over the course of the students' working lives. Michigan will also benefit from an estimated **\$9.8 million** in present value social savings related to reduced crime, lower welfare and unemployment assistance, and increased health and well-being across the state. For every dollar society invests in NMC, an average of **\$7.40** in benefits will accrue to Michigan over the course of the students' careers.

## Acknowledgments

Lightcast gratefully acknowledges the excellent support of the staff at Northwestern Michigan College in making this study possible. Special thanks go to Dr. Nick Nissley, President, who approved the study, and to Shelly Grant, Business Intelligence Analyst; Troy Kierczynski, Vice President of Finance & Administration; Denny Nguyen, Human Resource Specialist; Linda Berlin, Director of Financial Aid; and Joy Goodchild, Executive Director of Research, Planning & Effectiveness, who collected much of the data and information requested. Any errors in the report are the responsibility of Lightcast and not any of the above-mentioned individuals.



# Introduction

Northwestern Michigan College (NMC), established in 1951, has today grown to serve 4,316 credit and 2,298 non-credit students. The college is led by Dr. Nick Nissley, President. The college's service region, for the purpose of this report, is referred to as the NMC Service Area and consists of Antrim, Benzie, Grand Traverse, Kalkaska, Leelanau, and Wexford Counties.

While this study only considers the economic benefits generated by NMC, it is worth noting the region receives a variety of benefits from the college, including social and cultural benefits that are difficult to quantify. The college naturally helps students achieve their individual potential and develop the knowledge, skills, and abilities they need to have fulfilling and prosperous careers. However, NMC impacts the NMC Service Area beyond influencing the lives of students. The college's program offerings supply employers with workers to make their businesses more productive. The college, its day-to-day and construction operations, and the expenditures of its students support the regional economy through the output and employment generated by regional vendors. The benefits created by the college extend as far as the state treasury in terms of the increased tax receipts and decreased public sector costs generated by students across the state.

This report assesses the impact of NMC as a whole on the regional economy and the benefits generated by the college for students, taxpayers, and society. The approach is twofold. We begin with an economic impact analysis of the college on the NMC Service Area economy. To derive results, we rely on a specialized Multi-Regional Social Accounting Matrix (MR-SAM) model to calculate the added income created in the NMC Service Area economy as a result of increased consumer spending and the added knowledge, skills, and abilities of students. Results of the economic impact analysis are broken out according to the following impacts: 1) impact of the college's operations spending, 2) impact of student spending, and 3) impact of alumni who are still employed in the NMC Service Area workforce.



NMC impacts the NMC Service Area beyond influencing the lives of students.



The second component of the study measures the benefits generated by NMC for the following stakeholder groups: students, taxpayers, and society. For students, we perform an investment analysis to determine how the money spent by students on their education performs as an investment over time. The students' investment in this case consists of their out-of-pocket expenses, the cost of interest incurred on student loans, and the opportunity cost of attending the college as opposed to working. In return for these investments, students receive a lifetime of higher earnings. For taxpayers, the study measures the benefits to state taxpayers in the form of increased tax revenues and public sector savings stemming from a reduced demand for social services. Finally, for society, the study assesses how the students' higher earnings and improved quality of life create benefits throughout Michigan as a whole.

The study uses a wide array of data that are based on several sources, including the FY 2021-22 academic and financial reports from NMC; industry and employment data from the Bureau of Labor Statistics and Census Bureau; outputs of Lightcast's impact model and MR-SAM model; and a variety of published materials relating education to social behavior.



Chapter 1:



# Profile of Northwestern Michigan College and the economy







**N**ORTHWESTERN MICHIGAN COLLEGE (NMC) is a public college that has served the residents of Michigan's Grand Traverse region for over 70 years. From humble origins operating out of borrow facilities at an airport terminal, NMC has grown to encompass multiple campuses located throughout the Grand Traverse region. In FY 2021-22 NMC served 4,316 credit students and 2,298 non-credit students.

Prospective students can choose from over 60 programs offered at the main campus in Traverse City, these programs range from certificates tailored to specific jobs to several bachelor's degrees. NMC is also host to the NMC university center which offers select bachelor, graduate, doctorate, certificate, and endorsement programs. By attending the University center, students can fulfill their educational goals without leaving northwestern Michigan.

Along with its credit offerings, NMC also offers a diverse array of lifelong and professional learning opportunities. These classes allow students to further develop the skills they need to be successful in their careers or learn entirely new skills. Unique to NMC is the Great Lakes Maritime Academy which provides the college's students with the skills they need to work in the commercial shipping industry. This includes hands on training on the ship *State of Michigan*.

Prospective students can choose from **over 60 programs** offered at the main campus in Traverse City.

NMC also provides students and community residents numerous facilities and events. For example, the Dennis Museum, located on NMC's Traverse City Campus, houses a notable collection of Inuit art of the Canadian Arctic, as well as a significant collection of outdoor sculptures from noted artists.

Finally, NMC is a vital asset to regional employers. The college adds highly trained and knowledgeable human capital to the regional workforce through building strong partnerships with businesses and organizations, thereby continuously contributing to community well-being and fostering regional economic prosperity.

# NMC employee and finance data



The study uses two general types of information: 1) data collected from the college and 2) regional economic data obtained from various public sources and Lightcast’s proprietary data modeling tools. <sup>2</sup> This chapter presents the basic underlying information from NMC used in this analysis and provides an overview of the NMC Service Area economy.

## Employee data

Data provided by NMC include information on faculty and staff by place of work and by place of residence. These data appear in Table 1.1. As shown, NMC employed 286 full-time and 386 part-time faculty and staff in FY 2021-22 (including student workers). Of these, all worked in the region and 93% lived in the region. These data are used to isolate the portion of the employees’ payroll and household expenses that remains in the regional economy.

## Revenues

Figure 1.1 shows the college’s annual revenues by funding source – a total of \$66.4 million in FY 2021-22. As indicated, tuition and fees comprised 27% of total revenue, and revenues from local, state, and federal government sources comprised another 60%. All other revenue (i.e., auxiliary revenue, sales and services, interest, and donations) comprised the remaining 13%. These data are critical in identifying the annual costs of educating the student body from the perspectives of students, taxpayers, and society.

## Expenditures

Figure 1.2 displays NMC’s expense data. The combined payroll at NMC, including student salaries and wages, amounted to \$30.4 million. This was equal to 51% of the college’s total expenses for FY 2021-22. Other expenditures, including capital construction, operation and maintenance of plant, depreciation and interest, and purchases of supplies and services, made up \$29.6 million. When we calculate the impact of these expenditures in Chapter 2, we exclude expenses for depreciation and interest, as they represent a devaluing of the college’s assets rather than an outflow of expenditures.

## Students

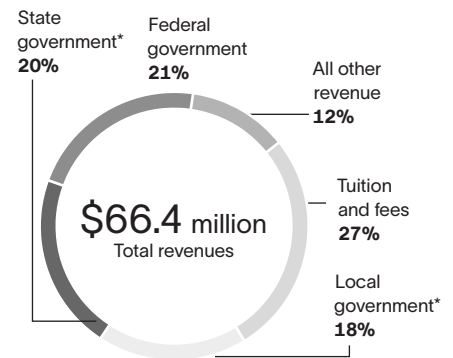
NMC served 4,316 students taking courses for credit and 2,298 non-credit students in FY 2021-22. These numbers represent unduplicated student headcounts. The breakdown of the student body by gender was 58% female, 42% male. The breakdown

**Table 1.1: Employee data, FY 2021-22**

|                                       |            |
|---------------------------------------|------------|
| Full-time faculty and staff           | 286        |
| Part-time faculty and staff           | 386        |
| <b>Total faculty and staff</b>        | <b>672</b> |
| % of employees who work in the region | 100%       |
| % of employees who live in the region | 93%        |

Source: Data provided by NMC.

**Figure 1.1: NMC revenues by source, FY 2021-22**

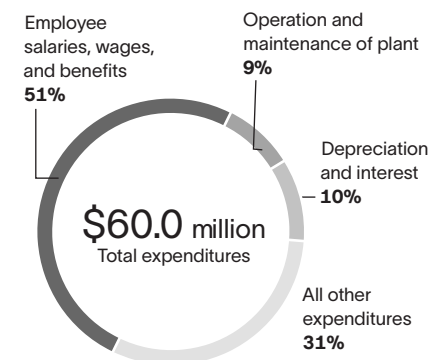


\* Revenue from state and local government includes capital appropriations.

Source: Data provided by NMC.

Percentages do not sum to 100% due to rounding.

**Figure 1.2: NMC expenses by function, FY 2021-22**



Source: Data provided by NMC.

<sup>2</sup> See Appendix 5 for a detailed description of the data sources used in the Lightcast modeling tools.





by ethnicity was 70% white, 9% students of color, and 21% unknown. The students' overall average age was 26 years old.<sup>3</sup> An estimated 73% of students remain in the NMC Service Area after finishing their time at NMC, another 14% settle outside the region but in the state, and the remaining 13% settle outside the state.<sup>4</sup>

Table 1.2 summarizes the breakdown of the student population and their corresponding awards and credits by education level. In FY 2021-22, NMC served 35 bachelor's degree graduates, 530 associate degree graduates, and 81 certificate graduates. Another 3,180 students enrolled in courses for credit but did not complete a degree during the reporting year. The college offered dual credit courses to high schools, serving a total of 490 students over the course of the year. The college also served 2,082 personal enrichment students enrolled in non-credit courses. Non-degree seeking students enrolled in workforce or professional development programs accounted for 216 students.

We use credit hour equivalents (CHEs) to track the educational workload of the students. One CHE is equal to 15 contact hours of classroom instruction per semester. In the analysis, we exclude the CHE production of personal enrichment students under the assumption that they do not attain knowledge, skills, and abilities that will increase their earnings. The average number of CHEs per student (excluding personal enrichment students) was 11.6.

**Table 1.2: Breakdown of student headcount and CHE production by education level, FY 2021-22**

| Category  | Headcount    | Total CHEs    | Average CHEs |
|---|--------------|---------------|--------------|
| Bachelor's degree graduates                     | 35           | 798           | 22.8         |
| Associate degree graduates                      | 530          | 7,809         | 14.7         |
| Certificate graduates                           | 81           | 1,153         | 14.2         |
| Continuing students                             | 3,180        | 37,876        | 11.9         |
| Dual credit students                            | 490          | 4,605         | 9.4          |
| Personal enrichment students                    | 2,082        | 1,981         | 1.0          |
| Workforce/professional development students     | 216          | 133           | 0.6          |
| <b>Total, all students</b>                      | <b>6,614</b> | <b>54,355</b> | <b>8.2</b>   |
| <b>Total, less personal enrichment students</b> | <b>4,532</b> | <b>52,374</b> | <b>11.6</b>  |

Source: Data provided by NMC.

<sup>3</sup> Unduplicated headcount, gender, ethnicity, and age data provided by NMC.

<sup>4</sup> Settlement data provided by NMC.

# The NMC Service Area economy



NMC serves a region referred to as the NMC Service Area in Michigan.<sup>5</sup> Since the college was first established, it has been serving the NMC Service Area by enhancing the workforce, providing local residents with easy access to higher education opportunities, and preparing students for highly-skilled, technical professions. Table 1.3 summarizes the breakdown of the regional economy by major industrial sector ordered by total income, with details on labor and non-labor income. Labor income refers to wages, salaries, and proprietors' income. Non-labor income refers to profits,

**Table 1.3: Income by major industry sector in the NMC Service Area, 2022\***

| Industry sector                               | Labor income (millions) | Non-labor income (millions) | Total income (millions)** | % of total income | Sales (millions) |
|---|-------------------------|-----------------------------|---------------------------|-------------------|------------------|
| Health Care & Social Assistance               | \$1,152                 | \$149                       | \$1,301                   | 13%               | \$2,111          |
| Manufacturing                                 | \$745                   | \$482                       | \$1,227                   | 12%               | \$3,242          |
| Retail Trade                                  | \$587                   | \$395                       | \$983                     | 10%               | \$1,654          |
| Finance & Insurance                           | \$567                   | \$313                       | \$880                     | 9%                | \$1,573          |
| Government, Non-Education                     | \$567                   | \$114                       | \$681                     | 7%                | \$3,016          |
| Construction                                  | \$556                   | \$108                       | \$664                     | 7%                | \$1,352          |
| Accommodation & Food Services                 | \$373                   | \$260                       | \$633                     | 6%                | \$1,140          |
| Wholesale Trade                               | \$204                   | \$326                       | \$530                     | 5%                | \$809            |
| Real Estate & Rental & Leasing                | \$349                   | \$136                       | \$485                     | 5%                | \$1,147          |
| Professional & Technical Services             | \$375                   | \$94                        | \$470                     | 5%                | \$720            |
| Information                                   | \$130                   | \$188                       | \$318                     | 3%                | \$556            |
| Government, Education                         | \$309                   | <\$1                        | \$309                     | 3%                | \$356            |
| Mining, Quarrying, & Oil and Gas Extraction   | \$85                    | \$222                       | \$308                     | 3%                | \$573            |
| Administrative & Waste Services               | \$228                   | \$48                        | \$275                     | 3%                | \$506            |
| Utilities                                     | \$74                    | \$196                       | \$270                     | 3%                | \$452            |
| Other Services (except Public Administration) | \$237                   | \$29                        | \$266                     | 3%                | \$431            |
| Transportation & Warehousing                  | \$172                   | \$35                        | \$207                     | 2%                | \$445            |
| Agriculture, Forestry, Fishing & Hunting      | \$109                   | \$53                        | \$162                     | 2%                | \$352            |
| Arts, Entertainment, & Recreation             | \$80                    | \$25                        | \$105                     | 1%                | \$164            |
| Educational Services                          | \$88                    | \$3                         | \$91                      | 1%                | \$116            |
| Management of Companies & Enterprises         | \$32                    | \$2                         | \$34                      | <1%               | \$56             |
| <b>Total</b>                                  | <b>\$7,020</b>          | <b>\$3,180</b>              | <b>\$10,199</b>           | <b>100%</b>       | <b>\$20,769</b>  |

\* Data reflect the most recent year for which data are available. Lightcast data are updated quarterly.

\*\* Numbers may not sum to totals due to rounding.

Source: Lightcast industry data.

5 The following counties comprise the NMC Service Area: Antrim, Benzie, Grand Traverse, Kalkaska, Leelanau, and Wexford.

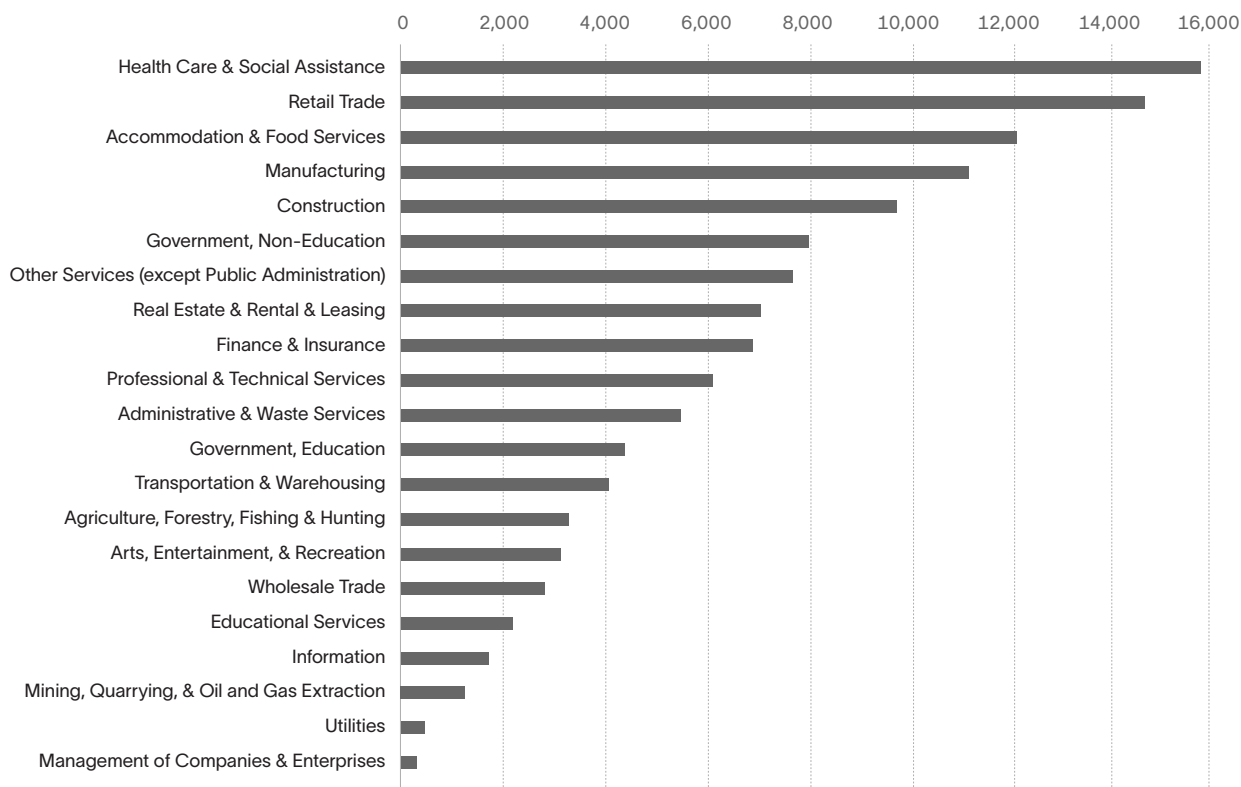


rents, and other forms of investment income. Together, labor and non-labor income comprise the region's total income, which can also be considered the region's gross regional product (GRP).

As shown in Table 1.3, the total income, or GRP, of the NMC Service Area is approximately \$10.2 billion, equal to the sum of labor income (\$7.0 billion) and non-labor income (\$3.2 billion). In Chapter 2, we use the total added income as the measure of the relative impacts of the college on the regional economy.

Figure 1.3 provides the breakdown of jobs by industry in the NMC Service Area. The Health Care & Social Assistance sector is the largest employer, supporting 15,631 jobs or 12.1% of total employment in the region. The second largest employer is the Retail Trade sector, supporting 14,543 jobs or 11.3% of the region's total employment. Altogether, the region supports 128,919 jobs.<sup>6</sup>

**Figure 1.3: Jobs by major industry sector in the NMC Service Area, 2022\***



\* Data reflect the most recent year for which data are available. Lightcast data are updated quarterly.  
Source: Lightcast employment data.

<sup>6</sup> Job numbers reflect Lightcast's complete employment data, which includes the following four job classes: 1) employees who are counted in the Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW), 2) employees who are not covered by the federal or state unemployment insurance (UI) system and are thus excluded from QCEW, 3) self-employed workers, and 4) extended proprietors.



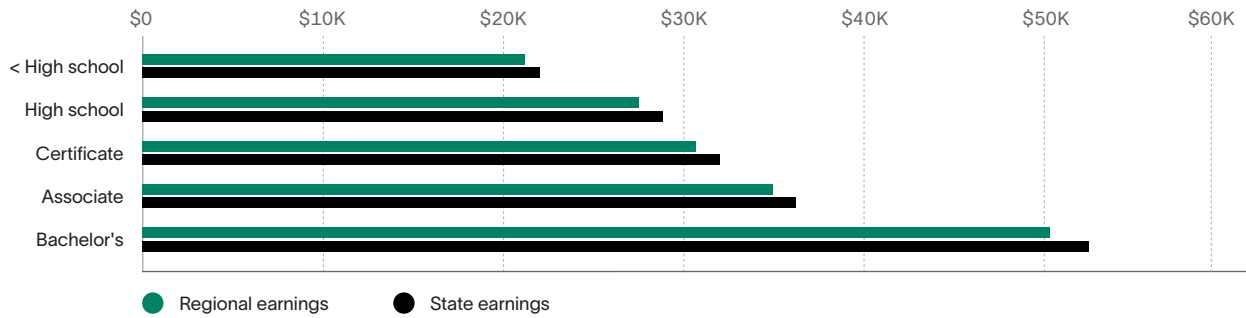
Table 1.4 and Figure 1.4 present the mean earnings by education level in the NMC Service Area and the state of Michigan at the midpoint of the average-aged worker's career. These numbers are derived from Lightcast complete employment data on average earnings per worker in the region and the state.<sup>7</sup> The numbers are then weighted by the college's demographic profile, and state earnings are weighted by students' settlement patterns. As shown, students have the potential to earn more as they achieve higher levels of education compared to maintaining a high school diploma. Students who earn an associate degree from NMC can expect approximate wages of \$35,500 per year within the NMC Service Area, approximately \$8,100 more than someone with a high school diploma.

**Table 1.4: Average earnings by education level at a NMC student's career midpoint**

| Education level           | Difference from                      |                                   | Difference from                      |                                   |
|---------------------------|--------------------------------------|-----------------------------------|--------------------------------------|-----------------------------------|
|                           | Regional earnings next lowest degree | State earnings next lowest degree | Regional earnings next lowest degree | State earnings next lowest degree |
| Less than high school     | \$20,200                             | n/a                               | \$21,000                             | n/a                               |
| High school or equivalent | \$27,400                             | \$7,200                           | \$28,500                             | \$7,500                           |
| Certificate               | \$30,800                             | \$3,400                           | \$32,000                             | \$3,500                           |
| Associate degree          | \$35,500                             | \$4,700                           | \$36,900                             | \$4,900                           |
| Bachelor's degree         | \$50,500                             | \$15,000                          | \$52,600                             | \$15,700                          |

Source: Lightcast employment data.

**Figure 1.4: Average earnings by education level at a NMC student's career midpoint**



Source: Lightcast employment data.

<sup>7</sup> Wage rates in the Lightcast MR-SAM model combine state and federal sources to provide earnings that reflect complete employment in the state, including proprietors, self-employed workers, and others not typically included in regional or state data, as well as benefits and all forms of employer contributions. As such, Lightcast industry earnings-per-worker numbers are generally higher than those reported by other sources.



# Economic impacts on the NMC Service Area economy

*NMC impacts the NMC Service Area economy in a variety of ways. The college is an employer and buyer of goods and services. It attracts monies that otherwise would not have entered the regional economy through its day-to-day and construction operations, and the expenditures of its students. Further, it provides students with the knowledge, skills, and abilities they need to become productive citizens and add to the overall output of the region.*



**I N THIS CHAPTER,** we estimate the following economic impacts of NMC: 1) the operations spending impact, 2) the student spending impact, and 3) the alumni impact, measuring the income added in the region as former students expand the regional economy's stock of human capital.

When exploring each of these economic impacts, we consider the following hypothetical question:

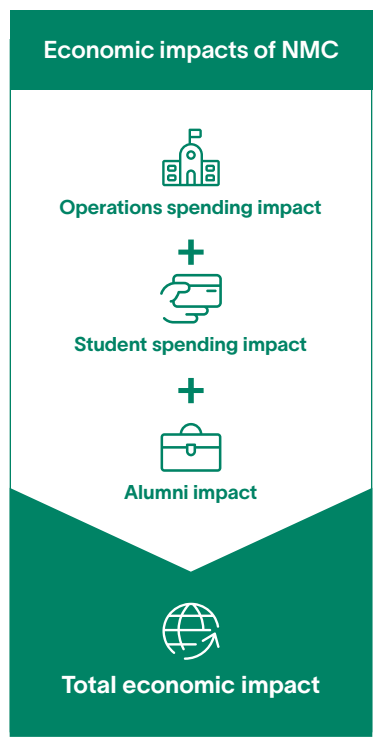
**How would economic activity change in the NMC Service Area if NMC and all its alumni did not exist in FY 2021-22?**

Each of the economic impacts should be interpreted according to this hypothetical question. Another way to think about the question is to realize that we measure net impacts, not gross impacts. Gross impacts represent an upper-bound estimate in terms of capturing all activity stemming from the college; however, net impacts reflect a truer measure of economic impact since they demonstrate what would not have existed in the regional economy if not for the college.

Economic impact analyses use different types of impacts to estimate the results. The impact focused on in this study assesses the change in income. This measure is similar to the commonly used gross regional product (GRP). Income may be further broken out into the **labor income impact**, also known as earnings, which assesses the change in employee compensation; and the **non-labor income impact**, which assesses the change in business profits. Together, labor income and non-labor income sum to total income.

Another way to state the impact is in terms of **jobs**, a measure of the number of full- and part-time jobs that would be required to support the change in income. Finally, a frequently used measure is the **sales impact**, which comprises the change in business sales revenue in the economy as a result of increased economic activity. It is important to bear in mind, however, that much of this sales revenue leaves the regional economy through intermediary transactions and costs.<sup>8</sup> All of these measures – added labor and non-labor income, total income, jobs, and sales – are used to estimate the economic impact results presented in this chapter. The analysis breaks out the impact measures into different components, each based on the economic effect that caused the impact. The following is a list of each type of effect presented in this analysis:

- The **initial effect** is the exogenous shock to the economy caused by the initial spending of money, whether to pay for salaries and wages, purchase goods or services, or cover operating expenses. This effect is only represented by labor income and sales and has zero non-labor income, as the initial effect of the college spending stems exclusively from its employees' salaries, wages, and



<sup>8</sup> See Appendix 4 for an example of the intermediary costs included in the sales impact but not in the income impact.





benefits, while any non-earnings direct expenditures of the college are reflected in the sales amount.

- The initial round of spending creates more spending in the economy, resulting in what is commonly known as the **multiplier effect**. The multiplier effect comprises the additional activity that occurs across all industries in the economy and may be further decomposed into the following three types of effects:
  - The **direct effect** refers to the additional economic activity that occurs as the industries affected by the initial effect spend money to purchase goods and services from their supply chain industries.
  - The **indirect effect** occurs as the supply chain of the initial industries creates even more activity in the economy through inter-industry spending.
  - The **induced effect** refers to the economic activity created by the household sector as the businesses affected by the initial, direct, and indirect effects raise salaries or hire more people.

The terminology used to describe the economic effects listed above differs slightly from that of other commonly used input-output models, such as IMPLAN. For example, the initial effect in this study is called the “direct effect” by IMPLAN, as shown below. Further, the term “indirect effect” as used by IMPLAN refers to the combined direct and indirect effects defined in this study. To avoid confusion, readers are encouraged to interpret the results presented in this chapter in the context of the terms and definitions listed above. Note that, regardless of the effects used to decompose the results, the total impact measures are analogous.

| Lightcast | Initial | Direct   | Indirect | Induced |
|-----------|---------|----------|----------|---------|
| IMPLAN    | Direct  | Indirect |          | Induced |

Multiplier effects in this analysis are derived using Light - cast Multi-Regional Social Accounting Matrix (MR-SAM) input-output model that captures the interconnection of industries, government, and households in the region. The Lightcast MR-SAM contains approx - imately 1,000 industry sectors at the highest level of detail available in the North American Industry Classification System (NAICS) and supplies the industry-specific multipliers required to determine the impacts associated with increased activity within a given economy. The multi-regional capacity of the MR-SAM allows impacts to be measured in the region and state simultaneously, accounting for NMC’s activity in each area, as well as each area’s economic char - acteristics. In this analysis, impacts on the region include impacts from the college’s regional activity, as well as the indirect and induced multiplier effects that reach the region from the college’s activity in the rest of the state. For more information on the Lightcast MR-SAM model and its data sources, see Appendix 5.

**Net impacts** reflect a truer measure of economic impact since they demonstrate what would not have existed in the regional economy if not for the college.

# Operations spending impact



Faculty and staff payroll is part of the region's total earnings, and the spending of employees for groceries, apparel, and other household expenditures helps support regional businesses. The college itself purchases supplies and services, and many of its vendors are located in the NMC Service Area. These expenditures create a ripple effect that generates still more jobs and higher wages throughout the economy.

Table 2.1 presents college expenditures for the following three categories: 1) salaries, wages, and benefits, 2) operation and maintenance of plant,<sup>9</sup> and 3) all other expenditures, including purchases for supplies and services. Also included in all other expenditures are expenses associated with grants and scholarships. Many students receive grants and scholarships that exceed the cost of tuition and fees. The college then dispenses this residual financial aid to students, who spend it on living expenses. Some of this spending takes place in the region, and is therefore an injection of new money into the regional economy that would not have happened if NMC did not exist. In this analysis, we exclude expenses for depreciation and interest due to the way those measures are calculated in the national input-output accounts, and because depreciation represents the devaluing of the college's assets rather than an outflow of expenditures.<sup>10</sup>



**Table 2.1: NMC expenses by function (excluding depreciation & interest), FY 2021-22**

| Expense category                       | In-region expenditures (thousands) | Out-of-region expenditures (thousands) | Total expenditures (thousands) |
|--|------------------------------------|--|--------------------------------|
| Employee salaries, wages, and benefits | \$28,133                           | \$2,271                                | \$30,404                       |
| Operation and maintenance of plant     | \$3,950                            | \$1,399                                | \$5,349                        |
| All other expenditures                 | \$8,110                            | \$10,342                               | \$18,452                       |
| <b>Total</b>                           | <b>\$33,704</b>                    | <b>\$20,501</b>                        | <b>\$54,205</b>                |

Source: Data provided by NMC, and the Lightcast impact model.

<sup>9</sup> Capital construction expenses are included under operation and maintenance of plant.

<sup>10</sup> This aligns with the economic impact guidelines set by the Association of Public and Land-Grant Universities. Ultimately, excluding these measures results in more conservative and defensible estimates.



The first step in estimating the multiplier effects of the college's operational expenditures is to map these categories of expenditures to the approximately 1,000 industries of the Lightcast MR-SAM model. Assuming that the spending patterns of college personnel approximately match those of the average U.S. consumer, we map salaries, wages, and benefits to spending on industry outputs using national household expenditure coefficients provided by Lightcast national SAM. All NMC employees work in the NMC Service Area (see Table 1.1), and therefore we consider all of the salaries, wages, and benefits. For the other two expenditure categories (i.e., operation and maintenance of plant and all other expenditures), we assume the college's spending patterns approximately match national averages and apply the national spending coefficients for NAICS 903612 (Colleges, Universities, and Professional Schools (LocalGovernment)).<sup>11</sup> Operation and maintenance of plant expenditures are mapped to the industries that relate to capital construction, maintenance, and support, while the college's remaining expenditures are mapped to the remaining industries.

We now have three vectors of expenditures for NMC: one for salaries, wages, and benefits; another for operation and maintenance of plant; and a third for the college's purchases of supplies and services. Portions of these expenditures occurring inside the NMC Service Area and outside the region were provided by NMC. Table 2.1 shows the break-out of NMC expenditures in FY 2021-22. The in-region, industry-specific, expenditures associated with the college feed into the MR-SAM<sup>12</sup> model's multiplier matrix, which in turn provides an estimate of the associated multiplier effects on regional labor income, non-labor income, total income, sales, and jobs.

Table 2.2 presents the economic impact of college operations spending. The people employed by NMC and their salaries, wages, and benefits comprise the initial effect, shown in the top row of the table in terms of labor income, non-labor income, total added income, sales, and jobs. The additional impacts created by the initial effect appear in the next four rows under the section labeled multiplier effect. Summing the initial and multiplier effects, the gross impacts are \$39.3 million in labor income and \$6.9 million in non-labor income. This sums to a total impact of \$46.2 million in total added income associated with the spending of the college and its employees in the region. This is equivalent to supporting 838 jobs.

The \$46.2 million in gross impact is often reported by researchers as the total impact. We go a step further to arrive at a net impact by applying a counterfactual scenario, i.e., what would have happened if a given event – in this case, the expenditure of in-region funds on NMC – had not occurred. NMC received an estimated 45% of its funding from sources within the NMC Service Area. This portion of the college's funding came from the tuition and fees paid by resident students, from the auxiliary revenue and donations from private sources located within the region, from state and local taxes, and from the financial aid issued to students by state and local government. We must account for the opportunity cost of this in-region funding. Had other industries received these monies rather than NMC, income impacts would have still been created in the

<sup>11</sup> See Appendix 2 for a definition of NAICS.

<sup>12</sup> See Appendix 5 for a description of Lightcast's MR-SAM model.





economy. In economic analysis, impacts that occur under counterfactual conditions are used to offset the impacts that actually occur in order to derive the true impact of the event under analysis.

We estimate this counterfactual by simulating a scenario where in-region monies spent on the college are instead spent on consumer goods and savings. This simulates the in-region monies being returned to the taxpayers and being spent by the household sector. Our approach is to establish the total amount spent by in-region students and taxpayers on NMC, map this to the detailed industries of the MR-SAM model using national household expenditure coefficients, use the industry regional purchase coefficients (RPCs) to estimate in-region spending, and run the in-region spending through the MR-SAM model's multiplier matrix to derive multiplier effects. RPCs represent a measure of the overall demand for the commodities produced by each sector that is satisfied by regional suppliers, for each of the approximately 1,000 industries in the MR-SAM model. For example, if 40% of the demand for NAICS 541211 (Offices of Certified Public Accountants) is satisfied by regional suppliers, the RPC for that industry is 40%. The remaining 60% of the demand for NAICS 541211 is provided by suppliers located outside the region. The results of this overall exercise are shown as negative values in the row labeled *less alternative uses of funds* in Table 2.2.

The total net impact of the college's operations is **\$37.4 million** in total added income, which is equivalent to supporting **749 jobs**.

The total net impact of the college's operations is equal to the gross impact less the impact of the alternative use of funds – the opportunity cost of the regional money. As shown in the last row of Table 2.2, the total net impact is approximately \$35.0 million in labor income and \$2.3 million in non-labor income. This sums together to \$37.4 million in total added income and is equivalent to supporting 749 jobs. These impacts represent new economic activity created in the regional economy solely attributable to the operations of NMC.

**Table 2.2: Operations spending impact, FY 2021-22**

|  | Labor income<br>(thousands) | Non-labor income<br>(thousands) | Total income<br>(thousands) | Sales           | Jobs<br>supported |
|--|-----------------------------|---------------------------------|-----------------------------|-----------------|-------------------|
| <b>Initial effect</b>                      | <b>\$30,404</b>             | <b>\$0</b>                      | <b>\$30,404</b>             | <b>\$54,205</b> | <b>672</b>        |
| <b>Multiplier effect</b>                   |                             |                                 |                             |                 |                   |
| Direct effect                              | \$3,946                     | \$2,008                         | \$5,955                     | \$12,060        | 66                |
| Indirect effect                            | \$266                       | \$100                           | \$366                       | \$722           | 4                 |
| Induced effect                             | \$4,680                     | \$4,751                         | \$9,431                     | \$14,865        | 96                |
| <b>Total multiplier effect</b>             | <b>\$8,892</b>              | <b>\$6,859</b>                  | <b>\$15,752</b>             | <b>\$27,648</b> | <b>166</b>        |
| <b>Gross impact (initial + multiplier)</b> | <b>\$39,296</b>             | <b>\$6,859</b>                  | <b>\$46,155</b>             | <b>\$81,852</b> | <b>838</b>        |
| Less alternative uses of funds             | -\$4,249                    | -\$4,540                        | -\$8,789                    | -\$21,772       | -89               |
| <b>Net impact</b>                          | <b>\$35,047</b>             | <b>\$2,319</b>                  | <b>\$37,366</b>             | <b>\$60,081</b> | <b>749</b>        |

Source: Lightcast impact model.

# Student spending impact



Both in-region and out-of-region students contribute to the student spending impact of NMC; however, not all of these students can be counted toward the impact. Of the in-region students, only the impact from those students who were retained, or who would have left the region to seek education elsewhere had they not attended NMC, is measured. Students who would have stayed in the region anyway are not counted toward the impact since their monies would have been added to the NMC Service Area economy regardless of NMC. In addition, only the out-of-region students who relocated to the NMC Service Area to attend the college are considered. Students who commute from outside the region or take courses online are not counted towards the student spending impact because they are not adding money from living expenses to the region.

While there were 3,142 students attending NMC who originated from the NMC Service Area (excluding personal enrichment students and dual credit high school students),<sup>13</sup> not all of them would have remained in the region if not for the existence of NMC. We apply a conservative assumption that 10% of these students would have left the NMC Service Area for other education opportunities if NMC did not exist.<sup>14</sup> Therefore, we recognize that the in-region spending of 314 students retained in the region is attributable to NMC. These students, called retained students, spent money at businesses in the region for everyday needs such as groceries, accommodation, and transportation.

<sup>13</sup> Note that because the college was unable to provide origin data for their non-credit students, we assume that all non-credit students originated from within the region.

<sup>14</sup> See Appendix 1 for a sensitivity analysis of the retained student variable.





Of the retained students, we estimate 11 lived on campus while attending the college. While these students spend money while attending the college, we exclude most of their spending for room and board since these expenditures are already reflected in the impact of the college's operations.

Relocated students are also accounted for in NMC's student spending impact. An estimated 19 students came from outside the region and lived off campus while attending NMC in FY 2021-22. Another estimated 265 out-of-region students lived on campus while attending the college. We apply the same adjustment as described above to the students who relocated and lived on campus during their time at the college. Collectively, the off-campus expenditures of out-of-region students supported jobs and created new income in the regional economy.<sup>15</sup>

The average costs for students appear in the first section of Table 2.3, equal to \$12,620 per student. Note that this table excludes expenses for books and supplies, since many of these costs are already reflected in the operations impact discussed in the previous section. We multiply the \$12,620 in annual costs by the 322 students who either were retained or relocated to the region because of NMC and lived in-region but off campus. This provides us with an estimate of their total spending. For students living on campus, we multiply the per-student cost of off-campus food purchases (assumed to be equal to 25% of room and board), personal expenses, and transportation by the number of students who lived in the region but on campus while attending (276 students). Altogether, off-campus spending of relocated and retained students generated

**Table 2.3: Average student costs and total sales generated by relocated and retained students in the NMC Service Area, FY 2021-22**

|   |                    |
|---|--------------------|
| Room and board                              | \$9,100            |
| Personal expenses                           | \$1,992            |
| Transportation                              | \$1,528            |
| <b>Total expenses per student</b>           | <b>\$12,620</b>    |
| <i>Number of students retained</i>          | 314                |
| <i>Number of students relocated</i>         | 284                |
| Gross retained student sales                | \$3,891,494        |
| Gross relocated student sales               | \$1,775,455        |
| <b>Total gross off-campus sales</b>         | <b>\$5,666,949</b> |
| Wages and salaries paid to student workers* | \$31,644           |
| <b>Net off-campus sales</b>                 | <b>\$5,635,305</b> |

\*This figure reflects only the portion of payroll that was used to cover the living expenses of relocated and retained student workers who lived in the region.

Source: Student costs and wages provided by NMC. The number of relocated and retained students who lived in the region off campus or on campus while attending is derived by Lightcast from the student origin data and in-term residence data provided by NMC.

<sup>15</sup> Online students and students who commuted to the NMC Service Area from outside the region are not considered in this calculation because it is assumed their living expenses predominantly occurred in the region where they resided during the analysis year. We recognize that not all online students live outside the region, but keep the assumption given data limitations.



gross sales of \$5.7 million. This figure, once net of the monies paid to student workers, yields net off-campus sales of \$5.6 million, as shown in the bottom row of Table 2.3.

Estimating the impacts generated by the \$5.6 million in student spending follows a procedure similar to that of the operations impact described above. We distribute the \$5.6 million in sales to the industry sectors of the MR-SAM model, apply RPCs to reflect in-region spending, and run the net sales figures through the MR-SAM model to derive multiplier effects.

Table 2.4 presents the results. The initial effect is purely sales-oriented and there is no change in labor or non-labor income. The impact of relocated and retained student spending thus falls entirely under the multiplier effect. The total impact of student spending is \$1.9 million in labor income and \$1.3 million in non-labor income. This sums together to \$3.2 million in total added income and is equivalent to supporting 51 jobs. These values represent the direct effects created at the businesses patronized by the students, the indirect effects created by the supply chain of those businesses, and the effects of the increased spending of the household sector throughout the regional economy as a result of the direct and indirect effects.

**Table 2.4: Student spending impact, FY 2021-22**

|  | Labor income<br>(thousands) | Non-labor income<br>(thousands) | Total income<br>(thousands) | Sales<br>(thousands) | Jobs<br>supported |
|--|-----------------------------|---------------------------------|-----------------------------|----------------------|-------------------|
| <b>Initial effect</b>                      | \$0                         | \$0                             | \$0                         | \$5,635              | 0                 |
| <b>Multiplier effect</b>                   |                             |                                 |                             |                      |                   |
| Direct effect                              | \$1,216                     | \$855                           | \$2,071                     | \$3,654              | 33                |
| Indirect effect                            | \$260                       | \$195                           | \$455                       | \$835                | 8                 |
| Induced effect                             | \$385                       | \$273                           | \$658                       | \$1,145              | 10                |
| <b>Total multiplier effect</b>             | <b>\$1,861</b>              | <b>\$1,323</b>                  | <b>\$3,184</b>              | <b>\$5,635</b>       | <b>51</b>         |
| <b>Total impact (initial + multiplier)</b> | <b>\$1,861</b>              | <b>\$1,323</b>                  | <b>\$3,184</b>              | <b>\$11,270</b>      | <b>51</b>         |

Source: Lightcast impact model.

The total impact of student spending is **\$3.2 million** in total added income and is equivalent to supporting **51 jobs**.

# Alumni impact



In this section, we estimate the economic impacts stemming from the added labor income of alumni in combination with their employers' added non-labor income. This impact is based on the number of students who have attended NMC *throughout its history*. We then use this total number to consider the impact of those students in the single FY 2021-22. Former students who earned a degree as well as those who may not have finished their degree or did not take courses for credit are considered alumni.

While NMC creates an economic impact through its operations and student spending, the greatest economic impact of NMC stems from the added human capital – the knowledge, creativity, imagination, and entrepreneurship – found in its alumni. While attending NMC, students gain experience, education, and the knowledge, skills, and abilities that increase their productivity and allow them to command a higher wage once they enter the workforce. But the reward of increased productivity does not stop there. Talented professionals make capital more productive too (e.g., buildings, production facilities, equipment–). The employers of NMC alumni enjoy the fruits of this increased productivity in the form of additional non-labor income (i.e., higher profits).

The greatest economic impact of NMC stems from the added human capital—the knowledge, creativity, imagination, and entrepreneurship—found in its alumni.

The methodology here differs from the previous impacts in one fundamental way. Whereas the previous spending impacts depend on an annually renewed injection of new sales into the regional economy, the alumni impact is the result of years of







past instruction and the associated accumulation of human capital. The initial effect of alumni is comprised of two main components. The first and largest of these is the added labor income of NMC's former students. The second component of the initial effect is comprised of the added non-labor income of the businesses that employ former students of NMC.

We begin by estimating the portion of alumni who are employed in the workforce. To estimate the historical employment patterns of alumni in the region, we use the following sets of data or assumptions: 1) settling-in factors to determine how long it takes the average student to settle into a career;<sup>16</sup> 2) death, retirement, and unemployment rates from the National Center for Health Statistics, the Social Security Administration, and the Bureau of Labor Statistics; and 3) state migration data from the Internal Revenue Service.<sup>17</sup> The result is the estimated portion of alumni from each previous year who were still actively employed in the region as of FY 2021-22.

The next step is to quantify the skills and human capital that alumni acquired from the college. We use the students' production of CHEs as a proxy for accumulated human capital. The average number of CHEs completed per student in FY 2021-22 was 11.6. To estimate the number of CHEs present in the workforce during the analysis year, we use the college's historical student headcount over the past 43 years, from FY 1979-80 to FY 2021-22. We apply a 43-year time horizon to include all alumni active in the regional workforce who have not reached the average retirement age of 67. The time horizon, or number of years in the workforce, is calculated by subtracting NMC's student oldest cohort average age (25 years per Lightcast's study for FY 2015-16) from the retirement age of 67. However, because the alumni impact is based on credits achieved and not headcount, we calculate and use an average age per credit rather than per student. We inform this average age by the historical student average age from NMC's economic impact study conducted by Lightcast for FY 2015-16.

We multiply the 11.6 average CHEs per student by the headcounts that we estimate are still actively employed from each of the previous years.<sup>18</sup> Students who enroll at the college more than one year are counted at least twice in the historical enrollment data. However, CHEs remain distinct regardless of when and by whom they were earned, so there is no duplication in the CHE counts. We estimate there are approximately 1.5 million CHEs from alumni active in the workforce.

Next, we estimate the value of the CHEs, or the skills and human capital acquired by NMC alumni. This is done using the *incremental* added labor income stemming from the students' higher wages. The incremental added labor income is the difference between the wage earned by NMC alumni and the alternative wage they would have

16 Settling-in factors are used to delay the onset of the benefits to students in order to allow time for them to find employment and settle into their careers. In the absence of hard data, we assume a range between one and three years for students who graduate with a certificate or a degree, and between one and five years for returning students.

17 According to a study performed by Pew Research Center, people who have already moved are more likely to move again than people who do not move. Therefore, migration rates are dampened to account for the idea that if they do not move in the first two years after leaving the college, then they are less likely to migrate out compared to the average person.

18 This assumes the average level of study from past years is equal to the level of study of students today. Lightcast used data provided by NMC for a previous study to estimate students' credit load in prior years.



earned had they not attended NMC. Using the regional incremental earnings, credits required, and distribution of credits at each level of study, we estimate the average value per CHE to equal \$116. This value represents the regional average incremental increase in wages that alumni of NMC received during the analysis year for every CHE they completed.

Because workforce experience leads to increased productivity and higher wages, the value per CHE varies depending on the students' workforce experience, with the highest value applied to the CHEs of students who had been employed the longest by FY 2021-22, and the lowest value per CHE applied to students who were just entering the workforce. More information on the theory and calculations behind the value per CHE appears in Appendix 6. In determining the amount of added labor income attributable to alumni, we multiply the CHEs of former students in each year of the historical time horizon by the corresponding average value per CHE for that year, and then sum the products together. This calculation yields approximately \$174.1 million in gross labor income from increased wages received by former students in FY 2021-22 (as shown in Table 2.5).

**Table 2.5: Number of CHEs in workforce and initial labor income created in the NMC Service Area, FY 2021-22**

|   |                      |
|---|----------------------|
| Number of CHEs in workforce                               | 1,504,877            |
| Average value per CHE                                     | \$116                |
| <b>Initial labor income, gross</b>                        | <b>\$174,110,263</b> |
| <b>Adjustments for counterfactual scenarios</b>           |                      |
| Percent reduction for alternative education opportunities | 15%                  |
| Percent reduction for adjustment for labor import effects | 50%                  |
| <b>Initial labor income, net</b>                          | <b>\$73,996,862</b>  |

Source: Lightcast impact model.

The next two rows in Table 2.5 show two adjustments used to account for counterfactual outcomes. As discussed above, counterfactual outcomes in economic analysis represent what would have happened if a given event had not occurred. The event in question is the education and training provided by NMC and subsequent influx of skilled labor into the regional economy. The first counterfactual scenario that we address is the adjustment for alternative education opportunities. In the counterfactual scenario where NMC does not exist, we assume a portion of NMC alumni would have received a comparable education elsewhere in the region or would have left the region and received a comparable education and then returned to the region. The incremental added labor income that accrues to those students cannot be counted toward the added labor income from NMC alumni. The adjustment for alternative education opportunities amounts to a 15% reduction of the \$174.1 million in added labor income. This means that 15% of the added labor income from NMC alumni would have been generated in the region anyway, even if the college did not exist. For more information on the alternative education adjustment, see Appendix 7.





The other adjustment in Table 2.5 accounts for the importation of labor. Suppose NMC did not exist and in consequence there were fewer skilled workers in the region. Businesses could still satisfy some of their need for skilled labor by recruiting from outside the NMC Service Area. We refer to this as the labor import effect. Lacking information on its possible magnitude, we assume 50% of the jobs that students fill at regional businesses could have been filled by workers recruited from outside the region if the college did not exist.<sup>19</sup> Consequently, the gross labor income must be adjusted to account for the importation of this labor, since it would have happened regardless of the presence of the college. We conduct a sensitivity analysis for this assumption in Appendix 1. With the 50% adjustment, the net added labor income added to the economy comes to \$74.0 million, as shown in Table 2.5.

The \$74.0 million in added labor income appears under the initial effect in the labor income column of Table 2.6. To this we add an estimate for initial non-labor income. As discussed earlier in this section, businesses that employ former students of NMC see higher profits as a result of the increased productivity of their capital assets. To estimate this additional income, we allocate the initial increase in labor income (\$74.0 million) to the six-digit NAICS industry sectors where students are most likely to be employed. This allocation entails a process that maps completers in the region to the detailed occupations for which those completers have been trained, and then maps the detailed occupations to the six-digit industry sectors in the MR-SAM model.<sup>20</sup> Using a crosswalk created by National Center for Education Statistics (NCES) and the Bureau of Labor Statistics, we map the breakdown of the college's completers to the approximately 700 detailed occupations in the Standard Occupational Classification (SOC) system. Finally, we apply a matrix of wages by industry and by occupation from the MR-SAM model to map the occupational distribution of the \$74.0 million in initial labor income effects to the detailed industry sectors in the MR-SAM model.<sup>21</sup>

**Table 2.6: Alumni impact, FY 2021-22**

|  | Labor income<br>(thousands) | Non-labor income<br>(thousands) | Total income<br>(thousands) | Sales<br>(thousands) | Jobs<br>supported |
|--|-----------------------------|---------------------------------|-----------------------------|----------------------|-------------------|
| <b>Initial effect</b>                      | <b>\$73,997</b>             | <b>\$32,449</b>                 | <b>\$106,446</b>            | <b>\$218,589</b>     | <b>1,494</b>      |
| <b>Multiplier effect</b>                   |                             |                                 |                             |                      |                   |
| Direct effect                              | \$12,848                    | \$5,387                         | \$18,235                    | \$37,917             | 269               |
| Indirect effect                            | \$3,616                     | \$1,541                         | \$5,157                     | \$10,665             | 75                |
| Induced effect                             | \$23,071                    | \$11,040                        | \$34,110                    | \$67,994             | 467               |
| <b>Total multiplier effect</b>             | <b>\$39,534</b>             | <b>\$17,968</b>                 | <b>\$57,502</b>             | <b>\$116,576</b>     | <b>811</b>        |
| <b>Total impact (initial + multiplier)</b> | <b>\$113,531</b>            | <b>\$50,417</b>                 | <b>\$163,948</b>            | <b>\$335,164</b>     | <b>2,305</b>      |

Source: Lightcast impact model.

19 A similar assumption is used by Walden (2014) in his analysis of the Cooperating Raleigh Colleges.

20 Completer data comes from the Integrated Postsecondary Education Data System (IPEDS), which organizes program completions according to the Classification of Instructional Programs (CIP) developed by the National Center for Education Statistics (NCES).

21 For example, if the MR-SAM model indicates that 20% of wages paid to workers in SOC 51-4121 (Welders) occur in NAICS 332313 (Plate Work Manufacturing), then we allocate 20% of the initial labor income effect under SOC 51-4121 to NAICS 332313.





Once these allocations are complete, we apply the ratio of non-labor to labor income provided by the MR-SAM model for each sector to our estimate of initial labor income. This computation yields an estimated \$32.4 million in added non-labor income attributable to the college's alumni. Summing initial labor and non-labor income together provides the total initial effect of alumni productivity in the NMC Service Area economy, equal to approximately \$106.4 million. To estimate multiplier effects, we convert the industry-specific income figures generated through the initial effect to sales using sales-to-income ratios from the MR-SAM model. We then run the values through the MR-SAM's multiplier matrix.

Table 2.6 shows the multiplier effects of alumni. Multiplier effects occur as alumni generate an increased demand for consumer goods and services through the expenditure of their higher wages. Further, as the industries where alumni are employed increase their output, there is a corresponding increase in the demand for input from the industries in the employers' supply chain. Together, the incomes generated by the expansions in business input purchases and household spending constitute the multiplier effect of the increased productivity of the college's alumni. The final results are \$39.5 million in added labor income and \$18 million in added non-labor income, for an overall total of \$57.5 million in multiplier effects. The grand total of the alumni impact is \$163.9 million in total added income, the sum of all initial and multiplier labor and non-labor income effects. This is equivalent to supporting 2,305 jobs.



# Total NMC impact



The total economic impact of NMC on the NMC Service Area can be generalized into two broad types of impacts. First, on an annual basis, NMC generates a flow of spending that has a significant impact on the regional economy. The impacts of this spending are captured by the operations and student spending impacts. While not insignificant, these impacts do not capture the true purpose of NMC. The fundamental mission of NMC is to foster human capital. Every year, a new cohort of former NMC students adds to the stock of human capital in the region, and a portion of alumni continues to add to the regional economy.

Table 2.7 displays the grand total impacts of NMC on the NMC Service Area economy in FY 2021-22. For context, the percentages of NMC compared to the total labor income, total non-labor income, combined total income, sales, and jobs in the NMC Service Area, as presented in Table 1.3 and Figure 1.3, are included. The total added value of NMC is \$204.5 million, equivalent to 2.0% of the GRP of the NMC Service Area. By comparison, this contribution that the college provides on its own is nearly as large as the entire Transportation & Warehousing industry in the region. NMC's total impact supported 3,106 jobs in FY 2021-22. For perspective, this means that one out of every 42 jobs in the NMC Service Area is supported by the activities of NMC and its students.



**Table 2.7: Total NMC impact, FY 2021-22**

|                                   | Labor income<br>(thousands) | Non-labor income<br>(thousands) | Total income<br>(thousands) | Sales<br>(thousands) | Jobs<br>supported |
|-----------------------------------|-----------------------------|---------------------------------|-----------------------------|----------------------|-------------------|
| Operations spending               | \$35,047                    | \$2,319                         | \$37,366                    | \$60,081             | 749               |
| Student spending                  | \$1,861                     | \$1,323                         | \$3,184                     | \$11,270             | 51                |
| Alumni                            | \$113,531                   | \$50,417                        | \$163,948                   | \$335,164            | 2,305             |
| <b>Total impact</b>               | <b>\$150,439</b>            | <b>\$54,059</b>                 | <b>\$204,498</b>            | <b>\$406,515</b>     | <b>3,106</b>      |
| % of the NMC Service Area economy | 2.1%                        | 1.7%                            | 2.0%                        | 1.8%                 | 2.4%              |

Source: Lightcast impact model.



These impacts from the college and its students stem from different industry sectors and spread throughout the regional economy. Table 2.8 displays the total impact of NMC by each industry sector based on their two-digit NAICS code. The table shows the total impact of operations, students, and alumni, as shown in Table 2.7, broken down by each industry sector's individual impact on the regional economy using processes outlined earlier in this chapter. By showing the impact from individual industry sectors, it is possible to see in finer detail the industries that drive the greatest impact on the regional economy from the spending of the college and its students and from where NMC alumni are employed. For example, the spending of NMC and its students as well as the activities of its alumni in the Health Care & Social Assistance industry sector generated an impact of \$21.9 million in FY 2021-22.

**Table 2.8: Total NMC impact by industry, FY 2021-22**

| Industry sector                               | Total income (thousands) | Jobs supported |
|---|--------------------------|----------------|
| Government, Education                         | \$34,178                 | 734            |
| Retail Trade                                  | \$28,930                 | 482            |
| Health Care & Social Assistance               | \$21,907                 | 281            |
| Real Estate & Rental & Leasing                | \$14,541                 | 243            |
| Government, Non-Education                     | \$14,345                 | 163            |
| Construction                                  | \$11,802                 | 180            |
| Wholesale Trade                               | \$11,495                 | 54             |
| Manufacturing                                 | \$11,005                 | 106            |
| Accommodation & Food Services                 | \$8,794                  | 173            |
| Finance & Insurance                           | \$8,578                  | 58             |
| Professional & Technical Services             | \$8,308                  | 120            |
| Transportation & Warehousing                  | \$6,841                  | 80             |
| Information                                   | \$5,882                  | 35             |
| Other Services (except Public Administration) | \$5,182                  | 171            |
| Administrative & Waste Services               | \$3,302                  | 65             |
| Utilities                                     | \$2,365                  | 4              |
| Arts, Entertainment, & Recreation             | \$2,278                  | 64             |
| Educational Services                          | \$2,023                  | 62             |
| Mining, Quarrying, & Oil and Gas Extraction   | \$1,261                  | 7              |
| Agriculture, Forestry, Fishing, & Hunting     | \$823                    | 18             |
| Management of Companies & Enterprises         | \$659                    | 6              |
| <b>Total impact</b>                           | <b>\$204,498</b>         | <b>3,106</b>   |

Source: Lightcast impact model.



## Investment analysis

*The benefits generated by NMC affect the lives of many people. The most obvious beneficiaries are the college's students; they give up time and money to go to the college in return for a lifetime of higher wages and improved quality of life. But the benefits do not stop there. As students earn more, communities and citizens throughout Michigan benefit from an enlarged economy and a reduced demand for social services. In the form of increased tax revenues and public sector savings, the benefits of education extend as far as the state and local government.*

*Investment analysis is the process of evaluating total costs and measuring these against total benefits to determine whether or not a proposed venture will be profitable. If benefits outweigh costs, then the investment is worthwhile. If costs outweigh benefits, then the investment will lose money and could be considered infeasible. In this chapter, we evaluate NMC as an investment from the perspectives of students, taxpayers, and society.*



# Student perspective



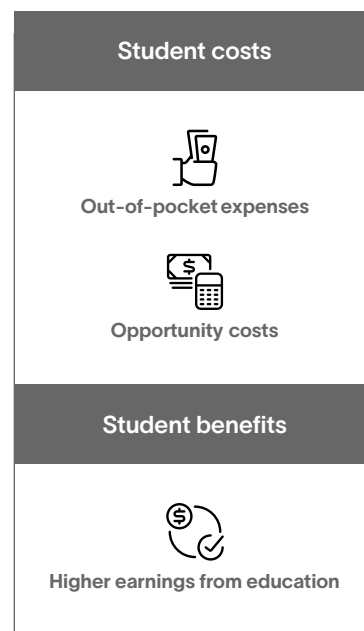
To enroll in postsecondary education, students pay for tuition and forgo monies that otherwise they would have earned had they chosen to work instead of attend college. From the perspective of students, education is the same as an investment; i.e., they incur a cost, or put up a certain amount of money, with the expectation of receiving benefits in return. The total costs consist of the tuition and fees that students pay and the opportunity cost of forgone time and money. The benefits are the higher earnings that students receive as a result of their education.

## Calculating student costs

Student costs consist of three main items: direct outlays, opportunity costs, and future principal and interest costs incurred from student loans. Direct outlays include tuition and fees, equal to \$18.3 million from Figure 1.1. Direct outlays also include the cost of books and supplies. On average, full-time students spent \$540 each on books and supplies during the reporting year.<sup>22</sup> Multiplying this figure by the number of full-time equivalents (FTEs) produced by NMC in FY 2021-22<sup>23</sup> generates a total cost of \$942.7 thousand for books and supplies.

In order to pay the cost of tuition, many students had to take out loans. These students not only incur the cost of tuition from the college but also incur the interest cost of taking out loans. In FY 2021-22, students received a total of \$4.2 million in federal loans to attend NMC.<sup>24</sup> Students pay back these loans along with interest over the span of several years in the future. Since students pay off these loans over time, they accrue no initial cost during the analysis year. Hence, to avoid double counting, the \$4.2 million in federal loans is subtracted from the costs incurred by students in FY 2021-22.

In addition to the cost of tuition, books, and supplies, students also experienced an opportunity cost of attending college during the analysis year. Opportunity cost is the most difficult component of student costs to estimate. It measures the value of time and earnings forgone by students who go to college rather than work. To calculate it,



<sup>22</sup> Based on the data provided by NMC.

<sup>23</sup> A single FTE is equal to 30 CHEs, so there were 1,746 FTEs produced by students in FY 2021-22, equal to 52,374 CHEs divided by the weighted average number of CHEs per student (excluding personal enrichment students).

<sup>24</sup> Due to data limitations, only federal loans are considered in this analysis.





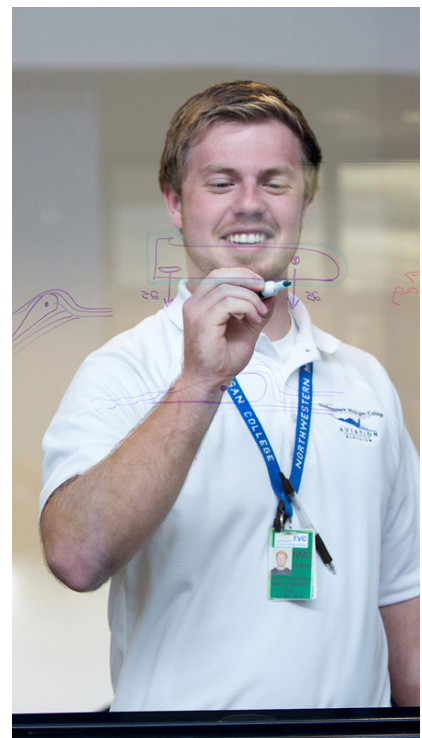
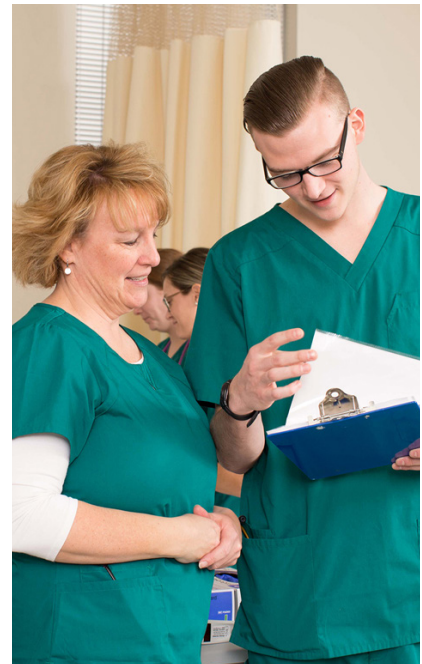
we need to know the difference between the students' full earning potential and what they actually earn while attending the college.

We derive the students' full earning potential by weighting the average annual earnings levels in Table 1.4 according to the education level breakdown of the student population at the start of the analysis year.<sup>25</sup> However, the earnings levels in Table 1.4 reflect what average workers earn at the midpoint of their careers, not while attending the college. Because of this, we adjust the earnings levels to the average age of the student population (26) to better reflect their wages at their current age.<sup>26</sup> This calculation yields an average full earning potential of \$18,731 per student.

In determining how much students earn while enrolled in postsecondary education, an important factor to consider is the time that they actually spend on postsecondary education, since this is the only time that they are required to give up a portion of their earnings. We use the students' CHE production as a proxy for time, under the assumption that the more CHEs students earn, the less time they have to work, and, consequently, the greater their forgone earnings. Overall, students attending NMC in FY 2021-22 earned an average of 11.8 CHEs per student (excluding personal enrichment students and dual credit high school students), which is approximately equal to 39% of a full academic year.<sup>27</sup> We thus include no more than \$7,379 (or 39%) of the students' full earning potential in the opportunity cost calculations.

Another factor to consider is the students' employment status while enrolled in postsecondary education. It is estimated that 73% of students are employed.<sup>28</sup> For the remainder of students, we assume that they are either seeking work or planning to seek work once they complete their educational goals (with the exception of personal enrichment students, who are not included in this calculation). By choosing to enroll, therefore, non-working students give up everything that they can potentially earn during the academic year (i.e., the \$7,379). The total value of their forgone earnings thus comes to \$8.1 million.

Working students are able to maintain all or part of their earnings while enrolled. However, many of them hold jobs that pay less than statistical averages, usually because those are the only jobs they can find that accommodate their course schedule. These jobs tend to be at entry level, such as restaurant servers or cashiers. To account for this, we assume that working students hold jobs that pay 83% of what they would have earned had they chosen to work full-time rather than go to college.<sup>29</sup> The remaining 17% comprises the percentage of their full earning potential that they forgo. Obviously, this assumption varies by person; some students forgo more and others less. Since



25 This is based on students who reported their prior level of education to NMC. The prior level of education data was then adjusted to exclude dual credit high school students.

26 Further discussion on this adjustment appears in Appendix 6.

27 Equal to 11.8 CHEs divided by 30, the assumed number of CHEs in a full-time academic year.

28 Based on data provided by NMC. This figure excludes dual credit high school students, who are not included in the opportunity cost calculations.

29 The 83% assumption is based on the average hourly wage of jobs commonly held by working students divided by the regional average hourly wage. Occupational wage estimates are published by the Bureau of Labor Statistics (see [http://www.bls.gov/oes/current/oes\\_nat.htm](http://www.bls.gov/oes/current/oes_nat.htm)).



we do not know the actual jobs that students hold while attending, the 17% in forgone earnings serves as a reasonable average.

Working students also give up a portion of their leisure time in order to attend higher education institutions. According to the Bureau of Labor Statistics American Time Use Survey, students forgo up to 0.1 hours of leisure time per day.<sup>30</sup> Assuming that an hour of leisure is equal in value to an hour of work, we derive the total cost of leisure by multiplying the number of leisure hours forgone during the academic year by the average hourly pay of the students' full earning potential. For working students, therefore, their total opportunity cost is \$4.0 million, equal to the sum of their forgone earnings (\$3.6 million) and forgone leisure time (\$404.0 thousand).

Thus far we have discussed student costs during the analysis year. However, recall that students take out student loans to attend college during the year, which they will have to pay back over time. The amount they will be paying in the future must be a part of their decision to attend the college today. Students who take out loans are not only required to pay back the principal of the loan but to also pay back a certain amount in interest. The first step in calculating students' loan interest cost is to determine the payback time for the loans. The \$4.2 million in loans was awarded to 731 students, averaging \$5,786 per student in the analysis year. However, this figure represents only one year of loans. Because loan payback time is determined by total indebtedness, we assume that since NMC is a two-year college, students will be indebted twice that amount, or \$11,572 on average. According to the U.S. Department of Education, this level of indebtedness will take up to 15 years to pay back under the standard repayment plan.<sup>31</sup>

This indebtedness calculation is used solely to estimate the loan payback period. Students will be paying back the principal amount of \$4.2 million over time. After taking into consideration the time value of money, this means that students will pay off a discounted present value of \$2.9 million in principal over the 15 years. In order to calculate interest, we only consider interest on the federal loans awarded to students in FY 2021-22. Using the student discount rate of 4.4%<sup>32</sup> as our interest rate, we calculate that students will pay a total discounted present value of \$1.2 million in interest on student loans throughout the first 15 years of their working lifetime. The stream of these future interest costs together with the stream of loan payments is included in the costs of Column 5 of Table 3.2.

The steps leading up to the calculation of student costs appear in Table 3.1. Direct outlays amount to \$14.3 million, the sum of tuition and fees (\$18.3 million) and books and supplies (\$942.7 thousand), less federal loans received (\$4.2 million) and \$665.4 thousand in direct outlays of personal enrichment students (those students are excluded from the cost calculations). Opportunity costs for working and non-working students

30 "American Time Use Survey, 2017-2019. Last modified November 30, 2021. Accessed March 2022. <https://www.bls.gov/tus/data.htm>.

31 Repayment period based on total education loan indebtedness, U.S. Department of Education, 2022. <https://studentaid.ed.gov/sa/repay-loans/understand/plans/standard>.

32 The student discount rate is derived from the three-year average of the baseline forecasts for the 10-year discount rate published by the Congressional Budget Office. See the Congressional Budget Office, Student Loan and Pell Grant Programs – May 2022 Baseline. <https://www.cbo.gov/data/baseline-projections-selected-programs>.





amount to \$12.1 million. Residual aid paid directly to students, offsetting costs, amounts to \$12.2 million.<sup>33</sup> Finally, we have the present value of future student loan costs, amounting to \$4.2 million between principal and interest. Summing direct outlays, opportunity costs, and future student loan costs together yields a total of \$18.4 million in present value student costs.

**Table 3.1: Present value of student costs, FY 2021-22 (thousands)**

|   |                  |
|---|------------------|
| <b>Direct outlays in FY 2021-22</b>                 |                  |
| Tuition and fees                                    | \$18,259         |
| Less federal loans received                         | -\$4,230         |
| Books and supplies                                  | \$943            |
| Less direct outlays of personal enrichment students | -\$665           |
| <b>Total direct outlays</b>                         | <b>\$14,307</b>  |
| <b>Opportunity costs in FY 2021-22</b>              |                  |
| Earnings forgone by non-working students            | \$8,053          |
| Earnings forgone by working students                | \$3,625          |
| Value of leisure time forgone by working students   | \$404            |
| <b>Total opportunity costs</b>                      | <b>\$12,082</b>  |
| Less residual aid                                   | -\$12,175        |
| <b>Total residual aid</b>                           | <b>-\$12,175</b> |
| <b>Future student loan costs (present value)</b>    |                  |
| Student loan principal                              | \$2,939          |
| Student loan interest                               | \$1,232          |
| <b>Total present value student loan costs</b>       | <b>\$4,171</b>   |
| <b>Total present value student costs</b>            | <b>\$18,385</b>  |

Source: Based on data provided by NMC and outputs of the Lightcast impact model.

## Linking education to earnings

Having estimated the costs of education to students, we weigh these costs against the benefits that students receive in return. The relationship between education and earnings is well documented and forms the basis for determining student benefits. As shown in Table 1.4, state mean earnings levels at the midpoint of the average-aged worker's career increase as people achieve higher levels of education. The differences between state earnings levels define the incremental benefits of moving from one education level to the next.

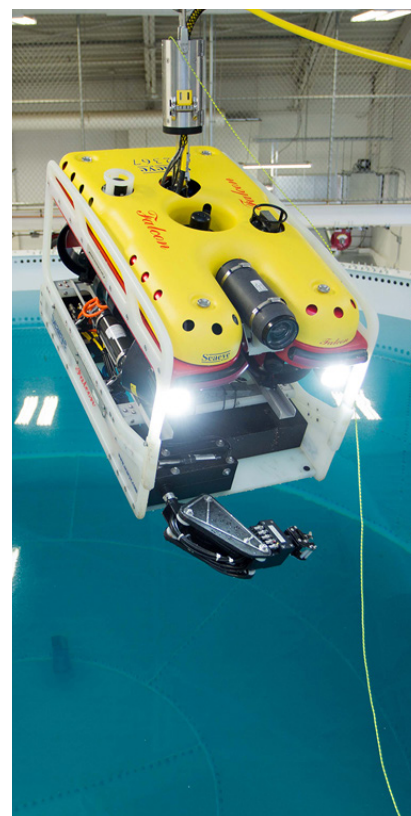
<sup>33</sup> Residual aid is the remaining portion of scholarship or grant aid distributed directly to a student after the college applies tuition and fees.

A key component in determining the students' return on investment is the value of their future benefits stream; i.e., what they can expect to earn in return for the investment they make in education. We calculate the future benefits stream to the college's FY 2021-22 students first by determining their average annual increase in earnings, equal to \$6.7 million. This value represents the higher wages that accrue to students at the midpoint of their careers and is calculated based on the marginal wage increases of the CHEs that students complete while attending the college. Using the state of Michigan earnings, the marginal wage increase per CHE is \$127. For a full description of the methodology used to derive the \$6.7 million, see Appendix 6.

The second step is to project the \$6.7 million annual increase in earnings into the future, for as long as students remain in the workforce. We do this using the Mincer function to predict the change in earnings at each point in an individual's working career.<sup>34</sup> The Mincer function originated from Mincer's seminal work on human capital (1958). The function estimates earnings using an individual's years of education and post-schooling experience. While some have criticized Mincer's earnings function, it is still upheld in recent data and has served as the foundation for a variety of research pertaining to labor economics. Card (1999 and 2001) addresses a number of these criticisms using U.S. based research over the last three decades and concludes that any upward bias in the Mincer parameters is on the order of 10% or less. We use state-specific and education level-specific Mincer coefficients. To account for any upward bias, we incorporate a 10% reduction in our projected earnings, otherwise known as the ability bias. With the \$6.7 million representing the students' higher earnings at the midpoint of their careers, we apply scalars from the Mincer function to yield a stream of projected future benefits that gradually increase from the time students enter the workforce, peak shortly after the career midpoint, and then dampen slightly as students approach retirement at age 67. This earnings stream appears in Column 2 of Table 3.2.

As shown in Table 3.2, the \$6.7 million in gross higher earnings occurs around Year 15, which is the approximate midpoint of the students' future working careers given the average age of the student population and an assumed retirement age of 67. In accordance with the Mincer function, the gross higher earnings that accrue to students in the years leading up to the midpoint are less than \$6.7 million and the gross higher earnings in the years after the midpoint are greater than \$6.7 million.

The final step in calculating the students' future benefits stream is to net out the potential benefits generated by students who are either not yet active in the workforce or who leave the workforce over time. This adjustment appears in Column 3 of Table 3.2 and represents the percentage of the FY 2021-22 student population that will be employed in the workforce in a given year. Note that the percentages in the first five years of the time horizon are relatively lower than those in subsequent years. This is because many students delay their entry into the workforce, either because they are still enrolled at the college or because they are unable to find a job immediately upon graduation. Accordingly, we apply a set of "settling-in" factors to account for the time needed by students to find employment and settle into their careers. As discussed



<sup>34</sup> Appendix 6 provides more information on the Mincer function and how it is used to predict future earnings growth.

**Table 3.2: Projected benefits and costs, student perspective**

| 1                    | 2  | 3                      | 4  | 5                        | 6                        |
|----------------------|--|------------------------|--|--------------------------|--------------------------|
| Year                 | Gross higher earnings to students (millions) | % active in workforce* | Net higher earnings to students (millions) | Student costs (millions) | Net cash flow (millions) |
| 0                    | \$3.4  | 10%                    | \$0.4                                      | \$14.2                   | -\$13.9                  |
| 1                    | \$3.6  | 17%                    | \$0.6                                      | \$0.4                    | \$0.2                    |
| 2                    | \$3.9  | 25%                    | \$1.0                                      | \$0.4                    | \$0.6                    |
| 3                    | \$4.1  | 40%                    | \$1.6                                      | \$0.4                    | \$1.2                    |
| 4                    | \$4.3  | 61%                    | \$2.6                                      | \$0.4                    | \$2.2                    |
| 5                    | \$4.5  | 96%                    | \$4.4                                      | \$0.4                    | \$4.0                    |
| 6                    | \$4.8  | 96%                    | \$4.6                                      | \$0.4                    | \$4.2                    |
| 7                    | \$5.0  | 96%                    | \$4.8                                      | \$0.4                    | \$4.4                    |
| 8                    | \$5.2  | 96%                    | \$5.0                                      | \$0.4                    | \$4.6                    |
| 9                    | \$5.4  | 96%                    | \$5.2                                      | \$0.4                    | \$4.8                    |
| 10                   | \$5.7  | 95%                    | \$5.4                                      | \$0.4                    | \$5.0                    |
| 11                   | \$5.9  | 95%                    | \$5.6                                      | \$0.4                    | \$5.2                    |
| 12                   | \$6.1  | 95%                    | \$5.8                                      | \$0.4                    | \$5.4                    |
| 13                   | \$6.3  | 95%                    | \$6.0                                      | \$0.4                    | \$5.6                    |
| 14                   | \$6.5  | 95%                    | \$6.1                                      | \$0.4                    | \$5.7                    |
| 15                   | \$6.7  | 94%                    | \$6.3                                      | \$0.4                    | \$5.9                    |
| 16                   | \$6.8  | 94%                    | \$6.4                                      | \$0.0                    | \$6.4                    |
| 17                   | \$7.0  | 94%                    | \$6.6                                      | \$0.0                    | \$6.6                    |
| 18                   | \$7.1  | 94%                    | \$6.7                                      | \$0.0                    | \$6.7                    |
| 19                   | \$7.3  | 93%                    | \$6.8                                      | \$0.0                    | \$6.8                    |
| 20                   | \$7.4  | 93%                    | \$6.9                                      | \$0.0                    | \$6.9                    |
| 21                   | \$7.5  | 93%                    | \$6.9                                      | \$0.0                    | \$6.9                    |
| 22                   | \$7.6  | 92%                    | \$7.0                                      | \$0.0                    | \$7.0                    |
| 23                   | \$7.6  | 92%                    | \$7.0                                      | \$0.0                    | \$7.0                    |
| 24                   | \$7.7  | 92%                    | \$7.1                                      | \$0.0                    | \$7.1                    |
| 25                   | \$7.7  | 91%                    | \$7.0                                      | \$0.0                    | \$7.0                    |
| 26                   | \$7.7  | 91%                    | \$7.0                                      | \$0.0                    | \$7.0                    |
| 27                   | \$7.7  | 90%                    | \$7.0                                      | \$0.0                    | \$7.0                    |
| 28                   | \$7.7  | 90%                    | \$6.9                                      | \$0.0                    | \$6.9                    |
| 29                   | \$7.7  | 89%                    | \$6.8                                      | \$0.0                    | \$6.8                    |
| 30                   | \$7.6  | 88%                    | \$6.7                                      | \$0.0                    | \$6.7                    |
| 31                   | \$7.6  | 88%                    | \$6.6                                      | \$0.0                    | \$6.6                    |
| 32                   | \$7.5  | 87%                    | \$6.5                                      | \$0.0                    | \$6.5                    |
| 33                   | \$7.4  | 86%                    | \$6.3                                      | \$0.0                    | \$6.3                    |
| 34                   | \$7.2  | 85%                    | \$6.2                                      | \$0.0                    | \$6.2                    |
| 35                   | \$7.1  | 84%                    | \$6.0                                      | \$0.0                    | \$6.0                    |
| 36                   | \$7.0  | 83%                    | \$5.8                                      | \$0.0                    | \$5.8                    |
| 37                   | \$6.8  | 82%                    | \$5.6                                      | \$0.0                    | \$5.6                    |
| 38                   | \$6.6  | 81%                    | \$5.4                                      | \$0.0                    | \$5.4                    |
| 39                   | \$6.4  | 80%                    | \$5.1                                      | \$0.0                    | \$5.1                    |
| 40                   | \$6.3  | 78%                    | \$4.9                                      | \$0.0                    | \$4.9                    |
| <b>Present value</b> |  |                        | <b>\$95.0</b>                              | <b>\$18.4</b>            | <b>\$76.6</b>            |

\* Includes the "settling-in" factors and attrition.

Source: Lightcast impact model.



Benefit-cost ratio

5.2



Internal rate of return

20.3%



Payback period (years)

6.3





in Chapter 2, settling-in factors delay the onset of the benefits by one to three years for students who graduate with a certificate or a degree and by one to five years for degree-seeking students who do not complete during the analysis year.

Beyond the first five years of the time horizon, students will leave the workforce for any number of reasons, whether death, retirement, or unemployment. We estimate the rate of attrition using the same data and assumptions applied in the calculation of the attrition rate in the economic impact analysis of Chapter 2.<sup>35</sup> The likelihood of leaving the workforce increases as students age, so the attrition rate is more aggressive near the end of the time horizon than in the beginning. Column 4 of Table 3.2 shows the net higher earnings to students after accounting for both the settling-in patterns and attrition.

## Return on investment for students

Having estimated the students' costs and their future benefits stream, the next step is to discount the results to the present to reflect the time value of money. For the student perspective we assume a discount rate of 4.4% (see below). Because students tend to rely upon debt to pay for education – i.e. they are negative savers – their discount rate is based upon student loan interest rates.<sup>36</sup> In Appendix 1, we conduct a sensitivity analysis of this discount rate. The present value of the benefits is then compared to student costs to derive the investment analysis results, expressed in terms of a benefit-cost ratio, rate of return, and payback period. The investment is feasible if returns match or exceed the minimum threshold values; i.e., a benefit-cost ratio greater than 1.0, a rate of return that exceeds the discount rate, and a reasonably short payback period.

### Discount rate

The discount rate is a rate of interest that converts future costs and benefits to present values. For example, \$1,000 in higher earnings realized 30 years in the future is worth much less than \$1,000 in the present. All future values must therefore be expressed in present value terms in order to compare them with investments (i.e., costs) made today. The selection of an appropriate discount rate, however, can become an arbitrary and controversial undertaking. As suggested in economic theory, the discount rate should reflect the investor's opportunity cost of capital, i.e., the rate of return one could reasonably expect to obtain from alternative investment schemes. In this study we assume a 4.4% discount rate from the student perspective and a 0.2% discount rate from the perspectives of taxpayers and society.

In Table 3.2, the net higher earnings of students yield a cumulative discounted sum of approximately \$95.0 million, the present value of all of the future earnings increments (see the bottom section of Column 4). This may also be interpreted as the gross

<sup>35</sup> See the discussion of the alumni impact in Chapter 2. The main sources for deriving the attrition rate are the National Center for Health Statistics, the Social Security Administration, and the Bureau of Labor Statistics. Note that we do not account for migration patterns in the student investment analysis because the higher earnings that students receive as a result of their education will accrue to them regardless of where they find employment.

<sup>36</sup> The student discount rate is derived from the most recent three-year average baseline forecasts for the 10-year Treasury rate published by the Congressional Budget Office. See the Congressional Budget Office, Student Loan and Pell Grant Programs – May 2022 Baseline. <https://www.cbo.gov/data/baseline-projections-selected-programs>.



capital asset value of the students' higher earnings stream. In effect, the aggregate FY 2021-22 student body is rewarded for its investment in NMC with a capital asset valued at \$95.0 million.

The students' cost of attending the college is shown in Column 5 of Table 3.2, equal to a present value of \$18.4 million. Comparing the cost with the present value of benefits yields a student benefit-cost ratio of 5.2 (equal to \$95.0 million in benefits divided by \$18.4 million in costs).

Another way to compare the same benefits stream and associated cost is to compute the rate of return. The rate of return indicates the interest rate that a bank would have to pay a depositor to yield an equally attractive stream of future payments.<sup>37</sup> Table 3.2 shows students of NMC earning average returns of 20.3% on their investment of time and money. This is a favorable return compared, for example, to approximately 1% on a standard bank savings account, or 9.6% on stocks and bonds (30-year average return).

NMC students see an average rate of return of **20.3%** for their investment of time and money.

Note that returns reported in this study are real returns, not nominal. When a bank promises to pay a certain rate of interest on a savings account, it employs an implicitly nominal rate. Bonds operate in a similar manner. If it turns out that the inflation rate is higher than the stated rate of return, then money is lost in real terms. In contrast, a real rate of return is on top of inflation. For example, if inflation is running at 3% and a nominal percentage of 5% is paid, then the real rate of return on the investment is only 2%. In Table 3.2, the 20.3% student rate of return is a real rate. With an inflation rate of 2.5% (the average rate reported over the past 20 years as per the U.S. Department of Commerce, Consumer Price Index), the corresponding nominal rate of return is 22.8%, higher than what is reported in Table 3.2.

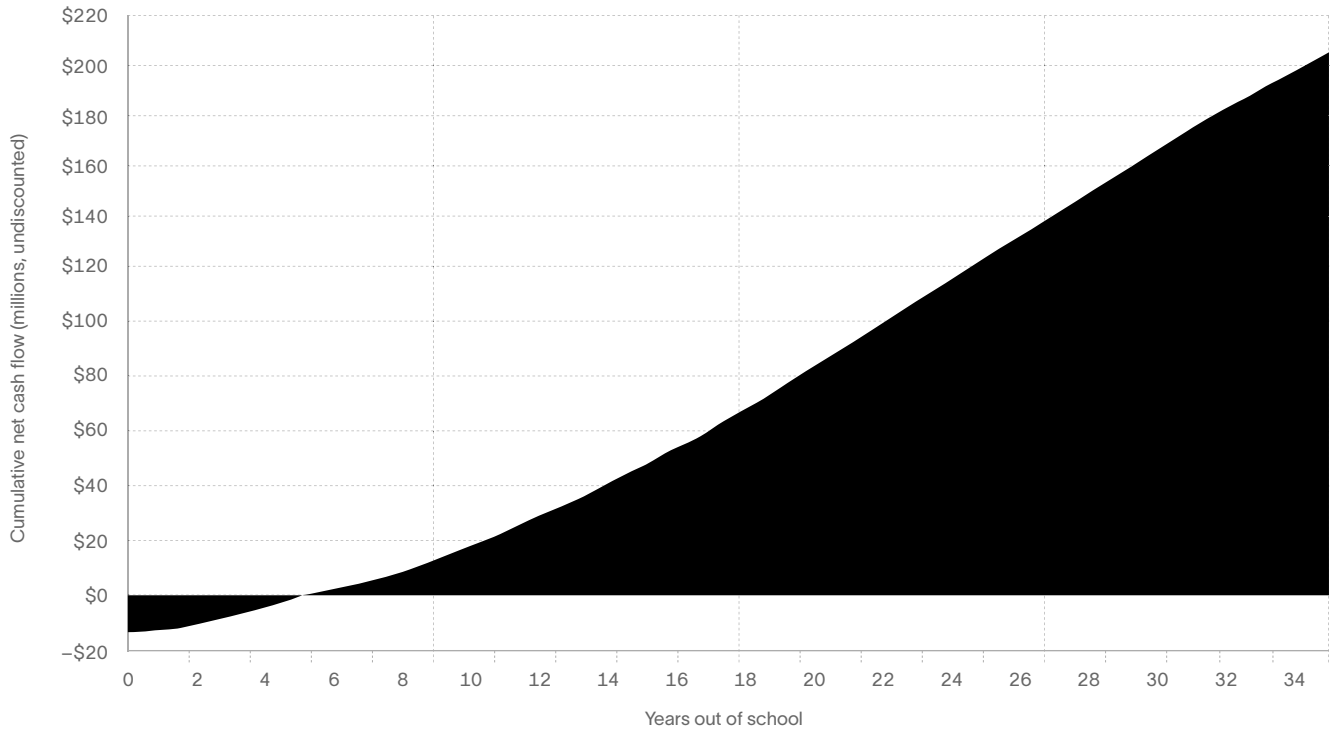
The payback period is defined as the length of time it takes to entirely recoup the initial investment.<sup>38</sup> Beyond that point, returns are what economists would call pure costless rent. As indicated in Table 3.2, students at NMC see, on average, a payback period of 6.3 years, meaning 6.3 years after their initial investment of forgone earnings and out-of-pocket costs, they will have received enough higher future earnings to fully recover those costs (Figure 3.1).

37 Rates of return are computed using the familiar internal rate-of-return calculation. Note that, with a bank deposit or stock market investment, the depositor puts up a principal, receives in return a stream of periodic payments, and then recovers the principal at the end. Someone who invests in education, on the other hand, receives a stream of periodic payments that include the recovery of the principal as part of the periodic payments, but there is no principal recovery at the end. These differences notwithstanding comparable cash flows for both bank and education investors yield the same internal rate of return.

38 Payback analysis is generally used by the business community to rank alternative investments when safety of investments is an issue. Its greatest drawback is it does not account for the time value of money. The payback period is calculated by dividing the cost of the investment by the net return per period. In this study, the cost of the investment includes tuition and fees plus the opportunity cost of time; it does not account for student living expenses.



Figure 3.1: Student payback period



Source: Lightcast impact model.





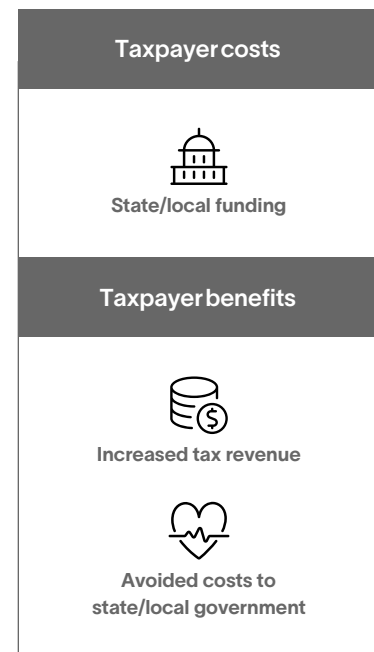


From the taxpayer perspective, the pivotal step is to determine the public benefits that specifically accrue to state and local government. For example, benefits resulting from earnings growth are limited to increased state and local tax payments. Similarly, savings related to improved health, reduced crime, and fewer welfare and unemployment claims, discussed below, are limited to those received strictly by state and local government. In all instances, benefits to private residents, local businesses, or the federal government are excluded.

## Growth in state tax revenues

As a result of their time at NMC, students earn more because of the skills they learned while attending the college, and businesses earn more because student skills make capital more productive (buildings, machinery, and everything else). This in turn raises profits and other business property income. Together, increases in labor and non-labor (i.e., capital) income are considered the effect of a skilled workforce. These in turn increase tax revenues since state and local government is able to apply tax rates to higher earnings.

Estimating the effect of NMC on increased tax revenues begins with the present value of the students' future earnings stream, which is displayed in Column 4 of Table 3.2. To these net higher earnings, we apply a multiplier derived from Lightcast's MR-SAM model to estimate the added labor income created in the state as students and businesses spend their higher earnings.<sup>39</sup> As labor income increases, so does non-labor income, which consists of monies gained through investments. To calculate the growth in non-labor income, we multiply the increase in labor income by a ratio of the Michigan gross state product to total labor income in the state. We also include the spending impacts discussed in Chapter 2 that were created in FY 2021-22 from operations and student spending, measured at the state level. To each of these, we apply the prevailing tax rates so we capture only the tax revenues attributable to state and local government from this additional revenue.



<sup>39</sup> For a full description of the Lightcast MR-SAM model, see Appendix 5.

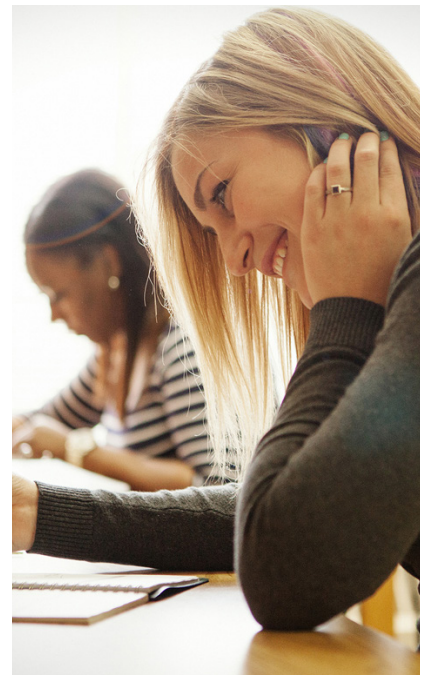


Not all of these tax revenues may be counted as benefits to the state, however. Some students leave the state during the course of their careers, and the higher earnings they receive as a result of their education leave the state with them. To account for this dynamic, we combine student settlement data from the college with data on migration patterns from the Internal Revenue Service to estimate the number of students who will leave the state workforce over time.

We apply another reduction factor to account for the students' alternative education opportunities. This is the same adjustment that we use in the calculation of the alumni impact in Chapter 2 and is designed to account for the counterfactual scenario where NMC does not exist. The assumption in this case is that any benefits generated by students who could have received an education even without the college cannot be counted as new benefits to society. For this analysis, we assume an alternative education variable of 15%, meaning that 15% of the student population at the college would have generated benefits anyway even without the college. For more information on the alternative education variable, see Appendix 7.

We apply a final adjustment factor to account for the "shutdown point" that nets out benefits that are not directly linked to the state and local government costs of supporting the college. As with the alternative education variable discussed under the alumni impact, the purpose of this adjustment is to account for counterfactual scenarios. In this case, the counterfactual scenario is where state and local government funding for NMC did not exist and NMC had to derive the revenue elsewhere. To estimate this shutdown point, we apply a sub-model that simulates the students' demand curve for education by reducing state and local support to zero and progressively increasing student tuition and fees. As student tuition and fees increase, enrollment declines. For NMC, the shutdown point adjustment is 0%, meaning that the college could not operate without taxpayer support. As such, no reduction applies. For more information on the theory and methodology behind the estimation of the shutdown point, see Appendix 9.

After adjusting for attrition, alternative education opportunities, and the shutdown point, we calculate the present value of the future added tax revenues that occur in the state, equal to \$32.8 million. Recall from the discussion of the student return on investment that the present value represents the sum of the future benefits that accrue each year over the course of the time horizon, discounted to current year dollars to account for the time value of money. Given that the stakeholder in this case is the public sector, we use the discount rate of 0.2%. This is the three-year average of the real Treasury interest rate reported by the Office of Management and Budget (OMB) for 30-year investments, and in Appendix 1, we conduct a sensitivity analysis of this discount rate.<sup>40</sup>



40 Office of Management and Budget. "Discount Rates for Cost-Effectiveness, Lease Purchase, and Related Analyses." Real Interest Rates on Treasury Notes and Bonds of Specified Maturities (in Percent). <https://www.whitehouse.gov/wp-content/uploads/2022/06/M-22-13-Discount-Rates.pdf>. Last revised March 15, 2022.

## Government savings

In addition to the creation of higher tax revenues to the state and local government, education is statistically associated with a variety of lifestyle changes that generate social savings, also known as external or incidental benefits of education. These represent the avoided costs to the government that otherwise would have been drawn from public resources absent the education provided by NMC. Government savings appear in Figure 3.2 and Table 3.3 and break down into three main categories: 1) health savings, 2) crime savings, and 3) income assistance savings. Health savings include avoided medical costs that would have otherwise been covered by state and local government. Crime savings consist of avoided costs to the justice system (i.e., police protection, judicial and legal, and corrections). Income assistance benefits comprise avoided costs due to the reduced number of welfare and unemployment insurance claims.

The model quantifies government savings by calculating the probability at each education level that individuals will have poor health, commit crimes, or claim welfare and unemployment benefits. Deriving the probabilities involves assembling data from a variety of studies and surveys analyzing the correlation between education and health, crime, and income assistance at the national and state level. We spread the probabilities across the education ladder and multiply the marginal differences by the number of students who achieved CHEs at each step. The sum of these marginal differences counts as the upper bound measure of the number of students who, due to the education they received at the college, will not have poor health, commit crimes, or demand income assistance. We dampen these results by the ability bias adjustment discussed earlier in the student perspective section and in Appendix 6 to account for factors (besides education) that influence individual behavior. We then multiply the marginal effects of education times the associated costs of health, crime, and income assistance.<sup>41</sup> Finally, we apply the same adjustments for attrition, alternative education,

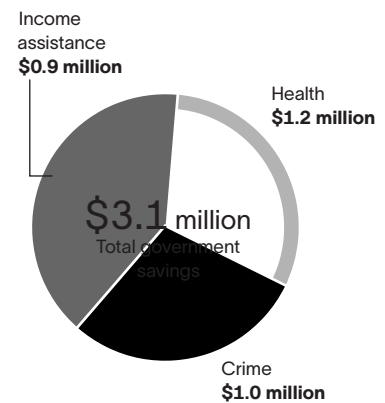
In addition to the creation of **higher tax revenues** to the state and local government, education is statistically associated with a variety of lifestyle changes that generate **social savings**.

**Table 3.3: Present value of added tax revenue and government savings (thousands)**

|                                 |                 |
|---------------------------------|-----------------|
| <b>Added tax revenue</b>        | <b>\$32,842</b> |
| <b>Government savings</b>       |                 |
| Health-related savings          | \$1,178         |
| Crime-related savings           | \$1,047         |
| Income assistance savings       | \$876           |
| <b>Total government savings</b> | <b>\$3,101</b>  |
| <b>Total taxpayer benefits</b>  | <b>\$35,943</b> |

Source: Lightcast impact model.

**Figure 3.2: Present value of government savings**



Source: Lightcast impact model.

<sup>41</sup> For a full list of the data sources used to calculate the social externalities, see the Resources and References section. See also Appendix 10 for a more in-depth description of the methodology.



and the shutdown point to derive the net savings to the government. Total government savings appear in Figure 3.2 and sum to \$3.1 million.

Table 3.3 displays all benefits to taxpayers. The first row shows the added tax revenues created in the state, equal to \$32.8 million, from students' higher earnings, increases in non-labor income, and spending impacts. The sum of the government savings and the added income in the state is \$35.9 million, as shown in the bottom row of Table 3.3. These savings continue to accrue in the future as long as the FY 2021-22 student population of NMC remains in the workforce.

## Return on investment for taxpayers

Taxpayer costs are reported in Table 3.4 and come to \$25.8 million, equal to the contribution of state and local government to NMC. In return for their public support, taxpayers will receive an investment benefit-cost ratio of 1.4 ( $= \$35.9 \text{ million} \div \$25.8 \text{ million}$ ), indicating a profitable investment.

At 2.1%, the rate of return to state and local taxpayers is favorable. Given that the stakeholder in this case is the public sector, we use the mentioned earlier discount rate of 0.2%, the three-year average of the real Treasury interest rate reported by the Office of Management and Budget for 30-year investments. This is the return governments are assumed to be able to earn on generally safe investments of unused funds, or alternatively, the interest rate for which governments, as relatively safe borrowers, can obtain funds. A rate of return of 0.2% would mean that the college just pays its own way. In principle, governments could borrow monies used to support NMC and repay the loans out of the resulting added taxes and reduced government expenditures. A rate of return of 2.1%, on the other hand, means that NMC not only pays its own way, but also generates a surplus that the state and local government can use to fund other programs.

Additionally, a benefit-cost ratio greater than 1.0 indicates a good public investment since the taxes from NMC student higher earnings and reduced government expenditures not only recover taxpayer costs but grow the Michigan tax base.

A benefit-cost ratio of **1.4** means NMC is a good public investment since the taxes from NMC student higher earnings and reduced government expenditures not only recover taxpayer costs but grow the Michigan tax base.



Table 3.4: Projected benefits and costs, taxpayer perspective

| 1                    | 2                                | 3   | 4                        |
|----------------------|----------------------------------|---|--------------------------|
| Year                 | Benefits to taxpayers (millions) | State & local government costs (millions) | Net cash flow (millions) |
| 0                    | \$3.4                            | \$25.8                                    | -\$22.4                  |
| 1                    | \$0.1                            | \$0.0                                     | \$0.1                    |
| 2                    | \$0.2                            | \$0.0                                     | \$0.2                    |
| 3                    | \$0.3                            | \$0.0                                     | \$0.3                    |
| 4                    | \$0.5                            | \$0.0                                     | \$0.5                    |
| 5                    | \$0.8                            | \$0.0                                     | \$0.8                    |
| 6                    | \$0.8                            | \$0.0                                     | \$0.8                    |
| 7                    | \$0.9                            | \$0.0                                     | \$0.9                    |
| 8                    | \$0.9                            | \$0.0                                     | \$0.9                    |
| 9                    | \$0.9                            | \$0.0                                     | \$0.9                    |
| 10                   | \$0.9                            | \$0.0                                     | \$0.9                    |
| 11                   | \$0.9                            | \$0.0                                     | \$0.9                    |
| 12                   | \$0.9                            | \$0.0                                     | \$0.9                    |
| 13                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 14                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 15                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 16                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 17                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 18                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 19                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 20                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 21                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 22                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 23                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 24                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 25                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 26                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 27                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 28                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 29                   | \$1.0                            | \$0.0                                     | \$1.0                    |
| 30                   | \$0.9                            | \$0.0                                     | \$0.9                    |
| 31                   | \$0.9                            | \$0.0                                     | \$0.9                    |
| 32                   | \$0.9                            | \$0.0                                     | \$0.9                    |
| 33                   | \$0.9                            | \$0.0                                     | \$0.9                    |
| 34                   | \$0.8                            | \$0.0                                     | \$0.8                    |
| 35                   | \$0.8                            | \$0.0                                     | \$0.8                    |
| 36                   | \$0.8                            | \$0.0                                     | \$0.8                    |
| 37                   | \$0.8                            | \$0.0                                     | \$0.8                    |
| 38                   | \$0.7                            | \$0.0                                     | \$0.7                    |
| 39                   | \$0.7                            | \$0.0                                     | \$0.7                    |
| 40                   | \$0.7                            | \$0.0                                     | \$0.7                    |
| <b>Present value</b> | <b>\$35.9</b>                    | <b>\$25.8</b>                             | <b>\$10.2</b>            |

Source: Lightcast impact model.



Benefit-cost ratio

1.4



Internal rate of return

2.1%



Payback period (years)

26.2

# Social perspective



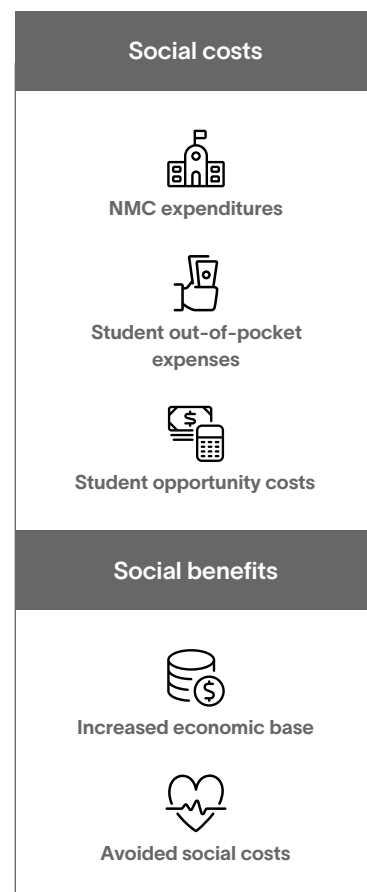
Michigan benefits from the education that NMC provides through the earnings that students create in the state and through the savings that they generate through their improved lifestyles. To receive these benefits, however, members of society must pay money and forgo services that they otherwise would have enjoyed if NMC did not exist. Society's investment in NMC stretches across a number of investor groups, from students to employers to taxpayers. We weigh the benefits generated by NMC to these investor groups against the total social costs of generating those benefits. The total social costs include all NMC expenditures, all student expenditures (including interest on student loans) less tuition and fees, and all student opportunity costs, totaling a present value of \$55.9 million.

On the benefits side, any benefits that accrue to Michigan as a whole – including students, employers, taxpayers, and anyone else who stands to benefit from the activities of NMC – are counted as benefits under the social perspective. We group these benefits under the following broad headings: 1) increased earnings in the state, and 2) social externalities stemming from improved health, reduced crime, and reduced unemployment in the state (see the Beekeeper Analogy box for a discussion of externalities). Both of these benefits components are described more fully in the following sections.

## Growth in state economic base

In the process of absorbing the newly acquired skills of students who attend NMC, not only does the productivity of the Michigan workforce increase, but so does the productivity of its physical capital and assorted infrastructure. Students earn more because of the skills they learned while attending the college, and businesses earn more because student skills make capital more productive (buildings, machinery, and everything else). This in turn raises profits and other business property income. Together, increases in labor and non-labor (i.e., capital) income are considered the effect of a skilled workforce.

Estimating the effect of NMC on the state's economic base follows a similar process used when calculating increased tax revenues in the taxpayer perspective. However, instead of looking at just the tax revenue portion, we include all of the added earnings





### Beekeeper analogy

Beekeepers provide a classic example of positive externalities (sometimes called “neighborhood effects”). The beekeeper’s intention is to make money selling honey. Like any other business, receipts must at least cover operating costs. If they don’t, the business shuts down.

But from society’s standpoint, there is more. Flowers provide the nectar that bees need for honey production, and smart beekeepers locate near flower-

ing sources such as orchards. Nearby orchard owners, in turn, benefit as the bees spread the pollen necessary for orchard growth and fruit production. This is an uncompensated external benefit of beekeeping, and economists have long recognized that society might actually do well to subsidize activities that produce positive externalities, such as beekeeping.

Educational institutions are like beekeepers. While their principal aim is to

provide education and raise people’s earnings, in the process they create an array of external benefits. Students’ health and lifestyles are improved, and society indirectly benefits just as orchard owners indirectly benefit from beekeepers. In an effort to provide a more comprehensive report of the benefits generated by education, the model accounts for many of these external social benefits.



and business output. First, we calculate the students’ future higher earnings stream. We factor in student attrition and alternative education opportunities to arrive at net higher earnings. We again apply multipliers derived from Lightcast’s MR-SAM model to estimate the added labor and non-labor income created in the state as students and businesses spend their higher earnings and as businesses generate additional profits from this increased output (added student and business income in Figure 3.3). We also include the operations and student spending impacts discussed in Chapter 2 that were created in FY 2021-22, measured at the state level (added income from college activities in Figure 3.3). The shutdown point does not apply to the growth of the economic base because the social perspective captures not only the state and local taxpayer support to the college, but also the support from the students and other non-government sources.

Using this process, we calculate the present value of the future added income that occurs in the state, equal to \$402.1 million. Recall from the discussion of the student and taxpayer return on investment that the present value represents the sum of the future benefits that accrue each year over the course of the time horizon, discounted to current year dollars to account for the time value of money. As stated in the taxpayer perspective, given that the stakeholder in this case is the public sector, we use the discount rate of 0.2%.

### Social savings

Similar to the government savings discussed above, society as a whole sees savings due to external or incidental benefits of education. These represent the avoided costs that otherwise would have been drawn from private and public resources absent the education provided by NMC. Social benefits appear in Table 3.5 and break down into three main categories: 1) health savings, 2) crime savings, and 3) income assistance savings. These are similar to the categories from the taxpayer perspective above, although health savings now also include lost productivity and other effects associated with smoking, alcohol dependence, obesity, depression, and drug abuse. In addition





to avoided costs to the justice system, crime savings also consist of avoided victim costs and benefits stemming from the added productivity of individuals who otherwise would have been incarcerated. Income assistance savings are comprised of the avoided government costs due to the reduced number of welfare and unemployment insurance claims.

Table 3.5 displays the results of the analysis. The first row shows the increased economic base in the state, equal to \$402.1 million, from students' higher earnings and their multiplier effects, increases in non-labor income, and spending impacts. Social savings appear next, beginning with a breakdown of savings related to health. These include savings due to a reduced demand for medical treatment and social services, improved worker productivity and reduced absenteeism, and a reduced number of vehicle crashes and fires induced by alcohol or smoking-related incidents. Although the prevalence of these health conditions generally declines as individuals attain higher levels of education, prevalence rates are sometimes higher for individuals with certain levels of education. For example, adults with college degrees may be more likely to spend more on alcohol and become dependent on alcohol. Thus, in some cases the social savings associated with a health factor can be negative. Nevertheless, the overall health savings for society are positive, amounting to \$7.8 million. Crime savings amount to \$1.2 million, including savings associated with a reduced number of crime victims, added worker productivity, and reduced expenditures for police and law enforcement,

**Table 3.5: Present value of the future increased economic base and social savings in the state (thousands)**

|  |                  |
|--|------------------|
| <b>Increased economic base</b>                         | <b>\$402,053</b> |
| <b>Social savings</b>                                  |                  |
| <b>Health</b>  |                  |
| Smoking  | \$8,691          |
| Alcohol dependence                                     | -\$1,295         |
| Obesity  | \$2,557          |
| Depression   | -\$2,209         |
| Drug abuse   | \$15             |
| <b>Total health savings*</b>                           | <b>\$7,760</b>   |
| <b>Crime</b>   |                  |
| Criminal justice system savings                        | \$1,036          |
| Crime victim savings                                   | \$27             |
| Added productivity                                     | \$110            |
| <b>Total crime savings</b>                             | <b>\$1,173</b>   |
| <b>Income assistance</b>                               |                  |
| Welfare savings  | \$671            |
| Unemployment savings                                   | \$205            |
| <b>Total income assistance savings</b>                 | <b>\$876</b>     |
| <b>Total social savings</b>                            | <b>\$9,808</b>   |
| <b>Total, increased economic base + social savings</b> | <b>\$411,861</b> |

\* In some cases, health savings may be negative. This is due to increased prevalence rates at certain education levels.

Source: Lightcast impact model.



courts and administration of justice, and corrective services. Finally, the present value of the savings related to income assistance amounts to \$875.6 thousand, stemming from a reduced number of persons in need of welfare or unemployment benefits. All told, social savings amounted to \$9.8 million in benefits to communities and citizens in Michigan.

The sum of the social savings and the increased state economic base is \$411.9 million, as shown in the bottom row of Table 3.5 and in Figure 3.3. These savings accrue in the future as long as the FY 2021–22 student population of NMC remains in the workforce.

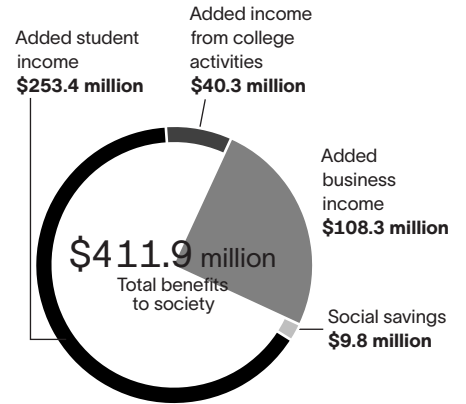
### Return on investment for society

Table 3.6 presents the stream of benefits accruing to the Michigan society and the total social costs of generating those benefits. Comparing the present value of the benefits and the social costs, we have a benefit-cost ratio of 7.4. This means that for every dollar invested in an education from NMC, whether it is the money spent on operations of the college or money spent by students on tuition and fees, an average of \$7.40 in benefits will accrue to society in Michigan.<sup>42</sup>

### With and without social savings

Earlier in this chapter, social benefits attributable to education (improved health, reduced crime, and reduced demand for income assistance) were defined as externalities that are incidental to the operations of NMC. Some would question the legitimacy of including these benefits in the calculation of rates of return to education, arguing that only the tangible benefits (higher earnings) should be counted. Table 3.4 and Table 3.6 are inclusive of social benefits reported as attributable to NMC. Recognizing the other point of view, Table 3.7 shows rates of return for both the taxpayer and social perspectives exclusive of social benefits. As indicated, returns are still above threshold levels (a net present value greater than zero and a benefit-cost ratio greater than 1.0), confirming that taxpayers and society as a whole receive value from investing in NMC.

**Figure 3.3: Present value of benefits to society**



Source: Lightcast impact model.

**Table 3.7: Social perspectives with and without social savings**

|                               | Including social savings | Excluding social savings |
|-------------------------------|--------------------------|--------------------------|
| <b>Taxpayer perspective</b>   |                          |                          |
| Net present value (millions)  | \$10.2                   | \$7.1                    |
| Benefit-cost ratio            | 1.4                      | 1.3                      |
| Internal rate of return       | 2.1%                     | 1.5%                     |
| Payback period (no. of years) | 26.2                     | 29.7                     |
| <b>Social perspective</b>     |                          |                          |
| Net present value (millions)  | \$356.0                  | \$346.2                  |
| Benefit-cost ratio            | 7.4                      | 7.2                      |

Source: Lightcast impact model.

<sup>42</sup> The rate of return is not reported for the social perspective because the beneficiaries of the investment are not necessarily the same as the original investors.



**Table 3.6: Projected benefits and costs, social perspective**

| 1                    | 2                              | 3                       | 4                        |
|----------------------|--------------------------------|-------------------------|--------------------------|
| Year                 | Benefits to society (millions) | Social costs (millions) | Net cash flow (millions) |
| 0                    | \$41.2                         | \$50.2                  | -\$9.0                   |
| 1                    | \$1.3                          | \$0.4                   | \$0.9                    |
| 2                    | \$2.0                          | \$0.4                   | \$1.6                    |
| 3                    | \$3.4                          | \$0.4                   | \$3.0                    |
| 4                    | \$5.4                          | \$0.4                   | \$5.0                    |
| 5                    | \$8.9                          | \$0.4                   | \$8.5                    |
| 6                    | \$9.2                          | \$0.4                   | \$8.8                    |
| 7                    | \$9.5                          | \$0.4                   | \$9.1                    |
| 8                    | \$9.7                          | \$0.4                   | \$9.4                    |
| 9                    | \$10.0                         | \$0.4                   | \$9.6                    |
| 10                   | \$10.3                         | \$0.4                   | \$9.9                    |
| 11                   | \$10.5                         | \$0.4                   | \$10.1                   |
| 12                   | \$10.7                         | \$0.4                   | \$10.3                   |
| 13                   | \$10.9                         | \$0.4                   | \$10.5                   |
| 14                   | \$11.1                         | \$0.4                   | \$10.7                   |
| 15                   | \$11.3                         | \$0.4                   | \$10.9                   |
| 16                   | \$11.4                         | \$0.0                   | \$11.4                   |
| 17                   | \$11.5                         | \$0.0                   | \$11.5                   |
| 18                   | \$11.6                         | \$0.0                   | \$11.6                   |
| 19                   | \$11.7                         | \$0.0                   | \$11.7                   |
| 20                   | \$11.8                         | \$0.0                   | \$11.8                   |
| 21                   | \$11.8                         | \$0.0                   | \$11.8                   |
| 22                   | \$11.8                         | \$0.0                   | \$11.8                   |
| 23                   | \$11.7                         | \$0.0                   | \$11.7                   |
| 24                   | \$11.7                         | \$0.0                   | \$11.7                   |
| 25                   | \$11.6                         | \$0.0                   | \$11.6                   |
| 26                   | \$11.5                         | \$0.0                   | \$11.5                   |
| 27                   | \$11.3                         | \$0.0                   | \$11.3                   |
| 28                   | \$11.2                         | \$0.0                   | \$11.2                   |
| 29                   | \$11.0                         | \$0.0                   | \$11.0                   |
| 30                   | \$10.7                         | \$0.0                   | \$10.7                   |
| 31                   | \$10.5                         | \$0.0                   | \$10.5                   |
| 32                   | \$10.2                         | \$0.0                   | \$10.2                   |
| 33                   | \$9.9                          | \$0.0                   | \$9.9                    |
| 34                   | \$9.6                          | \$0.0                   | \$9.6                    |
| 35                   | \$9.3                          | \$0.0                   | \$9.3                    |
| 36                   | \$8.9                          | \$0.0                   | \$8.9                    |
| 37                   | \$8.6                          | \$0.0                   | \$8.6                    |
| 38                   | \$8.2                          | \$0.0                   | \$8.2                    |
| 39                   | \$7.8                          | \$0.0                   | \$7.8                    |
| 40                   | \$7.4                          | \$0.0                   | \$7.4                    |
| <b>Present value</b> | <b>\$411.9</b>                 | <b>\$55.9</b>           | <b>\$356.0</b>           |

Source: Lightcast impact model.



Benefit-cost ratio

7.4



Payback period (years)

3.7

Chapter 4:

# Conclusion





**W**HILE NMC'S VALUE to the NMC Service Area is larger than simply its economic impact, understanding the dollars and cents value is an important asset to understanding the college's value as a whole. In order to fully assess NMC's value to the regional economy, this report has evaluated the college from the perspectives of economic impact analysis and investment analysis.

From an economic impact perspective, we calculated that NMC generates a total economic impact of **\$204.5 million** in total added income for the regional economy. This represents the sum of several different impacts, including the college's:

- Operations spending impact (**\$37.4 million**);
- Student spending impact (**\$3.2 million**); and
- Alumni impact (**\$163.9 million**).

The total impact of \$204.5 million is equivalent to approximately **2.0%** of the total GRP of the NMC Service Area and is equivalent to supporting **3,106 jobs**. For perspective, this means that **one out of every 42 jobs** in the NMC Service Area is supported by the activities of NMC and its students.

**One out of every 42 jobs** in the NMC Service Area is supported by the activities of NMC and its students.

Since NMC's activity represents an investment by various parties, including students, taxpayers, and society as a whole, we also evaluated the college as an investment to see the value it provides to these investors. For each dollar invested by students, taxpayers, and society, NMC offers a benefit of **\$5.20**, **\$1.40**, and **\$7.40**, respectively. These results indicate that NMC is an attractive investment to students with rates of return that exceed alternative investment opportunities. At the same time, the presence of the college expands the state economy and creates a wide range of positive social benefits that accrue to taxpayers and society in general within Michigan.

Modeling the impact of the college is subject to many factors, the variability of which we considered in our sensitivity analysis (Appendix 1). With this variability accounted for, we present the findings of this study as a robust picture of the economic value of NMC.

Lightcast provides colleges and universities with labor market data that help create better outcomes for students, businesses, and communities. Our data, which cover more than 99% of the U.S. workforce, are compiled from a wide variety of government sources, job postings, and online profiles and résumés. Hundreds of institutions use Lightcast to align programs with regional needs, drive enrollment, connect students with in-demand careers, track their alumni's employment outcomes, and demonstrate their institution's economic impact on their region. Visit [lightcast.io/solutions/education](https://lightcast.io/solutions/education) to learn more or connect with us.

## Resources and references

## Appendices

Administration for Children and Families. "Fiscal Year 2016 TANF Financial Data." *Office of Family Assistance, TANF Financial Data* 2018. <https://www.acf.hhs.gov/ofa/resource/tanf-financial-data-fy-2016>.

Baryla, Edward and Douglas Dotterweich. "Student Migration: Do Significant Factors Vary by Region?" *Education Economics* 9, no. 3 (2001).

Becker, Gary S. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* New York: Columbia College Press for NBER, 1964.

Bilkic, Natasa, Thomas Gries, and Margarethe Pilichowski. "Stay in School or Start Working? The Human Capital Investment Decision under Uncertainty and Irreversibility." *Labour Economics* 19, no. 5 (October 2012): 706-717.

Bureau of Labor Statistics. *American Time Use Survey*. 2018, 2019, and 2021. Last modified July 2022. <https://www.bls.gov/tus/data.htm>.

Bureau of Justice Statistics. "Table 2: Prisoners under the Jurisdiction of State or Federal Correctional Authorities, by Jurisdiction, December 31, 2015 and 2016." *Prisoners in 2016, NCJ 251149*, 2018. <https://www.bjs.gov/content/pub/pdf/p16.pdf>.

Bureau of Labor Statistics. "Medical care commodities in U.S. city average, all urban consumers, not seasonally adjusted." CPI for All Urban Consumers (CPI-U). <https://beta.bls.gov/dataViewer/view/timeseries/CUUR0000SAM1>.

Bureau of Labor Statistics. "Table 3. Employment status of the civilian noninstitutional population by age, sex, and race" Current Population Survey, Labor Force Statistics, Household Data, Annual Averages. Last modified January 25, 2023. <https://www.bls.gov/cps/cpsaat03.htm>.

Bureau of Labor Statistics. "Table 7. Employment status of the civilian noninstitutional population 25 years and over by educational attainment, sex, race, and Hispanic or Latino ethnicity." Current Population Survey, Labor Force Statistics, Household Data Annual Averages, 2019. <http://www.bls.gov/cps/cpsaat07.pdf>.



- Bureau of Labor Statistics. Consumer Price Index. "All items in U.S. city average, all urban consumers, not seasonally adjusted." [https://data.bls.gov/timeseries/CUUR0000SA0?years\\_option=all\\_years](https://data.bls.gov/timeseries/CUUR0000SA0?years_option=all_years).
- Bureau of Labor Statistics. "Table A-10: Unemployment rates by age, sex, and marital status, seasonally adjusted." Labor Force Statistics from the Current Population Survey. March 2023. <https://www.bls.gov/web/empsit/cpseea10.htm>.
- Bureau of Labor Statistics. "Table 5.1 Unemployment rates and earnings by educational attainment, 2021." BLS Employment Projections. April 2022. <https://www.bls.gov/emp/tables/unemployment-earnings-education.htm>.
- Buss, Christian, Jeffrey Parker, and Jon Rivenburg. "Cost, Quality and Enrollment Demand at Liberal Arts Colleges." *Economics of Education Review* 23, no. 1 (February 2004): 57-65.
- Card, David. "The Causal Effect of Education on Earnings." *Handbook of Labor Economics* 3 (1999): 1801-1863.
- Card, David. "Estimating the Return to Schooling: Progress on Some Persistent Econometric Problems." *Econometrica* 69, no. 5 (September 2001): 1127-1160.
- Carson, Ann E. "Prisoners in 2018." *Bureau of Justice Statistics* NCJ 253516, April 2020. <https://www.bjs.gov/content/pub/pdf/p18.pdf>.
- Center on Budget and Policy Priorities. "Policy Basics—How Many Weeks of Unemployment are Available?" April 2018. <https://www.cbpp.org/sites/default/files/atoms/files/policybasics-uiweeks.pdf>.
- Centers for Disease Control and Prevention. "Current Cigarette Use Among Adults (Behavior Risk Factor Surveillance System) 2018." *Behavioral Risk Factor Surveillance System Prevalence and Trends Data* [Data set]. <https://www.cdc.gov/statesystem/cigaretteuseadult.html>.
- Centers for Disease Control and Prevention. "Heavy drinkers (adult men having more than 14 drinks per week and adult women having more than seven drink per week)." *Alcohol Consumption—2018, Behavioral Risk Factor Surveillance System Prevalence and Trends Data* [https://nccd.cdc.gov/BRFSSPrevalence/RdPage.aspx?rdReport=DPH\\_BRFSS.ExploreByTopic&rbLocationType=StatesAndMMSA&isIClass=-CLASS01&isITopic=Topic30&isIYear=2018](https://nccd.cdc.gov/BRFSSPrevalence/RdPage.aspx?rdReport=DPH_BRFSS.ExploreByTopic&rbLocationType=StatesAndMMSA&isIClass=-CLASS01&isITopic=Topic30&isIYear=2018).
- Centers for Disease Control and Prevention. "Table. Characteristics of Current Adult Cigarette Smokers." *National Health Interview Survey, United States, 2016*. [https://www.cdc.gov/mmwr/volumes/67/wr/mm6702a1.htm#T1\\_down](https://www.cdc.gov/mmwr/volumes/67/wr/mm6702a1.htm#T1_down).
- Centers for Medicare and Medicaid Services. "Table 05 National Health Expenditures, by Type of Sponsor." *NHE Tables*. April 2022. <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical>
- College Board. "Figure CP-1. Average Estimated Full-Time Undergraduate Budgets (Enrollment Weighted) by Sector, 2021-22." *The College Board, Annual Survey of Colleges, Trends in College Pricing and Student Aid 2021*. <https://research.collegeboard.org/trends/college-pricing>.
- Congressional Budget Office. "Table 5. Federal Student Loan Programs: Projected Interest Rates." *Congressional Budget Office Publications CBO's Baseline Projections for the Student Loan Program*. May 2022. <https://www.cbo.gov/system/files?file=2022-05/51310-2022-05-studentloan.pdf>.



- Criminal Justice Expenditure and Employment Extracts Program. "Table 4. Justice System Expenditure by Character, State and Type of Government, Fiscal Year 2015" *Justice Expenditure and Employment Extracts 2015 (preliminary) NCJ 251780*. <https://www.bjs.gov/index.cfm?ty=dcdetail&iid=286>.
- Damodaran, Aswath. "Historical Returns on Stocks, Bonds and Bills: 1928-2022" Stern School of Business at New York University. March 2023. [http://pages.stern.nyu.edu/~adamodar/New\\_Home\\_Page/datafile/histretSP.html](http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html).
- Dickerson, Andy, and Steven McIntosh. "The Impact of Distance to Nearest Education Institution on the Post Compulsory Education Participation Decision." *Urban Studies* 50, no. 4 (2013): 742-758.
- Dynarski, Susan M. "Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion." *American Economic Review* 93, no. 1 (2003): 279-288.
- Federal Bureau of Investigation, Criminal Justice Information Services Division. "Table 1: Crime in the United States." *Crime in the United States 2016, Offenses Known to Law Enforcement*. <https://ucr.fbi.gov/crime-in-the-u.s/2016/crime-in-the-u.s.-2016/tables/table-1>.
- Federal Bureau of Investigation, Criminal Justice Information Services Division. "Table 18: Estimated Number of Arrests, United States, 2016" in "Uniform Crime Reports." *Crime in the United States, 2016, Persons Arrested*. <https://ucr.fbi.gov/crime-in-the-u.s/2016/crime-in-the-u.s.-2016/tables/table-18>.
- Federal Deposit Insurance Corporation. "Monthly Rate Cap Information as of March 2023." *National Rates and Rate Caps—Monthly Update*. <https://www.fdic.gov/regulations/resources/rates/>.
- Federal Reserve Economic Data. "Gross Domestic Product: Implicit Price Deflator, Index 2012=100, Quarterly, Seasonally Adjusted." March 2023. <https://fred.stlouisfed.org/series/GDPDEF>.
- Finkelstein, Eric A., Marco da Costa DiBonaventura, Somali M. Burgess, and Brent C. Hale. "The Costs of Obesity in the Workplace." *Journal of Occupational and Environmental Medicine* 52, no. 10 (October 2010): 971-976.
- Greenberg, Paul, Andree-Anne Fournier, Tammy Sisitsky, Crystal Pike, and Ronald Kessler. "The Economic Burden of Adults with Major Depressive Disorder in the United States (2005 and 2010)" *Journal of Clinical Psychiatry* 76:2, 2015.
- Hamadeh, Mohamad and Roy Khoueiri. "Demand Elasticities for Higher Education in the United States." *International Journal of Business and Economic Perspectives* 5, no. 2 (2010): 60-67.
- Henderson, James M. and Richard E. Quandt. *Microeconomic Theory: A Mathematical Approach*. New York: McGraw-Hill Book Company, 1971.
- Hernández-Murillo, Rubén, Lesli S. Ott, Michael T. Owyang, and Denise Whalen. "Patterns of Interstate Migration in the United States from the Survey of Income and Program Participation." *Federal Reserve Bank of St. Louis Review* 93, no. 3 (May/June 2011): 169-186. <https://files.stlouisfed.org/files/htdocs/publications/review/11/05/169-186Hernandez.pdf>.
- Hilliard, Tom. "Out of Reach: Too Few New Yorkers are Earning a High School Equivalency Diploma." Table 3. *High School Equivalency Attainment in the United States, 2012-2016*. *Center for an Urban Future*. October 2018. <https://nycfuture.org/research/out-of-reach>.



- Jaeger, David A. and Marianne E. Page. "New Evidence on Sheepskin Effects in the Returns to Education." *The Review of Economics and Statistics* 78, no. 4 (November 1996): 733-740.
- Jamal Ahmed, Elyse Phillips, Andrea S. Gentzke, David M. Homa, Stephen D. Babb, Brian A. King, and Linda J. Neff. "Current Cigarette Smoking Among Adults—United States, 2016." *Morbidity and Mortality Weekly Report* 2018 67:53-59. DOI: <http://dx.doi.org/10.15585/mmwr.mm6702a1>.
- Kelchtermans, Stijn and Frank Verboven. "Participation and Study Decisions in a Public System of Higher Education." *Journal of Applied Econometrics* 25, no. 3 (2010): 355-391.
- Leigh, Andrew and Chris Ryan. "Estimating Returns to Education Using Different Natural Experiments Techniques." *Economics of Education Review* 27 (2008): 149-160.
- Leonesio, Michael V. "The Economics of Retirement: A Nontechnical Guide." *Social Security Bulletin* 59, no. 4 (Winter 1996): 29-50.
- Lightcast Labor Market Data and Software. <https://lightcast.io/>.
- NMCollister, Kathryn E., Michael T. French, and Hai Fang. "The Cost of Crime to Society: New Crime-Specific Estimates for Policy and Program Evaluation." *Drug and Alcohol Dependence* 108, no. 1-2 (April 2010): 98-109. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2835847>.
- Mincer, Jacob. "Investment in Human Capital and Personal Income Distribution." *Journal of Political Economy* 66, no. 4 (August 1958): 281-302.
- Mincer, Jacob. *Schooling, Experience and Earnings*. New York: National Bureau of Economic Research, 1974.
- National Center for Education Statistics. Integrated Post-secondary Education Data System (IPEDS). <http://nces.ed.gov/ipeds>.
- National Center for Health Statistics. "Table 58. Normal Weight, Overweight, and Obesity Among Persons 20 Years of Age and Over, by Selected Characteristics: United States, Selected Years 1988-1994 through 2011-2014." *Centers for Disease Control and Prevention, Health, United States, 2015* <https://www.cdc.gov/nchs/data/hus/2015/058.pdf>.
- National Employment Law Project. "Unemployment Insurance: An Overview of the Challenges and Strengths of Today's System." 2016. <https://waysandmeans.house.gov/wp-content/uploads/2016/09/20160907HR-Testimony-Conti.pdf>.
- National Survey on Drug Use and Health. "Table 20: Illicit Drug Use Disorder in the Past Year, by Age Group and State: Percentages, Annual Averages, and P Values from Tests of Differences between Percentages, 2015-2016 and 2016-2017." *Comparison of 2015-2016 and 2016-2017 Population Percentages (50 States and the District of Columbia)*. <https://www.samhsa.gov/data/report/comparison-2015-2016-and-2016-2017-nsduh-population-percentages-50-states-and-district>.
- National Survey on Drug Use and Health. "Table 31: Major Depressive Episode in the Past Year, by age group and state: Percentages, annual averages, and P values from tests of differences between percentages, 2015-2016 and 2016-2017." *Comparison of 2015-2016 and 2016-2017 Population Percentages (50 States and the District of Columbia)*. <https://www.samhsa.gov/data/report/comparison-2015-2016-and-2016-2017-nsduh-population-percentages-50-states-and-district>.





- National Survey on Drug Use and Health. "Table 8.39B: Major Depressive Episode (MDE) or MDE with Severe Impairment in Past Year among Persons Aged 18 or Older, and Receipt of Treatment for Depression in Past Year among Persons Aged 18 or Older with MDE or MDE with Severe Impairment in Past Year, by Demographic Characteristics: Percentages, 2017 and 2018." <https://www.samhsa.gov/data/report/2018-nsduh-detailed-tables>.
- National Survey on Drug Use and Health. "Table 8.40B: Major Depressive Episode (MDE) or MDE with Severe Impairment in Past Year among Persons Aged 18 or Older, and Receipt of Treatment for Depression in Past Year among Persons Aged 18 or Older with MDE or MDE with Severe Impairment in Past Year, by Geographic, Socioeconomic, and Health Characteristics: Numbers in Thousands, 2017 and 2018." <https://www.samhsa.gov/data/report/2018-nsduh-detailed-tables>.
- Nowotny, Kathryn, Ryan Masters, and Jason Boardman, 2016. "The relationship between education and health among incarcerated man and women in the United States" BMC Public Health. September 2016. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5009667/>.
- OECD (2023). "Household savings." <https://data.oecd.org/hha/household-savings.htm#indicator-chart>.
- Office of Management and Budget. "Discount Rates for Cost-Effectiveness, Lease Purchase, and Related Analyses." *Real Interest Rates on Treasury Notes and Bonds of Specified Maturities (in Percent)* June 3rd, 2022. <https://www.whitehouse.gov/wp-content/uploads/2022/06/M-22-13-Discount-Rates.pdf>.
- Office of Management and Budget. "Table 14.1—Total Government Receipts in Absolute Amounts and as Percentages of GDP: 1948–2022." OMB Historical Tables. <https://www.whitehouse.gov/omb/historical-tables/>.
- Ogden, Cynthia L., Molly M. Lamb, Margaret D. Carroll, and Katherine M. Flegal. "Figure 3. Prevalence of Obesity among Adults Aged 20 Years and Over, by Education, Sex, and Race and Ethnicity: United States 2005–2008." *Obesity and Socioeconomic Status in Adults: United States 2005–2008, National Center for Health Statistics* no. 50. (2010).
- Ogden Cynthia L., Tala H. Fakhouri, Margaret D. Carroll, Craig M. Hales, Cheryl D. Fryar, Xianfen Li, David S. Freedman. "Prevalence of Obesity Among Adults, by Household Income and Education—United States, 2011–2014" National Center for Health Statistics, Morbidity and Mortality Weekly Report, 66:1369–1373(2017). [https://www.cdc.gov/mmwr/volumes/66/wr/mm6650a1.htm?s\\_cid=mm6650a1\\_w#suggestedcitation](https://www.cdc.gov/mmwr/volumes/66/wr/mm6650a1.htm?s_cid=mm6650a1_w#suggestedcitation).
- Polachek, Solomon W. "Earnings Over the Lifecycle: The Mincer Earnings Function and its Applications." *Foundations and Trends in Microeconomics* 4, no. 3 (2008): 165–272.
- Polachek, Solomon W. "Mincer's Overtaking Point and the Lifecycle Earnings Distribution." *Review of the Economics of the Household* 1, no. 4 (December 2003): 273–304.
- Ramey, Valerie and Neville Francis. "A Century of Work and Leisure." *American Economic Journal: Macroeconomics* 1, no. 2 (2009): 189–224.
- Sacks, Gonzales, Bouchery, Tomedi, & Brewer (2015). 2010 National and State Costs of Excessive Alcohol Consumption. *American Journal of Preventive Medicine*, 49(5), E73–E79. [https://www.ajpmonline.org/article/S0749-3797\(15\)00354-2/pdf/](https://www.ajpmonline.org/article/S0749-3797(15)00354-2/pdf/).



- Sevilla, Almudena, Jose Ignacio Gimenez-Nadal, and Jonathan I. Gershuny. "Leisure Inequality in the United States: 1965-2003." *IZA Discussion Paper* no. 6708 (July 2012).
- Social Security Administration. "Retirement Benefits." *Full Retirement Age*. 2023. <https://www.ssa.gov/benefits/retirement/planner/agereduction.html>.
- State of Obesity. "Adult Obesity in the United States." Adult Obesity Rate by State, 2018. <https://stateofobesity.org/adult-obesity/>.
- Substance Abuse and Mental Health Services Administration. "Table A.2. Spending by Payer: Levels and Percent Distribution for Mental Health and Substance Abuse (MHSA), Mental Health (MH), Substance Abuse (SA), Alcohol Abuse (AA), Drug Abuse (DA), and All-Health, 2014." *Behavioral Health Spending & Use Accounts, 1986-2014. HHS Publication No. SMA-16-4975, 2016*. <https://store.samhsa.gov/shin/content/SMA16-4975/SMA16-4975.pdf>.
- Substance Abuse and Mental Health Services Administration. "Table 5.3B—Illicit Drug Use Disorder in Past Year among Persons Aged 12 or Older, by Age Group and Demographic Characteristics: Percentages, 2017 and 2018." SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017 and 2018. <https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2016/NSDUH-DetTabs-2016.htm#tab5-4B>.
- Substance Abuse and Mental Health Services Administration. "Table 5.4B—Alcohol Use Disorder in Past Year among Persons Aged 12 or Older, by Age Group and Demographic Characteristics: Percentages, 2017 and 2018." SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017 and 2018. <https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHDetailedTabs2018R2/NSDUHDetailedTabs2018.pdf>.
- Supplemental Nutrition Assistance Program. "State Activity Report Fiscal Year 2016." *Food and Nutrition Service, Supplemental Nutrition Assistance Program, Program Accountability and Administration Division* (September 2017). <https://fns-prod.azureedge.net/sites/default/files/snap/FY16-State-Activity-Report.pdf>.
- Taylor, Paul, Rich Morin, D'Vera Cohn, and Wendy Wang. "American Mobility: Who Moves? Who Stays Put? Where's Home?" *Pew Research Center*. December 2008. <https://www.pewresearch.org/wp-content/uploads/sites/3/2011/04/American-Mobility-Report-updated-12-29-08.pdf>
- Timothy Vermeer. Tax Foundation. "State Individual Income Tax Rates and Brackets, 2022" *February 2023*. <https://taxfoundation.org/state-income-tax-rates-2023/#Prior>.
- U.S. Census Bureau. "National Population by Characteristics: 2020-2022" "Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2020 to July 1, 2021." <https://www.census.gov/data/tables/2020/demo/popest/2020-demographic-analysis-tables.html>.
- U.S. Census Bureau, Current Population Survey, 2018 Annual Social and Economic Supplement. "Table 1. Educational Attainment of the Population 18 Years and Over, by Age, Sex, Race, and Hispanic Origin: 2018." <https://www.census.gov/data/tables/2018/demo/education-attainment/cps-detailed-tables.html>.

- U.S. Census Bureau, Current Population Survey, 2021 Annual Social and Economic Supplement. "Table 1. General Mobility, by Race and Hispanic Origin, Region, Sex, Age, Relationship to Householder, Educational Attainment, Marital Status, Nativity, Tenure, and Poverty Status: 2020 to 2021." November 2021. <https://www.census.gov/data/tables/2020/demo/geographic-mobility/cps-2021.html>.
- U.S. Census Bureau. "Educational Characteristics of Prisoners: Data from the ACS." 2011. <https://www.census.gov/library/working-papers/2011/demo/SEHSD-WP2011-08.html>.
- U.S. Census Bureau. "Social Insurance and Human Services." *The 2012 Statistical Abstract*. [http://www.census.gov/compendia/statab/cats/social\\_insurance\\_human\\_services.html](http://www.census.gov/compendia/statab/cats/social_insurance_human_services.html).
- U.S. Department of Agriculture, Office of Policy Support. Supplemental Nutrition Assistance Program Nutrition Assistance Program Report Series. "Characteristics of Supplemental Nutrition Assistance Program Households: Fiscal Year 2018." <https://fns-prod.azureedge.net/sites/default/files/resource-files/Characteristics2018.pdf>.
- U.S. Department of Education, Federal Student Aid Office. "The Standard Repayment Plan." <https://studentaid.ed.gov/sa/repay-loans/understand/plans/standard>.
- U.S. Department of Education. National Reporting System for Adult Education. 2011 & 2015 Aggregate Reports for All Regions. Table 3: Participants by Program Type and Age. June 30th, 2012 and June 30th, 2016. <https://nrs.ed.gov/index.php/rt/reports/aggregate>.
- U.S. Department of Health and Human Services. "Welfare Indicators and Risk Factors: Fourteenth Report to Congress" Annual Report to Congress, 2015. <https://aspe.hhs.gov/system/files/pdf/116161/Final%20Fourteenth%20Report%20-%20Final%209%2022%2015.pdf>.
- U.S. Department of Health and Human Services. "Welfare Indicators and Risk Factors: Seventeenth Report to Congress" Annual Report to Congress, 2018. <https://aspe.hhs.gov/system/files/pdf/259196/WelfareIndicators17Threport.pdf>.
- U.S. Department of Health & Human Services, National Vital Statistics System, United States Life Tables, 2020. August 8, 2022. <https://www.cdc.gov/nchs/data/nvsr/nvsr71/nvsr71-01.pdf>.
- U.S. Department of Health and Human Services, Office of Family Assistance. "Characteristics and Financial Circumstances of TANF Recipients, Fiscal Year 2018." [https://www.acf.hhs.gov/sites/default/files/ofa/fy18\\_characteristics\\_web\\_508\\_2.pdf](https://www.acf.hhs.gov/sites/default/files/ofa/fy18_characteristics_web_508_2.pdf).
- U.S. Department of Health & Human Services. "The Health Consequences of Smoking—50 Years of Progress." A Report of the Surgeon General, 2014. [https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf\\_NBK179276.pdf](https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf_NBK179276.pdf).
- U.S. Department of Labor. "Unemployment Insurance Data Summary, 3rd Quarter 2019." [https://oui.doleta.gov/unemploy/data\\_summary/DataSum.asp](https://oui.doleta.gov/unemploy/data_summary/DataSum.asp).
- Walden, Michael, "The Local Economic Impact of the Cooperating Raleigh Colleges: Update 2013." March 2014. <http://crraleighcolleges.org/files/crcimpact2013-final.pdf>.



Sensitivity analysis measures the extent to which a model's outputs are affected by hypothetical changes in the background data and assumptions. This is especially important when those variables are inherently uncertain. This analysis allows us to identify a plausible range of potential results that would occur if the value of any of the variables is in fact different from what was expected. In this chapter we test the sensitivity of the model to the following input factors: 1) the alternative education variable, 2) the labor import effect variable, 3) the student employment variables, 4) the discount rate, and 5) the retained student variable.

### Alternative education variable

The alternative education variable (15%) accounts for the counterfactual scenario where students would have to seek a similar education elsewhere absent the publicly-funded college in the region. Given the difficulty in accurately specifying the alternative education variable, we test the sensitivity of the taxpayer and social investment analysis results to its magnitude. Variations in the alternative education assumption are calculated around base case results listed in the middle column of Table A1.1. Next, the model brackets the base case assumption on either side with a plus or minus 10%, 25%, and 50% variation in assumptions. Analyses are then repeated introducing one change at a time, holding all other variables constant. For example, an increase of 10% in the alternative education assumption (from 15% to 17%) reduces the taxpayer perspective rate of return from 2.1% to 2.0%. Likewise, a decrease of 10% (from 15% to 14%) in the assumption increases the rate of return from 2.1% to 2.2%.

**Table A1.1: Sensitivity analysis of alternative education variable, taxpayer and social perspectives**

| % variation in assumption             | -50%      | -25%       | -10%       | Base case  | 10%        | 25%        | 50%        |
|---------------------------------------|-----------|------------|------------|------------|------------|------------|------------|
| <b>Alternative education variable</b> | <b>8%</b> | <b>11%</b> | <b>14%</b> | <b>15%</b> | <b>17%</b> | <b>19%</b> | <b>23%</b> |
| <b>Taxpayer perspective</b>           |           |            |            |            |            |            |            |
| Net present value (millions)          | \$13.3    | \$11.7     | \$10.8     | \$10.2     | \$9.5      | \$8.6      | \$7.0      |
| Rate of return                        | 2.6%      | 2.3%       | 2.2%       | 2.1%       | 2.0%       | 1.8%       | 1.5%       |
| Benefit-cost ratio                    | 1.52      | 1.46       | 1.42       | 1.39       | 1.37       | 1.33       | 1.27       |
| <b>Social perspective</b>             |           |            |            |            |            |            |            |
| Net present value (millions)          | \$392     | \$374      | \$363      | \$356      | \$349      | \$338      | \$320      |
| Benefit-cost ratio                    | 8.0       | 7.7        | 7.5        | 7.4        | 7.2        | 7.0        | 6.7        |

Based on this sensitivity analysis, the conclusion can be drawn that NMC investment analysis results from the taxpayer and social perspectives are not very sensitive to relatively large variations in the alternative education variable. As indicated, results are

still above threshold levels (a net present value greater than zero and a benefit-cost ratio greater than 1.0), even when the alternative education assumption is increased by as much as 50% (from 15% to 23%). The conclusion is that although the assumption is difficult to specify, its impact on overall investment analysis results for the taxpayer and social perspectives is not very sensitive.

### Labor import effect variable

The labor import effect variable only affects the alumni impact calculation in Table 2.6. In the model we assume a labor import effect variable of 50%, which means that 50% of the region’s labor demands would have been satisfied without the presence of NMC. In other words, businesses that hired NMC students could have substituted some of these workers with equally-qualified people from outside the region had there been no NMC students to hire. Therefore, we attribute only the remaining 50% of the initial labor income generated by increased alumni productivity to the college.

Table A1.2 presents the results of the sensitivity analysis for the labor import effect variable. As explained earlier, the assumption increases and decreases relative to the base case of 50% by the increments indicated in the table. Alumni productivity impacts attributable to NMC, for example, range from a high of \$245.9 million at a -50% variation to a low of \$82 million at a +50% variation from the base case assumption. This means that if the labor import effect variable increases, the impact that we claim as attributable to alumni decreases. Even under the most conservative assumptions, the alumni impact on the NMC Service Area economy still remains sizeable.

**Table A1.2: Sensitivity analysis of labor import effect variable**

| % variation in assumption    | -50%  | -25%  | -10%  | Base case | 10%   | 25%   | 50%  |
|------------------------------|-------|-------|-------|-----------|-------|-------|------|
| Labor import effect variable | 25%   | 38%   | 45%   | 50%       | 55%   | 63%   | 75%  |
| Alumni impact (millions)     | \$246 | \$205 | \$180 | \$164     | \$148 | \$123 | \$82 |

### Student employment variables

Student employment variables are difficult to estimate because many students do not report their employment status or because colleges generally do not collect this kind of information. Employment variables include the following: 1) the percentage of students who are employed while attending the college and 2) the percentage of earnings that working students receive relative to the earnings they would have received had they not chosen to attend the college. Both employment variables affect the investment analysis results from the student perspective.

Students incur substantial expense by attending NMC because of the time they spend not gainfully employed. Some of that cost is recaptured if students remain partially (or fully) employed while attending. It is estimated that 73% of students are employed.<sup>43</sup> This variable is tested in the sensitivity analysis by changing it first to 100% and then to 0%.

<sup>43</sup> Based on data provided by NMC. This figure excludes dual credit high school students, who are not included in the opportunity cost calculations.

The second student employment variable is more difficult to estimate. In this study we estimate that students who are working while attending the college earn only 83%, on average, of the earnings that they statistically would have received if not attending NMC. This suggests that many students hold part-time jobs that accommodate their NMC attendance, though it is at an additional cost in terms of receiving a wage that is less than what they otherwise might make. The 83% variable is an estimation based on the average hourly wages of the most common jobs held by students while attending college relative to the average hourly wages of all occupations in the NMC Service Area. The model captures this difference in wages and counts it as part of the opportunity cost of time. As above, the 83% estimate is tested in the sensitivity analysis by changing it to 100% and then to 0%.

The changes generate results summarized in Table A1.3, with A defined as the percent of students employed and B defined as the percent that students earn relative to their full earning potential. Base case results appear in the shaded row; here the assumptions remain unchanged, with A equal to 73% and B equal to 83%. Sensitivity analysis results are shown in non-shaded rows. Scenario 1 increases A to 100% while holding B constant, Scenario 2 increases B to 100% while holding A constant, Scenario 3 increases both A and B to 100%, and Scenario 4 decreases both A and B to 0%.

**Table A1.3: Sensitivity analysis of student employment variables**

| Variations in assumptions      | Net present value (millions) | Internal rate of return | Benefit-cost ratio |
|--------------------------------|------------------------------|-------------------------|--------------------|
| Base case: A = 73%, B = 83%    | \$76.6                       | 20.3%                   | 5.2                |
| Scenario 1: A = 100%, B = 83%  | \$83.2                       | 30.0%                   | 8.0                |
| Scenario 2: A = 73%, B = 100%  | \$80.2                       | 24.5%                   | 6.4                |
| Scenario 3: A = 100%, B = 100% | \$88.1                       | 56.9%                   | 13.9               |
| Scenario 4: A = 0%, B = 0%     | \$58.9                       | 11.7%                   | 2.6                |

Note: A = percent of students employed; B = percent earned relative to statistical averages.

- **Scenario 1:** Increasing the percentage of students employed (A) from 73% to 100%, the net present value, internal rate of return, and benefit-cost ratio improve to \$83.2 million, 30.0%, and 8.0, respectively, relative to base case results. Improved results are attributable to a lower opportunity cost of time; all students are employed in this case.
- **Scenario 2:** Increasing earnings relative to statistical averages (B) from 83% to 100%, the net present value, internal rate of return, and benefit-cost ratio results improve to \$80.2 million, 24.5%, and 6.4, respectively, relative to base case results; this strong improvement, again, is attributable to a lower opportunity cost of time.
- **Scenario 3:** Increasing both assumptions A and B to 100% simultaneously, the net present value, internal rate of return, and benefit-cost ratio improve yet further to \$88.1 million, 56.9%, and 13.9, respectively, relative to base case results. This scenario assumes that all students are fully employed and earning full salaries (equal to statistical averages) while attending classes.



- **Scenario 4:** Finally, decreasing both A and B to 0% reduces the net present value, internal rate of return, and benefit-cost ratio to \$58.9 million, 11.7%, and 2.6, respectively, relative to base case results. These results are reflective of an increased opportunity cost; none of the students are employed in this case.<sup>44</sup>

It is strongly emphasized in this section that base case results are very attractive in that results are all above their threshold levels. As is clearly demonstrated here, results of the first three alternative scenarios appear much more attractive, although they overstate benefits. Results presented in Chapter 3 are realistic, indicating that investments in NMC generate excellent returns, well above the long-term average percent rates of return in stock and bond markets.

## Discount rate

The discount rate is a rate of interest that converts future monies to their present value. In investment analysis, the discount rate accounts for two fundamental principles: 1) the time value of money, and 2) the level of risk that an investor is willing to accept. Time value of money refers to the value of money after interest or inflation has accrued over a given length of time. An investor must be willing to forgo the use of money in the present to receive compensation for it in the future. The discount rate also addresses the investors' risk preferences by serving as a proxy for the minimum rate of return that the proposed risky asset must be expected to yield before the investors will be persuaded to invest in it. Typically, this minimum rate of return is determined by the known returns of less risky assets where the investors might alternatively consider placing their money.

**Table A1.4: Sensitivity analysis of discount rate**

| % variation in assumption    | -50%   | -25%   | -10%   | Base case | 10%    | 25%   | 50%   |
|------------------------------|--------|--------|--------|-----------|--------|-------|-------|
| <b>Student perspective</b>   |        |        |        |           |        |       |       |
| Discount rate                | 2.2%   | 3.3%   | 4.0%   | 4.4%      | 4.9%   | 5.5%  | 6.6%  |
| Net present value (millions) | \$123  | \$97   | \$84   | \$77      | \$70   | \$61  | \$49  |
| Benefit-cost ratio           | 7.7    | 6.3    | 5.6    | 5.2       | 4.8    | 4.3   | 3.7   |
| <b>Taxpayer perspective</b>  |        |        |        |           |        |       |       |
| Discount rate                | 0.10%  | 0.15%  | 0.18%  | 0.20%     | 0.22%  | 0.25% | 0.30% |
| Net present value (millions) | \$10.9 | \$10.5 | \$10.3 | \$10.2    | \$10.0 | \$9.8 | \$9.5 |
| Benefit-cost ratio           | 1.42   | 1.41   | 1.40   | 1.39      | 1.39   | 1.38  | 1.37  |
| <b>Social perspective</b>    |        |        |        |           |        |       |       |
| Discount rate                | 0.10%  | 0.15%  | 0.18%  | 0.20%     | 0.22%  | 0.25% | 0.30% |
| Net present value (millions) | \$364  | \$360  | \$358  | \$356     | \$354  | \$352 | \$348 |
| Benefit-cost ratio           | 7.52   | 7.44   | 7.40   | 7.37      | 7.34   | 7.30  | 7.23  |

<sup>44</sup> Note that reducing the percent of students employed to 0% automatically negates the percent they earn relative to full earning potential, since none of the students receive any earnings in this case.



In this study, we assume a 4.4% discount rate for students and a 0.2% discount rate for taxpayers and society.<sup>45</sup> Similar to the sensitivity analysis of the alternative education variable, we vary the base case discount rates for students, taxpayers, and society on either side by increasing the discount rate by 10%, 25%, and 50%, and then reducing it by 10%, 25%, and 50%.

As demonstrated in Table A1.4, an increase in the discount rate leads to a corresponding decrease in the expected returns, and vice versa. For example, increasing the student discount rate by 50% (from 4.4% to 6.6%) reduces the students' benefit-cost ratio from 5.2 to 3.7. Conversely, reducing the discount rate for students by 50% (from 4.4% to 2.2%) increases the benefit-cost ratio from 5.2 to 7.7. The sensitivity analysis results for taxpayers and society show the same inverse relationship.

### Retained student variable

The retained student variable only affects the student spending impact calculation in Table 2.4. For this analysis, we assume a retained student variable of 10%, which means that 10% of NMC's students who originated from the NMC Service Area would have left the region for other opportunities, whether that be education or employment, if NMC did not exist. The money these retained students spent in the region for accommodation and other personal and household expenses is attributable to NMC.

Table A1.5 presents the results of the sensitivity analysis for the retained student variable. The assumption increases and decreases relative to the base case of 10% by the increments indicated in the table. The student spending impact is recalculated at each value of the assumption, holding all else constant. Student spending impacts attributable to NMC range from a high of \$4.3 million when the retained student variable is 15% to a low of \$2.1 million when the retained student variable is 5%. This means as the retained student variable decreases, the student spending attributable to NMC decreases. Even under the most conservative assumptions, the student spending impact on the NMC Service Area economy remains substantial.

**Table A1.5: Sensitivity analysis of retained student variable**

| % variation in assumption           | -50%    | -25%    | -10%    | Base case | 10%     | 25%     | 50%     |
|-------------------------------------|---------|---------|---------|-----------|---------|---------|---------|
| Retained student variable           | 5%      | 8%      | 9%      | 10%       | 11%     | 13%     | 15%     |
| Student spending impact (thousands) | \$2,073 | \$2,628 | \$2,962 | \$3,184   | \$3,406 | \$3,739 | \$4,295 |

<sup>45</sup> These values are based on the three-year average of the baseline forecasts for the 10-year Treasury rate published by the Congressional Budget Office and the real treasury interest rates reported by the Office of Management and Budget for 30-year investments. See the Congressional Budget Office "Table 5. Federal Student Loan Programs: Projected Interest Rates: CBO's May 2022 Baseline" and the Office of Management and Budget "Discount Rates for Cost-Effectiveness, Lease Purchase, and Related Analyses".



**Alternative education:** A “with” and “without” measure of the percent of students who would still be able to avail themselves of education if the college under analysis did not exist. An estimate of 10%, for example, means that 10% of students do not depend directly on the existence of the college in order to obtain their education.

**Alternative use of funds:** A measure of how monies that are currently used to fund the college might otherwise have been used if the college did not exist.

**Asset value:** Capitalized value of a stream of future returns. Asset value measures what someone would have to pay today for an instrument that provides the same stream of future revenues.

**Attrition rate:** Rate at which students leave the workforce due to out-migration, unemployment, retirement, or death.

**Benefit-cost ratio:** Present value of benefits divided by present value of costs. If the benefit-cost ratio is greater than 1, then benefits exceed costs, and the investment is feasible.

**Counterfactual scenario:** What would have happened if a given event had not occurred. In the case of this economic impact study, the counterfactual scenario is a scenario where the college did not exist.

**Credit hour equivalent:** Credit hour equivalent, or CHE, is defined as 15 contact hours of education if on a semester system, and 10 contact hours if on a quarter system. In general, it requires 450 contact hours to complete one full-time equivalent, or FTE.

**Demand:** Relationship between the market price of education and the volume of education demanded (expressed in terms of enrollment). The law of the downward-sloping demand curve is related to the fact that enrollment increases only if the price (tuition and fees) is lowered, or conversely, enrollment decreases if price increases.

**Discounting:** Expressing future revenues and costs in present value terms.

**Earnings (labor income):** Income that is received as a result of labor; i.e., wages.

**Economics:** Study of the allocation of scarce resources among alternative and competing ends. Economics is not normative (what ought to be done), but positive (describes what is, or how people are likely to behave in response to economic changes).



**Elasticity of demand:** Degree of responsiveness of the quantity of education demanded (enrollment) to changes in market prices (tuition and fees). If a decrease in fees increases or decreases total enrollment by a significant amount, demand is elastic. If enrollment remains the same or changes only slightly, demand is inelastic.

**Externalities:** Impacts (positive and negative) for which there is no compensation. Positive externalities of education include improved social behaviors such as improved health, lower crime, and reduced demand for income assistance. Educational institutions do not receive compensation for these benefits but benefits still occur because education is statistically proven to lead to improved social behaviors.

**Gross regional product:** Measure of the final value of all goods and services produced in a region after netting out the cost of goods used in production. Alternatively, gross regional product (GRP) equals the combined incomes of all factors of production; i.e., labor, land, and capital. These include wages, salaries, proprietors' incomes, profits, rents, and other. Gross regional product is also sometimes called value added or added income.

**Initial effect:** Income generated by the initial injection of monies into the economy through the payroll of the college and the higher earnings of its students.

**Input-output analysis:** Relationship between a given set of demands for final goods and services and the implied amounts of manufactured inputs, raw materials, and labor that this requires. When educational institutions pay wages and salaries and spend money for supplies in the region, they also generate earnings in all sectors of the economy, thereby increasing the demand for goods and services and jobs. Moreover, as students enter or rejoin the workforce with higher skills, they earn higher salaries and wages. In turn, this generates more consumption and spending in other sectors of the economy.

**Internal rate of return:** Rate of interest that, when used to discount cash flows associated with investing in education, reduces its net present value to zero (i.e., where the present value of revenues accruing from the investment are just equal to the present value of costs incurred). This, in effect, is the breakeven rate of return on investment since it shows the highest rate of interest at which the investment makes neither a profit nor a loss.

**Multiplier effect:** Additional income created in the economy as the college and its students spend money in the region. It consists of the income created by the supply chain of the industries initially affected by the spending of the college and its students (i.e., the direct effect), income created by the supply chain of the initial supply chain (i.e., the indirect effect), and the income created by the increased spending of the household sector (i.e., the induced effect).

**NAICS:** The North American Industry Classification System (NAICS) classifies North American business establishment in order to better collect, analyze, and publish statistical data related to the business economy.



**Net cash flow:** Benefits minus costs, i.e., the sum of revenues accruing from an investment minus costs incurred.

**Net present value:** Net cash flow discounted to the present. All future cash flows are collapsed into one number, which, if positive, indicates feasibility. The result is expressed as a monetary measure.

**Non-labor income:** Income received from investments, such as rent, interest, and dividends.

**Opportunity cost:** Benefits foregone from alternative B once a decision is made to allocate resources to alternative A. Or, if individuals choose to attend college, they forego earnings that they would have received had they chosen instead to work full-time. Foregone earnings, therefore, are the “price tag” of choosing to attend college.

**Payback period:** Length of time required to recover an investment. The shorter the period, the more attractive the investment. The formula for computing payback period is:

$$\text{Payback period} = \text{cost of investment} / \text{net return per period}$$



# Appendix 3: Frequently asked questions (FAQs)

*This appendix provides answers to some frequently asked questions about the results.*

## **What is economic impact analysis?**

Economic impact analysis quantifies the impact from a given economic event – in this case, the presence of a college – on the economy of a specified region.

## **What is investment analysis?**

Investment analysis is a standard method for determining whether or not an existing or proposed investment is economically viable. This methodology is appropriate in situations where a stakeholder puts up a certain amount of money with the expectation of receiving benefits in return, where the benefits that the stakeholder receives are distributed over time, and where a discount rate must be applied in order to account for the time value of money.

## **Do the results differ by region, and if so, why?**

Yes. Regional economic data are drawn from Lightcast's proprietary MR-SAM model, the Census Bureau, and other sources to reflect the specific earnings levels, jobs numbers, unemployment rates, population demographics, and other key characteristics of the region served by the college. Therefore, model results for the college are specific to the given region.

## **Are the funds transferred to the college increasing in value, or simply being re-directed?**

Lightcast's approach is not a simple "rearranging of the furniture" where the impact of operations spending is essentially a restatement of the level of funding received by the college. Rather, it is an impact assessment of the additional income created in the region as a result of the college spending on payroll and other non-pay expenditures, net of any impacts that would have occurred anyway if the college did not exist.



## How do my college's rates of return compare to that of other institutions?

In general, Lightcast discourages comparisons between institutions since many factors, such as regional economic conditions, institutional differences, and student demographics are outside of the college's control. It is best to compare the rate of return to the discount rates of 4.4% (for students) and 0.2% (for society and taxpayers), which can also be seen as the opportunity cost of the investment (since these stakeholder groups could be spending their time and money in other investment schemes besides education). If the rate of return is higher than the discount rate, the stakeholder groups can expect to receive a positive return on their educational investment.

Lightcast recognizes that some institutions may want to make comparisons. As a word of caution, if comparing to an institution that had a study commissioned by a firm other than Lightcast, then differences in methodology will create an "apples to oranges" comparison and will therefore be difficult. The study results should be seen as unique to each institution.

## Lightcast conducted an economic impact study for my college a few years ago. Why have results changed?

Lightcast is a leading provider of economic impact studies and labor market data to educational institutions, workforce planners, and regional developers in the U.S. and internationally. Since 2000, Lightcast has completed over 3,000 economic impact studies for educational institutions in three countries. Along the way we have worked to continuously update and improve our methodologies to ensure that they conform to best practices and stay relevant in today's economy. The present study reflects the latest version of our model, representing the most up-to-date theory, practices, and data for conducting economic impact and investment analyses. Many of our former assumptions have been replaced with observed data, and we have researched the latest sources in order to update the background data used in our model. Additionally, changes in the data the college provides to Lightcast can influence the results of the study.

## Net present value (NPV): How do I communicate this in laymen's terms?

Which would you rather have: a dollar right now or a dollar 30 years from now? That most people will choose a dollar now is the crux of net present value. The preference for a dollar today means today's dollar is therefore worth more than it would be in the future (in most people's opinion). Because the dollar today is worth more than a dollar in 30 years, the dollar 30 years from now needs to be adjusted to express its worth today. Adjusting the values for this "time value of money" is called discounting and the result of adding them all up after discounting each value is called net present value.



## Internal rate of return (IRR): How do I communicate this in laymen's terms?

Using the bank as an example, an individual needs to decide between spending all of their paycheck today and putting it into savings. If they spend it today, they know what it is worth: \$1 = \$1. If they put it into savings, they need to know that there will be some sort of return to them for spending those dollars in the future rather than now. This is why banks offer interest rates and deposit interest earnings. This makes it so an individual can expect, for example, a 3% return in the future for money that they put into savings now.

## Total economic impact: How do I communicate this in laymen's terms?

Big numbers are great but putting them into perspective can be a challenge. To add perspective, find an industry with roughly the same "% of GRP" as your college (Table 1.3). This percentage represents its portion of the total gross regional product in the region (similar to the nationally recognized gross domestic product but at a regional level). This allows the college to say that their single brick and mortar campus does just as much for the NMC Service Area as the entire Utilities industry, for example. This powerful statement can help put the large total impact number into perspective.



# Appendix 4: Example of sales versus income

Lightcast's economic impact study differs from many other studies because we prefer to report the impacts in terms of income rather than sales (or output). Income is synonymous with value added or gross regional product (GRP). Sales include all the intermediary costs associated with producing goods and services. Income is a net measure that excludes these intermediary costs:

$$\text{Income} = \text{Sales} - \text{Intermediary Costs}$$

For this reason, income is a more meaningful measure of new economic activity than reporting sales. This is evidenced by the use of gross domestic product (GDP)—a measure of income—by economists when considering the economic growth or size of a country. The difference is GRP reflects a region and GDP a country.

To demonstrate the difference between income and sales, let us consider an example of a baker's production of a loaf of bread. The baker buys the ingredients such as eggs, flour, and yeast for \$2.00. He uses capital such as a mixer to combine the ingredients and an oven to bake the bread and convert it into a final product. Overhead costs for these steps are \$1.00. Total intermediary costs are \$3.00. The baker then sells the loaf of bread for \$5.00.

The sales amount of the loaf of bread is \$5.00. The income from the loaf of bread is equal to the sales amount less the intermediary costs:

$$\text{Income} = \$5.00 - \$3.00 = \$2.00$$

In our analysis, we provide context behind the income figures by also reporting the associated number of jobs. The impacts are also reported in sales and earnings terms for reference.



Lightcast's MR-SAM represents the flow of all economic transactions in a given region. It replaces Lightcast's previous input-output (IO) model, which operated with some 1,000 industries, four layers of government, a single household consumption sector, and an investment sector. The old IO model was used to simulate the ripple effects (i.e., multipliers) in the regional economy as a result of industries entering or exiting the region. The MR-SAM model performs the same tasks as the old IO model, but it also does much more. Along with the same 1,000 industries, government, household, and investment sectors embedded in the old IO tool, the MR-SAM exhibits much more functionality, a greater amount of data, and a higher level of detail on the demographic and occupational components of jobs (16 demographic cohorts and about 750 occupations are characterized).

This appendix presents a high-level overview of the MR-SAM. Additional documentation on the technical aspects of the model is available upon request.

## Data sources for the model

The Lightcast MR-SAM model relies on a number of internal and external data sources, mostly compiled by the federal government. What follows is a listing and short explanation of our sources. The use of these data will be covered in more detail later in this appendix.

**Lightcast Data** are produced from many data sources to produce detailed industry, occupation, and demographic jobs and earnings data at the local level. This information (especially sales-to-jobs ratios derived from jobs and earnings-to-sales ratios) is used to help regionalize the national matrices as well as to disaggregate them into more detailed industries than are normally available.

**BEA Make and Use Tables (MUT)** are the basis for input-output models in the U.S. The make table is a matrix that describes the amount of each commodity made by each industry in a given year. Industries are placed in the rows and commodities in the columns. The use table is a matrix that describes the amount of each commodity used by each industry in a given year. In the use table, commodities are placed in the rows and industries in the columns. The BEA produces two different sets of MUTs, the benchmark and the summary. The benchmark set contains about 500 sectors and is released every five years, with a five-year lag time (e.g., 2002 benchmark MUTs were released in 2007). The summary set contains about 80 sectors and is released every year, with a two-year lag (e.g., 2010 summary MUTs were released in late 2011/early 2012). The MUTs are used in the Lightcast MR-SAM model to produce an industry-by-industry matrix describing all industry purchases from all industries.





**BEA Gross Domestic Product by State (GSP)** describes gross domestic product from the value added (also known as added income) perspective. Value added is equal to employee compensation, gross operating surplus, and taxes on production and imports, less subsidies. Each of these components is reported for each state and an aggregate group of industries. This dataset is updated once per year, with a one-year lag. The Lightcast MR-SAM model makes use of this data as a control and pegs certain pieces of the model to values from this dataset.

**BEA National Income and Product Accounts (NIPA)** cover a wide variety of economic measures for the nation, including gross domestic product (GDP), sources of output, and distribution of income. This dataset is updated periodically throughout the year and can be between a month and several years old depending on the specific account. NIPA data are used in many of the Lightcast MR-SAM processes as both controls and seeds.

**BEA Local Area Income (LPI)** encapsulates multiple tables with geographies down to the county level. The following two tables are specifically used: CA05 (Personal income and earnings by industry) and CA91 (Gross flow of earnings). CA91 is used when creating the commuting submodel and CA05 is used in several processes to help with place-of-work and place-of-residence differences, as well as to calculate personal income, transfers, dividends, interest, and rent.

**Bureau of Labor Statistics Consumer Expenditure Survey (CEX)** reports on the buying habits of consumers along with some information as to their income, consumer unit, and demographics. Lightcast utilizes this data heavily in the creation of the national demographic by income type consumption on industries.

**Census of Government's (CoG)** state and local government finance dataset is used specifically to aid breaking out state and local data that is reported in the MUTs. This allows Lightcast to have unique production functions for each of its state and local government sectors.

**Census' OnTheMap (OTM)** is a collection of three datasets for the census block level for multiple years. **Origin-Destination (OD)** offers job totals associated with both home census blocks and a work census block. **Residence Area Characteristics (RAC)** offers jobs totaled by home census block. **Workplace Area Characteristics (WAC)** offers jobs totaled by work census block. All three of these are used in the commuting submodel to gain better estimates of earnings by industry that may be counted as commuting. This dataset has holes for specific years and regions. These holes are filled with Census' Journey-to-Work described later.

**Census' Current Population Survey (CPS)** is used as the basis for the demographic breakout data of the MR-SAM model. This set is used to estimate the ratios of demographic cohorts and their income for the three different income categories (i.e., wages, property income, and transfers).

**Census' Journey-to-Work (JtW)** is part of the 2000 Census and describes the amount of commuting jobs between counties. This set is used to fill in the areas where OTM does not have data.



**Census' American Community Survey (ACS) Public Use Microdata Sample (PUMS)** is the replacement for Census' long form and is used by Lightcast to fill the holes in the CPS data.

**Oak Ridge National Lab (ORNL) County-to-County Distance Matrix (Skim Tree)** contains a matrix of distances and network impedances between each county via various modes of transportation such as highway, railroad, water, and combined highway-rail. Also included in this set are minimum impedances utilizing the best combination of paths. The ORNL distance matrix is used in Lightcast's gravitational flows model that estimates the amount of trade between counties in the country.

## Overview of the MR-SAM model

Lightcast's MR-SAM modeling system is a comparative static model in the same general class as RIMS II (Bureau of Economic Analysis) and IMPLAN (Minnesota Implan Group). The MR-SAM model is thus not an econometric model, the primary example of which is PolicyInsight by REMI. It relies on a matrix representation of industry-to-industry purchasing patterns originally based on national data which are regionalized with the use of local data and mathematical manipulation (i.e., non-survey methods). Models of this type estimate the ripple effects of changes in jobs, earnings, or sales in one or more industries upon other industries in a region.

The Lightcast MR-SAM model shows final equilibrium impacts—that is, the user enters a change that perturbs the economy and the model shows the changes required to establish a new equilibrium. As such, it is not a dynamic model that shows year-by-year changes over time (as REMI's does).

### National SAM

Following standard practice, the SAM model appears as a square matrix, with each row sum exactly equaling the corresponding column sum. Reflecting its kinship with the standard Leontief input-output framework, individual SAM elements show accounting flows between row and column sectors during a chosen base year. Read across rows, SAM entries show the flow of funds into column accounts (also known as receipts or the appropriation of funds by those column accounts). Read down columns, SAM entries show the flow of funds into row accounts (also known as expenditures or the dispersal of funds to those row accounts).

The SAM may be broken into three different aggregation layers: broad accounts, sub-accounts, and detailed accounts. The broad layer is the most aggregate and will be covered first. Broad accounts cover between one and four sub-accounts, which in turn cover many detailed accounts. This appendix will not discuss detailed accounts directly because of their number. For example, in the industry broad account, there are two sub-accounts and over 1,000 detailed accounts.



## Multi-regional aspect of the MR-SAM

Multi-regional (MR) describes a non-survey model that has the ability to analyze the transactions and ripple effects (i.e., multipliers) of not just a single region, but multiple regions interacting with each other. Regions in this case are made up of a collection of counties.

Lightcast's multi-regional model is built off of gravitational flows, assuming that the larger a county's economy, the more influence it will have on the surrounding counties' purchases and sales. The equation behind this model is essentially the same that Isaac Newton used to calculate the gravitational pull between planets and stars. In Newton's equation, the masses of both objects are multiplied, then divided by the distance separating them and multiplied by a constant. In Lightcast's model, the masses are replaced with the supply of a sector for one county and the demand for that same sector from another county. The distance is replaced with an impedance value that considers the distance, type of roads, rail lines, and other modes of transportation. Once this is calculated for every county-to-county pair, a set of mathematical operations is performed to make sure all counties absorb the correct amount of supply from every county and the correct amount of demand from every county. These operations produce more than 200 million data points.

## Components of the Lightcast MR-SAM model

The Lightcast MR-SAM is built from a number of different components that are gathered together to display information whenever a user selects a region. What follows is a description of each of these components and how each is created. Lightcast's internally created data are used to a great extent throughout the processes described below, but its creation is not described in this appendix.

### County earnings distribution matrix

The county earnings distribution matrices describe the earnings spent by every industry on every occupation for a year—i.e., earnings by occupation. The matrices are built utilizing Lightcast's industry earnings, occupational average earnings, and staffing patterns.

Each matrix starts with a region's staffing pattern matrix which is multiplied by the industry jobs vector. This produces the number of occupational jobs in each industry for the region. Next, the occupational average hourly earnings per job are multiplied by 2,080 hours, which converts the average hourly earnings into a yearly estimate. Then the matrix of occupational jobs is multiplied by the occupational annual earnings per job, converting it into earnings values. Last, all earnings are adjusted to match the known industry totals. This is a fairly simple process, but one that is very important. These matrices describe the place-of-work earnings used by the MR-SAM.

### Commuting model

The commuting sub-model is an integral part of Lightcast's MR-SAM model. It allows the regional and multi-regional models to know what amount of the earnings can be



attributed to place-of-residence vs. place-of-work. The commuting data describe the flow of earnings from any county to any other county (including within the counties themselves). For this situation, the commuted earnings are not just a single value describing total earnings flows over a complete year but are broken out by occupation and demographic. Breaking out the earnings allows for analysis of place-of-residence and place-of-work earnings. These data are created using Bureau of Labor Statistics' OnTheMap dataset, Census' Journey-to-Work, BEA's LPI CA91 and CA05 tables, and some of Lightcast's data. The process incorporates the cleanup and disaggregation of the OnTheMap data, the estimation of a closed system of county inflows and outflows of earnings, and the creation of finalized commuting data.

## National SAM

The national SAM as described above is made up of several different components. Many of the elements discussed are filled in with values from the national Z matrix—or industry-to-industry transaction matrix. This matrix is built from BEA data that describe which industries make and use what commodities at the national level. These data are manipulated with some industry standard equations to produce the national Z matrix. The data in the Z matrix act as the basis for the majority of the data in the national SAM. The rest of the values are filled in with data from the county earnings distribution matrices, the commuting data, and the BEA's National Income and Product Accounts.

One of the major issues that affect any SAM project is the combination of data from multiple sources that may not be consistent with one another. Matrix balancing is the broad name for the techniques used to correct this problem. Lightcast uses a modification of the "diagonal similarity scaling" algorithm to balance the national SAM.

## Gravitational flows model

The most important piece of the Lightcast MR-SAM model is the gravitational flows model that produces county-by-county regional purchasing coefficients (RPCs). RPCs estimate how much an industry purchases from other industries inside and outside of the defined region. This information is critical for calculating all IO models.

Gravity modeling starts with the creation of an impedance matrix that values the difficulty of moving a product from county to county. For each sector, an impedance matrix is created based on a set of distance impedance methods for that sector. A distance impedance method is one of the measurements reported in the Oak Ridge National Laboratory's County-to-County Distance Matrix. In this matrix, every county-to-county relationship is accounted for in six measures: great-circle distance, highway impedance, rail miles, rail impedance, water impedance, and highway-rail-highway impedance. Next, using the impedance information, the trade flows for each industry in every county are solved for. The result is an estimate of multi-regional flows from every county to every county. These flows are divided by each respective county's demand to produce multi-regional RPCs.



# Appendix 6: Value per credit hour equivalent and the Mincer function

Two key components in the analysis are 1) the value of the students' educational achievements, and 2) the change in that value over the students' working careers. Both of these components are described in detail in this appendix.

## Value per CHE

Typically, the educational achievements of students are marked by the credentials they earn. However, not all students who attended NMC in the 2021-22 analysis year obtained a degree or certificate. Some returned the following year to complete their education goals, while others took a few courses and entered the workforce without graduating. As such, the only way to measure the value of the students' achievement is through their credit hour equivalents, or CHEs. This approach allows us to see the benefits to all students who attended the college, not just those who earned a credential.

To calculate the value per CHE, we first determine how many CHEs are required to complete each education level. For example, assuming that there are 30 CHEs in an academic year, a student generally completes 120 CHEs in order to move from a high school diploma to a bachelor's degree, another 60 CHEs to move from a bachelor's degree to a master's degree, and so on. This progression of CHEs generates an education ladder beginning at the less than high school level and ending with the completion of a doctoral degree, with each level of education representing a separate stage in the progression.

The second step is to assign a unique value to the CHEs in the education ladder based on the wage differentials presented in Table 1.4.<sup>46</sup> For example, the difference in regional earnings between a high school diploma and an associate degree is \$8,100. We spread this \$8,100 wage differential across the 60 CHEs that occur between a high school diploma and an associate degree, applying a ceremonial "boost" to the last CHE in the stage to mark the achievement of the degree.<sup>47</sup> We repeat this process for each education level in the ladder.

46 The value per CHE is calculated differently between the economic impact analysis and the investment analysis. The economic impact analysis uses the region as its background and, therefore, uses regional earnings to calculate value per CHE, while the investment analysis uses the state as its backdrop and, therefore, uses state earnings. The methodology outlined in this appendix will use regional earnings; however, the same methodology is followed for the investment analysis when state earnings are used.

47 Economic theory holds that workers that acquire education credentials send a signal to employers about their ability level. This phenomenon is commonly known as the sheepskin effect or signaling effect. The ceremonial boosts applied to the achievement of degrees in the Lightcast impact model are derived from Jaeger and Page (1996).

Next, we map the CHE production of the FY 2021-22 student population to the education ladder. Table 1.2 provides information on the CHE production of students attending NMC, broken out by educational achievement. In total, students completed 52,374 CHEs during the analysis year, excluding personal enrichment students. We map each of these CHEs to the education ladder depending on the students' education level and the average number of CHEs they completed during the year. For example, bachelor's degree graduates are allocated to the stage between the associate degree and the bachelor's degree, and the average number of CHEs they completed informs the shape of the distribution curve used to spread out their total CHE production within that stage of the progression.

The sum product of the CHEs earned at each step within the education ladder and their corresponding value yields the students' aggregate annual increase in income ( $\Delta E$ ), as shown in the following equation:

$$\Delta E = \sum_{i=1}^n e_i h_i \text{ where } i \in 1, 2, \dots, n$$

and  $n$  is the number of steps in the education ladder,  $e_i$  is the marginal earnings gain at step  $i$ , and  $h_i$  is the number of CHEs completed at step  $i$ .

Table A6.1 displays the result for the students' aggregate annual increase in income ( $\Delta E$ ), a total of \$6.4 million. By dividing this value by the students' total production of 52,374 CHEs during the analysis year, we derive an overall value of \$123 per CHE.

**Table A6.1: Aggregate annual increase in income of students and value per CHE**

|   |              |
|---|--------------|
| Aggregate annual increase in income                 | \$6,416,378  |
| Total credit hour equivalents (CHEs) in FY 2021-22* | 52,374       |
| <b>Value per CHE</b>                                | <b>\$123</b> |

\* Excludes the CHE production of personal enrichment students.

Source: Lightcast impact model.

## Mincer function

The \$123 value per CHE in Table A6.1 only tells part of the story, however. Human capital theory holds that earnings levels do not remain constant; rather, they start relatively low and gradually increase as the worker gains more experience. Research also shows that the earnings increment between educated and non-educated workers grows through time. These basic patterns in earnings over time were originally identified by Jacob Mincer, who viewed the lifecycle earnings distribution as a function with the key elements being earnings, years of education, and work experience, with age serving as a proxy for experience.<sup>48</sup> While some have criticized Mincer's earnings function, it is still upheld in recent data and has served as the foundation for a variety of research pertaining to labor economics. Those critical of the Mincer function point to several

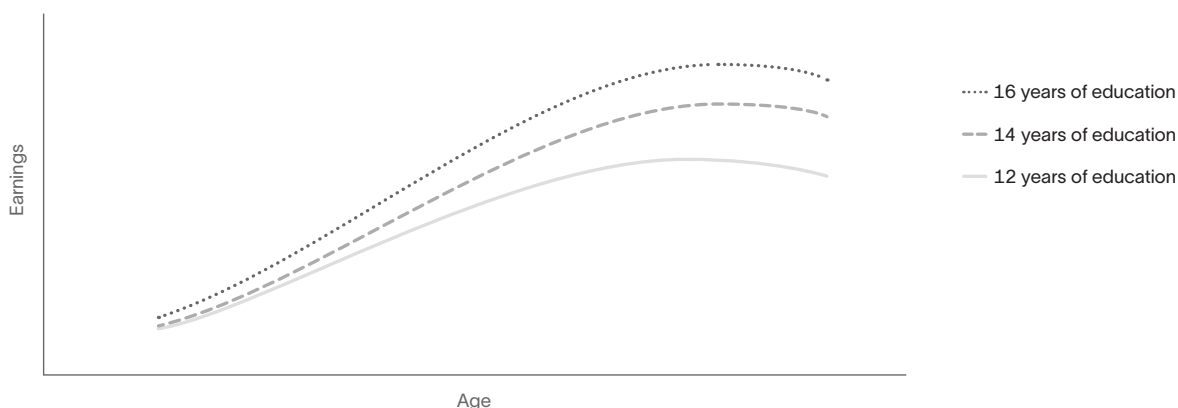
48 See Mincer (1958 and 1974).



unobserved factors such as ability, socioeconomic status, and family background that also help explain higher earnings. Failure to account for these factors results in what is known as an “ability bias.” Research by Card (1999 and 2001) suggests that the benefits estimated using Mincer’s function are biased upwards by 10% or less. As such, we reduce the estimated benefits by 10%. We use state-specific and education level-specific Mincer coefficients.

Figure A6.1 illustrates several important points about the Mincer function. First, as demonstrated by the shape of the curves, an individual’s earnings initially increase at an increasing rate, then increase at a decreasing rate, reach a maximum somewhere well after the midpoint of the working career, and then decline in later years. Second, individuals with higher levels of education reach their maximum earnings at an older age compared to individuals with lower levels of education (recall that age serves as a proxy for years of experience). And third, the benefits of education, as measured by the difference in earnings between education levels, increase with age.

**Figure A6.1: Lifecycle change in earnings**



In calculating the alumni impact in Chapter 2, we use the slope of the curve in Mincer’s earnings function to condition the \$123 value per CHE to the students’ age and work experience. To the students just starting their career during the analysis year, we apply a lower value per CHE; to the students in the latter half or approaching the end of their careers we apply a higher value per CHE. The original \$123 value per CHE applies only to the CHE production of students precisely at the midpoint of their careers during the analysis year.

In Chapter 3 we again apply the Mincer function, this time to project the benefits stream of the FY 2021-22 student population into the future. Here too the value per CHE is lower for students at the start of their career and higher near the end of it, in accordance with the scalars derived from the slope of the Mincer curve illustrated in Figure A6.1.

In a scenario where the college did not exist, some of its students would still be able to avail themselves of an alternative comparable education. These students create benefits in the region even in the absence of the college. The alternative education variable accounts for these students and is used to discount the benefits we attribute to the college.

Recall this analysis considers only relevant economic information regarding the college. Considering the existence of various other academic institutions surrounding the college, we have to assume that a portion of the students could find alternative education and either remain in or return to the region. For example, some students may participate in online programs while remaining in the region. Others may attend an out-of-region institution and return to the region upon completing their studies. For these students – who would have found an alternative education and produced benefits in the region regardless of the presence of the college – we discount the benefits attributed to the college. An important distinction must be made here: the benefits from students who would find alternative education outside the region and not return to the region are not discounted. Because these benefits would not occur in the region without the presence of the college, they must be included.

In the absence of the college, we assume 15% of the college's students would find alternative education opportunities and remain in or return to the region. We account for this by discounting the alumni impact, the benefits to taxpayers, and the benefits to society in the region in Chapters 2 and 3 by 15%. In other words, we assume 15% of the benefits created by the college's students would have occurred anyway in the counterfactual scenario where the college did not exist. A sensitivity analysis of this adjustment is presented in Appendix 1.






# Appendix 8: Overview of investment analysis measures

The appendix provides context to the investment analysis results using the simple hypothetical example summarized in Table A8.1 below. The table shows the projected benefits and costs for a single student over time and associated investment analysis results.<sup>49</sup>

**Table A8.1: Example of the benefits and costs of education for a single student**

| 1                        | 2       | 3                | 4               | 5               | 6               |
|--------------------------|---------|------------------|-----------------|-----------------|-----------------|
| Year                     | Tuition | Opportunity cost | Total cost      | Higher earnings | Net cash flow   |
| 1                        | \$1,500 | \$20,000         | \$21,500        | \$0             | -\$21,500       |
| 2                        | \$0     | \$0              | \$0             | \$5,000         | \$5,000         |
| 3                        | \$0     | \$0              | \$0             | \$5,000         | \$5,000         |
| 4                        | \$0     | \$0              | \$0             | \$5,000         | \$5,000         |
| 5                        | \$0     | \$0              | \$0             | \$5,000         | \$5,000         |
| 6                        | \$0     | \$0              | \$0             | \$5,000         | \$5,000         |
| 7                        | \$0     | \$0              | \$0             | \$5,000         | \$5,000         |
| 8                        | \$0     | \$0              | \$0             | \$5,000         | \$5,000         |
| 9                        | \$0     | \$0              | \$0             | \$5,000         | \$5,000         |
| 10                       | \$0     | \$0              | \$0             | \$5,000         | \$5,000         |
| <b>Net present value</b> |         |                  | <b>\$21,500</b> | <b>\$35,753</b> | <b>\$14,253</b> |

|   |                                  |   |   |   |                                      |
|---|----------------------------------|---|---|---|--------------------------------------|
|  | Benefit-cost ratio<br><b>1.7</b> |  | Internal rate of return<br><b>18.0%</b> |  | Payback period (years)<br><b>4.2</b> |
|---|----------------------------------|---|---|---|--------------------------------------|

Assumptions are as follows:

- Benefits and costs are projected out 10 years into the future (Column 1).
- The student attends the college for one year, and the cost of tuition is \$1,500 (Column 2).
- Earnings foregone while attending the college for one year (opportunity cost) come to \$20,000 (Column 3).

<sup>49</sup> Note that this is a hypothetical example. The numbers used are not based on data collected from an existing college.



- Together, tuition and earnings foregone cost sum to \$21,500. This represents the out-of-pocket investment made by the student (Column 4).
- In return, the student earns \$5,000 more per year than he otherwise would have earned without the education (Column 5).
- The net cash flow (NCF) in Column 6 shows higher earnings (Column 5) less the total cost (Column 4).
- The assumed going rate of interest is 4%, the rate of return from alternative investment schemes for the use of the \$21,500.

Results are expressed in standard investment analysis terms, which are as follows: the net present value, the internal rate of return, the benefit-cost ratio, and the payback period. Each of these is briefly explained below in the context of the cash flow numbers presented in Table A8.1.

## Net present value

The student in Table A8.1 can choose either to attend college or to forego post-secondary education and maintain his present employment. If he decides to enroll, certain economic implications unfold. Tuition and fees must be paid, and earnings will cease for one year. In exchange, the student calculates that with post-secondary education, his earnings will increase by at least the \$5,000 per year, as indicated in the table.

The question is simple: Will the prospective student be economically better off by choosing to enroll? If he adds up higher earnings of \$5,000 per year for the remaining nine years in Table A8.1, the total will be \$45,000. Compared to a total investment of \$21,500, this appears to be a very solid investment. The reality, however, is different. Benefits are far lower than \$45,000 because future money is worth less than present money. Costs (tuition plus earnings foregone) are felt immediately because they are incurred today, in the present. Benefits, on the other hand, occur in the future. They are not yet available. All future benefits must be discounted by the going rate of interest (referred to as the discount rate) to be able to express them in present value terms.<sup>50</sup>

Let us take a brief example. At 4%, the present value of \$5,000 to be received one year from today is \$4,807. If the \$5,000 were to be received in year 10, the present value would reduce to \$3,377. Put another way, \$4,807 deposited in the bank today earning 4% interest will grow to \$5,000 in one year; and \$3,377 deposited today would grow to \$5,000 in 10 years. An “economically rational” person would, therefore, be equally satisfied receiving \$3,377 today or \$5,000 10 years from today given the going rate of interest of 4%. The process of discounting—finding the present value of future higher earnings—allows the model to express values on an equal basis in future or present value terms.

<sup>50</sup> Technically, the interest rate is applied to compounding—the process of looking at deposits today and determining how much they will be worth in the future. The same interest rate is called a discount rate when the process is reversed—determining the present value of future earnings.



The goal is to express all future higher earnings in present value terms so that they can be compared to investments incurred today (in this example, tuition plus earnings foregone). As indicated in Table A8.1 the cumulative present value of \$5,000 worth of higher earnings between years 2 and 10 is \$35,753 given the 4% interest rate, far lower than the undiscounted \$45,000 discussed above.

The net present value of the investment is \$14,253. This is simply the present value of the benefits less the present value of the costs, or  $\$35,753 - \$21,500 = \$14,253$ . In other words, the present value of benefits exceeds the present value of costs by as much as \$14,253. The criterion for an economically worthwhile investment is that the net present value is equal to or greater than zero. Given this result, it can be concluded that, in this case, and given these assumptions, this particular investment in education is very strong.

### Internal rate of return

The internal rate of return is another way of measuring the worth of investing in education using the same cash flows shown in Table A8.1. In technical terms, the internal rate of return is a measure of the average earning power of money used over the life of the investment. It is simply the interest rate that makes the net present value equal to zero. In the discussion of the net present value above, the model applies the going rate of interest of 4% and computes a positive net present value of \$14,253. The question now is what the interest rate would have to be in order to reduce the net present value to zero. Obviously, it would have to be higher—18.0% in fact, as indicated in Table A8.1. Or, if a discount rate of 18.0% were applied to the net present value calculations instead of the 4%, then the net present value would reduce to zero.

What does this mean? The internal rate of return of 18.0% defines a breakeven solution—the point where the present value of benefits just equals the present value of costs, or where the net present value equals zero. Or, at 18.0%, higher earnings of \$5,000 per year for the next nine years will earn back all investments of \$21,500 made plus pay 18.0% for the use of that money (\$21,500) in the meantime. Is this a good return? Indeed, it is. If it is compared to the 4% going rate of interest applied to the net present value calculations, 18.0% is far higher than 4%. It may be concluded, therefore, that the investment in this case is solid. Alternatively, comparing the 18.0% rate of return to the long-term 9.6% rate or so obtained from investments in stocks and bonds also indicates that the investment in education is strong relative to the stock market returns (on average).

### Benefit-cost ratio

The benefit-cost ratio is simply the present value of benefits divided by present value of costs, or  $\$35,753 \div \$21,500 = 1.7$  (based on the 4% discount rate). Of course, any change in the discount rate would also change the benefit-cost ratio. Applying the 18.0% internal rate of return discussed above would reduce the benefit-cost ratio to 1.0, the breakeven solution where benefits just equal costs. Applying a discount rate higher than the 18.0% would reduce the ratio to lower than 1.0, and the investment

would not be feasible. The 1.7 ratio means that a dollar invested today will return a cumulative \$1.70 over the ten-year time period.

## Payback period

This is the length of time from the beginning of the investment (consisting of tuition and earnings foregone) until higher future earnings give a return on the investment made. For the student in Table A8.1, it will take roughly 4.2 years of \$5,000 worth of higher earnings to recapture his investment of \$1,500 in tuition and the \$20,000 in earnings foregone while attending the college. Higher earnings that occur beyond 4.2 years are the returns that make the investment in education in this example economically worthwhile. The payback period is a fairly rough, albeit common, means of choosing between investments. The shorter the payback period, the stronger the investment.



The investment analysis in Chapter 3 weighs the benefits generated by the college against the state and local taxpayer funding that the college receives to support its operations. An important part of this analysis is factoring out the benefits that the college would have been able to generate anyway, even without state and local taxpayer support. This adjustment is used to establish a direct link between what taxpayers pay and what they receive in return. If the college is able to generate benefits without taxpayer support, then it would not be a true investment.<sup>51</sup>

The overall approach includes a sub-model that simulates the effect on student enrollment if the college loses its state and local funding and has to raise student tuition and fees in order to stay open. If the college can still operate without state and local support, then any benefits it generates at that level are discounted from total benefit estimates. If the simulation indicates that the college cannot stay open, however, then benefits are directly linked to costs, and no discounting applies. This appendix documents the underlying theory behind these adjustments.

## State and local government support versus student demand for education

Figure A9.1 presents a simple model of student demand and state and local government support. The right side of the graph is a standard demand curve ( $D$ ) showing student enrollment as a function of student tuition and fees. Enrollment is measured in terms of total credit hour equivalents (CHEs) and expressed as a percentage of the college's current CHE production. Current student tuition and fees are represented by  $p'$ , and state and local government support covers  $C\%$  of all costs. At this point in the analysis, it is assumed that the college has only two sources of revenues: 1) student tuition and fees and 2) state and local government support.

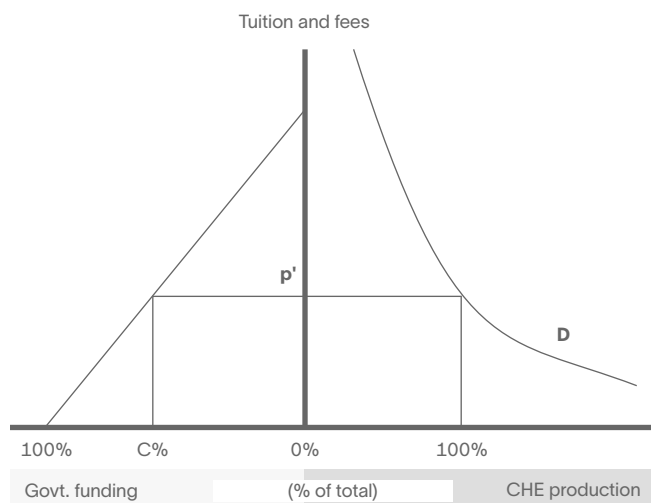
Figure A9.2 shows another important reference point in the model—where state and local government support is 0%, student tuition and fees are increased to  $p''$ , and CHE production is at  $Z\%$  (less than 100%). The reduction in CHEs reflects the price elasticity of the students' demand for education, i.e., the extent to which the students' decision to attend the college is affected by the change in tuition and fees. Ignoring for the moment those issues concerning the college's minimum operating scale (considered below in the section called "Calculating benefits at the shutdown point"), the implication for the investment analysis is that benefits to state and local government must be adjusted to

<sup>51</sup> Of course, as a public training provider, the college would not be permitted to continue without public funding, so the situation in which it would lose all state support is entirely hypothetical. The purpose of the adjustment factor is to examine the college in standard investment analysis terms by netting out any benefits it may be able to generate that are not directly linked to the costs of supporting it.

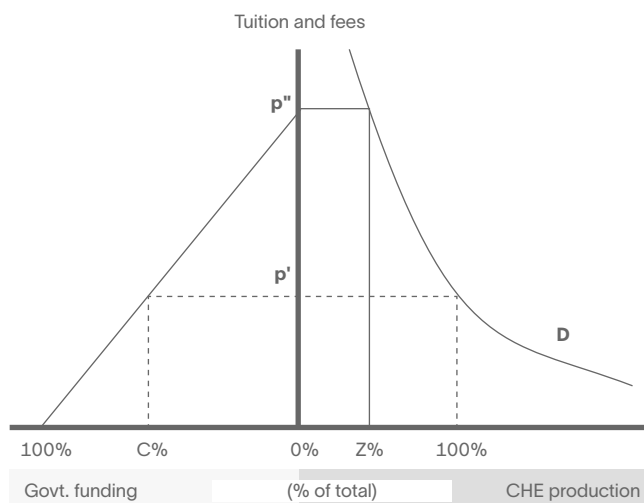


net out the benefits that the college can provide absent state and local government support, represented as Z% of the college's current CHE production in Figure A9.2.

**Figure A9.1: Student demand and government funding by tuition and fees**



**Figure A9.2: CHE production and government funding by tuition and fees**



To clarify the argument, it is useful to consider the role of enrollment in the larger benefit-cost model. Let  $B$  equal the benefits attributable to state and local government support. The analysis derives all benefits as a function of student enrollment, measured in terms of CHEs produced. For consistency with the graphs in this appendix,  $B$  is expressed as a function of the percent of the college's current CHE production. Equation 1 is thus as follows:

$$1) \quad B = B (100\%)$$

This reflects the total benefits generated by enrollments at their current levels.

Consider benefits now with reference to  $Z$ . The point at which state and local government support is zero nonetheless provides for  $Z\%$  (less than 100%) of the current enrollment, and benefits are symbolically indicated by the following equation:

$$2) \quad B = B (Z\%)$$

Inasmuch as the benefits in equation 2 occur with or without state and local government support, the benefits appropriately attributed to state and local government support are given by equation 3 as follows:

$$3) \quad B = B (100\%) - B (Z\%)$$



## Calculating benefits at the shutdown point

Colleges and universities cease to operate when the revenue they receive from the quantity of education demanded is insufficient to justify their continued operations. This is commonly known in economics as the shutdown point.<sup>52</sup> The shutdown point is introduced graphically in Figure A9.3 as  $S\%$ . The location of point  $S\%$  indicates that the college can operate at an even lower enrollment level than  $Z\%$  (the point at which the college receives zero state and local government funding). State and local government support at point  $S\%$  is still zero, and student tuition and fees have been raised to  $p'''$ . State and local government support is thus credited with the benefits given by equation 3, or  $B = B(100\%) - B(Z\%)$ . With student tuition and fees still higher than  $p''$ , the college would no longer be able to attract enough students to keep the doors open, and it would shut down.

Figure A9.4 illustrates yet another scenario. Here, the shutdown point occurs at a level of CHE production greater than  $Z\%$  (the level of zero state and local government support), meaning some minimum level of state and local government support is needed for the college to operate at all. This minimum portion of overall funding is indicated by  $S'\%$  on the left side of the chart, and as before, the shutdown point is indicated by  $S\%$  on the right side of chart. In this case, state and local government support is appropriately credited with all the benefits generated by the college's CHE production, or  $B = B(100\%)$ .

Figure A9.3: Shutdown point after zero government funding

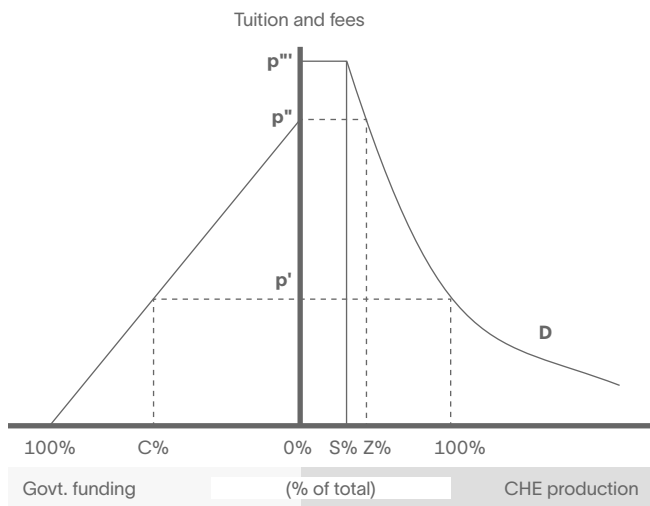
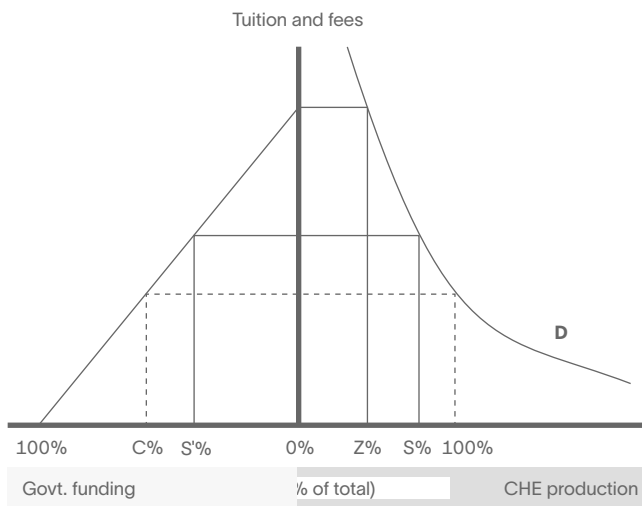


Figure A9.4: Shutdown point before zero government funding



52 In the traditional sense, the shutdown point applies to firms seeking to maximize profits and minimize losses. Although profit maximization is not the primary aim of colleges and universities, the principle remains the same, i.e., that there is a minimum scale of operation required in order for colleges and universities to stay open.



Education has a predictable and positive effect on a diverse array of social benefits. These, when quantified in dollar terms, represent significant social savings that directly benefit society communities and citizens throughout the region, including taxpayers. In this appendix we discuss the following three main benefit categories: 1) improved health, 2) reductions in crime, and 3) reduced demand for government-funded income assistance.

It is important to note that the data and estimates presented here should not be viewed as exact, but rather as indicative of the positive impacts of education on an individual’s quality of life. The process of quantifying these impacts requires a number of assumptions to be made, creating a level of uncertainty that should be borne in mind when reviewing the results.

## Health

Statistics show a correlation between increased education and improved health. The manifestations of this are found in five health-related variables: smoking, alcohol dependence, obesity, depression, and drug abuse. There are other health-related areas that link to educational attainment, but these are omitted from the analysis until we can invoke adequate (and mutually exclusive) databases and are able to fully develop the functional relationships between them.

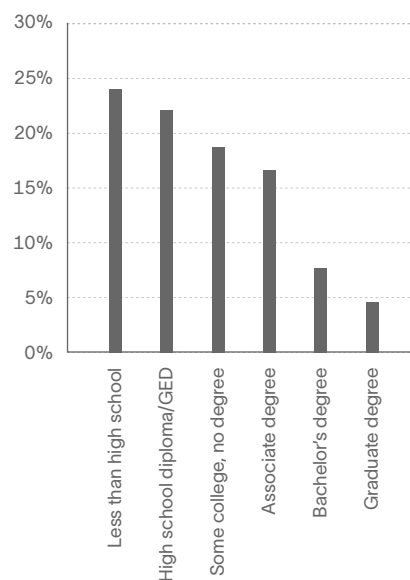
## Smoking

Despite a marked decline over the last several decades in the percentage of U.S. residents who smoke, a sizeable percentage of the U.S. population still smokes. The negative health effects of smoking are well documented in the literature, which identifies smoking as one of the most serious health issues in the U.S.

Figure A10.1 shows the prevalence of cigarette smoking among adults, 25 years and over, based on data provided by the National Health Interview Survey.<sup>53</sup> The data include adults who reported smoking more than 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days. As indicated, the percent of who smoke begins to decline beyond the level of high school education.

The Centers for Disease Control and Prevention (CDC) reports the percentage of adults who are current smokers by state.<sup>54</sup> We use this information to create an index

**Figure A10.1: Prevalence of smoking among U.S. adults by education level**



Source: Centers for Disease Control and Prevention.

53 Centers for Disease Control and Prevention. "Table. Characteristics of current adult cigarette smokers," National Health Interview Survey, United States, 2016.

54 Centers for Disease Control and Prevention. "Current Cigarette Use Among Adults (Behavior Risk Factor Surveillance System) 2018." *Behavioral Risk Factor Surveillance System Prevalence and Trends Data*, 2018.





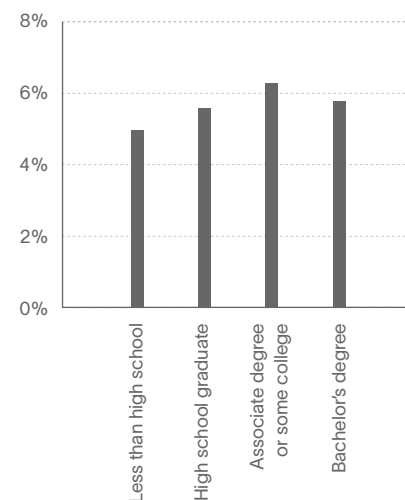
value by which we adjust the national prevalence data on smoking to each state. For example, 18.9% of Michigan adults were smokers in 2018, relative to 15.9% for the nation. We thus apply a scalar of 1.19 to the national probabilities of smoking in order to adjust them to the state of Michigan.

### Alcohol dependence

Although alcohol dependence has large public and private costs, it is difficult to measure and define. There are many patterns of drinking, ranging from abstinence to heavy drinking. Alcohol abuse is riddled with social costs, including health care expenditures for treatment, prevention, and support; workplace losses due to reduced worker productivity; and other effects.

Figure A10.2 compares the percentage of adults, 18 and older, that abuse or depend on alcohol by education level, based on data from the Substance Abuse and Mental Health Services Administration (SAMHSA).<sup>55</sup> These statistics give an indication of the correlation between education and the reduced probability of alcohol dependence. Adults with an associate degree or some college have higher rates of alcohol dependence than adults with a high school diploma or lower. Prevalence rates are lower for adults with a bachelor’s degree or higher than those with an associate degree or some college. Although the data do not maintain a pattern of decreased alcohol dependence at every level of increased education, we include these rates in our model to ensure we provide a comprehensive view of the social benefits and costs correlated with education.

**Figure A10.2: Prevalence of alcohol dependence or abuse by education level**



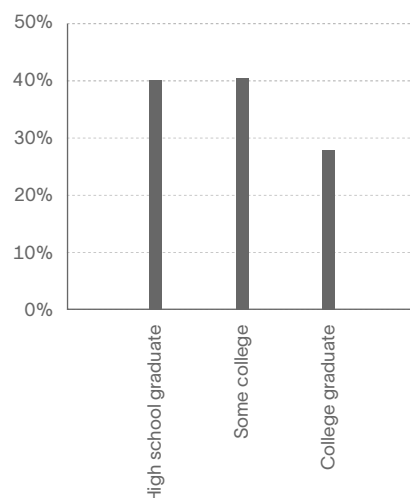
Source: Centers for Disease Control and Prevention.

### Obesity

The rise in obesity and diet-related chronic diseases has led to increased attention on how expenditures relating to obesity have increased in recent years. The average cost of obesity-related medical conditions is calculated using information from the *Journal of Occupational and Environmental Medicine*, which reports incremental medical expenditures and productivity losses due to excess weight.<sup>56</sup>

Data for Figure A10.3 is derived from the National Center for Health Statistics which shows the prevalence of obesity among adults aged 20 years and over by education, gender, and ethnicity.<sup>57</sup> As indicated, college graduates are less likely to be obese than individuals with a high school diploma. However, the prevalence of obesity among adults with some college is actually greater than those with just a high school diploma. In general, though, obesity tends to decline with increasing levels of education.

**Figure A10.3: Prevalence of obesity by education level**



Source: Derived from data provided by the National Center for Health Statistics.

55 Substance Abuse and Mental Health Services Administration. "Table 5.4B—Alcohol Use Disorder in Past Year among Persons Aged 12 or Older, by Age Group and Demographic Characteristics: Percentages, 2017 and 2018." SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017 and 2018.

56 Eric A. Finkelstein, Marco da Costa DiBonaventura, Somali M. Burgess, and Brent C. Hale, "The Costs of Obesity in the Workplace," *Journal of Occupational and Environmental Medicine* 52, no. 10 (October 2010): 971-976.

57 Ogden Cynthia L., Tala H. Fakhouri, Margaret D. Carroll, Craig M. Hales, Cheryl D. Fryar, Xianfen Li, David S. Freedman. "Prevalence of Obesity Among Adults, by Household Income and Education—United States, 2011–2014" National Center for Health Statistics, *Morbidity and Mortality Weekly Report*, 66:1369–1373 (2017).

## Depression

Capturing the full economic cost of mental illness is difficult because not all mental disorders have a correlation with education. For this reason, we only examine the economic costs associated with major depressive disorder (MDD), which are comprised of medical and pharmaceutical costs, workplace costs such as absenteeism, and suicide-related costs.<sup>58</sup>

Figure A10.4 summarizes the prevalence of MDD among adults by education level, based on data provided by the CDC.<sup>59</sup> As shown, people with some college are most likely to have MDD compared to those with other levels of educational attainment. People with a high school diploma or less, along with college graduates, are all fairly similar in the prevalence rates.

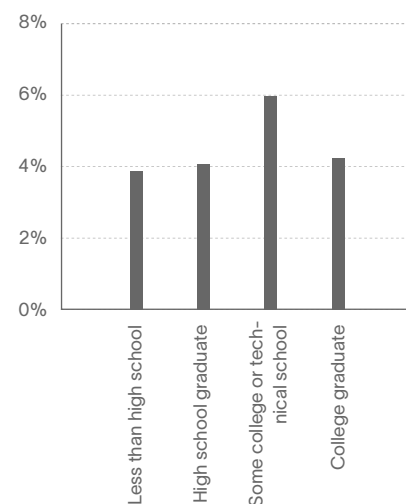
## Drug abuse

The burden and cost of illicit drug abuse is enormous in the U.S., but little is known about the magnitude of costs and effects at a national level. What is known is that the rate of people abusing drugs is inversely proportional to their education level. The higher the education level, the less likely a person is to abuse or depend on illicit drugs. The probability that a person with less than a high school diploma will abuse drugs is 3.9%, twice as large as the probability of drug abuse for college graduates (1.7%). This relationship is presented in Figure A10.5 based on data supplied by SAMHSA.<sup>60</sup> Similar to alcohol abuse, prevalence does not strictly decline at every education level. Health costs associated with illegal drug use are also available from SAMSHA, with costs to state and local government representing 40% of the total cost related to illegal drug use.<sup>61</sup>

## Crime

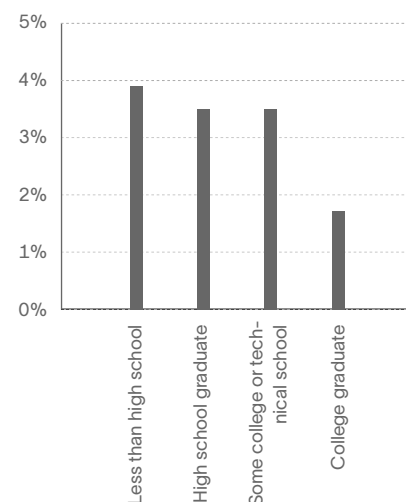
As people achieve higher education levels, they are statistically less likely to commit crimes. The analysis identifies the following three types of crime-related expenses: 1) criminal justice expenditures, including police protection, judicial and legal, and corrections, 2) victim costs, and 3) productivity lost as a result of time spent in jail or prison rather than working.

**Figure A10.4: Prevalence of major depressive episode by education level**



Source: National Survey on Drug Use and Health.

**Figure A10.5: Prevalence of illicit drug dependence or abuse by education level**



Source: Substance Abuse and Mental Health Services Administration.

58 Greenberg, Paul, Andree-Anne Fournier, Tammy Sisitsky, Crystal Pike, and Ronald Kessler. "The Economic Burden of Adults with Major Depressive Disorder in the United States (2005 and 2010)" *Journal of Clinical Psychiatry* 76:2, 2015.

59 National Survey on Drug Use and Health. "Table 8.40B: Major Depressive Episode (MDE) or MDE with Severe Impairment in Past Year among Persons Aged 18 or Older, and Receipt of Treatment for Depression in Past Year among Persons Aged 18 or Older with MDE or MDE with Severe Impairment in Past Year, by Geographic, Socioeconomic, and Health Characteristics: Numbers in Thousands, 2017 and 2018."

60 Substance Abuse and Mental Health Services Administration. "Table 5.3B—Illicit Drug Use Disorder in Past Year among Persons Aged 12 or Older, by Age Group and Demographic Characteristics: Percentages, 2017 and 2018." SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017 and 2018.

61 Substance Abuse and Mental Health Services Administration. "Table A.2. Spending by Payer: Levels and Percent Distribution for Mental Health and Substance Abuse (MHSA), Mental Health (MH), Substance Abuse (SA), Alcohol Abuse (AA), Drug Abuse (DA), and All-Health, 2014." *Behavioral Health Spending & Use Accounts, 1986–2014*. HHS Publication No. SMA-16-4975, 2016.



Figure A10.6 displays the educational attainment of the incarcerated population in the U.S. Data are derived from the breakdown of the inmate population by education level in federal, state, and local prisons as provided by the U.S. Census Bureau.<sup>62</sup>

Victim costs comprise material, medical, physical, and emotional losses suffered by crime victims. Some of these costs are hidden, while others are available in various databases. Estimates of victim costs vary widely, attributable to differences in how the costs are measured. The lower end of the scale includes only tangible out-of-pocket costs, while the higher end includes intangible costs related to pain and suffering.<sup>63</sup>

Yet another measurable cost is the economic productivity of people who are incarcerated and are thus not employed. The measurable productivity cost is simply the number of additional incarcerated people, who could have been in the labor force, multiplied by the average income of their corresponding education levels.

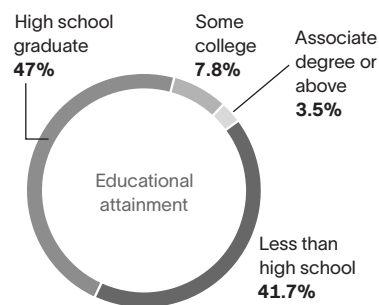
### Income assistance

Statistics show that as education levels increase, the number of applicants for government-funded income assistance such as welfare and unemployment benefits declines. Welfare and unemployment claimants can receive assistance from a variety of different sources, including Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), Medicaid, Supplemental Security Income (SSI), and unemployment insurance.<sup>64</sup>

Figure A10.7 relates the breakdown of TANF recipients by education level, derived from data provided by the U.S. Department of Health and Human Services.<sup>65</sup> As shown, the demographic characteristics of TANF recipients are weighted heavily towards the less than high school and high school categories, with a much smaller representation of individuals with greater than a high school education.

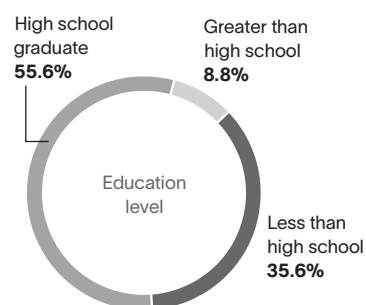
Unemployment rates also decline with increasing levels of education, as illustrated in Figure A10.8. These data are provided by the Bureau of Labor Statistics.<sup>66</sup> As shown, unemployment rates range from 5.4% for those with less than a high school diploma to 1.9% for those at the graduate degree level or higher.

**Figure A10.6:**  
Educational attainment of the incarcerated population



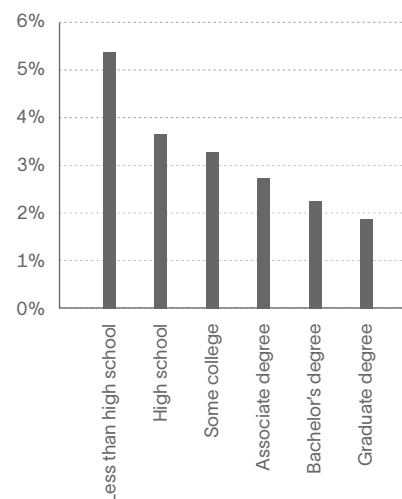
Source: Derived from data provided by the U.S. Census Bureau.

**Figure A10.7:**  
Breakdown of TANF recipients by education level



Source: U.S. Department of Health and Human Services, Office of Family Assistance.

**Figure A10.8: Unemployment by education level**



Source: Bureau of Labor Statistics.

62 U.S. Census Bureau. "Educational Characteristics of Prisoners: Data from the ACS." 2011.

63 NMCollister, Kathryn E., Michael T. French, and Hai Fang. "The Cost of Crime to Society: New Crime-Specific Estimates for Policy and Program Evaluation." *Drug and Alcohol Dependence* 108, no. 1-2 (April 2010): 98-109.

64 Medicaid is not considered in this analysis because it overlaps with the medical expenses in the analyses for smoking, alcohol dependence, obesity, depression, and drug abuse. We also exclude any welfare benefits associated with disability and age.

65 U.S. Department of Health and Human Services, Office of Family Assistance. "Characteristics and Financial Circumstances of TANF Recipients, Fiscal Year 2018."

66 Bureau of Labor Statistics. "Table 7. Employment status of the civilian noninstitutional population 25 years and over by educational attainment, sex, race, and Hispanic or Latino ethnicity." *Current Population Survey, Labor Force Statistics, Household Data Annual Averages, 2019.*



# **Appendix B**

## **Enrollment by Program**



# Records Office

## Contact Hours Generated All Campuses

|                                |                          | Fall 2020<br>07-SEP-20 | Fall 2021<br>13-SEP-21 | Fall 2022<br>12-SEP-22 | Fall 2023<br>11-SEP-23 | Fall 2024<br>09-SEP-24 | Pct<br>Change |
|--------------------------------|--------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------------|
| <b>Aviation</b>                |                          |                        |                        |                        |                        |                        |               |
| AVF                            | Aviation Flight          | 384                    | 348                    | 435                    | 373                    | 385                    | 3.2%          |
| AVG                            | Aviation Ground          | 414                    | 478                    | 602                    | 617                    | 688                    | 11.5%         |
| UAS                            | Uncrewed Aerial Systems  | 0                      | 186                    | 229                    | 161                    | 157                    | -2.5%         |
| <b>Academic Area Totals:</b>   |                          | <b>798</b>             | <b>1,012</b>           | <b>1,266</b>           | <b>1,151</b>           | <b>1,230</b>           | <b>6.9%</b>   |
| <b>Business</b>                |                          |                        |                        |                        |                        |                        |               |
| ACC                            | Accounting               | 671                    | 621                    | 601                    | 542                    | 500                    | -7.7%         |
| BUS                            | Business Administration  | 711                    | 723                    | 696                    | 696                    | 795                    | 14.2%         |
| CIT                            | Computer Info Technology | 1,394                  | 1,467                  | 1,373                  | 1,402                  | 1,574                  | 12.3%         |
| CUL                            | Culinary Arts            | 1,166                  | 1,311                  | 1,041                  | 1,320                  | 1,385                  | 4.9%          |
| ESP                            | Esports                  | 0                      | 0                      | 0                      | 0                      | 0                      | 0.0%          |
| MGT                            | Management               | 360                    | 249                    | 237                    | 282                    | 216                    | -23.4%        |
| MKT                            | Marketing                | 232                    | 241                    | 210                    | 242                    | 196                    | -19.0%        |
| <b>Academic Area Totals:</b>   |                          | <b>4,534</b>           | <b>4,612</b>           | <b>4,158</b>           | <b>4,484</b>           | <b>4,666</b>           | <b>4.1%</b>   |
| <b>Communications</b>          |                          |                        |                        |                        |                        |                        |               |
| ASL                            | American Sign Language   | 208                    | 264                    | 216                    | 272                    | 332                    | 22.1%         |
| COM                            | Communications           | 292                    | 244                    | 108                    | 180                    | 152                    | -15.6%        |
| ENG                            | English                  | 4,371                  | 4,776                  | 4,215                  | 4,048                  | 4,199                  | 3.7%          |
| FRN                            | French                   | 0                      | 0                      | 0                      | 0                      | 0                      | 0.0%          |
| GRM                            | German                   | 0                      | 0                      | 0                      | 0                      | 0                      | 0.0%          |
| SPN                            | Spanish                  | 128                    | 240                    | 196                    | 216                    | 264                    | 22.2%         |
| THR                            | Theater                  | 0                      | 0                      | 40                     | 0                      | 0                      | 0.0%          |
| <b>Academic Area Totals:</b>   |                          | <b>4,999</b>           | <b>5,524</b>           | <b>4,775</b>           | <b>4,716</b>           | <b>4,947</b>           | <b>4.9%</b>   |
| <b>Construction Technology</b> |                          |                        |                        |                        |                        |                        |               |
| CAR                            | Carpentry                | 254                    | 373                    | 202                    | 363                    | 271                    | -25.3%        |
| CMT                            | Construction Management  | 15                     | 24                     | 0                      | 0                      | 0                      | 0.0%          |
| EGY                            | Renewable Energy         | 12                     | 36                     | 30                     | 45                     | 78                     | 73.3%         |
| ELE                            | Electrician              | 401                    | 394                    | 427                    | 426                    | 470                    | 10.3%         |
| HVA                            | Heating and Ventilation  | 111                    | 112                    | 136                    | 62                     | 56                     | -9.7%         |
| PLU                            | Plumbing                 | 20                     | 24                     | 0                      | 0                      | 24                     | 100.0%        |
| <b>Academic Area Totals:</b>   |                          | <b>813</b>             | <b>963</b>             | <b>795</b>             | <b>896</b>             | <b>899</b>             | <b>0.3%</b>   |
| <b>Health Occupations</b>      |                          |                        |                        |                        |                        |                        |               |
| HAH                            | Allied Health            | 234                    | 218                    | 225                    | 216                    | 216                    | 0.0%          |
| HDA                            | Dental Assistant         | 274                    | 260                    | 216                    | 135                    | 192                    | 42.2%         |
| HNR                            | Nursing                  | 3,044                  | 2,793                  | 2,949                  | 2,829                  | 2,701                  | -4.5%         |
| HPD                            | Professional Development | 11                     | 10                     | 10                     | 8                      | 8                      | 5.3%          |
| SRG                            | Surgical Technology      | 308                    | 205                    | 201                    | 135                    | 154                    | 13.7%         |
| <b>Academic Area Totals:</b>   |                          | <b>3,871</b>           | <b>3,485</b>           | <b>3,601</b>           | <b>3,322</b>           | <b>3,271</b>           | <b>-1.6%</b>  |
| <b>Humanities</b>              |                          |                        |                        |                        |                        |                        |               |
| ART                            | Art                      | 867                    | 1,067                  | 1,241                  | 1,204                  | 1,262                  | 4.8%          |

|                                |                             |              |              |              |              |              |              |
|--------------------------------|-----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| AUD                            | Audio Technology            | 182          | 200          | 281          | 336          | 334          | -0.6%        |
| DNC                            | Dance                       | 0            | 8            | 24           | 32           | 58           | 81.3%        |
| HST                            | History                     | 869          | 848          | 830          | 707          | 612          | -13.4%       |
| HUM                            | Humanities                  | 171          | 198          | 96           | 206          | 184          | -10.7%       |
| MUS                            | Music                       | 288          | 402          | 419          | 514          | 578          | 12.5%        |
| PHL                            | Philosophy                  | 881          | 825          | 839          | 761          | 827          | 8.7%         |
| VCA                            | Visual Communication Arts   | 388          | 300          | 320          | 500          | 564          | 12.8%        |
| <b>Academic Area Totals:</b>   |                             | <b>3,646</b> | <b>3,848</b> | <b>4,050</b> | <b>4,260</b> | <b>4,419</b> | <b>3.7%</b>  |
| <b>Maritime</b>                |                             |              |              |              |              |              |              |
| MDK                            | Maritime-Deck               | 1,039        | 873          | 969          | 868          | 896          | 3.2%         |
| MNG                            | Maritime-Engine             | 563          | 545          | 581          | 528          | 569          | 7.8%         |
| MNS                            | Naval Science               | 112          | 82           | 98           | 96           | 108          | 12.5%        |
| <b>Academic Area Totals:</b>   |                             | <b>1,714</b> | <b>1,500</b> | <b>1,648</b> | <b>1,492</b> | <b>1,573</b> | <b>5.4%</b>  |
| <b>Science &amp; Math</b>      |                             |              |              |              |              |              |              |
| AST                            | Astronomy                   | 245          | 220          | 0            | 245          | 250          | 2.0%         |
| BIO                            | Biology                     | 2,577        | 2,357        | 2,142        | 1,988        | 2,102        | 5.7%         |
| CHM                            | Chemistry                   | 843          | 469          | 714          | 549          | 530          | -3.5%        |
| EGR                            | Engineering                 | 186          | 154          | 131          | 211          | 177          | -16.1%       |
| ENV                            | Environmental Sciences      | 670          | 635          | 705          | 475          | 545          | 14.7%        |
| MTH                            | Mathematics                 | 3,680        | 3,415        | 2,913        | 2,827        | 3,214        | 13.7%        |
| PHY                            | Physics                     | 613          | 535          | 520          | 553          | 594          | 7.4%         |
| <b>Academic Area Totals:</b>   |                             | <b>8,814</b> | <b>7,785</b> | <b>7,125</b> | <b>6,848</b> | <b>7,412</b> | <b>8.2%</b>  |
| <b>Social Science</b>          |                             |              |              |              |              |              |              |
| ANT                            | Anthropology                | 102          | 162          | 126          | 123          | 153          | 24.4%        |
| CJ                             | Criminal Justice            | 239          | 234          | 131          | 180          | 138          | -23.3%       |
| ECE                            | Early Childhood Education   | 317          | 469          | 347          | 353          | 398          | 12.7%        |
| ECO                            | Economics                   | 531          | 486          | 513          | 522          | 483          | -7.5%        |
| EDU                            | Education                   | 141          | 223          | 212          | 200          | 249          | 24.5%        |
| GEO                            | Geography                   | 330          | 245          | 337          | 290          | 287          | -1.0%        |
| HAH                            | Allied Health               | 40           | 48           | 0            | 0            | 0            | 0.0%         |
| LWE                            | Law Enforcement             | 220          | 272          | 135          | 450          | 540          | 20.0%        |
| PLS                            | Political Science           | 363          | 357          | 360          | 231          | 273          | 18.2%        |
| PSY                            | Psychology                  | 1,320        | 1,208        | 1,123        | 1,179        | 1,402        | 18.9%        |
| SOC                            | Sociology                   | 627          | 579          | 690          | 630          | 561          | -11.0%       |
| SWK                            | Social Work                 | 109          | 93           | 70           | 93           | 90           | -3.2%        |
| <b>Academic Area Totals:</b>   |                             | <b>4,339</b> | <b>4,376</b> | <b>4,044</b> | <b>4,251</b> | <b>4,574</b> | <b>7.6%</b>  |
| <b>Technical</b>               |                             |              |              |              |              |              |              |
| AT                             | Automotive Technology       | 531          | 636          | 657          | 611          | 742          | 21.4%        |
| DD                             | Drafting and Design         | 135          | 254          | 168          | 229          | 197          | -14.0%       |
| EET                            | Electrical/Electronics Tech | 270          | 338          | 246          | 232          | 293          | 26.3%        |
| MFG                            | Manufacturing Technologies  | 168          | 210          | 182          | 118          | 132          | 11.9%        |
| RAM                            | Robotics and Automation     | 132          | 180          | 132          | 136          | 112          | -17.6%       |
| SVR                            | Surveying                   | 76           | 141          | 24           | 157          | 197          | 25.5%        |
| WPT                            | Welding Process Technology  | 175          | 293          | 326          | 390          | 316          | -19.0%       |
| <b>Academic Area Totals:</b>   |                             | <b>1,487</b> | <b>2,052</b> | <b>1,735</b> | <b>1,873</b> | <b>1,989</b> | <b>6.2%</b>  |
| <b>Water Studies Institute</b> |                             |              |              |              |              |              |              |
| WSI                            | Water Studies Institute     | 192          | 165          | 157          | 249          | 281          | 12.9%        |
| <b>Academic Area Totals:</b>   |                             | <b>192</b>   | <b>165</b>   | <b>157</b>   | <b>249</b>   | <b>281</b>   | <b>12.9%</b> |

|                       |               |               |               |               |               |             |
|-----------------------|---------------|---------------|---------------|---------------|---------------|-------------|
| <b>Report Totals:</b> | <b>35,207</b> | <b>35,322</b> | <b>33,354</b> | <b>33,542</b> | <b>35,261</b> | <b>5.1%</b> |
|-----------------------|---------------|---------------|---------------|---------------|---------------|-------------|

Note: This report does not include enrollment from EES sections that are cross-listed with academic sections

### Digital Dashboard - Registration



# **Appendix C**

## **Faculty and Staff Headcounts**



**ADP Report**  
**Annual report November 1**

**2023**

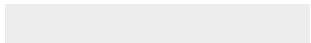
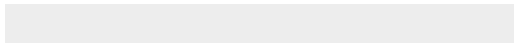
**2022**

**2021**

**2020**

Category

|                                  |            |     |            |            |
|----------------------------------|------------|-----|------------|------------|
| Faculty                          | <b>81</b>  | 82  | <b>82</b>  | <b>82</b>  |
| Full Time                        | 78         | 78  | 80         | 80         |
| Part Time                        | 3          | 4   | 2          | 2          |
| NMC Administrator                | <b>35</b>  | 35  | <b>37</b>  | <b>37</b>  |
| Full Time                        | 35         | 35  | 37         | 37         |
| Part Time                        | 0          | 0   | 0          | 0          |
| Staff                            | <b>157</b> | 150 | <b>142</b> | <b>145</b> |
| Full Time                        | 152        | 146 | 139        | 139        |
| Part Time                        | 5          | 4   | 3          | 6          |
| <i>Employed through Edustaff</i> | 0          |     |            |            |
| Maintenance/Custodial Staff      | <b>27</b>  | 27  | <b>28</b>  | <b>29</b>  |
| Full Time                        | 27         | 27  | 28         | 29         |
| Part Time                        | 0          | 0   | 0          | 0          |
| Total Regular Employees          | <b>300</b> | 294 | <b>289</b> | <b>293</b> |
| Full Time                        | 292        | 286 | 284        | 285        |
| Part Time                        | 8          | 8   | 5          | 8          |



# **Appendix D**

## **Course Efficiency Reports**

## Northwestern Michigan College – Course Efficiency Report 2017-2023

(Note: Highlighted cells exceed 90% goal)

|                    | Available     | Avg.         | Count Day     | # of       | Avg. Students |              |
|--------------------|---------------|--------------|---------------|------------|---------------|--------------|
| <b>Fall 2017</b>   | Seats         | Max          | Enrollment    | Sections   | per Section   | % Full       |
| Aviation           | 262           | 23.82        | 147           | 11         | 13.36         | 56.11        |
| Business           | 1,797         | 23.96        | 1498          | 75         | 19.97         | 83.36        |
| Communications     | 1,944         | 18.87        | 1873          | 103        | 18.18         | 96.35        |
| Construction Tech  | 264           | 14.67        | 165           | 18         | 9.17          | 62.50        |
| Health Occupations | 1022          | 13.81        | 843           | 74         | 11.39         | 82.49        |
| Humanities         | 1,626         | 20.85        | 1372          | 78         | 17.59         | 84.38        |
| Maritime           | 846           | 20.14        | 669           | 42         | 15.93         | 79.08        |
| Physical Education | 378           | 25.20        | 77            | 15         | 5.13          | 20.37        |
| Science/Math       | 3,666         | 25.11        | 3350          | 146        | 22.95         | 91.38        |
| Social Science     | 1,997         | 29.37        | 1657          | 68         | 24.37         | 82.97        |
| Technical          | 680           | 16.19        | 498           | 42         | 11.86         | 73.24        |
| Water Studies      | 82            | 20.50        | 53            | 4          | 13.25         | 64.63        |
| <b>TOTALS</b>      | <b>14,564</b> | <b>21.54</b> | <b>12,202</b> | <b>676</b> | <b>18.05</b>  | <b>83.78</b> |

|                    | Available    | Avg.         | End of Sem   | # of       | Avg. Students |              |
|--------------------|--------------|--------------|--------------|------------|---------------|--------------|
| <b>Spring 2018</b> | Seats        | Max          | Enrollment   | Sections   | per Section   | % Full       |
| Aviation           | 191          | 23.88        | 148          | 8          | 18.50         | 77.49        |
| Business           | 1692         | 21.97        | 1353         | 77         | 17.57         | 79.96        |
| Communications     | 1502         | 20.30        | 1321         | 74         | 17.85         | 87.95        |
| Construction Tech  | 179          | 14.92        | 125          | 12         | 10.42         | 69.83        |
| Health Occupations | 938          | 16.46        | 730          | 57         | 12.81         | 77.83        |
| Humanities         | 1599         | 20.50        | 1278         | 78         | 16.38         | 79.92        |
| Maritime           | 849          | 21.23        | 735          | 40         | 18.38         | 86.57        |
| Physical Education | 176          | 22.00        | 64           | 8          | 8.00          | 36.36        |
| Science/Math       | 3091         | 24.93        | 2661         | 124        | 21.46         | 86.09        |
| Social Science     | 2028         | 28.56        | 1594         | 71         | 22.45         | 78.60        |
| Technical          | 587          | 16.31        | 406          | 36         | 11.28         | 69.17        |
| Water Studies      | 86           | 21.50        | 48           | 4          | 12.00         | 55.81        |
| <b>TOTALS</b>      | <b>12918</b> | <b>21.93</b> | <b>10463</b> | <b>589</b> | <b>17.76</b>  | <b>81.00</b> |

|                    | Available          | Avg.         | Count Day     | # of       | Avg. Students |              |
|--------------------|--------------------|--------------|---------------|------------|---------------|--------------|
| <b>Fall 2018</b>   | Seats              | Max          | Enrollment    | Sections   | per Section   | % Full       |
| Aviation           | 211                | 23.44        | 145           | 9          | 16.11         | 68.72        |
| Business           | 1,680              | 24.00        | 1288          | 70         | 18.40         | 76.67        |
| Communications     | 1,904              | 19.04        | 1788          | 100        | 17.88         | 93.91        |
| Construction Tech  | 209                | 14.93        | 149           | 14         | 10.64         | 71.29        |
| Health Occupations | 1029               | 14.29        | 897           | 72         | 12.46         | 87.17        |
| Humanities         | 1,664              | 20.80        | 1353          | 80         | 16.91         | 81.31        |
| Maritime           | 892                | 20.74        | 725           | 43         | 16.86         | 81.28        |
| Physical Education | No Courses Offered |              |               |            |               |              |
| Science/Math       | 3,496              | 24.62        | 3092          | 142        | 21.77         | 88.44        |
| Social Science     | 1,874              | 28.83        | 1619          | 65         | 24.91         | 86.39        |
| Technical          | 520                | 15.29        | 397           | 34         | 11.68         | 76.35        |
| Water Studies      | 78                 | 19.50        | 55            | 4          | 13.75         | 70.51        |
| <b>TOTALS</b>      | <b>13,557</b>      | <b>21.42</b> | <b>11,508</b> | <b>633</b> | <b>18.18</b>  | <b>84.89</b> |

|                    | Available    | Avg.         | End of Sem   | # of       | Avg. Students |              |
|--------------------|--------------|--------------|--------------|------------|---------------|--------------|
| <b>Spring 2019</b> | Seats        | Max          | Enrollment   | Sections   | per Section   | % Full       |
| Aviation           | 250          | 25.00        | 144          | 10         | 14.40         | 57.60        |
| Business           | 1586         | 23.67        | 1251         | 67         | 18.67         | 78.88        |
| Communications     | 1541         | 19.76        | 1313         | 78         | 16.83         | 85.20        |
| Construction Tech  | 229          | 14.31        | 161          | 16         | 10.06         | 70.31        |
| Health Occupations | 947          | 15.78        | 757          | 60         | 12.62         | 79.94        |
| Humanities         | 1565         | 20.59        | 1305         | 76         | 17.17         | 83.39        |
| Maritime           | 822          | 20.55        | 710          | 40         | 17.75         | 86.37        |
| Science/Math       | 3068         | 24.54        | 2521         | 125        | 20.17         | 82.17        |
| Social Science     | 1955         | 27.54        | 1590         | 71         | 22.39         | 81.33        |
| Technical          | 488          | 16.27        | 374          | 30         | 12.47         | 76.64        |
| Water Studies      | 90           | 22.50        | 38           | 4          | 9.50          | 42.22        |
| <b>TOTALS</b>      | <b>12541</b> | <b>21.73</b> | <b>10164</b> | <b>577</b> | <b>17.62</b>  | <b>81.05</b> |

|                    | Available | Avg.  | Count Day  | # of     | Avg. Students |        |
|--------------------|-----------|-------|------------|----------|---------------|--------|
| Fall 2019          | Seats     | Max   | Enrollment | Sections | per Section   | % Full |
| Aviation           | 316       | 26.33 | 137        | 12       | 11.42         | 43.35  |
| Business           | 1,589     | 23.72 | 1235       | 67       | 18.43         | 77.72  |
| Communications     | 1,851     | 19.48 | 1631       | 95       | 17.17         | 88.11  |
| Construction Tech  | 314       | 14.27 | 217        | 22       | 9.86          | 69.11  |
| Health Occupations | 1069      | 15.27 | 862        | 70       | 12.31         | 80.64  |
| Humanities         | 1,602     | 20.03 | 1290       | 80       | 16.13         | 80.52  |
| Maritime           | 886       | 20.60 | 690        | 43       | 16.05         | 77.88  |
| Science/Math       | 3,562     | 24.07 | 3105       | 148      | 20.98         | 87.17  |
| Social Science     | 2,011     | 28.32 | 1647       | 71       | 23.20         | 81.90  |
| Technical          | 457       | 16.93 | 354        | 27       | 13.11         | 77.46  |
| Water Studies      | 78        | 19.50 | 39         | 4        | 9.75          | 50.00  |
| TOTALS             | 13,735    | 21.49 | 11,207     | 639      | 17.54         | 81.59  |

|                    | Available | Avg.  | End of Sem | # of     | Avg. Students |        |
|--------------------|-----------|-------|------------|----------|---------------|--------|
| Spring 2020        | Seats     | Max   | Enrollment | Sections | per Section   | % Full |
| Aviation           | 222       | 22.20 | 135        | 10       | 13.50         | 60.81  |
| Business           | 1643      | 23.14 | 1181       | 71       | 16.63         | 71.88  |
| Communications     | 1468      | 19.84 | 1209       | 74       | 16.34         | 82.36  |
| Construction Tech  | 249       | 13.83 | 163        | 18       | 9.06          | 65.46  |
| Health Occupations | 1015      | 17.50 | 753        | 58       | 12.98         | 74.19  |
| Humanities         | 1462      | 20.89 | 1177       | 70       | 16.81         | 80.51  |
| Maritime           | 827       | 20.68 | 679        | 40       | 16.98         | 82.10  |
| Science/Math       | 3147      | 24.02 | 2548       | 131      | 19.45         | 80.97  |
| Social Science     | 1894      | 27.06 | 1491       | 70       | 21.30         | 78.72  |
| Technical          | 543       | 16.45 | 380        | 33       | 11.52         | 69.98  |
| Water Studies      | 86        | 21.50 | 34         | 4        | 8.50          | 39.53  |
| TOTALS             | 12556     | 21.69 | 9750       | 579      | 16.84         | 77.65  |

|                    | Available | Avg.  | Count Day  | # of     | Avg. Students |        |
|--------------------|-----------|-------|------------|----------|---------------|--------|
| Fall 2020          | Seats     | Max   | Enrollment | Sections | per Section   | % Full |
| Aviation           | 269       | 26.90 | 126        | 10       | 12.60         | 46.84  |
| Business           | 1,691     | 22.55 | 1158       | 75       | 15.44         | 68.48  |
| Communications     | 1,532     | 17.02 | 1399       | 90       | 15.54         | 91.32  |
| Construction Tech  | 449       | 24.94 | 214        | 18       | 11.89         | 47.66  |
| Health Occupations | 1177      | 16.81 | 936        | 70       | 13.37         | 79.52  |
| Humanities         | 1,515     | 20.20 | 1121       | 75       | 14.95         | 73.99  |
| Maritime           | 847       | 20.17 | 688        | 42       | 16.38         | 81.23  |
| Science/Math       | 3,439     | 24.56 | 2881       | 140      | 20.58         | 83.77  |
| Social Science     | 1,751     | 25.75 | 1438       | 68       | 21.15         | 82.12  |
| Technical          | 507       | 12.68 | 303        | 40       | 7.58          | 59.76  |
| Water Studies      | 78        | 19.50 | 54         | 4        | 13.50         | 69.23  |
| TOTALS             | 13,255    | 20.97 | 10,318     | 632      | 16.33         | 77.84  |

|                    | Available | Avg.  | Count Day  | # of     | Avg. Students |        |
|--------------------|-----------|-------|------------|----------|---------------|--------|
| Spring 2021        | Seats     | Max   | Enrollment | Sections | per Section   | % Full |
| Aviation           | 222       | 27.75 | 135        | 8        | 16.88         | 60.81  |
| Business           | 1467      | 20.10 | 1010       | 73       | 13.84         | 68.85  |
| Communications     | 1174      | 14.68 | 1001       | 80       | 12.51         | 85.26  |
| Construction Tech  | 234       | 15.60 | 148        | 15       | 9.87          | 63.25  |
| Health Occupations | 1076      | 17.93 | 825        | 60       | 13.75         | 76.67  |
| Humanities         | 1556      | 21.61 | 1057       | 72       | 14.68         | 67.93  |
| Maritime           | 884       | 21.56 | 681        | 41       | 16.61         | 77.04  |
| Science/Math       | 2787      | 22.30 | 2193       | 125      | 17.54         | 78.69  |
| Social Science     | 1575      | 23.16 | 1253       | 68       | 18.43         | 79.56  |
| Technical          | 465       | 12.92 | 270        | 36       | 7.50          | 58.06  |
| Water Studies      | 70        | 17.50 | 35         | 4        | 8.75          | 50.00  |
| TOTALS             | 11510     | 19.78 | 8608       | 582      | 14.79         | 74.79  |

|                    | Available     | Avg.         | Count Day     | # of       | Avg. Students |              |
|--------------------|---------------|--------------|---------------|------------|---------------|--------------|
| <b>Fall 2021</b>   | Seats         | Max          | Enrollment    | Sections   | per Section   | % Full       |
| Aviation           | 225           | 22.50        | 142           | 10         | 14.20         | 63.11        |
| Business           | 1,550         | 21.23        | 1171          | 73         | 16.04         | 75.55        |
| Communications     | 1,725         | 19.83        | 1543          | 87         | 17.74         | 89.45        |
| Construction Tech  | 383           | 22.53        | 268           | 17         | 15.76         | 69.97        |
| Health Occupations | 1099          | 15.70        | 859           | 70         | 12.27         | 78.16        |
| Humanities         | 1,781         | 23.75        | 1281          | 75         | 17.08         | 71.93        |
| Maritime           | 889           | 21.17        | 634           | 42         | 15.10         | 71.32        |
| Science/Math       | 3,088         | 22.06        | 2523          | 140        | 18.02         | 81.70        |
| Social Science     | 1,646         | 24.21        | 1403          | 68         | 20.63         | 85.24        |
| Technical          | 533           | 13.33        | 404           | 40         | 10.10         | 75.80        |
| Water Studies      | 107           | 26.75        | 43            | 4          | 10.75         | 40.19        |
| <b>TOTALS</b>      | <b>13,026</b> | <b>20.81</b> | <b>10,271</b> | <b>626</b> | <b>16.41</b>  | <b>78.85</b> |

|                     | Available    | Avg.         | Count Day   | # of       | Avg. Students |              |
|---------------------|--------------|--------------|-------------|------------|---------------|--------------|
| <b>Spring 2022</b>  | Seats        | Max          | Enrollment  | Sections   | per Section   | % Full       |
| Aviation (Adj 2022) | 177          | 22.13        | 139         | 8          | 17.38         | 78.53        |
| Business            | 1675         | 22.64        | 1116        | 74         | 15.08         | 66.63        |
| Communications      | 1333         | 16.87        | 1151        | 79         | 14.57         | 86.35        |
| Construction Tech   | 579          | 41.36        | 464         | 14         | 33.14         | 80.14        |
| Health Occupations  | 1010         | 16.83        | 735         | 60         | 12.25         | 72.77        |
| Humanities          | 1559         | 21.36        | 1051        | 73         | 14.40         | 67.42        |
| Maritime            | 914          | 22.29        | 721         | 41         | 17.59         | 78.88        |
| Science/Math        | 2895         | 22.98        | 2271        | 126        | 18.02         | 78.45        |
| Social Science      | 1580         | 22.57        | 1204        | 70         | 17.20         | 76.20        |
| Technical           | 552          | 15.33        | 327         | 36         | 9.08          | 59.24        |
| Water Studies       | 306          | 76.50        | 256         | 4          | 64.00         | 83.66        |
| <b>TOTALS</b>       | <b>12580</b> | <b>21.50</b> | <b>9435</b> | <b>585</b> | <b>16.13</b>  | <b>75.00</b> |

|                     | Available    | Avg.         | Count Day   | # of       | Avg. Students |              |
|---------------------|--------------|--------------|-------------|------------|---------------|--------------|
| <b>Fall 2022</b>    | Seats        | Max          | Enrollment  | Sections   | per Section   | % Full       |
| Aviation (AVG only) | 213          | 21.30        | 175         | 10         | 17.50         | 82.16        |
| Business            | 1574         | 24.22        | 1116        | 65         | 17.17         | 70.90        |
| Communications      | 1480         | 18.50        | 1329        | 80         | 16.61         | 89.80        |
| Construction Tech   | 264          | 16.50        | 216         | 16         | 13.50         | 81.82        |
| Health Occupations  | 1125         | 16.54        | 859         | 68         | 12.63         | 76.36        |
| Humanities          | 1674         | 22.62        | 1201        | 74         | 16.23         | 71.74        |
| Maritime            | 795          | 18.93        | 635         | 42         | 15.12         | 79.87        |
| Science/Math        | 3103         | 22.99        | 2477        | 135        | 18.35         | 79.83        |
| Social Science      | 1705         | 26.23        | 1340        | 65         | 20.62         | 78.59        |
| Technical           | 506          | 12.65        | 343         | 40         | 8.58          | 67.79        |
| Water Studies       | 79           | 19.75        | 41          | 4          | 10.25         | 51.90        |
| <b>TOTALS</b>       | <b>12518</b> | <b>20.90</b> | <b>9732</b> | <b>599</b> | <b>16.25</b>  | <b>77.74</b> |

|                     | Available    | Avg.         | Count Day   | # of       | Avg. Students |              |
|---------------------|--------------|--------------|-------------|------------|---------------|--------------|
| <b>Spring 2023</b>  | Seats        | Max          | Enrollment  | Sections   | per Section   | % Full       |
| Aviation (AVG only) | 260          | 32.50        | 137         | 8          | 17.13         | 52.69        |
| Business            | 1560         | 22.29        | 1083        | 70         | 15.47         | 69.42        |
| Communications      | 1189         | 15.85        | 1014        | 75         | 13.52         | 85.28        |
| Construction Tech   | 259          | 18.50        | 181         | 14         | 12.93         | 69.88        |
| Health Occupations  | 994          | 17.14        | 699         | 58         | 12.05         | 70.32        |
| Humanities          | 1393         | 19.62        | 1072        | 71         | 15.10         | 76.96        |
| Maritime            | 912          | 22.80        | 611         | 40         | 15.28         | 67.00        |
| Science/Math        | 2699         | 22.68        | 2179        | 119        | 18.31         | 80.73        |
| Social Science      | 1623         | 24.97        | 1188        | 65         | 18.28         | 73.20        |
| Technical           | 406          | 11.94        | 286         | 34         | 8.41          | 70.44        |
| Water Studies       | 102          | 25.50        | 29          | 4          | 7.25          | 28.43        |
| <b>TOTALS</b>       | <b>11397</b> | <b>20.42</b> | <b>8479</b> | <b>558</b> | <b>15.20</b>  | <b>74.40</b> |

|                     | Available | Avg.  | Count Day  | # of     | Avg. Students |        |
|---------------------|-----------|-------|------------|----------|---------------|--------|
| <b>Fall 2023</b>    | Seats     | Max   | Enrollment | Sections | per Section   | % Full |
| Aviation (AVG only) | 237       | 21.50 | 186        | 11       | 17.00         | 78.48  |
| Business            | 1586      | 22.20 | 1189       | 74       | 16.20         | 74.97  |
| Communications      | 1465      | 20.30 | 1320       | 72       | 18.20         | 90.10  |
| Construction Tech   | 274       | 14.40 | 245        | 19       | 12.90         | 89.42  |
| Health Occupations  | 1011      | 15.80 | 736        | 64       | 11.40         | 72.80  |
| Humanities          | 1640      | 19.30 | 1268       | 85       | 14.70         | 77.32  |
| Maritime            | 795       | 17.30 | 559        | 46       | 12.20         | 70.31  |
| Science/Math        | 2999      | 22.70 | 2333       | 132      | 17.60         | 77.79  |
| Social Science      | 1797      | 23.60 | 1409       | 78       | 18.30         | 78.41  |
| Technical           | 505       | 15.30 | 0.76       | 33       | 11.50         | 74.46  |
| Water Studies       | 125       | 20.80 | 71         | 6        | 11.80         | 56.80  |
| <b>TOTALS</b>       | 12852     | 19.38 | 9871       | 620      | 14.71         | 76.81  |

|                     | Available | Avg.  | Count Day  | # of     | Avg. Students |        |
|---------------------|-----------|-------|------------|----------|---------------|--------|
| <b>Spring 2024</b>  | Seats     | Max   | Enrollment | Sections | per Section   | % Full |
| Aviation (AVG only) | 175       | 17.50 | 159        | 10       | 15.90         | 90.86  |
| Business            | 1472      | 21.60 | 1142       | 68       | 16.80         | 77.58  |
| Communications      | 1244      | 20.70 | 1115       | 60       | 18.60         | 89.63  |
| Construction Tech   | 274       | 14.40 | 210        | 19       | 11.10         | 76.64  |
| Health Occupations  | 961       | 16.90 | 648        | 57       | 11.20         | 67.43  |
| Humanities          | 1622      | 20.30 | 1196       | 80       | 15.00         | 73.74  |
| Maritime            | 942       | 20.90 | 717        | 45       | 16.00         | 76.11  |
| Science/Math        | 2586      | 22.70 | 2057       | 114      | 18.00         | 79.54  |
| Social Science      | 1534      | 23.00 | 1126       | 69       | 17.30         | 73.40  |
| Technical           | 499       | 14.30 | 344        | 35       | 9.90          | 68.94  |
| Water Studies       | 102       | 20.40 | 38         | 5        | 7.40          | 37.25  |
| <b>TOTALS</b>       | 11766     | 19.34 | 8941       | 562      | 14.29         | 75.99  |

# **Appendix E**

## **Facilities Condition Assessment**



**Northwestern  
Michigan  
College**





Northwestern Michigan College  
Facilities Condition Assessment  
Report of Findings  
November 29<sup>th</sup>, 2021



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## Disclaimer

### **Acknowledgements:**

We would like to thank the many members of the Northwestern Michigan College community and Sodexo team members who participated in this project. Without that assistance the Facility Condition Assessment (FCA) would not have been possible. We are deeply grateful to them for their efforts. Their willingness to share both their time and expertise served to ensure the quality, utility, and extent of the data collected, information that was instrumental to the development of a tool that will assist Northwestern Michigan College in identifying its immediate needs and guide it to achieving future goals.

### **Report Disclaimer:**

This report only describes the conditions present at the time of our inspection. It is not intended to fully delineate or document every defect or deficiency throughout the subject property. The assessor's opinion and recommendations are based on the information available and observations obtained at the time of the inspection and preparation of the report. These opinions and recommendations are made to a reasonable degree of engineering certainty. Sodexo reserves the right to amend or supplement this report if additional information becomes available. Investigation for the presence of asbestos containing materials (ACM), PCB's, CFC's, radon, and other environmentally hazardous materials is not part of this Agreement. In addition, a review and certification that the buildings have been designed to meet current seismic requirements is not part of this review.

## Overview and Objectives

### **Overview and Background:**

"Northwestern Michigan College (NMC) is a public community college in Traverse City, Michigan. Founded in 1951, it enrolls nearly 4,000 students. NMC offers associate degrees and professional certificates, bachelor's degrees through the Great Lakes Maritime Academy and Great Lakes Water Studies Institute, and bachelor's and master's degrees granted by partner universities through NMC's University Center.

NMC has a branch campus on Grand Traverse Bay that houses the Great Lakes Culinary Institute, Great Lakes Maritime Academy, Great Lakes Water Studies Institute and Hagerty Conference Center. Another branch campus near Cherry Capital Airport is home to NMC's aviation and automotive service technology programs, and offers training in manufacturing, construction, renewable energy and information technology. NMC also has an observatory (the Rogers Observatory), and a nursing program in conjunction with Munson Medical Center located at their NMC University Center Campus." (Northwestern Michigan College)

Northwestern Michigan College partnered with Sodexo in 2006 to operate the campus' maintenance, grounds, custodial and facilities operations. As part of the Sodexo commitment to the College, we conducted a facilities assessment including 30 structures and grounds totaling approximately 850,000 square feet. The Current Replacement Value (CRV), of the buildings assessed is \$204,487,000 and was supplied by the school from its insurance documents.

### **Objectives:**

This effort was a comprehensive assessment that includes a detailed physical survey of current deficiencies and an estimate of the associated capital renewal costs. The primary objectives of this assessment were to determine the condition of the facilities, and to quantify the costs associated with continuing to maintain, repair, or replace them.

The Facilities Condition Assessment (FCA) performed for Northwestern Michigan College included an in-depth visual condition assessment survey of the college's buildings and grounds. This survey was conducted by a member of Sodexo's Asset Management and Engineering Team. The result of the field survey is a catalog of current deficiencies with direct project estimates using RS Means pricing. The RS Means pricing database is

updated annually and regionally adjusted to Traverse City, MI. Each building's current replacement value (CRV) is manually input and should be updated annually. Forecasts projecting renewal costs from component life cycles are included in the life cycle model. Together, this information resource becomes a strategic tool that allows the facility managers to quickly identify and capture deferred maintenance priorities.

Developing and maintaining a capital plan, informed, and guided by the Sodexo Facility Capital Assessment Program, will provide school leadership with the information they need to proactively address their capital project needs. The plan will help break down the overall facility needs into small and well-defined buckets that can be prioritized in a way that is consistent with the funding ability and strategic focus of the College. Establishing annual funds to address the capital, modernization, and infrastructure needs of the College are solid methodologies for strategic planning, and the result will be reduced deferred maintenance, and higher satisfaction, leading to a more competitive residential and academic program.

The key objectives of a facilities capital plan include building conditions, school priorities, and budget and priority strategies. A successful capital plan is not a static document, but rather a perpetual effort to assess and maintain the physical assets of the College to complement and enable the priorities of the institution. It is essentially a storehouse of deficiencies coupled with clear prioritization tools that form an effective and executable plan.

The strategic value of an FCA is to:

- ✓ Assess the college's buildings, identifying current and future projected deficiencies
- ✓ Reduce/mitigate risk associated with system failures
- ✓ Improve service quality and customer satisfaction (*students, faculty, and staff*)
- ✓ Lower utility, maintenance, and replacement costs
- ✓ Satisfy regulatory and compliance requirements
- ✓ Positively impact recruitment and retention

## Project Scope

### Methodology:

The Facilities Condition Assessment (FCA) performed for Northwestern Michigan College included a visual survey of the various facilities, a review of as-built structural drawings (when available), and historical engineering assessments and maintenance records as required with a focus on life cycle Findings in this report or the electronic data base are based on replacement in-kind and may not reflect local interpretation of federal, state and local regulations and codes. The scope of data collected, both system data and requirements (priority capital renewal/deferred maintenance projects) were based on the following criteria:

- Systems that currently exceed their BOMA expected industry life span.
- Systems that are within 5 years of their BOMA expected industry life span; and
- Systems that, regardless of age, their physical condition and/or their reported operating/maintenance history infers that they will likely need replacement within the next 5 years.

The result of the field survey is a catalog of current deficiencies tied to direct project costs in a robust database. The overall tool also catalogues the deficiencies and will forecast prioritization scenarios. This information resource becomes a strategic tool allowing facility managers to quickly identify, capture, and plan the retirement of deferred maintenance items. Further, the FCA Includes both high-level and granular levels of detail, appropriate to the need. It also gives a snapshot of the College's buildings including age, condition, predicted remaining useful life, and estimated replacement value for every component (which becomes a project).

## System Analysis

All materials and equipment have a useful life, or a life cycle. This life cycle assumes that it will be installed, wear out over time, and eventually either fail or become obsolete. These costs assume the complete replacement of the system which may not be necessary. It shows the potential risk but with proper management this risk can be mitigated. As the component ages and enters the end of its useful life period, the likelihood of failures increases, and may become repetitive. A loss of efficiency and reliability will also occur.

The following tables show the building system unformat categories. This is an important way to begin considering what types of systems are to become the priority for upcoming years and to get a better understanding of the general condition of the various types of building systems. Because NMC has four distinct campus' the reports were run to show values specific to each campus and then as a combined value for the College as a whole.

### Deficiencies by System Categorized by Unformat Code (5 Years with inflation)

| Campus: Aero Park               |                |                |                |                |                  |                  |
|---------------------------------|----------------|----------------|----------------|----------------|------------------|------------------|
| Unformat and Fiscal Year        | 2022           | 2023           | 2024           | 2025           | 2026             | Summary          |
| B20 - Exterior Enclosure        | 14,216         | 0              | 0              | 0              | 0                | 14,216           |
| B30 - Roofing                   | 0              | 0              | 248,813        | 0              | 0                | 248,813          |
| C10 - Interior Construction     | 26,034         | 87,749         | 0              | 0              | 30,181           | 143,964          |
| C30 - Interior Finishes         | 8,011          | 0              | 0              | 0              | 328,669          | 336,680          |
| D30 - HVAC System               | 102,224        | 76,107         | 0              | 611,045        | 205,752          | 995,129          |
| D50 - Electrical System         | 36,934         | 2,337          | 14,735         | 0              | 322,603          | 376,609          |
| G20 - Site Improvements         | 89,893         | 0              | 0              | 0              | 133,859          | 223,753          |
| G40 - Site Electrical Utilities | 0              | 0              | 0              | 0              | 56,740           | 56,740           |
| <b>Summary</b>                  | <b>277,314</b> | <b>166,193</b> | <b>263,548</b> | <b>611,045</b> | <b>1,077,803</b> | <b>2,395,904</b> |

| <b>Campus: Great Lakes</b>      |                |               |                |               |                |                |
|---------------------------------|----------------|---------------|----------------|---------------|----------------|----------------|
| Uniformat and Fiscal Year       | 2022           | 2023          | 2024           | 2025          | 2026           | Summary        |
| B20 - Exterior Enclosure        | 0              | 0             | 0              | 0             | 0              | 0              |
| B30 - Roofing                   | 0              | 0             | 0              | 0             | 0              | 0              |
| C30 - Interior Finishes         | 71,978         | 0             | 0              | 0             | 87,989         | 159,966        |
| D30 - HVAC System               | 0              | 41,350        | 40,109         | 15,528        | 240,595        | 337,582        |
| D50 - Electrical System         | 24,069         | 0             | 103,072        | 4,959         | 8,015          | 140,116        |
| G20 - Site Improvements         | 0              | 0             | 0              | 0             | 0              | 0              |
| G40 - Site Electrical Utilities | 28,402         | 0             | 0              | 0             | 0              | 28,402         |
| <b>Summary</b>                  | <b>124,449</b> | <b>41,350</b> | <b>143,181</b> | <b>20,487</b> | <b>336,599</b> | <b>666,066</b> |

| <b>Campus: Main Campus</b>      |                  |                  |                  |                  |                  |                   |
|---------------------------------|------------------|------------------|------------------|------------------|------------------|-------------------|
| Uniformat and Fiscal Year       | 2022             | 2023             | 2024             | 2025             | 2026             | Summary           |
| B10 - Super Structure           | 3,376            | 0                | 107,266          | 0                | 0                | 110,642           |
| B20 - Exterior Enclosure        | 591,880          | 0                | 449,708          | 44,475           | 30,657           | 1,116,720         |
| B30 - Roofing                   | 997,446          | 120,419          | 154,718          | 36,044           | 696,133          | 2,004,760         |
| C10 - Interior Construction     | 481,892          | 1,821,207        | 90,381           | 3,786            | 800,761          | 3,198,027         |
| C30 - Interior Finishes         | 1,075,768        | 503,704          | 57,967           | 84,892           | 411,784          | 2,134,115         |
| D10 - Conveying                 | 74,032           | 0                | 0                | 83,324           | 171,647          | 329,003           |
| D20 - Plumbing System           | 29,448           | 6,324            | 0                | 5,849            | 31,555           | 73,176            |
| D30 - HVAC System               | 1,167,574        | 301,459          | 103,276          | 459,505          | 1,327,929        | 3,359,744         |
| D50 - Electrical System         | 2,021,998        | 384,616          | 0                | 271,370          | 678,334          | 3,356,317         |
| E - Equipment and Furnishing    | 260,000          | 0                | 0                | 0                | 215,573          | 475,573           |
| G20 - Site Improvements         | 102,021          | 5,914            | 6,091            | 327,566          | 90,548           | 532,139           |
| G30 - Site Mechanical Utilities | 4,664            | 4,814            | 0                | 0                | 1,980            | 11,457            |
| G40 - Site Electrical Utilities | 139,790          | 35,971           | 45,202           | 19,087           | 363,481          | 603,531           |
| <b>Summary</b>                  | <b>6,949,888</b> | <b>3,184,426</b> | <b>1,014,610</b> | <b>1,335,897</b> | <b>4,820,383</b> | <b>17,305,204</b> |

| <b>Building: University Center</b> |                |                |          |               |                |                  |
|------------------------------------|----------------|----------------|----------|---------------|----------------|------------------|
| Uniformat and Fiscal Year          | 2021           | 2023           | 2024     | 2025          | 2026           | Summary          |
| B20 - Exterior Enclosure           | 0              | 0              | 0        | 0             | 0              | 0                |
| B30 - Roofing                      | 0              | 260,477        | 0        | 0             | 31,067         | 291,544          |
| C10 - Interior Construction        | 0              | 0              | 0        | 0             | 587,868        | 587,868          |
| C30 - Interior Finishes            | 237,188        | 103,191        | 0        | 0             | 56,006         | 396,385          |
| D10 - Conveying                    | 85,420         | 0              | 0        | 0             | 0              | 85,420           |
| D30 - HVAC System                  | 24,439         | 36,057         | 0        | 32,712        | 106,230        | 199,438          |
| D50 - Electrical System            | 108,544        | 41,663         | 0        | 9,942         | 129,623        | 289,773          |
| G20 - Site Improvements            | 4,515          | 0              | 0        | 0             | 7,586          | 12,101           |
| G40 - Site Electrical Utilities    | 0              | 0              | 0        | 0             | 0              | 0                |
| <b>Summary</b>                     | <b>460,105</b> | <b>415,090</b> | <b>0</b> | <b>42,653</b> | <b>918,381</b> | <b>1,862,528</b> |

| <b>Campus: All Combined</b>     |                  |                  |                  |                  |                  |                   |
|---------------------------------|------------------|------------------|------------------|------------------|------------------|-------------------|
| Uniformat and Fiscal Year       | 2022             | 2023             | 2024             | 2025             | 2026             | Summary           |
| B10 - Super Structure           | 3,376            | 0                | 107,266          | 0                | 0                | 110,642           |
| B20 - Exterior Enclosure        | 606,096          | 0                | 449,708          | 44,475           | 30,657           | 1,130,936         |
| B30 - Roofing                   | 997,446          | 380,896          | 403,531          | 36,044           | 727,200          | 2,545,117         |
| C10 - Interior Construction     | 507,926          | 1,908,956        | 90,381           | 3,786            | 1,418,811        | 3,929,859         |
| C30 - Interior Finishes         | 1,392,944        | 606,895          | 57,967           | 84,892           | 884,448          | 3,027,146         |
| D10 - Conveying                 | 159,452          | 0                | 0                | 83,324           | 171,647          | 414,424           |
| D20 - Plumbing System           | 29,448           | 6,324            | 0                | 5,849            | 31,555           | 73,176            |
| D30 - HVAC System               | 1,299,247        | 425,241          | 143,385          | 1,091,927        | 1,805,831        | 4,765,630         |
| D50 - Electrical System         | 2,191,546        | 428,616          | 117,806          | 286,270          | 1,138,575        | 4,162,814         |
| E - Equipment and Furnishings   | 260,000          | 0                | 0                | 0                | 215,573          | 475,573           |
| G20 - Site Improvements         | 196,429          | 5,914            | 6,091            | 327,566          | 231,993          | 767,992           |
| G30 - Site Mechanical Utilities | 4,664            | 4,814            | 0                | 0                | 1,980            | 11,457            |
| G40 - Site Electrical Utilities | 168,192          | 35,971           | 45,202           | 19,087           | 420,221          | 688,673           |
| <b>Summary</b>                  | <b>7,816,766</b> | <b>3,803,626</b> | <b>1,421,338</b> | <b>1,983,220</b> | <b>7,078,490</b> | <b>22,103,440</b> |

For each of these various summaries all future year expenditures were calculated with a 3% inflation factor.

The value of these charts is to highlight, at a high level, the types of building system capital investments that are currently due or going to become due that Northwestern Michigan College leadership should consider in creating a positive and healthy learning environment. Infrastructure investment to ensure that buildings have proper utility support is just as important as the high curb appeal that the Northwestern Michigan College grounds must demonstrate. HVAC System needs are critical for Northwestern Michigan College leadership to consider in creating a positive and healthy learning environment. Infrastructure investments to ensure that buildings have proper utility support is just as important as the high curb appeal that the school's interior construction and site improvements must demonstrate. If the planners are not careful, "invisible" systems like the roofs, boilers, chillers, and security/life safety assets will be competing with aesthetic and classroom upgrades for limited capital funds. The aesthetic priorities often win, leaving leaky roofs and inefficient or undependable heating and cooling systems or infrastructure within the buildings. These ignored projects quickly become deferred maintenance items, and their costs quickly snowball over time. Experts say that the cost of deferred maintenance if delayed can grow quickly to over four (4X) times the original repair cost. The inevitable impact on the school community, created by excessive deferred maintenance, is solid justification for strategic updating critical building components, or the failure to do so, affects the quality of life of the occupants, and therefore can impact recruitment, satisfaction, and retention.

## Distribution of Requirement Categories

Each requirement or deficiency is assigned a category that indicates the general issue or the reason for the deficiency. These requirement categories were identified during the assessment and will assist in prioritizing the renewal and planning process. Additional categories are available as required. As shown below systems identified as Integrity (affecting the overall integrity of the building) represent the single biggest challenge (20% of the total) and opportunity for improvement.

### Priority Criteria:

In addition to system age, the assessment's visual survey sought to identify major repairs, upgrades, and renewals anticipated within the next five years. Each requirement was assigned a priority based on when it was judged that corrective action should be performed, taken from the list in the database. A Requirement Category is the type of issue that must be addressed for a requirement. Each Requirement is assigned a category so that the issues affecting a facility can be categorized. The tables below are for the first five years as categories and priorities.

### Deficiencies by Category and Priority By Campus:

| Campus: Aero Park            |                                    |                                     |                                     |                                     |                                     |                  |            |
|------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|------------|
| Category and Priority        | 1- Due within 1 Year of Inspection | 2- Due within 2 Years of Inspection | 3- Due within 3 Years of Inspection | 4- Due within 4 Years of Inspection | 5- Due within 5 Years of Inspection | Total            | % of Total |
| Abandoned                    | 0                                  | 2,203                               | 0                                   | 0                                   | 0                                   | 2,203            | 0.1%       |
| Accessibility                | 0                                  | 0                                   | 0                                   | 6,818                               | 0                                   | 6,818            | 0.3%       |
| Appearance                   | 0                                  | 0                                   | 0                                   | 8,011                               | 179,563                             | 187,574          | 8.6%       |
| Energy                       | 54,339                             | 56,127                              | 0                                   | 0                                   | 13,484                              | 123,950          | 5.7%       |
| Functionality                | 22,934                             | 6,776                               | 0                                   | 166,696                             | 36,599                              | 233,005          | 10.7%      |
| Integrity                    | 0                                  | 0                                   | 227,699                             | 0                                   | 0                                   | 227,699          | 10.5%      |
| Lifecycle                    | 0                                  | 4,385                               | 0                                   | 0                                   | 160,665                             | 165,050          | 7.6%       |
| Maintenance (Optimization)   | 89,894                             | 30,606                              | 0                                   | 18,832                              | 115,468                             | 254,800          | 11.7%      |
| Mission                      | 0                                  | 0                                   | 0                                   | 3,485                               | 0                                   | 3,485            | 0.2%       |
| Modernization                | 26,034                             | 82,712                              | 0                                   | 0                                   | 110,203                             | 218,949          | 10.1%      |
| Regulatory / Code Compliance | 65,798                             | 0                                   | 0                                   | 0                                   | 54,035                              | 119,833          | 5.5%       |
| Reliability                  | 0                                  | 4,450                               | 0                                   | 357,378                             | 273,189                             | 635,017          | 29.2%      |
| <b>Total</b>                 | <b>258,999</b>                     | <b>187,259</b>                      | <b>227,699</b>                      | <b>561,220</b>                      | <b>943,206</b>                      | <b>2,178,383</b> |            |

| <b>Campus: Great Lakes Campus</b> |                                    |                                     |                                     |                                     |                                     |                |            |
|-----------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------------|------------|
| Category and Priority             | 1- Due within 1 Year of Inspection | 2- Due within 2 Years of Inspection | 3- Due within 3 Years of Inspection | 4- Due within 4 Years of Inspection | 5- Due within 5 Years of Inspection | Total          | % of Total |
| Appearance                        | 71,976                             | 0                                   | 0                                   | 0                                   | 75,900                              | 147,876        | 22.4%      |
| Energy                            | 0                                  | 38,977                              | 94,325                              | 0                                   | 0                                   | 133,302        | 20.2%      |
| Functionality                     | 0                                  | 0                                   | 0                                   | 0                                   | 135,427                             | 135,427        | 20.5%      |
| Integrity                         | 0                                  | 55,620                              | 0                                   | 0                                   | 0                                   | 55,620         | 8.4%       |
| Life Safety                       | 351                                | 0                                   | 0                                   | 0                                   | 0                                   | 351            | 0.1%       |
| Lifecycle                         | 28,402                             | 0                                   | 36,705                              | 13,796                              | 1,973                               | 80,876         | 12.2%      |
| Maintenance (Optimization)        | 1,280                              | 0                                   | 0                                   | 0                                   | 0                                   | 1,280          | 0.2%       |
| Mission                           | 0                                  | 0                                   | 0                                   | 0                                   | 70,139                              | 70,139         | 10.6%      |
| Regulatory / Code Compliance      | 14,452                             | 0                                   | 0                                   | 0                                   | 0                                   | 14,452         | 2.2%       |
| Reliability                       | 9,617                              | 0                                   | 0                                   | 4,406                               | 6,914                               | 20,937         | 3.2%       |
| <b>Total</b>                      | <b>126,078</b>                     | <b>94,597</b>                       | <b>131,030</b>                      | <b>18,202</b>                       | <b>290,353</b>                      | <b>660,260</b> |            |

| <b>Campus: Main Campus</b>   |                                    |                                     |                                     |                                     |                                     |                   |            |
|------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------|------------|
| Category and Priority        | 1- Due within 1 Year of Inspection | 2- Due within 2 Years of Inspection | 3- Due within 3 Years of Inspection | 4- Due within 4 Years of Inspection | 5- Due within 5 Years of Inspection | Total             | % of Total |
| Accessibility                | 200,121                            | 0                                   | 26,445                              | 124,462                             | 184,736                             | 535,764           | 3.3%       |
| Appearance                   | 823,348                            | 476,011                             | 24,500                              | 202,697                             | 481,303                             | 2,007,859         | 12.3%      |
| Energy                       | 479,718                            | 214,688                             | 49,695                              | 0                                   | 30,309                              | 774,410           | 4.8%       |
| Functionality                | 542,045                            | 129,555                             | 20,072                              | 426,241                             | 680,660                             | 1,798,573         | 11.0%      |
| HazMat                       | 10,291                             | 0                                   | 0                                   | 0                                   | 0                                   | 10,291            | 0.1%       |
| Integrity                    | 1,437,655                          | 203,293                             | 0                                   | 0                                   | 1,189,915                           | 2,830,863         | 17.4%      |
| Life Safety                  | 81,404                             | 5,574                               | 0                                   | 0                                   | 0                                   | 86,978            | 0.5%       |
| Lifecycle                    | 386,601                            | 276,256                             | 72,720                              | 474,338                             | 868,938                             | 2,078,853         | 12.8%      |
| Maintenance                  | 0                                  | 0                                   | 0                                   | 0                                   | 43,390                              | 43,390            | 0.3%       |
| Maintenance (Optimization)   | 28,311                             | 0                                   | 0                                   | 7,106                               | 51,041                              | 86,458            | 0.5%       |
| Mission                      | 0                                  | 0                                   | 0                                   | 0                                   | 30,479                              | 30,479            | 0.2%       |
| Modernization                | 341,130                            | 1,519,942                           | 0                                   | 3,364                               | 1,080,597                           | 2,945,033         | 18.1%      |
| Regulatory / Code Compliance | 496,517                            | 113,829                             | 0                                   | 88,049                              | 11,722                              | 710,117           | 4.4%       |
| Reliability                  | 936,058                            | 100,558                             | 51,142                              | 213,867                             | 799,063                             | 2,100,688         | 12.9%      |
| Technological Improvements   | 0                                  | 0                                   | 0                                   | 0                                   | 247,919                             | 247,919           | 1.5%       |
| <b>Total</b>                 | <b>5,763,199</b>                   | <b>3,039,706</b>                    | <b>244,574</b>                      | <b>1,540,124</b>                    | <b>5,700,072</b>                    | <b>16,287,675</b> |            |

| <b>Campus: NMC University Center</b> |                                    |                                     |                                     |                                     |                  |            |  |
|--------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------|------------|--|
| Category and Priority                | 1- Due within 1 Year of Inspection | 2- Due within 2 Years of Inspection | 4- Due within 4 Years of Inspection | 5- Due within 5 Years of Inspection | Total            | % of Total |  |
| Accessibility                        | 0                                  | 0                                   | 0                                   | 11,059                              | 11,059           | 0.6%       |  |
| Appearance                           | 0                                  | 334,456                             | 0                                   | 48,311                              | 382,767          | 22.4%      |  |
| Functionality                        | 0                                  | 0                                   | 29,064                              | 91,635                              | 120,699          | 7.0%       |  |
| Integrity                            | 8,475                              | 245,525                             | 0                                   | 37,628                              | 291,628          | 17.0%      |  |
| Lifecycle                            | 18,427                             | 9,198                               | 0                                   | 0                                   | 27,625           | 1.6%       |  |
| Modernization                        | 85,420                             | 0                                   | 0                                   | 496,270                             | 581,690          | 34.0%      |  |
| Regulatory / Code Compliance         | 131,042                            | 0                                   | 0                                   | 0                                   | 131,042          | 7.7%       |  |
| Reliability                          | 3,035                              | 39,272                              | 8,833                               | 114,820                             | 165,960          | 9.7%       |  |
| <b>Total</b>                         | <b>246,399</b>                     | <b>628,451</b>                      | <b>37,897</b>                       | <b>799,723</b>                      | <b>1,712,470</b> |            |  |



### Deficiencies by Category by Year: (ALL Campus' Combined)

| Campus: All Campus' Merged   |                                    |                                     |                                     |                                     |                                     |                   |            |
|------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------|------------|
| Category and Priority        | 1- Due within 1 Year of Inspection | 2- Due within 2 Years of Inspection | 3- Due within 3 Years of Inspection | 4- Due within 4 Years of Inspection | 5- Due within 5 Years of Inspection | Total             | % of Total |
| Abandoned                    | 0                                  | 2,203                               | 0                                   | 0                                   | 0                                   | 2,203             | 0.0%       |
| Accessibility                | 200,121                            | 0                                   | 26,445                              | 131,280                             | 195,795                             | 553,641           | 2.7%       |
| Appearance                   | 895,324                            | 810,467                             | 24,500                              | 210,708                             | 785,077                             | 2,726,076         | 13.1%      |
| Energy                       | 534,057                            | 309,792                             | 144,020                             | 0                                   | 43,793                              | 1,031,662         | 5.0%       |
| Functionality                | 564,979                            | 136,331                             | 20,072                              | 622,001                             | 944,321                             | 2,287,704         | 11.0%      |
| HazMat                       | 10,291                             | 0                                   | 0                                   | 0                                   | 0                                   | 10,291            | 0.0%       |
| Integrity                    | 1,446,130                          | 504,438                             | 227,699                             | 0                                   | 1,227,543                           | 3,405,810         | 16.3%      |
| Life Safety                  | 81,755                             | 5,574                               | 0                                   | 0                                   | 0                                   | 87,329            | 0.4%       |
| Lifecycle                    | 433,430                            | 289,839                             | 109,425                             | 488,134                             | 1,031,576                           | 2,352,404         | 11.3%      |
| Maintenance                  | 0                                  | 0                                   | 0                                   | 0                                   | 43,390                              | 43,390            | 0.2%       |
| Maintenance (Optimization)   | 119,485                            | 30,606                              | 0                                   | 25,938                              | 166,509                             | 342,538           | 1.6%       |
| Mission                      | 0                                  | 0                                   | 0                                   | 3,485                               | 100,618                             | 104,103           | 0.5%       |
| Modernization                | 452,584                            | 1,602,654                           | 0                                   | 3,364                               | 1,687,070                           | 3,745,672         | 18.0%      |
| Regulatory / Code Compliance | 707,809                            | 113,829                             | 0                                   | 88,049                              | 65,757                              | 975,444           | 4.7%       |
| Reliability                  | 948,710                            | 144,280                             | 51,142                              | 584,484                             | 1,193,986                           | 2,922,602         | 14.0%      |
| Technological Improvements   | 0                                  | 0                                   | 0                                   | 0                                   | 247,919                             | 247,919           | 1.2%       |
| <b>Total</b>                 | <b>6,394,675</b>                   | <b>3,950,013</b>                    | <b>603,303</b>                      | <b>2,157,443</b>                    | <b>7,733,354</b>                    | <b>20,838,788</b> |            |

### Percentage by Category:



# Facilities Condition Index

For a facility to benchmark and measure its condition, there must be a metric for comparison. The Facility Condition Index (FCI) is a nationally and industry recognized facility management benchmark that is used to objectively assess the current condition of a building. FCI was developed by a research group working on a project sponsored by NACUBO. NACUBO asked for a written description of the facility condition assessment process, and related data analysis. The FCI is a ratio that compares the amount of deferred maintenance and capital renewal expressed in dollars, to the Current Replacement Value (CRV) of all the equipment; the higher the FCI – the poorer the condition of the assets. Not all requirement categories are included in the FCI calculation as not all systems are considered deferred maintenance items such as abandoned equipment or sustainability improvements.

|                                    |   |
|------------------------------------|---|
| Facilities Condition Index (FCI) = | $\frac{\text{Deferred Maintenance + Capital Renewal Needs}}{\text{Assets Current Replacement Value (CRV)}}$ |
| Facility Operating Standards       | FCI Range   |
| Good                               | < .10   |
| Fair                               | .10 to .20  |
| Poor                               | .20 to .30  |
| Critical                           | >.30  |

| Requirement Categories Included in FCI |                            |                 |
|--|----------------------------|-----------------|
| Parent                                 | Category                   | Included in FCI |
| Integrity                              | Appearance                 |                 |
|  | Integrity                  | X               |
|  | Lifecycle                  | X               |
|  | Maintainability            | X               |
| Regulatory                             | Reliability                | X               |
|  | Accessibility              | X               |
|  | Building Code              | X               |
|  | HazMat                     | X               |
| Optimization                           | Life Safety                | X               |
|  | Abandoned                  |                 |
|  | Capacity                   |                 |
|  | Energy                     |                 |
|  | Maintenance                | X               |
|  | Mission                    | X               |
|  | Sustainability             |                 |
| Functionality                          | Technological Improvements |                 |
|  | Functionality              | X               |
|  | Modernization              |                 |

The primary value of the FCI metric is to provide a standard benchmark of the current condition of existing physical assets. It is very helpful in comparing facilities and prioritizing expenditures within the portfolio. The FCI is only one component for strategic planning and should not be used exclusively when determining project priority. Other factors to consider are facility profile, usage, and mission critical application. There is, however, a direct correlation between the physical appearance of the facilities and academic success.

Most facilities with FCI's above 10% and below 30% are manageable with an active strategic plan. FCI's above 30% require a very focused plan to identify the best use of resources. The goal should be to improve the FCI of all real-estate assets, which accordingly will enhance Northwestern Michigan College's competitive advantage within the industry by improving the "quality of life" for students and faculty and thereby facilitating the delivery of the Schools primary mission: "Northwestern Michigan College provides lifelong learning opportunities to our communities."

## FCI Building Summary:

This first chart looks at FCI in a traditional alphabetical listing of assets.

| Campus Name: Aero Park Campus   |                  |                     |     |                       |                |                   |                  |             |
|---------------------------------|------------------|---------------------|-----|-----------------------|----------------|-------------------|------------------|-------------|
| Building                        | Year Constructed | Year Last Renovated | Age | Use                   | Size           | Replacement Value | FCI Cost         | FCI         |
| Aero Park Campus Grounds        | 1960             |                     | 61  | SUPPORTING FACILITIES | 1              | 12,000,000        | 0                | 0.00        |
| Aero Park Laboratories          | 1980             | 2011                | 41  | ACADEMIC FACILITIES   | 29,600         | 4,121,500         | 304,650          | 0.07        |
| Automotive Technology           | 1990             | 2001                | 31  | ACADEMIC FACILITIES   | 18,309         | 3,268,400         | 180,968          | 0.06        |
| Aviation Building               | 1977             |                     | 44  | ACADEMIC FACILITIES   | 20,912         | 2,386,100         | 69,624           | 0.03        |
| Parsons-Stulen/Michigan Tech Ed | 1999             |                     | 22  | ACADEMIC FACILITIES   | 65,000         | 15,297,900        | 835,667          | 0.05        |
| <b>Subtotal for Building</b>    |                  |                     |     |                       | <b>133,821</b> | <b>25,073,900</b> | <b>1,390,909</b> | <b>0.06</b> |

| Campus Name: Great Lakes Campus    |                  |                     |     |                        |                |                    |                   |             |
|------------------------------------|------------------|---------------------|-----|------------------------|----------------|--------------------|-------------------|-------------|
| Building                           | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost          | FCI         |
| Great Lakes Campus                 | 2004             |                     | 17  | ACADEMIC FACILITIES    | 75,364         | 21,990,100         | 377,803           | 0.02        |
| Subtotal for Building              |                  |                     |     |                        | 75,364         | 21,990,100         | 349,401           | 0.02        |
| Campus Name: Main Campus           |                  |                     |     |                        |                |                    |                   |             |
| Building                           | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost          | FCI         |
| Apartment A 1880                   | 1973             |                     | 48  | RESIDENTIAL FACILITIES | 12,399         | 2,057,266          | 502,886           | 0.24        |
| Apartment B 1882                   | 1973             |                     | 48  | RESIDENTIAL FACILITIES | 12,399         | 1,740,200          | 562,005           | 0.32        |
| Apartment C 1884                   | 1973             |                     | 48  | RESIDENTIAL FACILITIES | 12,399         | 1,740,200          | 530,000           | 0.30        |
| Appel Property                     | 1954             |                     | 67  | SUPPORTING FACILITIES  | 1,160          | 153,200            | 5,610             | 0.04        |
| Athletic Fields                    | 1976             |                     | 45  | SUPPORTING FACILITIES  | 1              | 55,000             | 31,250            | 0.57        |
| Biederman Building                 | 1976             | 2002                | 45  | ACADEMIC FACILITIES    | 28,441         | 8,818,956          | 1,039,650         | 0.12        |
| Campus General                     | 1961             |                     | 60  | SUPPORTING FACILITIES  | 1              | 7,000,000          | 755,165           | 0.11        |
| Denno Museum Center                | 1991             | 2019                | 30  | SUPPORTING FACILITIES  | 53,545         | 17,332,700         | 341,944           | 0.02        |
| East Hall                          | 1965             | 1999                | 56  | RESIDENTIAL FACILITIES | 52,288         | 11,990,600         | 271,801           | 0.02        |
| Facilities Maintenance Building    | 2001             |                     | 20  | SUPPORTING FACILITIES  | 11,900         | 1,052,100          | 24,292            | 0.02        |
| Fine Arts                          | 1971             | 2000                | 50  | ACADEMIC FACILITIES    | 18,800         | 4,843,500          | 390,997           | 0.08        |
| Founders Hall                      | 1976             | 2003                | 45  | OFFICE FACILITIES      | 4,950          | 1,170,200          | 174,688           | 0.15        |
| Health and Science Building        | 2002             |                     | 19  | ACADEMIC FACILITIES    | 57,477         | 17,463,812         | 486,309           | 0.03        |
| James J. Beckett                   | 1996             |                     | 25  | ACADEMIC FACILITIES    | 34,269         | 8,164,100          | 372,337           | 0.05        |
| North Hall                         | 2017             |                     | 4   | RESIDENTIAL FACILITIES | 46,730         | 6,818,200          | 0                 | 0.00        |
| Oleson Center                      | 1978             | 2006                | 43  | SUPPORTING FACILITIES  | 9,925          | 2,506,400          | 122,539           | 0.05        |
| Osterlin Building                  | 1960             | 2002                | 61  | ACADEMIC FACILITIES    | 46,734         | 12,068,600         | 2,106,875         | 0.17        |
| Power House                        | 1962             |                     | 59  | SUPPORTING FACILITIES  | 3,625          | 2,128,300          | 574,542           | 0.27        |
| Rajkovich Physical Education       | 1969             |                     | 52  | ATHLETIC FACILITIES    | 25,674         | 5,053,068          | 1,013,391         | 0.20        |
| Rogers Observatory                 | 1981             |                     | 40  | ACADEMIC FACILITIES    | 1,624          | 398,600            | 0                 | 0.00        |
| Scholars Hall                      | 1962             | 2003                | 59  | ACADEMIC FACILITIES    | 62,812         | 15,495,300         | 389,322           | 0.03        |
| Tanis Building                     | 1957             | 2003                | 64  | OFFICE FACILITIES      | 14,300         | 4,344,912          | 456,368           | 0.11        |
| Utility Tunnels                    | 1970             |                     | 51  | SUPPORTING FACILITIES  | 6,925          | 1,924,000          | 0                 | 0.00        |
| West Hall                          | 1965             | 2020                | 56  | SUPPORTING FACILITIES  | 63,254         | 9,596,500          | 74,032            | 0.01        |
| Subtotal for Building              |                  |                     |     |                        | 581,632        | 143,915,714        | 10,226,002        | 0.07        |
| Campus Name: NMC University Center |                  |                     |     |                        |                |                    |                   |             |
| Building                           | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost          | FCI         |
| University Center                  | 1986             | 1994                | 35  | ACADEMIC FACILITIES    | 59,460         | 13,507,600         | 748,013           | 0.06        |
| Subtotal for Building              |                  |                     |     |                        | 59,460         | 13,507,600         | 748,013           | 0.06        |
| <b>Grand Totals</b>                |                  |                     |     |                        | <b>850,277</b> | <b>204,487,314</b> | <b>12,714,326</b> | <b>0.06</b> |

The FCI values highlighted are those over 20% which would typically require a very focused plan to identify that asset's best plan of action, **however regarding the Power House the value of the equipment within the building vs the value of the building itself is disproportionate. And similarly, the "Athletic Fields" the value of the fields themselves is so low most any improvements makes the ratio disproportionately high.** These values did not skew the campus' overall FCI value by much as the fields only comprise .4% of the gross value of campus. Additionally, the FCI value for the TEC is currently at almost 100% as the canvas material that is the primary building component is nearing its lifecycle and tears have started appearing at the West end.

The next chart shows the buildings listed from highest to lowest FCI Cost. This ranks the buildings/assets that need the most attention or long-term capital planning.

Building FCI Listed by FCI (Highest to Lowest)

| Campus Name: Aero Park Campus      |                  |                     |     |                        |                |                    |                   |             |
|------------------------------------|------------------|---------------------|-----|------------------------|----------------|--------------------|-------------------|-------------|
| Building                           | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost          | FCI         |
| Aero Park Laboratories             | 1980             | 2011                | 41  | ACADEMIC FACILITIES    | 29,600         | 4,121,500          | 304,650           | 0.07        |
| Automotive Technology              | 1990             | 2001                | 31  | ACADEMIC FACILITIES    | 18,309         | 3,268,400          | 180,968           | 0.06        |
| Parsons-Stulen/Michigan Tech Ed    | 1999             |                     | 22  | ACADEMIC FACILITIES    | 65,000         | 15,297,900         | 835,667           | 0.05        |
| Aviation Building                  | 1977             |                     | 44  | ACADEMIC FACILITIES    | 20,912         | 2,386,100          | 69,624            | 0.03        |
| Aero Park Campus Grounds           | 1960             |                     | 61  | SUPPORTING FACILITIES  | 1              | 12,000,000         | 0                 | 0.00        |
| <b>Subtotal for Building</b>       |                  |                     |     |                        | <b>104,222</b> | <b>32,952,400</b>  | <b>1,086,259</b>  | <b>0.03</b> |
| Campus Name: Great Lakes Campus    |                  |                     |     |                        |                |                    |                   |             |
| Building                           | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost          | FCI         |
| Great Lakes Campus                 | 2004             |                     | 17  | ACADEMIC FACILITIES    | 75,364         | 21,990,100         | 377,803           | 0.02        |
| <b>Subtotal for Building</b>       |                  |                     |     |                        | <b>75,364</b>  | <b>21,990,100</b>  | <b>349,401</b>    | <b>0.02</b> |
| Campus Name: Main Campus           |                  |                     |     |                        |                |                    |                   |             |
| Building                           | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost          | FCI         |
| Athletic Fields                    | 1976             |                     | 45  | SUPPORTING FACILITIES  | 1              | 55,000             | 31,250            | 0.57        |
| Apartment B 1882                   | 1973             |                     | 48  | RESIDENTIAL FACILITIES | 12,399         | 1,740,200          | 562,005           | 0.32        |
| Apartment C 1884                   | 1973             |                     | 48  | RESIDENTIAL FACILITIES | 12,399         | 1,740,200          | 530,000           | 0.30        |
| Power House                        | 1962             |                     | 59  | SUPPORTING FACILITIES  | 3,625          | 2,128,300          | 574,542           | 0.27        |
| Apartment A 1880                   | 1973             |                     | 48  | RESIDENTIAL FACILITIES | 12,399         | 2,057,266          | 502,886           | 0.24        |
| Rajkovich Physical Education       | 1969             |                     | 52  | ATHLETIC FACILITIES    | 25,674         | 5,053,068          | 1,013,391         | 0.20        |
| Osterlin Building                  | 1960             | 2002                | 61  | ACADEMIC FACILITIES    | 46,734         | 12,068,600         | 2,106,875         | 0.17        |
| Founders Hall                      | 1976             | 2003                | 45  | OFFICE FACILITIES      | 4,950          | 1,170,200          | 174,688           | 0.15        |
| Biederman Building                 | 1976             | 2002                | 45  | ACADEMIC FACILITIES    | 28,441         | 8,818,956          | 1,039,650         | 0.12        |
| Campus General                     | 1961             |                     | 60  | SUPPORTING FACILITIES  | 1              | 7,000,000          | 755,165           | 0.11        |
| Tanis Building                     | 1957             | 2003                | 64  | OFFICE FACILITIES      | 14,300         | 4,344,912          | 456,368           | 0.11        |
| Fine Arts                          | 1971             | 2000                | 50  | ACADEMIC FACILITIES    | 18,800         | 4,843,500          | 390,997           | 0.08        |
| Oleson Center                      | 1978             | 2006                | 43  | SUPPORTING FACILITIES  | 9,925          | 2,506,400          | 122,539           | 0.05        |
| James J. Beckett                   | 1996             |                     | 25  | ACADEMIC FACILITIES    | 34,269         | 8,164,100          | 372,337           | 0.05        |
| Appel Property                     | 1954             |                     | 67  | SUPPORTING FACILITIES  | 1,160          | 153,200            | 5,610             | 0.04        |
| Health and Science Building        | 2002             |                     | 19  | ACADEMIC FACILITIES    | 57,477         | 17,463,812         | 486,309           | 0.03        |
| Scholars Hall                      | 1962             | 2003                | 59  | ACADEMIC FACILITIES    | 62,812         | 15,495,300         | 389,322           | 0.03        |
| Facilities Maintenance Building    | 2001             |                     | 20  | SUPPORTING FACILITIES  | 11,900         | 1,052,100          | 24,292            | 0.02        |
| East Hall                          | 1965             | 1999                | 56  | RESIDENTIAL FACILITIES | 52,288         | 11,990,600         | 271,801           | 0.02        |
| Dennos Museum Center               | 1991             | 2019                | 30  | SUPPORTING FACILITIES  | 53,545         | 17,332,700         | 341,944           | 0.02        |
| West Hall                          | 1965             | 2020                | 56  | SUPPORTING FACILITIES  | 63,254         | 9,596,500          | 74,032            | 0.01        |
| North Hall                         | 2017             |                     | 4   | RESIDENTIAL FACILITIES | 46,730         | 6,818,200          | 0                 | 0.00        |
| Rogers Observatory                 | 1981             |                     | 40  | ACADEMIC FACILITIES    | 1,624          | 398,600            | 0                 | 0.00        |
| Utility Tunnels                    | 1970             |                     | 51  | SUPPORTING FACILITIES  | 6,925          | 1,924,000          | 0                 | 0.00        |
| <b>Subtotal for Building</b>       |                  |                     |     |                        | <b>581,632</b> | <b>143,915,714</b> | <b>10,226,002</b> | <b>0.07</b> |
| Campus Name: NMC University Center |                  |                     |     |                        |                |                    |                   |             |
| Building                           | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost          | FCI         |
| University Center                  | 1986             | 1994                | 35  | ACADEMIC FACILITIES    | 59,460         | 13,507,600         | 748,013           | 0.06        |
| <b>Subtotal for Building</b>       |                  |                     |     |                        | <b>59,460</b>  | <b>13,507,600</b>  | <b>748,013</b>    | <b>0.06</b> |
| <b>Grand Totals</b>                |                  |                     |     |                        | <b>820,678</b> | <b>212,365,814</b> | <b>12,409,676</b> | <b>0.06</b> |

The third chart shows the asset listed sorted by building usage type.

| ACADEMIC BUILDINGS              |                  |                     |     |                        |                |                    |                  |             |
|---------------------------------|------------------|---------------------|-----|------------------------|----------------|--------------------|------------------|-------------|
| Building                        | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost         | FCI         |
| Osterlin Building               | 1960             | 2002                | 61  | ACADEMIC FACILITIES    | 46,734         | 12,068,600         | 2,106,875        | 0.17        |
| Biederman Building              | 1976             | 2002                | 45  | ACADEMIC FACILITIES    | 28,441         | 8,818,956          | 1,039,650        | 0.12        |
| Fine Arts                       | 1971             | 2000                | 50  | ACADEMIC FACILITIES    | 18,800         | 4,843,500          | 390,997          | 0.08        |
| Aero Park Laboratories          | 1980             | 2011                | 41  | ACADEMIC FACILITIES    | 29,600         | 4,121,500          | 304,650          | 0.07        |
| University Center               | 1986             | 1994                | 35  | ACADEMIC FACILITIES    | 59,460         | 13,507,600         | 748,013          | 0.06        |
| Automotive Technology           | 1990             | 2001                | 31  | ACADEMIC FACILITIES    | 18,309         | 3,268,400          | 180,968          | 0.06        |
| Parsons-Stulen/Michigan Tech Ed | 1999             |                     | 22  | ACADEMIC FACILITIES    | 65,000         | 15,297,900         | 835,667          | 0.05        |
| James J. Beckett                | 1996             |                     | 25  | ACADEMIC FACILITIES    | 34,269         | 8,164,100          | 372,337          | 0.05        |
| Aviation Building               | 1977             |                     | 44  | ACADEMIC FACILITIES    | 20,912         | 2,386,100          | 69,624           | 0.03        |
| Health and Science Building     | 2002             |                     | 19  | ACADEMIC FACILITIES    | 57,477         | 17,463,812         | 486,309          | 0.03        |
| Scholars Hall                   | 1962             | 2003                | 59  | ACADEMIC FACILITIES    | 62,812         | 15,495,300         | 389,322          | 0.03        |
| Great Lakes Campus              | 2004             |                     | 17  | ACADEMIC FACILITIES    | 75,364         | 21,990,100         | 377,803          | 0.02        |
| Rogers Observatory              | 1981             |                     | 40  | ACADEMIC FACILITIES    | 1,624          | 398,600            | 0                | 0.00        |
| <b>Subtotal</b>                 |                  |                     |     |                        | <b>518,802</b> | <b>127,824,468</b> | <b>7,302,216</b> | <b>0.06</b> |
| RESIDENTIAL BUILDINGS           |                  |                     |     |                        |                |                    |                  |             |
| Building                        | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost         | FCI         |
| Apartment B 1882                | 1973             |                     | 48  | RESIDENTIAL FACILITIES | 12,399         | 1,740,200          | 562,005          | 0.32        |
| Apartment C 1884                | 1973             |                     | 48  | RESIDENTIAL FACILITIES | 12,399         | 1,740,200          | 530,000          | 0.30        |
| Apartment A 1880                | 1973             |                     | 48  | RESIDENTIAL FACILITIES | 12,399         | 2,057,266          | 502,886          | 0.24        |
| East Hall                       | 1965             | 1999                | 56  | RESIDENTIAL FACILITIES | 52,288         | 11,990,600         | 271,801          | 0.02        |
| North Hall                      | 2017             |                     | 4   | RESIDENTIAL FACILITIES | 46,730         | 6,818,200          | 0                | 0.00        |
| <b>Subtotal</b>                 |                  |                     |     |                        | <b>136,215</b> | <b>24,346,466</b>  | <b>1,866,692</b> | <b>0.08</b> |
| SUPPORTING BUILDINGS            |                  |                     |     |                        |                |                    |                  |             |
| Building                        | Year Constructed | Year Last Renovated | Age | Use                    | Size           | Replacement Value  | FCI Cost         | FCI         |
| Athletic Fields                 | 1976             |                     | 45  | SUPPORTING FACILITIES  | 1              | 55,000             | 31,250           | 0.57        |
| Power House                     | 1962             |                     | 59  | SUPPORTING FACILITIES  | 3,625          | 2,128,300          | 574,542          | 0.27        |
| Rajkovich Physical Education    | 1969             |                     | 52  | SUPPORTING FACILITIES  | 25,674         | 5,053,068          | 1,013,391        | 0.20        |
| Founders Hall                   | 1976             | 2003                | 45  | SUPPORTING FACILITIES  | 4,950          | 1,170,200          | 174,688          | 0.15        |
| Campus General                  | 1961             |                     | 60  | SUPPORTING FACILITIES  | 1              | 7,000,000          | 755,165          | 0.11        |
| Tanis Building                  | 1957             | 2003                | 64  | SUPPORTING FACILITIES  | 14,300         | 4,344,912          | 456,368          | 0.11        |
| Oleson Center                   | 1978             | 2006                | 43  | SUPPORTING FACILITIES  | 9,925          | 2,506,400          | 122,539          | 0.05        |
| Appel Property                  | 1954             |                     | 67  | SUPPORTING FACILITIES  | 1,160          | 153,200            | 5,610            | 0.04        |
| Facilities Maintenance Building | 2001             |                     | 20  | SUPPORTING FACILITIES  | 11,900         | 1,052,100          | 24,292           | 0.02        |
| Dennos Museum Center            | 1991             | 2019                | 30  | SUPPORTING FACILITIES  | 53,545         | 17,332,700         | 341,944          | 0.02        |
| West Hall                       | 1965             | 2020                | 56  | SUPPORTING FACILITIES  | 63,254         | 9,596,500          | 74,032           | 0.01        |
| Aero Park Campus Grounds        | 1960             |                     | 61  | SUPPORTING FACILITIES  | 1              | 12,000,000         | 0                | 0.00        |
| Utility Tunnels                 | 1970             |                     | 51  | SUPPORTING FACILITIES  | 6,925          | 1,924,000          | 0                | 0.00        |
| <b>Subtotal</b>                 |                  |                     |     |                        | <b>195,261</b> | <b>64,316,380</b>  | <b>3,573,821</b> | <b>0.06</b> |

Using the above data for Northwestern Michigan College the cumulative FCI percentage for the campus is 6% which is in the “Good” category. Going forward it is recommended that building envelopes continue to be prioritized in order to maintain building integrity from degrading. From looking at the average FCI’s by building usage type the Residential buildings look like they are in most need of focus at a cumulative 8% but also the Apartments standing out the most.

It is generally best to use the FCI’s as an internal comparison of relative condition and a guide for the best approach for corrective action. However, for external comparisons we see facilities like Northwestern Michigan College having FCI’s ranging between 10% and 20%. NMC has been doing a great job of keeping their building conditions in good shape and staying below the average FCI range.

Most facilities with FCI’s above 10% and below 30% are manageable with an active strategic plan. FCI’s above 30% require a very focused plan to identify the best use of resources. The goal should be to improve the FCI of all real-estate assets, which accordingly will enhance Northwestern Michigan College’s competitive advantage within the industry by improving the “quality of life” for students, faculty and staff.

## Requirement Investment by Year

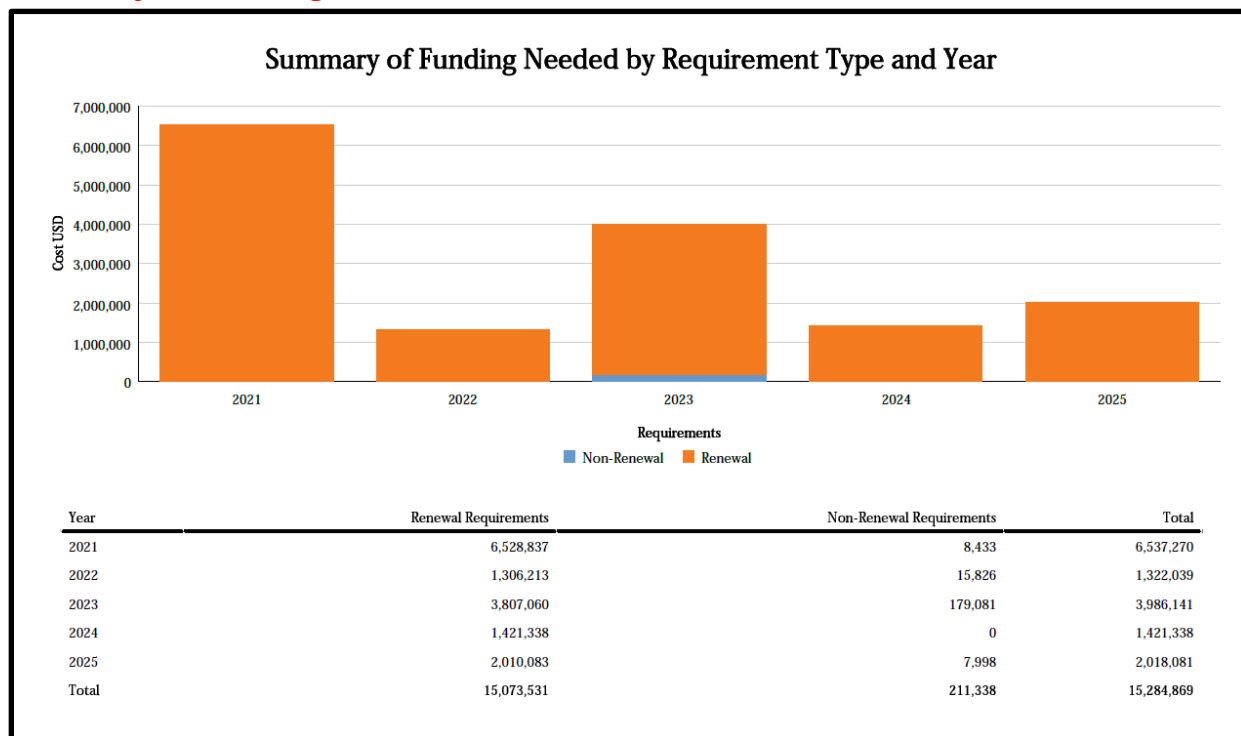
The five-year action plan reflects an investment horizon that identifies critical infrastructural and facility investments. Given the current economic state of many institutions today this plan can be extended to accommodate funding availability. No Institution is operating without a deferred maintenance backlog. The goal of what is being shown here is NOT to get to zero. The goal is to plan out specific improvements.

Developing a clear, concise, and comprehensive capital action plan is not a simple task. Each component of diverse school infrastructure has distinctive maintenance necessities. That is why Sodexo takes the time to understand those necessities and provide the critical information to create the perfect strategic approach for integrating the unique composite of systems and structures.

Our knowledge and expertise allow our partners more control of their fiscal future. By providing a living instrument to track and maintain existing assets, we offer the stakeholders the ability to target their efforts and optimize the results through the evaluation of existing conditions, a five-year management plan to reduce existing and future deferred maintenance conditions.

The annual totals reflected below are estimates based on like replacement costs and can easily be adjusted to actively manage the data base and create a historical register of completed projects. The priority years may also be adjusted to best align with Northwestern Michigan College’s budget, mission, and strategic plan. The data is with the use of the software tools should be evaluated annually to maintain an active budgeting tool.

### Summary of Funding Needs:



## Capital Renewal Funding Options

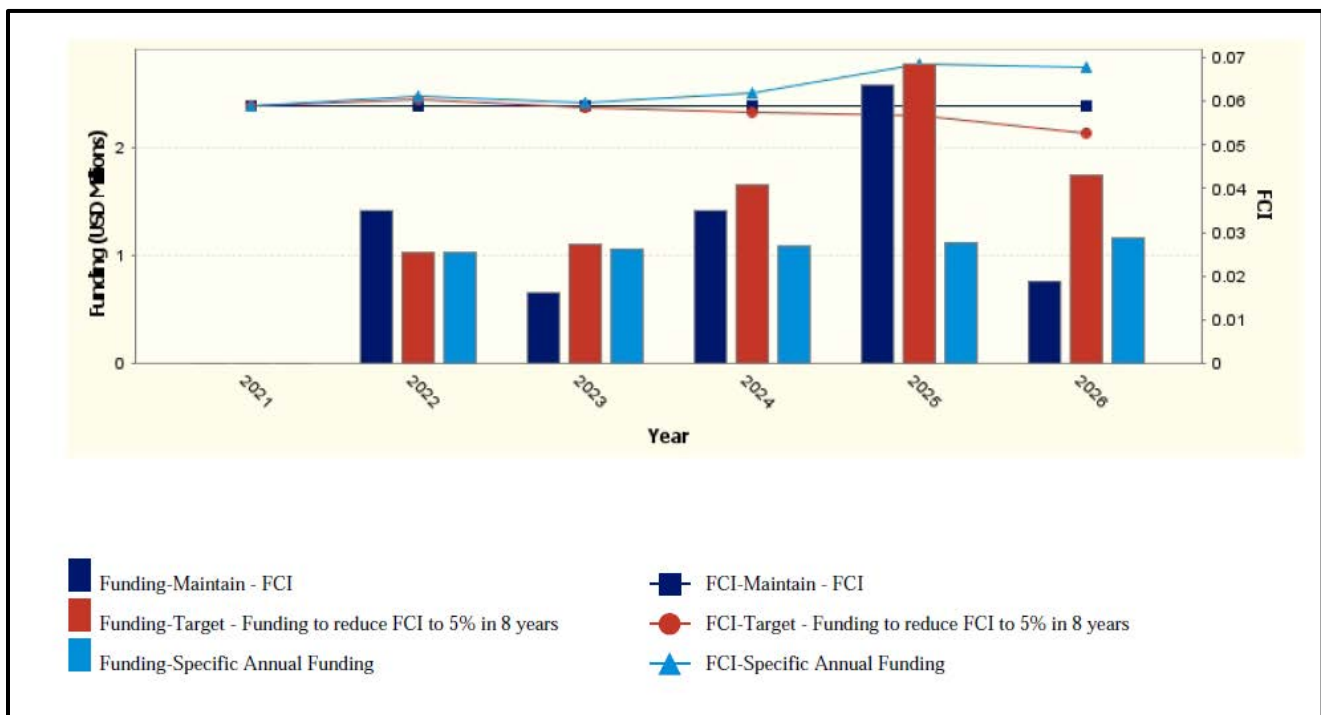
Systems that have exceeded their life cycle are likely compromised. When replacing compromised critical infrastructure components quite often the corresponding equipment must also be replaced which increases the overall cost of the project.

Using the Northwestern Michigan College asset data and the funding module within VFA Facility we can examine various funding strategies, analyze their fiscal implications over various time periods, and project the impact of deferred maintenance, either for individual assets, or across the entire assessed portfolio. Values, either assumed or measured, and different time ranges, can be modeled with the funding module for analysis purposes, to see their cost implications and to project their impact on facility conditions.

To show the analysis potential of VFA Facility, note the three examples summarized below, illustrating the varying costs and condition impacts those different strategies can produce. For these examples, the costs for annual system renewals reflect an annual inflation rate of 3% (today's dollars) over the time examined with a 2% deterioration backlog. The scenarios shown below are samples of funding options. With the VFA Facility software we can produce additional options to match Northwestern Michigan College's mission, values, and available budget.

These are samples of three 5-year Funding scenarios:

### Funding/FCI Graph:



*Maintain - FCI*

Cost Curve Applied: Spiky 0

| Year | Replacement Cost | Renewal Cost | Backlog Deterioration | Total New Liability | New Backlog Total | Net Plant Value | Funding   | Funding Reserve | FCI    |
|------|------------------|--------------|-----------------------|---------------------|-------------------|-----------------|-----------|-----------------|--------|
| 2021 | 216,487,314      | 12,586,810   | 0                     | 12,742,729          | 12,742,729        | 203,744,585     | 0         | 0               | 0.0589 |
| 2022 | 222,981,928      | 1,157,833    | 262,500               | 1,420,333           | 13,125,011        | 209,856,917     | 1,420,333 | 0               | 0.0589 |
| 2023 | 229,671,379      | 382,479      | 270,375               | 652,854             | 13,518,761        | 216,152,619     | 652,854   | 0               | 0.0589 |
| 2024 | 236,561,514      | 1,141,698    | 278,486               | 1,420,185           | 13,924,323        | 222,637,191     | 1,420,185 | 0               | 0.0589 |
| 2025 | 243,658,353      | 2,293,541    | 286,841               | 2,580,382           | 14,342,052        | 229,316,300     | 2,580,382 | 0               | 0.0589 |
| 2026 | 250,968,096      | 471,858      | 295,446               | 767,305             | 14,772,314        | 236,195,783     | 767,305   | 0               | 0.0589 |

*Target - Funding to reduce FCI to 4.5% in 8 years*

Cost Curve Applied: Spiky 0

| Year | Replacement Cost | Renewal Cost | Backlog Deterioration | Total New Liability | New Backlog Total | Net Plant Value | Funding   | Funding Reserve | FCI    |
|------|------------------|--------------|-----------------------|---------------------|-------------------|-----------------|-----------|-----------------|--------|
| 2021 | 216,487,314      | 12,586,810   | 0                     | 12,742,729          | 12,742,729        | 203,744,585     | 0         | 0               | 0.0589 |
| 2022 | 222,981,928      | 1,157,833    | 262,500               | 1,420,333           | 13,063,421        | 209,918,506     | 1,481,922 | 0               | 0.0586 |
| 2023 | 229,671,379      | 382,479      | 269,106               | 651,585             | 12,990,315        | 216,681,064     | 1,116,593 | 0               | 0.0566 |
| 2024 | 236,561,514      | 1,141,698    | 267,600               | 1,409,299           | 13,003,107        | 223,558,407     | 1,786,216 | 0               | 0.0550 |
| 2025 | 243,658,353      | 2,293,541    | 267,864               | 2,561,405           | 13,183,362        | 230,474,990     | 2,771,243 | 0               | 0.0541 |
| 2026 | 250,968,096      | 471,858      | 271,577               | 743,436             | 12,546,285        | 238,421,811     | 1,776,013 | 0               | 0.0500 |

*Specific Annual Funding*

Cost Curve Applied: Spiky 0

| Year | Replacement Cost | Renewal Cost | Backlog Deterioration | Total New Liability | New Backlog Total | Net Plant Value | Funding   | Funding Reserve | FCI    |
|------|------------------|--------------|-----------------------|---------------------|-------------------|-----------------|-----------|-----------------|--------|
| 2021 | 216,487,314      | 12,586,810   | 0                     | 12,742,729          | 12,742,729        | 203,744,585     | 0         | 0               | 0.0589 |
| 2022 | 222,981,928      | 1,157,833    | 262,500               | 1,420,333           | 13,615,927        | 209,366,001     | 1,030,000 | 100,583         | 0.0611 |
| 2023 | 229,671,379      | 382,479      | 280,488               | 662,967             | 13,743,354        | 215,928,025     | 1,060,900 | 220,484         | 0.0598 |
| 2024 | 236,561,514      | 1,141,698    | 283,113               | 1,424,812           | 14,642,887        | 221,918,627     | 1,092,727 | 382,246         | 0.0619 |
| 2025 | 243,658,353      | 2,293,541    | 301,643               | 2,595,184           | 16,711,651        | 226,946,702     | 1,125,509 | 553,515         | 0.0686 |
| 2026 | 250,968,096      | 471,858      | 344,260               | 816,118             | 17,034,440        | 233,933,656     | 1,159,274 | 734,717         | 0.0679 |

To avoid adding additional deferred maintenance, capital renewal projects should be funded with increasing or decreasing overall campus backlog in mind. Based on standard system life cycle calculations the recommended **annual minimum** renewal budget for Northwestern Michigan College would be an average of \$1,786,397. Funding below this level will cause the deferred maintenance backlog to continue to grow and could create operational and client satisfaction and retention issues going forward. More critical than the FCI reduction is this will allow Northwestern Michigan College to address deferred maintenance before it becomes more difficult to manage.

There are many options in looking at ways to address this challenge. Our team would welcome the opportunity to work with Northwestern Michigan College's leadership to explore possible scenarios. Unfortunately, several of these buildings are approaching an age where an increase in funding for deferred maintenance will be necessary. This is not unique to Northwestern Michigan College as we see it in aging asset portfolios across most markets. Without a specific plan most annual operating budgets do not adequately support the growing need to fund deferred maintenance.



As projects are planned additional focus should be placed on the exterior shell of the buildings (aged roofs, windows, masonry), indoor air quality and interior finishes of your facilities. More specific recommendations are included as an Appendix to this report.

The capital renewal allowance does not include funding for deferred maintenance backlogs and is usually applicable to facilities with a manageable backlog. Deferred maintenance backlog reduction involving a substantial amount of work may require a high level of funding in the initial years of a multi-year capital plan to reduce backlogs to a desired level.

This five-year action plan should be used as a proactive tool to manage Northwestern Michigan College's capital project needs. The report distributes projects in varying amounts for each year based on project priority and justification. The costs developed in the report are budgetary estimates and may fluctuate based on project scope, materials, and bidding process.

## Common Facilities Maintenance Acronyms

|                                  |   |  |
|----------------------------------|---|--|
| AC – Air Conditioning            | EMS - Energy Management System          | HVAC – Heating, Ventilation and Air Conditioning |
| AHU – Air Handling Unit          | FCI – Facility Condition Index          | LED lighting – Light Emitting Diode              |
| BAS – Building Automation System | FCU – Fan Coil Unit                     | MEP - Mechanical, Electrical and Plumbing        |
| CRV – Current Replacement Value  | FM - Facilities Management              | PM - Preventive Maintenance                      |
| DDC – Direct Digital Control     | HID Lighting – High Intensity Discharge |  |

## Appendix

### Recommended Projects:

Based on the Assessors observations and not a specific budget or mission critical needs the following projects should have priority. Specific detailed reports are attached.

1. 5 Year Plan By Building By Year
2. Funding Scenarios Report
3. Roof Replacements
4. Sample Building Detail Report

### Works Cited

Wikipedia contributors. "Northwestern Michigan College." *Wikipedia, The Free Encyclopedia*. Wikipedia, The Free Encyclopedia, 14 Dec. 2020. Web. 5 Nov. 2021.

**Appendix F**

**Summary of Facilities and  
Square Footage**

| SCHEDULE OF BUILDINGS & CONTENTS   |   |                          |                      |                       |                     |                       |                            |                       |                |
|--|---|--------------------------|----------------------|-----------------------|---------------------|-----------------------|----------------------------|-----------------------|----------------|
| (Period: 7/1/2024 through 7/1/2025)  |   |                          |                      |                       |                     |                       |                            |                       |                |
| Northwestern Michigan College  |   |                          |                      |                       |                     |                       |                            |                       |                |
| <b>Last Year Totals:</b>   |   |                          | <b>Buildings</b>     | \$ 272,138,200        | <b>Contents</b>     | \$ 25,141,384         | <b>Building + Contents</b> | \$ 297,279,584        |                |
| <b>Current Year Totals:</b>  |   |                          | <b>Buildings</b>     | \$ 294,034,200        | <b>Contents</b>     | \$ 27,799,158         | <b>Building + Contents</b> | \$ 321,833,358        |                |
| Location#  | Location Description                                | Last Year Building Value | Last Year Contents   | Last Year Total Value | Last Year Square Ft | New Building Value    | New Contents Value         | New Total Value       | New Square Ft  |
| <b>Main Campus (1701 E. Front St., Traverse City, MI 49686)</b>                        |   |                          |                      |                       |                     |                       |                            |                       |                |
| 1  | Tanis/Beiderman/STLC                                | 40,408,200               | 2,594,196            | 43,002,396            | 105,519             | 43,641,800            | 2,723,906                  | 46,365,706            | 105,519        |
| 2  | Apartments A  | 2,365,000                | 42,972               | 2,407,972             | 12,399              | 2,554,000             | 45,121                     | 2,599,121             | 12,399         |
| 2B   | Apartment B   | 2,365,000                | 42,972               | 2,407,972             | 12,399              | 2,554,000             | 45,121                     | 2,599,121             | 12,399         |
| 2C   | Apartment C   | 2,365,000                | 42,972               | 2,407,972             | 12,399              | 2,554,000             | 45,121                     | 2,599,121             | 12,399         |
| 6  | Founders Hall                                       | 1,553,500                | 80,330               | 1,633,830             | 4,950               | 1,677,900             | 84,347                     | 1,762,247             | 4,950          |
| 7  | East Residence Hall                                 | 15,861,300               | 2,656,571            | 18,517,871            | 52,288              | 17,130,300            | 3,432,046                  | 20,562,346            | 52,288         |
| 8  | Fine Arts Building                                  | 6,400,800                | 166,098              | 6,566,898             | 18,800              | 6,913,000             | 212,133                    | 7,125,133             | 18,800         |
| 10   | Osterlin Library                                    | 15,973,600               | 3,962,994            | 19,936,594            | 46,734              | 17,251,600            | 4,161,144                  | 21,412,744            | 46,734         |
| 13   | Museum - Auditorium                                 | 22,902,900               | 685,152              | 23,588,052            | 55,085              | 24,735,100            | 872,071                    | 25,607,171            | 55,085         |
| 15   | Oleson Center                                       | 3,326,600                | 73,281               | 3,399,881             | 10,398              | 3,592,700             | 76,945                     | 3,669,645             | 10,398         |
| 16   | Physical Education                                  | 7,442,100                | 91,855               | 7,533,955             | 25,674              | 8,037,300             | 96,448                     | 8,133,748             | 25,674         |
| 17   | Powerhouse  | 2,807,800                | 17,421               | 2,825,221             | 3,580               | 3,032,500             | 18,292                     | 3,050,792             | 3,580          |
| 18   | Scholars Hall                                       | 20,473,100               | 109,289              | 20,582,389            | 62,812              | 22,111,000            | 114,753                    | 22,225,753            | 62,812         |
| 19   | Timothy J. Nelson Innovation Center                 | 23,097,200               | 3,317,234            | 26,414,434            | 66,304              | 24,945,200            | 3,483,096                  | 28,428,296            | 66,304         |
| 22   | Utility Tunnels                                     | 2,538,400                | -                    | 2,538,400             | 6,925               | 2,741,500             | -                          | 2,741,500             | 6,925          |
| 26   | Beckett   | 10,812,000               | 498,576              | 11,310,576            | 34,269              | 11,676,900            | 523,505                    | 12,200,405            | 34,269         |
| 46   | Maintenance   | 1,350,000                | 660,186              | 2,010,186             | 11,900              | 1,457,900             | 732,990                    | 2,190,890             | 11,900         |
| 47   | Landscape Bin                                       | 40,600                   | -                    | 40,600                | 675                 | 43,900                | -                          | 43,900                | 675            |
| 51   | North Hall (student housing)                        | 9,055,800                | 88,170               | 9,143,970             | 46,730              | 9,780,200             | 92,579                     | 9,872,779             | 46,730         |
|  | <b>Subtotal (Main Campus):</b>                      | <b>\$ 191,138,900</b>    | <b>\$ 15,130,269</b> | <b>\$ 206,269,169</b> | <b>589,840</b>      | <b>\$ 206,430,800</b> | <b>\$ 16,759,618</b>       | <b>\$ 223,190,418</b> | <b>589,840</b> |
| <b>Appel Biology (1891 Sarns Road, Traverse City, MI 49696)</b>                        |   |                          |                      |                       |                     |                       |                            |                       |                |
| 3  | Appel Biology                                       | 202,000                  | -                    | 202,000               | 1,160               | 218,400               | -                          | 218,400               | 1,160          |
|  | <b>Subtotal (Appel Biology):</b>                    | <b>\$ 202,000</b>        | <b>\$ -</b>          | <b>\$ 202,000</b>     | <b>1,160</b>        | <b>\$ 218,400</b>     | <b>\$ -</b>                | <b>\$ 218,400</b>     | <b>1,160</b>   |
| <b>Eastern Avenue Apartment Storage (2005 Eastern Avenue, Traverse City, MI 49686)</b> |   |                          |                      |                       |                     |                       |                            |                       |                |
| 23   | Eastern Avenue Apartment Storage                    | 76,000                   | -                    | 76,000                | 1,344               | 82,300                | -                          | 82,300                | 1,344          |
|  | <b>Subtotal (Eastern Avenue Apartment Storage):</b> | <b>\$ 76,000</b>         | <b>\$ -</b>          | <b>\$ 76,000</b>      | <b>1,344</b>        | <b>\$ 82,300</b>      | <b>\$ -</b>                | <b>\$ 82,300</b>      | <b>1,344</b>   |
| <b>Great Lakes Campus (715 E Front Street)</b>   |   |                          |                      |                       |                     |                       |                            |                       |                |
| 49   | Great Lakes Campus                                  | 29,063,200               | 3,669,220            | 32,732,420            | 75,364              | 31,383,800            | 4,332,739                  | 35,716,539            | 75,364         |
|  | <b>Subtotal (Great Lakes Campus):</b>               | <b>\$ 29,063,200</b>     | <b>\$ 3,669,220</b>  | <b>\$ 32,732,420</b>  | <b>75,364</b>       | <b>\$ 31,383,800</b>  | <b>\$ 4,332,739</b>        | <b>\$ 35,716,539</b>  | <b>75,364</b>  |
| <b>NMC University Center (2200 Dendrin Drive, Traverse City, MI 49686)</b>             |   |                          |                      |                       |                     |                       |                            |                       |                |
| 20   | University Center Campus                            | 17,871,900               | 400,306              | 18,272,206            | 59,460              | 19,430,000            | 420,321                    | 19,850,321            | 59,460         |
|  | <b>Subtotal (University Center Campus):</b>         | <b>\$ 17,871,900</b>     | <b>\$ 400,306</b>    | <b>\$ 18,272,206</b>  | <b>59,460</b>       | <b>\$ 19,430,000</b>  | <b>\$ 420,321</b>          | <b>\$ 19,850,321</b>  | <b>59,460</b>  |
| <b>Aero Park Campus (2600 Aero Park Drive, Traverse City, MI 49686)</b>                |   |                          |                      |                       |                     |                       |                            |                       |                |
| 5  | Aviation  | 3,178,000                | 957,621              | 4,135,621             | 20,912              | 3,432,200             | 1,005,502                  | 4,437,702             | 20,912         |
| 45   | Parsen - Stullen M-TEC                              | 20,271,700               | 2,625,594            | 22,897,294            | 65,000              | 21,893,300            | 2,756,874                  | 24,650,174            | 65,000         |
| 50   | Aero Park Lab                                       | 5,468,100                | 1,984,103            | 7,452,203             | 29,600              | 5,905,400             | 2,131,119                  | 8,036,519             | 29,600         |
| 48   | Automotive Service Tech                             | 4,332,800                | 296,699              | 4,629,499             | 18,328              | 4,679,500             | 311,534                    | 4,991,034             | 18,328         |
|  | <b>Subtotal (Aero Park Campus):</b>                 | <b>\$ 33,250,600</b>     | <b>\$ 5,864,017</b>  | <b>\$ 39,114,617</b>  | <b>133,840</b>      | <b>\$ 35,910,400</b>  | <b>\$ 6,205,029</b>        | <b>\$ 42,115,429</b>  | <b>133,840</b> |
| <b>Rogers Observatory (1753 Brimley Rd., Traverse City, MI 49686)</b>                  |   |                          |                      |                       |                     |                       |                            |                       |                |
| 14   | Observatory   | 535,600                  | 77,572               | 613,172               | 1,624               | 578,500               | 81,451                     | 659,951               | 1,624          |
|  | <b>Subtotal (Observatory):</b>                      | <b>535,600</b>           | <b>77,572</b>        | <b>613,172</b>        | <b>1,624</b>        | <b>578,500</b>        | <b>81,451</b>              | <b>659,951</b>        | <b>1,624</b>   |
|  | <b>Totals:</b>                                      | <b>\$ 272,138,200</b>    | <b>\$ 25,141,384</b> | <b>\$ 297,279,584</b> | <b>862,632</b>      | <b>\$ 294,034,200</b> | <b>\$ 27,799,158</b>       | <b>\$ 321,833,358</b> | <b>862,632</b> |

**Appendix G**

**Building and Classroom  
Utilization**

# Location Utilization Summary

Based on events from 12:00 A.M. to 11:45 P.M., between Aug 15 2023 and May 15 2024. There are 6,531.25 total hours in the report period, (K).

|                              | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|------------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| AL - ENTIRE SHOP (NO SPACES) | 536                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL 101                       | 16                     |                      | 0.00                     | 6,531.25                 | 456.50               | 3,895.00                | 6.99%                      | 53.57%                           | 3.73%                         | 0.26%                     |
| AL 102                       | 24                     |                      | 0.00                     | 6,531.25                 | 557.42               | 8,807.42                | 8.53%                      | 66.67%                           | 5.62%                         | 0.48%                     |
| AL 103                       | 13                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL 106                       | 16                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL 110A                      | 16                     |                      | 0.00                     | 6,531.25                 | 350.50               | 1,921.00                | 5.37%                      | 32.29%                           | 1.84%                         | 0.1%                      |
| AL 110B                      | 20                     |                      | 0.00                     | 6,531.25                 | 469.00               | 4,328.00                | 7.18%                      | 46.25%                           | 3.31%                         | 0.24%                     |
| AL 118                       | 20                     |                      | 0.00                     | 6,531.25                 | 546.32               | 7,023.88                | 8.36%                      | 63.33%                           | 5.38%                         | 0.45%                     |
| AL 122                       | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL A                         | 20                     |                      | 0.00                     | 6,531.25                 | 801.00               | 7,646.33                | 12.26%                     | 47.27%                           | 5.85%                         | 0.72%                     |
| AL A/B                       | 40                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL A/B/C                     | 60                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL A/B/C/D                   | 80                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL B                         | 20                     |                      | 0.00                     | 6,531.25                 | 6.67                 | 53.33                   | 0.1%                       | 40%                              | 0.04%                         | 0%                        |
| AL B/C                       | 40                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL B/C/D                     | 60                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL BLDG (NO SPACES)          | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL C                         | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL C/D                       | 40                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL D                         | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL E                         | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL E/F                       | 40                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL E/F/G                     | 60                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL E/F/G/H                   | 80                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL F                         | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL F/G                       | 40                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL F/G/H                     | 60                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL G                         | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL G/H                       | 40                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL H                         | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL I                         | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL I/J                       | 40                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |

# Location Utilization Summary

|                                 | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|---------------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| AL J                            | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL K                            | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AL L                            | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| APPEL                           | 45                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| ARR ROOM                        | 999                    |                      | 0.00                     | 6,531.25                 | 1,223.10             | 65,663.50               | 18.73%                     | 1.07%                            | 1.01%                         | 0.19%                     |
| AT 100                          | 18                     |                      | 0.00                     | 6,531.25                 | 352.00               | 4,886.00                | 5.39%                      | 77.78%                           | 4.16%                         | 0.22%                     |
| AT 102                          | 18                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AT 104                          | 18                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| AT 108                          | 18                     |                      | 0.00                     | 6,531.25                 | 799.00               | 8,749.00                | 12.23%                     | 59.03%                           | 7.44%                         | 0.91%                     |
| AT 111                          | 18                     |                      | 237.25                   | 6,294.00                 | 420.00               | 6,420.00                | 6.67%                      | 87.5%                            | 5.67%                         | 0.38%                     |
| AT BLDG (NO SPACES)             | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| BFC GYM                         | 500                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| BIK STUDIO                      | 50                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| CC POOL                         | 500                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| CITY OPERA HOUSE                | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| CTC BLDG                        | 999                    |                      | 0.00                     | 6,531.25                 | 400.50               | 600.75                  | 6.13%                      | 0.15%                            | 0.01%                         | 0%                        |
| DMC 101                         | 30                     |                      | 0.00                     | 6,531.25                 | 286.83               | 5,084.25                | 4.39%                      | 52.59%                           | 2.59%                         | 0.11%                     |
| DMC BINSFELD GALLERY            | 50                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC CONFERENCE ROOM             | 12                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC DISCOVERY GALLERY           | 100                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC DUTMERS THEATER             | 34                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC GALLERIES                   | 250                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC INUIT GALLERY               | 50                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC JANIS ROOM                  | 75                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC MACFARLANE GALLERY          | 200                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC MILLIKEN                    | 400                    |                      | 0.00                     | 6,531.25                 | 240.17               | 4,740.75                | 3.68%                      | 11.11%                           | 0.18%                         | 0.01%                     |
| DMC MUSEUM CENTER               | 500                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC PARKING LOT                 | 999                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC SCHMUCKAL GALLERY           | 150                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| DMC SCULPTURE COURT             | 300                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| ED SERVICES RECEPTION AREA T 55 | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F - MUSIC WING                  | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F 102                           | 49                     |                      | 0.00                     | 6,531.25                 | 417.75               | 5,896.00                | 6.4%                       | 17.57%                           | 1.84%                         | 0.12%                     |
| F 103                           | 10                     |                      | 0.00                     | 6,531.25                 | 250.25               | 2,031.33                | 3.83%                      | 66.36%                           | 3.11%                         | 0.12%                     |

# Location Utilization Summary

|                                  | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|----------------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| F 104                            | 4                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F 105                            | 30                     |                      | 0.00                     | 6,531.25                 | 417.33               | 9,035.58                | 6.39%                      | 80.51%                           | 4.61%                         | 0.29%                     |
| F 107/108 - RECORDING STUDIO     | 3                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F 109/110 - MUSIC PRACTICE ROOMS | 2                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F 115                            | 84                     |                      | 0.00                     | 6,531.25                 | 611.33               | 10,327.50               | 9.36%                      | 50.82%                           | 1.88%                         | 0.18%                     |
| F 115 STEINWAY PIANO             | 0                      |                      | 0.00                     | 6,531.25                 | 25.50                | 0.00                    | 0.39%                      | 0%                               | 0%                            | 0%                        |
| F 120                            | 18                     |                      | 0.00                     | 6,531.25                 | 392.00               | 5,494.00                | 6%                         | 65.28%                           | 4.67%                         | 0.28%                     |
| F 126                            | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F 130                            | 20                     |                      | 0.00                     | 6,531.25                 | 484.00               | 10,088.00               | 7.41%                      | 75.91%                           | 7.72%                         | 0.57%                     |
| F 132                            | 50                     |                      | 0.00                     | 6,531.25                 | 122.00               | 2,928.00                | 1.87%                      | 24%                              | 0.9%                          | 0.02%                     |
| F 135                            | 18                     |                      | 0.00                     | 6,531.25                 | 489.83               | 4,329.00                | 7.5%                       | 48.89%                           | 3.68%                         | 0.28%                     |
| F 137 - KILN ROOM                | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F BLDG (NO SPACES)               | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F CENTER LOBBY                   | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F NORTH LOBBY                    | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| F SOUTH LOBBY                    | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| FFY GYM                          | 50                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| FH                               | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| FH 109                           | 10                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| FH 110                           | 16                     |                      | 0.00                     | 6,531.25                 | 168.92               | 8,785.83                | 2.59%                      | 320.31%                          | 8.41%                         | 0.22%                     |
| FH 113                           | 12                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| GL 100                           | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| GL 101                           | 40                     |                      | 0.00                     | 6,531.25                 | 562.98               | 9,107.77                | 8.62%                      | 39.21%                           | 3.49%                         | 0.3%                      |
| GL 102                           | 10                     |                      | 0.00                     | 6,531.25                 | 216.73               | 1,077.33                | 3.32%                      | 50%                              | 1.65%                         | 0.05%                     |
| GL 103                           | 24                     |                      | 0.00                     | 6,531.25                 | 316.73               | 2,066.33                | 4.85%                      | 29.58%                           | 1.32%                         | 0.06%                     |
| GL 108                           | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| GL 110                           | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| GL 111                           | 32                     |                      | 0.00                     | 6,531.25                 | 661.50               | 11,009.50               | 10.13%                     | 52.71%                           | 5.27%                         | 0.53%                     |
| GL 112                           | 40                     |                      | 0.00                     | 6,531.25                 | 529.75               | 5,438.17                | 8.11%                      | 24.43%                           | 2.08%                         | 0.17%                     |
| GL 114                           | 12                     |                      | 0.00                     | 6,531.25                 | 101.00               | 480.00                  | 1.55%                      | 47.22%                           | 0.61%                         | 0.01%                     |
| GL 200-205 RADAR LABS            | 2                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| GL 207                           | 12                     |                      | 0.00                     | 6,531.25                 | 225.00               | 945.00                  | 3.44%                      | 35%                              | 1.21%                         | 0.04%                     |
| GL 210                           | 24                     |                      | 0.00                     | 6,531.25                 | 202.50               | 1,748.50                | 3.1%                       | 15.08%                           | 1.12%                         | 0.03%                     |
| GL 211                           | 40                     |                      | 0.00                     | 6,531.25                 | 557.50               | 10,776.50               | 8.54%                      | 42.86%                           | 4.12%                         | 0.35%                     |



# Location Utilization Summary

|  | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|--|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| GL 214                                     | 12                     |                      | 0.00                     | 6,531.25                 | 48.00                | 432.00                  | 0.73%                      | 75%                              | 0.55%                         | 0%                        |
| GL 215 - STUDENT ENCLAVE & GALLEY<br>SD 12 | 16                     |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL 222                                     | 36                     |                      | 0.00                     | 6,531.25                 | 990.17               | 20,489.25               | 15.16%                     | 54.84%                           | 8.71%                         | 1.32%                     |
| GL 231                                     | 12                     |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL 251                                     | 24                     |                      | 0.00                     | 6,531.25                 | 237.97               | 2,316.73                | 3.64%                      | 39.88%                           | 1.48%                         | 0.05%                     |
| GL 252                                     | 21                     |                      | 0.00                     | 6,531.25                 | 760.00               | 7,265.00                | 11.64%                     | 45.24%                           | 5.3%                          | 0.62%                     |
| GL 254                                     | 27                     |                      | 0.00                     | 6,531.25                 | 728.00               | 7,764.00                | 11.15%                     | 39.51%                           | 4.4%                          | 0.49%                     |
| GL 256                                     | 25                     |                      | 0.00                     | 6,531.25                 | 333.87               | 5,164.80                | 5.11%                      | 52%                              | 3.16%                         | 0.16%                     |
| GL 257                                     | 12                     |                      | 0.00                     | 6,531.25                 | 484.00               | 3,810.00                | 7.41%                      | 65.62%                           | 4.86%                         | 0.36%                     |
| GL 258                                     | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL 269                                     | 106                    |                      | 0.00                     | 6,531.25                 | 428.62               | 6,638.80                | 6.56%                      | 12.35%                           | 0.96%                         | 0.06%                     |
| GL 271                                     | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL BLDG (NO SPACES)                        | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL CULINARY OFFICE                         | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL HARBOR LAWN                             | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL MARITIME OFFICE                         | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL PIER                                    | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL RECEPTION DESK & WORKROOM               | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL T/S STATE OF MICHIGAN                   | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GL WEST LAWN                               | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| GTA ROOM                                   | 32                     |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| Greenspire School - UC 211-219             | 0                      | 0                    | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC A                                       | 156                    |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC A & 1/2 B                               | 264                    |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC A & B                                   | 420                    |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC B                                       | 192                    |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC B & C                                   | 432                    |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC BALLROOM                                | 594                    |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC C                                       | 224                    |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC C & 1/2 B                               | 314                    |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC CATWALK                                 | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC COURTYARD                               | 300                    |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| HC HAGERTY OFFICE                          | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |

# Location Utilization Summary

|                         | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|-------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| HC ROTARY HALL          | 64                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HC Room D               | 76                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HOMESTEAD               | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS 110                  | 12                     |                      | 0.00                     | 6,531.25                 | 214.00               | 1,528.00                | 3.28%                      | 61.67%                           | 1.95%                         | 0.06%                     |
| HS 111                  | 25                     |                      | 0.00                     | 6,531.25                 | 152.00               | 3,196.00                | 2.33%                      | 84%                              | 1.96%                         | 0.05%                     |
| HS 111/113 VESTIBULE    | 0                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS 111A                 | 9                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS 112                  | 16                     |                      | 0.00                     | 6,531.25                 | 60.00                | 540.00                  | 0.92%                      | 56.25%                           | 0.52%                         | 0%                        |
| HS 113                  | 25                     |                      | 0.00                     | 6,531.25                 | 354.00               | 4,627.25                | 5.42%                      | 66%                              | 2.83%                         | 0.15%                     |
| HS 114                  | 32                     |                      | 33.25                    | 6,498.00                 | 748.08               | 10,932.83               | 11.51%                     | 42.71%                           | 5.26%                         | 0.61%                     |
| HS 115                  | 25                     |                      | 0.00                     | 6,531.25                 | 188.00               | 2,907.00                | 2.88%                      | 49.6%                            | 1.78%                         | 0.05%                     |
| HS 115/117 VESTIBULE    | 0                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS 116                  | 32                     |                      | 0.00                     | 6,531.25                 | 685.83               | 12,430.33               | 10.5%                      | 42.19%                           | 5.95%                         | 0.62%                     |
| HS 117                  | 25                     |                      | 0.00                     | 6,531.25                 | 356.00               | 6,228.50                | 5.45%                      | 70.4%                            | 3.81%                         | 0.21%                     |
| HS 117A                 | 14                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS 119 GREENHOUSE       | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS 208                  | 24                     |                      | 0.00                     | 6,531.25                 | 13.50                | 931.50                  | 0.21%                      | 95.83%                           | 0.59%                         | 0%                        |
| HS 208/210              | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS 210                  | 24                     |                      | 0.00                     | 6,531.25                 | 726.00               | 45,414.00               | 11.12%                     | 104.17%                          | 28.97%                        | 3.22%                     |
| HS 211                  | 27                     |                      | 0.00                     | 6,531.25                 | 432.00               | 5,957.50                | 6.61%                      | 42.82%                           | 3.38%                         | 0.22%                     |
| HS 212                  | 8                      |                      | 0.00                     | 6,531.25                 | 10.50                | 42.00                   | 0.16%                      | 50%                              | 0.08%                         | 0%                        |
| HS 213                  | 24                     |                      | 0.00                     | 6,531.25                 | 429.00               | 7,252.00                | 6.57%                      | 64.95%                           | 4.63%                         | 0.3%                      |
| HS 214                  | 11                     |                      | 0.00                     | 6,531.25                 | 13.50                | 42.00                   | 0.21%                      | 28.28%                           | 0.06%                         | 0%                        |
| HS 215                  | 24                     |                      | 0.00                     | 6,531.25                 | 274.00               | 4,094.00                | 4.2%                       | 62.5%                            | 2.61%                         | 0.11%                     |
| HS 216                  | 30                     |                      | 0.00                     | 6,531.25                 | 542.75               | 10,919.50               | 8.31%                      | 48.89%                           | 5.57%                         | 0.46%                     |
| HS 217                  | 24                     |                      | 0.00                     | 6,531.25                 | 30.00                | 300.00                  | 0.46%                      | 41.67%                           | 0.19%                         | 0%                        |
| HS BLDG (NO SPACES)     | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS BOOKSTORE            | 32                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS BOOKSTORE STORAGE    | 54                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS LOBBY                | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| HS LOBBY - UPSTAIRS     | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| JB 127 (MEDIA SERVICES) | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| JB 128                  | 1                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |

# Location Utilization Summary

|                                  | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|----------------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| JB 136                           | 48                     |                      | 0.00                     | 6,531.25                 | 4.00                 | 64.00                   | 0.06%                      | 33.33%                           | 0.02%                         | 0%                        |
| JB 140                           | 48                     |                      | 0.00                     | 6,531.25                 | 88.00                | 782.00                  | 1.35%                      | 18.75%                           | 0.25%                         | 0%                        |
| JB 146                           | 36                     |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| JB 146/147                       | 72                     |                      | 0.00                     | 6,531.25                 | 131.50               | 1,876.50                | 2.01%                      | 18.98%                           | 0.4%                          | 0.01%                     |
| JB 147                           | 36                     |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| JB 148                           | 35                     |                      | 0.00                     | 6,531.25                 | 181.50               | 4,800.00                | 2.78%                      | 77.62%                           | 2.1%                          | 0.06%                     |
| JB 149                           | 35                     |                      | 0.00                     | 6,531.25                 | 103.50               | 0.00                    | 1.58%                      | 0%                               | 0%                            | 0%                        |
| JB 202                           | 17                     |                      | 0.00                     | 6,531.25                 | 377.67               | 9,383.58                | 5.78%                      | 148.42%                          | 8.45%                         | 0.49%                     |
| JB 204                           | 20                     |                      | 0.00                     | 6,531.25                 | 724.00               | 12,224.00               | 11.09%                     | 76.33%                           | 9.36%                         | 1.04%                     |
| JB 214                           | 24                     |                      | 0.00                     | 6,531.25                 | 187.83               | 3,608.17                | 2.88%                      | 56.25%                           | 2.3%                          | 0.07%                     |
| JB 215                           | 30                     |                      | 241.50                   | 6,289.75                 | 136.50               | 3,475.50                | 2.17%                      | 90%                              | 1.84%                         | 0.04%                     |
| JB 216                           | 35                     |                      | 0.00                     | 6,531.25                 | 197.50               | 3,429.00                | 3.02%                      | 38.86%                           | 1.5%                          | 0.05%                     |
| JB 217                           | 24                     |                      | 0.00                     | 6,531.25                 | 177.00               | 2,446.50                | 2.71%                      | 22.22%                           | 1.56%                         | 0.04%                     |
| JB BLDG (NO SPACES)              | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| JB FIRST LEVEL LOBBY             | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| JB SECOND LEVEL LOBBY            | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| JB SIMPLY-TO-                    | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| LB 105                           | 40                     |                      | 0.00                     | 6,531.25                 | 662.00               | 9,984.00                | 10.14%                     | 36.09%                           | 3.82%                         | 0.39%                     |
| LB 106 - STUDENT HEALTH SERVICES | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| LB 206                           | 42                     |                      | 0.00                     | 6,531.25                 | 699.08               | 13,643.58               | 10.7%                      | 30.95%                           | 4.97%                         | 0.53%                     |
| LB 207                           | 40                     |                      | 0.00                     | 6,531.25                 | 568.00               | 8,739.50                | 8.7%                       | 26.25%                           | 3.35%                         | 0.29%                     |
| LB 208                           | 40                     |                      | 546.00                   | 5,985.25                 | 577.50               | 7,809.25                | 9.65%                      | 25%                              | 3.26%                         | 0.31%                     |
| LB 32 (STUDY ROOM)               | 7                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| LB 35/37                         | 24                     |                      | 0.00                     | 6,531.25                 | 431.58               | 8,332.00                | 6.61%                      | 48.81%                           | 5.32%                         | 0.35%                     |
| LB 38                            | 70                     |                      | 0.00                     | 6,531.25                 | 230.00               | 17,700.00               | 3.52%                      | 30.65%                           | 3.87%                         | 0.14%                     |
| LB BLDG                          | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| LB LOBBY                         | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| LOBDELL'S RESTAURANT - BOT       | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| LUCKY JACK'S                     | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| MILL CREEK ELEMENTARY            | 30                     |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| O 103                            | 4                      | 0                    | No events found          |                          |                      |                         |                            |                                  |                               |                           |
| O 113                            | 23                     |                      | 0.00                     | 6,531.25                 | 151.50               | 2,502.00                | 2.32%                      | 32.92%                           | 1.67%                         | 0.04%                     |
| O 152 TUTORING                   | 0                      |                      | No events found          |                          |                      |                         |                            |                                  |                               |                           |

# Location Utilization Summary

|                          | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|--------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| O 202                    | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| O 203                    | 72                     |                      | 0.00                     | 6,531.25                 | 110.00               | 2,028.00                | 1.68%                      | 16.11%                           | 0.43%                         | 0.01%                     |
| O 204                    | 30                     |                      | 0.00                     | 6,531.25                 | 180.00               | 3,840.00                | 2.76%                      | 63.33%                           | 1.96%                         | 0.05%                     |
| O 205                    | 72                     |                      | 0.00                     | 6,531.25                 | 126.50               | 4,628.00                | 1.94%                      | 33.33%                           | 0.98%                         | 0.02%                     |
| O 208 OFFICE             | 2                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| O 209 OFFICE             | 2                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| O 210 OFFICE             | 2                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| O BLDG (NO SPACES)       | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| O LOBBY                  | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| O SIMPLY-TO-GO CAFE      | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| O SSC                    | 50                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OBSV BLDG                | 60                     |                      | 0.00                     | 6,531.25                 | 185.00               | 2,218.00                | 2.83%                      | 17.38%                           | 0.57%                         | 0.02%                     |
| OBSV GATE                | 0                      |                      | 0.00                     | 6,531.25                 | 3.00                 | 0.00                    | 0.05%                      | 0%                               | 0%                            | 0%                        |
| OC 102                   | 5                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC 112                   | 91                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC 129                   | 20                     |                      | 0.00                     | 6,531.25                 | 2.00                 | 0.00                    | 0.03%                      | 0%                               | 0%                            | 0%                        |
| OC A                     | 44                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC A/B                   | 88                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC ABC                   | 132                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC B                     | 44                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC B/C                   | 88                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC BACK DOOR (NO SPACES) | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC BLDG (NO SPACES)      | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC C                     | 44                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OC LOBBY                 | 86                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OFF CAMPUS               | 9999999                |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| ONLINE CLASS             | 9999999                |                      | 0.00                     | 6,531.25                 | 250.25               | 3,902.00                | 3.83%                      | 0%                               | 0%                            | 0%                        |
| OPEN TO PUBLIC           | 9999999                |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| OSTERLIN TESTING SITE A  | 25                     | 0                    | 0.00                     | 6,531.25                 | 51.58                | 0.00                    | 0.79%                      | 0%                               | 0%                            | 0%                        |
| OSTERLIN TESTING SITE B  | 25                     | 0                    | 0.00                     | 6,531.25                 | 51.58                | 0.00                    | 0.79%                      | 0%                               | 0%                            | 0%                        |
| Off Site Catering        | 0                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| P 100                    | 90                     |                      | 261.00                   | 6,270.25                 | 385.58               | 2,190.00                | 6.15%                      | 2.01%                            | 0.39%                         | 0.02%                     |
| P 100N                   | 50                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |

# Location Utilization Summary

|                              | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|------------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| P 107                        | 5                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| P 120                        | 40                     |                      | 261.00                   | 6,270.25                 | 185.50               | 4,696.00                | 2.96%                      | 32.5%                            | 1.87%                         | 0.06%                     |
| P 202                        | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| P 206                        | 30                     |                      | 261.00                   | 6,270.25                 | 122.00               | 1,956.00                | 1.95%                      | 26.67%                           | 1.04%                         | 0.02%                     |
| P 207 (MEDIA SERVICES)       | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| P BUILDING                   | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| P LOBBY                      | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| P SHOWER ROOMS               | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PHG GYM                      | 500                    |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PRESIDENT'S CONFERENCE ROOM  | 5                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PRESIDENT'S OFFICE           | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS - HALL OF TECHNOLOGY      | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 101/103                   | 78                     |                      | 0.00                     | 6,531.25                 | 292.50               | 3,905.00                | 4.48%                      | 10.58%                           | 0.77%                         | 0.03%                     |
| PS 104B                      | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 105 (NOT RENTABLE)        | 12                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 106                       | 16                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 106K SIMPLY-TO-GO CAFE    | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 107                       | 16                     |                      | 0.00                     | 6,531.25                 | 617.00               | 6,914.00                | 9.45%                      | 54.91%                           | 6.62%                         | 0.63%                     |
| PS 110                       | 12                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 112 - Aviation Simulators | 32                     |                      | 252.50                   | 6,278.75                 | 321.58               | 4,129.67                | 5.12%                      | 46.88%                           | 2.06%                         | 0.11%                     |
| PS 114                       | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 115 - MMTC-NL             | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 151                       | 22                     |                      | 0.00                     | 6,531.25                 | 406.50               | 2,720.00                | 6.22%                      | 29.55%                           | 1.89%                         | 0.12%                     |
| PS 151C                      | 20                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 151D                      | 20                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 151E                      | 20                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 153                       | 12                     |                      | 0.00                     | 6,531.25                 | 120.00               | 900.00                  | 1.84%                      | 62.5%                            | 1.15%                         | 0.02%                     |
| PS 154 (RESOURCE ROOM)       | 6                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 155                       | 24                     |                      | 0.00                     | 6,531.25                 | 862.50               | 6,176.00                | 13.21%                     | 29.81%                           | 3.94%                         | 0.52%                     |
| PS 157                       | 96                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 157A                      | 16                     |                      | 0.00                     | 6,531.25                 | 244.00               | 1,480.00                | 3.74%                      | 31.25%                           | 1.42%                         | 0.05%                     |
| PS 157B                      | 16                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 157C                      | 7                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |

# Location Utilization Summary

|                           | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|---------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| PS 1ST FLOOR COMMONS      | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 201                    | 24                     |                      | 0.00                     | 6,531.25                 | 239.92               | 3,212.83                | 3.67%                      | 60%                              | 2.05%                         | 0.08%                     |
| PS 203                    | 24                     |                      | 0.00                     | 6,531.25                 | 395.50               | 3,560.00                | 6.06%                      | 25%                              | 2.27%                         | 0.14%                     |
| PS 204                    | 19                     |                      | 0.00                     | 6,531.25                 | 153.00               | 6,270.00                | 2.34%                      | 107.89%                          | 5.05%                         | 0.12%                     |
| PS 204 B - RESOURCE ROOM  | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 205                    | 24                     |                      | 0.00                     | 6,531.25                 | 176.00               | 1,580.00                | 2.69%                      | 37.5%                            | 1.01%                         | 0.03%                     |
| PS 206                    | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 206A                   | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 216                    | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 217/219                | 20                     |                      | 0.00                     | 6,531.25                 | 416.17               | 5,042.50                | 6.37%                      | 32.31%                           | 3.86%                         | 0.25%                     |
| PS 218                    | 16                     |                      | 0.00                     | 6,531.25                 | 91.50                | 823.50                  | 1.4%                       | 56.25%                           | 0.79%                         | 0.01%                     |
| PS 220                    | 30                     |                      | 0.00                     | 6,531.25                 | 231.50               | 2,572.00                | 3.54%                      | 35.33%                           | 1.31%                         | 0.05%                     |
| PS 222                    | 24                     |                      | 0.00                     | 6,531.25                 | 60.00                | 1,020.00                | 0.92%                      | 70.83%                           | 0.65%                         | 0.01%                     |
| PS 222/224                | 56                     |                      | 0.00                     | 6,531.25                 | 574.33               | 9,105.75                | 8.79%                      | 32.29%                           | 2.49%                         | 0.22%                     |
| PS 224                    | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 225                    | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 226                    | 24                     |                      | 0.00                     | 6,531.25                 | 282.50               | 2,539.00                | 4.33%                      | 34.52%                           | 1.62%                         | 0.07%                     |
| PS 227                    | 14                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS 2ND FLOOR COMMONS      | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS AIRPORT SIDE PATIO     | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS BLDG (NO SPACES)       | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS BUILDING               | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS EAST OFFICE WING       | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS NORTH OFFICE WING      | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS RECEPTION LOBBY        | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| PS SOLAR TRAILER          | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SBHS SBHS                 | 20                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH FIRST LEVEL WEST LOBBY | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH 09                     | 24                     |                      | 0.00                     | 6,531.25                 | 82.50                | 1,320.00                | 1.26%                      | 66.67%                           | 0.84%                         | 0.01%                     |
| SH 101                    | 40                     |                      | 0.00                     | 6,531.25                 | 348.33               | 7,209.50                | 5.33%                      | 52.25%                           | 2.76%                         | 0.15%                     |
| SH 102                    | 40                     |                      | 0.00                     | 6,531.25                 | 210.75               | 3,927.50                | 3.23%                      | 45%                              | 1.5%                          | 0.05%                     |
| SH 103                    | 24                     |                      | 24.75                    | 6,506.50                 | 146.33               | 2,713.33                | 2.25%                      | 75%                              | 1.74%                         | 0.04%                     |
| SH 103/105                | 64                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |

# Location Utilization Summary

|   | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|---|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| SH 104                                  | 32                     |                      | 0.00                     | 6,531.25                 | 367.75               | 7,045.50                | 5.63%                      | 59.82%                           | 3.37%                         | 0.19%                     |
| SH 105                                  | 40                     |                      | 0.00                     | 6,531.25                 | 335.50               | 6,100.00                | 5.14%                      | 43.6%                            | 2.33%                         | 0.12%                     |
| SH 106                                  | 32                     |                      | 0.00                     | 6,531.25                 | 96.00                | 1,909.50                | 1.47%                      | 59.58%                           | 0.91%                         | 0.01%                     |
| SH 107 - FACULTY & STAFF BREAKROOM      | 10                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH 109                                  | 120                    |                      | 0.00                     | 6,531.25                 | 21.00                | 1,519.00                | 0.32%                      | 22.92%                           | 0.19%                         | 0%                        |
| SH 113                                  | 40                     |                      | 0.00                     | 6,531.25                 | 386.50               | 5,765.50                | 5.92%                      | 34.17%                           | 2.21%                         | 0.13%                     |
| SH 13-The Neurodiversity Support Center | 10                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH 15                                   | 24                     |                      | 0.00                     | 6,531.25                 | 60.00                | 1,200.00                | 0.92%                      | 83.33%                           | 0.77%                         | 0.01%                     |
| SH 19                                   | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH 20                                   | 24                     |                      | 0.00                     | 6,531.25                 | 20.00                | 0.00                    | 0.31%                      | 0%                               | 0%                            | 0%                        |
| SH 20/22                                | 60                     |                      | 0.00                     | 6,531.25                 | 911.50               | 6,910.00                | 13.96%                     | 11.23%                           | 1.76%                         | 0.25%                     |
| SH 202                                  | 40                     |                      | 0.00                     | 6,531.25                 | 658.25               | 12,200.00               | 10.08%                     | 44.29%                           | 4.67%                         | 0.47%                     |
| SH 204                                  | 28                     |                      | 0.00                     | 6,531.25                 | 481.40               | 8,669.90                | 7.37%                      | 63.93%                           | 4.74%                         | 0.35%                     |
| SH 205                                  | 24                     |                      | 0.00                     | 6,531.25                 | 503.83               | 8,479.17                | 7.71%                      | 70.45%                           | 5.41%                         | 0.42%                     |
| SH 206                                  | 25                     |                      | 0.00                     | 6,531.25                 | 62.00                | 1,350.00                | 0.95%                      | 74%                              | 0.83%                         | 0.01%                     |
| SH 207                                  | 32                     |                      | 0.00                     | 6,531.25                 | 634.30               | 10,916.60               | 9.71%                      | 52.86%                           | 5.22%                         | 0.51%                     |
| SH 209                                  | 32                     |                      | 0.00                     | 6,531.25                 | 606.00               | 11,678.00               | 9.28%                      | 59.94%                           | 5.59%                         | 0.52%                     |
| SH 215 - FACULTY & STAFF BREAK ROOM     | 10                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH 217                                  | 77                     |                      | 0.00                     | 6,531.25                 | 184.00               | 3,180.00                | 2.82%                      | 17.21%                           | 0.63%                         | 0.02%                     |
| SH 218                                  | 23                     |                      | 0.00                     | 6,531.25                 | 63.00                | 0.00                    | 0.96%                      | 0%                               | 0%                            | 0%                        |
| SH 22                                   | 32                     |                      | 0.00                     | 6,531.25                 | 10.00                | 0.00                    | 0.15%                      | 0%                               | 0%                            | 0%                        |
| SH 221 - WRITING & READING CNTR SD 10   | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH 23 - WHITE PINE PRESS OFFICE         | 10                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH 28 - NMC MAGAZINE                    | 5                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH 30                                   | 32                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH 32                                   | 32                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH BLDG (NO SPACES)                     | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH FIRST LEVEL EAST LOBBY               | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| SH SECOND LEVEL LOBBY                   | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| STUDENT SERVICES CONFERENCE ROOM        | 10                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| T 51 - TECH HELP DESK                   | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| T 53 - MATH LAB                         | 7                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TANIS BUILDING (NO SPACES)              | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |

# Location Utilization Summary

|                          | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|--------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| TC GOLF AND COUNTRY CLUB | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TC OPERA HOUSE           | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TCAPS                    | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TCCHS ROOM               | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TCWSH ROOM               | 30                     |                      | 0.00                     | 6,531.25                 | 181.30               | 2,440.80                | 2.78%                      | 45.56%                           | 1.25%                         | 0.03%                     |
| TECHNOLOGY HELP DESK     | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 01                 | 6                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 02                 | 6                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 03                 | 4                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 04                 | 4                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 08                 | 14                     | 0                    | 0.00                     | 6,531.25                 | 33.50                | 264.00                  | 0.51%                      | 15.71%                           | 0.29%                         | 0%                        |
| TJNIC 09                 | 3                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 104                | 24                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 104/105            | 48                     | 0                    | 0.00                     | 6,531.25                 | 381.67               | 7,863.50                | 5.84%                      | 25.6%                            | 2.51%                         | 0.15%                     |
| TJNIC 105                | 24                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 106                | 36                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 106/107            | 76                     | 0                    | 0.00                     | 6,531.25                 | 364.00               | 14,024.00               | 5.57%                      | 25.77%                           | 2.83%                         | 0.16%                     |
| TJNIC 107                | 40                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 116                | 4                      | 0                    | 0.00                     | 6,531.25                 | 20.50                | 0.00                    | 0.31%                      | 0%                               | 0%                            | 0%                        |
| TJNIC 117                | 4                      | 0                    | 0.00                     | 6,531.25                 | 14.00                | 0.00                    | 0.21%                      | 0%                               | 0%                            | 0%                        |
| TJNIC 118                | 4                      | 0                    | 0.00                     | 6,531.25                 | 7.00                 | 0.00                    | 0.11%                      | 0%                               | 0%                            | 0%                        |
| TJNIC 123                | 24                     | 0                    | 0.00                     | 6,531.25                 | 75.17                | 0.00                    | 1.15%                      | 0%                               | 0%                            | 0%                        |
| TJNIC 124                | 2                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 125                | 2                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC 14                 | 30                     | 0                    | 0.00                     | 6,531.25                 | 189.50               | 3,162.00                | 2.9%                       | 46%                              | 1.61%                         | 0.05%                     |
| TJNIC 15                 | 30                     | 0                    | 0.00                     | 6,531.25                 | 84.50                | 1,020.00                | 1.29%                      | 11.33%                           | 0.52%                         | 0.01%                     |
| TJNIC 203                | 0                      | 0                    | 0.00                     | 6,531.25                 | 9.00                 | 0.00                    | 0.14%                      | 0%                               | 0%                            | 0%                        |
| TJNIC 207                | 4                      | 0                    | 0.00                     | 6,531.25                 | 14.00                | 0.00                    | 0.21%                      | 0%                               | 0%                            | 0%                        |
| TJNIC 208                | 2                      | 0                    | 0.00                     | 6,531.25                 | 14.00                | 0.00                    | 0.21%                      | 0%                               | 0%                            | 0%                        |
| TJNIC 209                | 4                      | 0                    | 0.00                     | 6,531.25                 | 14.00                | 0.00                    | 0.21%                      | 0%                               | 0%                            | 0%                        |
| TJNIC 35                 | 10                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC Building           | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC Catering           | 0                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| TJNIC Library            | 0                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |



# Location Utilization Summary

|                 | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|-----------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| TJNIC Lobby     | 0                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 01           | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 05           | 42                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 06           | 22                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 07           | 44                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 08           | 13                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 09           | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 103 (ZONTA)  | 8                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 105 (ZONTA)  | 8                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 106          | 16                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 11           | 14                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 12           | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 14           | 28                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 14/16        | 48                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 16           | 28                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 17           | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 18           | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 202-F (GRAY) | 15                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 204          | 36                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 205          | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 206          | 9                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 207          | 40                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 208          | 20                     |                      | 6,531.00                 | 0.25                     | 31.50                | 472.50                  | 12600%                     | 75%                              | 9450%                         | 1190700%                  |
| UC 209          | 32                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 211          | 12                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 212          | 32                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 213          | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 214          | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 215          | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 215/217      | 48                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 216          | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 217          | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 218          | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC 219          | 24                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |

# Location Utilization Summary

|                                 | (A)<br>Max<br>Capacity | (B)<br>Fill<br>Ratio | (C)<br>Blackout<br>Hours | (D)<br>Possible<br>Hours | (E)<br>Hours<br>Used | (F)<br>Contact<br>Hours | (G)<br>Time<br>Utilization | (H)<br>Class Seat<br>Utilization | (I)<br>Station<br>Utilization | (J)<br>Net<br>Utilization |
|---------------------------------|------------------------|----------------------|--------------------------|--------------------------|----------------------|-------------------------|----------------------------|----------------------------------|-------------------------------|---------------------------|
| UC BLDG (NO SPACES)             | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC Basement Common Area Kitchen | 10                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC CAFE                         | 14                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC FIRST LEVEL SOUTH LOBBY      | 6                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC GVSU Lower Level             | 90                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC LOWER LEVEL SOUTH LOBBY      | 19                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC OFF CAMPUS                   | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC PARTNER OFFICE               | 0                      |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| UC PATIO                        | 35                     |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| VIRTUAL MEETING                 | 999999                 |                      |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| West Hall Catering              | 0                      | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |
| Z_P 151C                        | 20                     | 0                    |                          | No events found          |                      |                         |                            |                                  |                               |                           |

## Column A & B

Maximum Capacity and Fill Ratio are values that may be provided for a location. The location utilization computations cannot be made where Maximum Capacity has not been specified.

## Column C

Blackout Hours is the total hours of all blackout dates defined for a location for this report time period.

## Column D

Possible Hours is calculated by taking the total possible hours for the report period (K) defined by the user report parameters and subtracting the total blackout hours for the location during that same time period.

## Column E

Hours Used is the total number of hours for all occurrences assigned to this location during the report period.

## Column F

Contact Hours is the product of (column I), Total Hours Used, and the Selected Head Count for each reservation in the report period.

## Column G

Time Utilization is the percentage of hours a location is used during the report period. This is the quotient of (column E), Hours Used, divided by (column D), Possible Hours. This value is expressed as a percentage.

## Column H

Class Seat Utilization is the average percentage of seats used for each reservation compared to the Maximum Capacity of the location. Class Seat Utilization is calculated by taking the Selected Head Count, divided by (column A), Maximum Capacity, multiplied by 100. This value is expressed as a percentage.

## Column I

Station Utilization is the percentage of total contact hours compared to the total possible contact hours for the location during the report period. The total possible contact hours is the (column A), Maximum Capacity, multiplied by (column D), Total Possible Hours. This value is expressed as a percentage.

## Column J

Net Utilization is the product of (column G), Time Utilization, and (column I), Station Utilization. This value is expressed as a percentage.

## Column K

The Total Hours per Report Period is computed from the date and time range entered when the report was printed.

# **Appendix H**

## **Replacement Value — Insurance Appraisal for all Buildings**

APPRAISAL OF

NORTHWESTERN MICHIGAN COLLEGE

1701 EAST FRONT STREET

TRAVERSE CITY, MICHIGAN 49686

# R.A. Schettler, Inc.

24634 W. FIVE MILE RD.  
REDFORD, MI. 48239

Certified  
Appraisal Service

(248) 705-5801

Industrial - Commercial

RAS

Residential - Institutional

NOVEMBER 1, 2023

ASSOCIATED RISK MANAGEMENT, INC.  
39111 W. SIX MILE ROAD  
LIVONIA, MICHIGAN 48152

TO WHOM IT MAY CONCERN:

WE SUBMIT HERewith OUR CERTIFIED APPRAISAL OF ASSETS BELONGING TO NORTHWESTERN MICHIGAN COLLEGE, 1701 EAST FRONT, TRAVERSE CITY, MICHIGAN. THIS APPRAISAL INCLUDES BUILDINGS ONLY.

THIS APPRAISAL IS ARRANGED UNDER SEVERAL PROPERTY CLASSIFICATIONS AND FURNISHES AN UNBIASED STATEMENT OF VALUES.

THE "REPLACEMENT VALUE NEW" THE COST THAT WOULD BE INCURRED IN ACQUIRING AN EQUALLY DESIRABLE SUBSTITUTE FOR PROPERTY, WHICH IS DETERMINED IN ACCORDANCE WITH MARKET PRICES PREVAILING AT THE DATE OF THIS APPRAISAL AND REPRESENTS THE COST TO REPLACE NEW, THE PROPERTY IN LIKE KIND.

THE "SOUND OR INSURABLE VALUE" INDICATING PRESENT PHYSICAL SOUND VALUES OF THE PROPERTY OF AN OPERATING ENTERPRISE BASED UPON THE COST OF REPRODUCTION NEW, LESS AN ALLOWANCE FOR ACCRUED DEPRECIATION RESULTING FROM ITS AGE, CONDITION AND DEGREE OF OBSOLESCENCE.

A SUMMARY IMMEDIATELY FOLLOWING THIS LETTER SHOWS THE REPLACEMENT VALUE NEW AND SOUND INSURABLE VALUES SEGREGATED ACCORDING TO ACCOUNTS ESTABLISHED BY OUR COMPANY.

IN ORDER THAT YOU MAY FULLY UNDERSTAND THE SERVICES WE HAVE RENDERED, WE PRESENT THE IMPORTANT POINTS AS FOLLOWS:

FIRST: ALL PHYSICAL CHANGES OF THEIR PROPERTY (ADDITIONS, REMOVALS, REPLACEMENTS, ALTERATIONS AND CHANGES IN LOCATION) AS FURNISHED BY THEIR MANAGERIAL STAFF AND/OR RECORDS HAVE BEEN INCORPORATED IN THE APPRAISAL.

SECOND: WE HAVE CHECKED AND VERIFIED BY PERSONAL INVESTIGATION ALL CHANGES SUBMITTED BY THEIR STAFF.

A RECOGNIZED AUTHORITY SINCE 1935

THIRD: WITH THE INFORMATION OBTAINED FROM THEIR RECORDS,  
WE HAVE DEDUCTED IN DOLLARS ALL RETIREMENTS AND  
ABANDONMENTS THAT HAVE TRANSPIRED SINCE THE DATE  
OF THEIR LAST APPRAISAL.

ECONOMIC CONDITIONS AFFECTING THE CONSTRUCTION, EQUIPMENT AND LABOR  
MARKETS, VALUES SHOWN ARE SUBJECT TO ADJUSTMENT, AS REQUIRED, AFTER  
THE DATE SPECIFIED IN CERTIFICATES.

WE HAVE NOT EXAMINED THE LEGAL TITLES OF PROPERTY; THEREFORE WE DO  
NOT ASSUME RESPONSIBILITY REGARDING THE OWNERSHIP OF PROPERTY IN  
THIS APPRAISAL.

VERY TRULY YOURS,

R. A. SCHETTLER, INC.

RAS/mbj

# R.A. Schettler, Inc.

24634 W. FIVE MILE RD.  
REDFORD, MI. 48239

Certified  
Appraisal Service

(248) 705-5801

Industrial - Commercial

RAS

Residential - Institutional

NOVEMBER 1, 2023

NORTHWESTERN MICHIGAN COLLEGE  
1701 EAST FRONT STREET  
TRAVERSE CITY, MICHIGAN 49686

TO WHOM IT MAY CONCERN:

WE SUBMIT HERewith OUR CERTIFIED APPRAISAL OF ASSETS BELONGING TO NORTHWESTERN MICHIGAN COLLEGE, 1701 EAST FRONT, TRAVERSE CITY, MICHIGAN. THIS APPRAISAL INCLUDES BUILDINGS ONLY.

THIS APPRAISAL IS ARRANGED UNDER SEVERAL PROPERTY CLASSIFICATIONS AND FURNISHES AN UNBIASED STATEMENT OF VALUES.

THE "REPLACEMENT VALUE NEW" THE COST THAT WOULD BE INCURRED IN ACQUIRING AN EQUALLY DESIRABLE SUBSTITUTE FOR PROPERTY, WHICH IS DETERMINED IN ACCORDANCE WITH MARKET PRICES PREVAILING AT THE DATE OF THIS APPRAISAL AND REPRESENTS THE COST TO REPLACE NEW, THE PROPERTY IN LIKE KIND.

THE "SOUND OR INSURABLE VALUE" INDICATING PRESENT PHYSICAL SOUND VALUES OF THE PROPERTY OF AN OPERATING ENTERPRISE BASED UPON THE COST OF REPRODUCTION NEW, LESS AN ALLOWANCE FOR ACCRUED DEPRECIATION RESULTING FROM ITS AGE, CONDITION AND DEGREE OF OBSOLESCENCE.

A SUMMARY IMMEDIATELY FOLLOWING THIS LETTER SHOWS THE REPLACEMENT VALUE NEW AND SOUND INSURABLE VALUES SEGREGATED ACCORDING TO ACCOUNTS ESTABLISHED BY OUR COMPANY.

IN ORDER THAT YOU MAY FULLY UNDERSTAND THE SERVICES WE HAVE RENDERED, WE PRESENT THE IMPORTANT POINTS AS FOLLOWS:

FIRST: ALL PHYSICAL CHANGES OF YOUR PROPERTY (ADDITIONS, REMOVALS, REPLACEMENTS, ALTERATIONS AND CHANGES IN LOCATION) AS FURNISHED BY YOUR MANAGERIAL STAFF AND/OR RECORDS HAVE BEEN INCORPORATED IN THE APPRAISAL.

SECOND: WE HAVE CHECKED AND VERIFIED BY PERSONAL INVESTIGATION ALL CHANGES SUBMITTED BY YOUR STAFF.

A RECOGNIZED AUTHORITY SINCE 1935



THIRD: WITH THE INFORMATION OBTAINED FROM YOUR RECORDS,  
WE HAVE DEDUCTED IN DOLLARS ALL RETIREMENTS AND  
ABANDONMENTS THAT HAVE TRANSPIRED SINCE THE DATE OF  
YOUR LAST APPRAISAL.

ECONOMIC CONDITIONS AFFECTING THE CONSTRUCTION, EQUIPMENT AND LABOR  
MARKETS, VALUES SHOWN ARE SUBJECT TO ADJUSTMENT, AS REQUIRED, AFTER  
THE DATE SPECIFIED IN CERTIFICATES.

WE HAVE NOT EXAMINED THE LEGAL TITLES OF PROPERTY; THEREFORE WE DO  
NOT ASSUME RESPONSIBILITY REGARDING THE OWNERSHIP OF PROPERTY IN  
THIS APPRAISAL.

VERY TRULY YOURS,

R. A. SCHETTLER, INC.

RAS/MBJ

R.A SCHETTLER, INC.  
REGISTERED APPRAISERS

-CERTIFY-

THAT ON THE DATE GIVEN IN THIS CERTIFICATE, THE PROPERTY OF

NORTHWESTERN MICHIGAN COLLEGE

LOCATED AT: 1701 EAST FRONT STREET

TRAVERSE CITY, MICHIGAN 49686

WAS WELL AND REASONABLY WORTH:

TWO HUNDRED NINTY-FOUR MILLION,  
THIRTY-FOUR THOUSAND, TWO HUNDRED DOLLARS.

ON THE BASIS OF ITS REPLACEMENT VALUE NEW

---

DISTRIBUTION OF VALUES ARE AS FOLLOWS:

REAL ESTATE - BUILDINGS. . . . . \$294,034,200.00

DATE: NOVEMBER FIRST TWO THOUSAND TWENTY-THREE R.A. SCHETTLER, INC.

PROJECT NO: 2186 BY \_\_\_\_\_

R.A SCHETTLER, INC.  
REGISTERED APPRAISERS

-CERTIFY-

THAT ON THE DATE GIVEN IN THIS CERTIFICATE, THE PROPERTY OF

NORTHWESTERN MICHIGAN COLLEGE

LOCATED AT: 1701 EAST FRONT STREET

TRAVERSE CITY, MICHIGAN 49686

WAS WELL AND REASONABLY WORTH:

TWO HUNDRED THREE MILLION, NINE HUNDRED THOUSAND,  
SIX HUNDRED DOLLARS

ON THE BASIS OF ITS SOUND VALUATION

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DISTRIBUTION OF VALUES ARE AS FOLLOWS:

REAL ESTATE - BUILDINGS. . . . . \$203,900,600.00  
\_\_\_\_\_

DATE: NOVEMBER FIRST TWO THOUSAND TWENTY-THREE R.A. SCHETTLER, INC.

PROJECT NO: 2186 BY \_\_\_\_\_

## R.A. SCHETTLER, INC

## SUMMATION

Asset Acct: NORTHWESTERN MICHIGAN COLLEGE  
 REAL ESTATE - BUILDING -

As of 11/1/23

| Summary<br>by:                   | Replacement<br>Value New | Sound or<br>Depr. Value |
|----------------------------------|--------------------------|-------------------------|
| TANIS/BIEDERMAN/HEALTH & SCIENCE | 43,641,800.00            | 30,985,700.00           |
| APARTMENT A                      | 2,554,000.00             | 1,251,500.00            |
| APARTMENT B                      | 2,554,000.00             | 1,251,500.00            |
| APARTMENT C                      | 2,554,000.00             | 1,251,500.00            |
| EASTERN AVENUE STORAGE BUILDING  | 82,300.00                | 58,400.00               |
| APPEL BIOLOGY LABORATORY         | 218,400.00               | 76,400.00               |
| AVIATION                         | 3,432,200.00             | 1,819,100.00            |
| BECKETT                          | 11,676,900.00            | 8,757,700.00            |
| FOUNDERS HALL                    | 1,677,900.00             | 1,057,100.00            |
| EAST HALL                        | 17,130,300.00            | 9,421,700.00            |
| FINE ARTS                        | 6,913,000.00             | 4,078,700.00            |
| OSTERLIN LIBRARY                 | 17,251,600.00            | 9,315,900.00            |
| MUSEUM/AUDITORIUM                | 24,735,100.00            | 18,798,700.00           |
| OBSERVATORY                      | 578,500.00               | 335,600.00              |
| OLESON CENTER                    | 3,592,700.00             | 2,550,800.00            |
| PHYSICAL EDUCATION               | 8,037,300.00             | 3,616,800.00            |
| POWERHOUSE                       | 3,032,500.00             | 1,243,300.00            |
| SCHOLARS HALL                    | 22,111,000.00            | 13,282,200.00           |
| WEST HALL INNOVATION<br>CENTER   | 24,945,200.00            | 21,951,800.00           |
| UNIVERSITY CENTER CAMPUS         | 19,430,000.00            | 12,823,800.00           |
| UTILITY TUNNELS                  | 2,741,500.00             | 1,206,300.00            |
| PARSEN-STULLEN M-TEC             | 21,893,300.00            | 16,857,800.00           |
| MAINTENANCE                      | 1,457,900.00             | 1,137,200.00            |
| LANDSCAPE BIN                    | 43,900.00                | 34,200.00               |

CONTINUED.....

## R.A. SCHETTLER, INC

## SUMMATION

Asset Acct: NORTHWESTERN MICHIGAN COLLEGE  
REAL ESTATE - BUILDING -

As of 11/1/23

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| Summary<br>by:                | Replacement<br>Value New | Sound or<br>Depr. Value |
|-------------------------------|--------------------------|-------------------------|
| AUTOMOTIVE SERVICE TECHNOLOGY | 4,679,500.00             | 2,854,500.00            |
| GREAT LAKES CAMPUS            | 31,383,800.00            | 25,107,000.00           |
| AERO PARK LAB                 | 5,905,400.00             | 3,484,200.00            |
| NORTH HALL                    | 9,780,200.00             | 9,291,200.00            |
| <hr/>                         |                          |                         |
| GRAND TOTAL                   | 294,034,200.00           | 203,900,600.00          |

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R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: TANIS/BIEDERMAN

KIND OF BUILDING: CLASS C

NO. OF STORIES: TWO AND THREE

OCCUPANCY - OFFICES AND CLASSROOMS

|                    |                    |
|--------------------|--------------------|
| SIZE - FIRST FLOOR | 17,707 SQUARE FEET |
| SECOND FLOOR       | 17,907 SQUARE FEET |
| THIRD FLOOR        | 8,718 SQUARE FEET  |
| TOTAL SQUARE FEET  | 44,392             |

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL

FLOORS - CONCRETE ON GROUND, PRECAST PRESTRESSED CONCRETE PLANKS,  
3" CONCRETE TOPPING, CONCRETE JOISTS, CONCRETE SLAB

FLOOR COVER - CARPET, OFFICES, CLASSROOMS, CORRIDOR  
BRICK, LOBBY  
CERAMIC TILE, RESTROOMS  
TERRAZZO, STAIRCASES

ROOF STRUCTURE - PRECAST CONCRETE PLANK, SKYLIGHT 20' X 20';  
CONCRETE JOISTS PRECAST TEES, CONCRETE SLAB

ROOF COVER - BUILT-UP COMPOSITION, RIGID INSULATION

CEILINGS - SUSPENDED ACOUSTICAL LAY-IN OFFICES AND CLASSROOMS;  
- GYPSUM BOARD, PAINTED RESTROOMS

INTERIOR CONSTRUCTION - METAL FRAME PARTITIONS;  
- 6" CONCRETE BLOCK PARTITIONS;  
- 8" CONCRETE BLOCK PARTITIONS

BUILT-IN FIXTURES -

- MONTGOMERY PASSENGER ELEVATOR, 3 STOP, 2,500 LB. CAPACITY
- 6 - LAMINATE TOP STUDY TABLES, 24' 10 SWIVEL SEATS EACH
- 6 - LAMINATE TOP TABLES, 24' WITH 5 SWIVEL SEATS
- RECEPTION DESK, LAMINATE
- 17 - WALL CABINETS, LAMINATE, 24" WIDE
- 3 - WALL CABINETS, LAMINATE, 12" WIDE
- 3 - BASE CABINETS, LAMINATE, SOLID SURFACE TOP, 24" WIDE
- 2 - BASE CABINETS, LAMINATE, LAMINATE TOP, 24"
- 2 - BASE CABINETS, LAMINATE, SOLID SURFACE TOP, 12" WIDE
- 2 - BASE CABINETS, LAMINATE, SOLID SURFACE TOP, 18" WIDE

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

---

TANIS/BIEDERMAN: continued

MECHANICAL EQUIPMENT:

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 14 - WATER CLOSETS
- 16 - LAVATORIES
- 6 - URINALS
- 2 - SANITARY SINKS
- 3 - DRINKING FOUNTAINS
- 1 - WATER HEATER, ELECTRIC, 200 GALLON
- 1 - HOSPITAL SINK, STAINLESS STEEL

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES;  
DISTRIBUTION PANEL, TRANSFORMERS

- 1 - 500 KVA TRANSFORMER

HEATING AND AIR CONDITIONING -

- STEAM FROM POWERHOUSE
- McQUAY MODEL MSL164BH AIR HANDLING UNIT
- McQUAY MODEL WHR080B2 PACKAGED WATER CHILLER, 70-TON
- HEATING PUMPS AND CHILLED WATER PUMPS AS REQUIRED
- LIEBERT COMPUTER ROOM CONDENSING UNIT
- KOLDWAVE AIR CONDITIONING UNIT
- MITSUBISHI PKG-30F WALL MOUNT AIR CONDITIONER
- MITSUBISHI CONDENSING UNIT
- BRYANT MODEL 580FEV151224AA PACKAGED GAS HEAT, 12 1/2 TON  
COOLING UNIT, #4907G30305
- CARRIER MODEL 48TME012-611 PACKAGED GAS HEAT, 12 TON  
COOLING UNIT, #1709G10902
- ABB VARIABLE FREQUENCY DRIVES

EXTERIOR WALLS - 14" CONCRETE  
- FACE BRICK BLOCK BACK-UP, 12"  
- DRYVIT, BLOCK BACK-UP, 8"  
- 12" CONCRETE  
- CURTAIN WALL

MISCELLANEOUS:

- SPRINKLERS THROUGHOUT
- COMPUTER ROOM FLOOR
- NOTIFIER
- FIRE ALARM SYSTEM
- 1 - AUTOMATIC DOOR OPENER
- ACCESS CONTROL SYSTEM
- 3 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: TANIS/ADMINISTRATION 1958; RENOVATED 1997

BIEDERMAN/HEALTH EDUCATION 1976; RENOVATED 2002



R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

---

NAME OF BUILDING: HEALTH AND SCIENCE

KIND OF BUILDING: CLASS C

NO. OF STORIES: TWO WITH PARTIAL BASEMENT, PENTHOUSE

OCCUPANCY: SCIENCE

SIZE: BASEMENT - 4,013 SQUARE FEET  
1ST FLOOR - 28,195 SQUARE FEET  
2ND FLOOR - 22,821 SQUARE FEET  
PENTHOUSE - 6,098 SQUARE FEET

TOTAL SQUARE FEET = 61,127

FOUNDATION: CONCRETE

SUPERSTRUCTURE

FRAME - STEEL

FLOORS - CONCRETE ON GROUND; CONCRETE COMPOSITE ON METAL DECK

FLOOR COVERINGS - CARPET; LINOLEUM; PORCELAIN TILE  
CERAMIC TILE

ROOF STRUCTURE - STEEL, CONCRETE ON METAL DECK

ROOF COVER - EPDM ROOF MEMBRANE WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL TILE  
PERFORATED METAL TILE  
GYPSUM BOARD

INTERIOR CONSTRUCTION - MASONRY AND FRAME PARTITIONS

BUILT-IN FIXTURES -

- 4 - DENTAL DESKS, DOUBLE FACE, WOOD, 74" WIDE
- 3 - TALL CABINETS, WOOD, 18" WIDE
- 3 - TALL CABINETS, WOOD, 42" WIDE
- 1 - TALL CABINET, WOOD, 30" WIDE
- 28 - WALL CABINETS, WOOD, 36" WIDE
- 3 - WALL CABINETS, WOOD, 24" WIDE
- 2 - WALL CABINETS, WOOD, 12" WIDE
- 5 - WALL CABINETS, WOOD, 30" WIDE
- 55 - BASE CABINETS, WITH EPOXY RESIN TOP, WOOD, 36" WIDE
- 5 - BASE CABINETS, WITH EPOXY RESIN TOP, WOOD, 24" WIDE
- 16 - BASE CABINETS, WITH EPOXY RESIN TOP, WOOD, 18" WIDE

REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

HEALTH SCIENCE: continued

SUPERSTRUCTURE: continued

BUILT-IN FIXTURES - continued

- 2 - TALL CABINETS, WOOD, 48" WIDE
- 3 - TALL CABINETS, WOOD, 36" WIDE
- 7 - WALL CABINETS, WOOD, 24" WIDE
- 5 - WALL CABINETS, WOOD, 18" WIDE
- 5 - WALL CABINETS, WOOD, 48" WIDE
- 10 - WALL CABINETS, WOOD, 42" WIDE
- 23 - BASE CABINETS, WOOD WITH EPOXY RESIN TOP, 42" WIDE
- 19 - BASE CABINETS, WOOD, WITH EPOXY RESIN TOP, 21" WIDE
- 10 - BASE CABINETS, WOOD, EPOXY RESIN TOP, 48" WIDE
- 3 - BASE CABINETS, WOOD, EPOXY RESIN TOP, 15" WIDE
- 3 - BASE CABINETS, WOOD, EPOXY RESIN TOP, 12" WIDE
- 1 - BASE CABINET, WOOD, EPOXY RESIN TOP, 30" WIDE
- 6 - KNEE SPACE CABINET, WOOD, EPOXY RESIN TOP, 48" WIDE
- 1 - KNEE SPACE CABINET, WOOD, EPOXY RESIN TOP, 52" WIDE
- 12 - DESK, WOOD, EPOXY RESIN TOP, 45" WIDE
- 18 - LAMINATE BASE CABINETS, LAMINATE TOP, 36" WIDE
- 5 - LAMINATE BASE CABINETS, LAMINATE TOP, 18" WIDE
- 2 - LAMINATE BASE CABINETS, LAMINATE TOP, 30" WIDE
- BACKPACK HANGERS, WALL MOUNT
- 2 - ACCORDIAN PARTITIONS
- 2 - SENTINEL COIN OPERATED LOCKERS, 5-DOOR, 16 TIER
- 18 - FUME HOODS WITH CABINET BASE
- 10 - CORRIDOR BENCH SEATING UNITS, 20 LINEAR FEET EACH WITH 2 TABLES
- EMERGENCY EYE WASH

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 19 - WATER CLOSETS
- 17 - LAVATORY
- 6 - URINALS
- 2 - SANITARY SINKS
- 4 - DRINKING FOUNTAINS
- 1 - BATHTUB
- 1 - LOCHINVAR DOMESTIC HOT WATER TANK

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH NECESSARY WALL PLUGS AND SWITCH BOXES,

- PITTSWAY NOTIFIER FIRE ALARM SYSTEM
- CLOCK SYSTEM
- 3 - CONTROLLED POWER EMERGENCY LIGHTING CONTROLLER
- TELEPHONE, DATA, LAN AND FIBER OPTIC

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REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

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HEALTH SCIENCE continued

SUPERSTRUCTURE: continued

HEATING AND AIR CONDITIONING -

- STEAM FROM POWER HOUSE
- 1 - HAAKON AIRPAK AIR HANDLING UNIT, #01-638101R
- 1 - TRANE EXHAUST FAN, 30 HORSEPOWER MOTOR
- 2 - TRANE EXHAUST FANS, 25 HORSEPOWER MOTOR
- 7 - TRANE UNIT HEATERS
- PUMPS AS REQUIRED
- 1 - TRANE RAUCD104BL0320 D0010 ROOFTOP AIR CONDITIONING UNIT  
#C01M67625
- 1 - TRANE RAUCD104BL0320 D0010 ROOFTOP AIR CONDITIONING UNIT  
#C01M67624
- TRANE PROGRAM CONTROL MODULE
- DRISTEAM VAPOR LOGIC 2 HUMIDIFIER
- 65 - VARIABLE AIR VOLUME TERMINAL UNITS (VAV)

EXTERIOR WALLS -

- FACE BRICK, BLOCK BACKUP, 12"
- COMPOSITE METAL PANEL SYSTEM AT FASCIA AND SOFFIT
- 1" INSULATED BUTT GLAZING IN ANOD ALUMINUM FRAME, SPLAYED  
MULLION AND LAP SEAL GLAZING
- 1" INSULATED GLAZING IN ANOD ALUMINUM CURTAIN WALL SYSTEM
- COMPOSITE METAL PANEL SYSTEM IN ANOD ALUMINUM CURTAIN WALL SYSTEM
- SPANDREL GLAZING IN ANOD ALUMINUM CURTAIN WALL SYSTEM

MISCELLANEOUS:

- 1 - OTIS PASSENGER ELEVATOR, 4 STOP, #38832
- PREFABRICATED GREENHOUSE
- LIFELINE MEDICAL AIR SYSTEM WITH 2 HITACHI 7.5 HORSEPOWER AIR  
COMPRESSORS
- SNOWMELT SYSTEM WITH 3 HEATWAY 1574 UNITS
- SPRINKLERS THROUGHOUT
- ACCESS CONTROL SYSTEM
- 5 - CAMERA SECURITY SYSTEM

BUILT: 2002

QUALITY OF CONSTRUCTION: GOOD

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: APARTMENT A  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 93,100.00    |
| SUPERSTRUCTURE:                   |              |
| FLOORS                            | 199,000.00   |
| FLOOR COVERINGS                   | 181,300.00   |
| CEILINGS                          | 63,700.00    |
| ROOF STRUCTURE                    | 66,700.00    |
| ROOF COVER                        | 40,800.00    |
| INTERIOR CONSTRUCTION             | 600,600.00   |
| BUILT-IN FIXTURES                 | 69,300.00    |
| ELECTRICAL                        | 208,000.00   |
| PLUMBING                          | 202,700.00   |
| HEATING                           | 201,400.00   |
| MISCELLANEOUS CONSTRUCTION        | 54,000.00    |
| EXTERIOR WALLS                    | 409,500.00   |
| TOTAL LABOR AND MATERIALS         | 2,386,900.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%           |
| Replacement Value New             | 2,554,000.00 |
| Depreciation %                    | 51%          |
| Sound Valuation                   | 1,251,500.00 |



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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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APARTMENT A: continued

SUPERSTRUCTURE: continued

EXTERIOR WALLS - WOOD FRAME, FACE BRICK

MISCELLANEOUS:

8 - BALCONIES, WOOD CONSTRUCTION WITH RAILING

- FIRE ALARM SYSTEM

2 - AWNINGS, WOOD CONSTRUCTION, 10 X 16'

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1972

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: APARTMENT B  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 93,100.00    |
| SUPERSTRUCTURE:                   |              |
| FLOORS                            | 199,000.00   |
| FLOOR COVERINGS                   | 181,300.00   |
| CEILINGS                          | 60,500.00    |
| ROOF STRUCTURE                    | 66,700.00    |
| ROOF COVER                        | 40,800.00    |
| INTERIOR CONSTRUCTION             | 600,600.00   |
| BUILT-IN FIXTURES                 | 69,300.00    |
| ELECTRICAL                        | 208,000.00   |
| PLUMBING                          | 202,700.00   |
| HEATING                           | 201,400.00   |
| MISCELLANEOUS CONSTRUCTION        | 54,000.00    |
| EXTERIOR WALLS                    | 409,500.00   |
| TOTAL LABOR AND MATERIALS         | 2,386,900.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%           |
| Replacement Value New             | 2,554,000.00 |
| Depreciation %                    | 51%          |
| Sound Valuation                   | 1,251,500.00 |





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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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APARTMENT B: continued

SUPERSTRUCTURE: continued

EXTERIOR WALLS - WOOD FRAME, FACE BRICK

MISCELLANEOUS:

8 - BALCONIES, WOOD CONSTRUCTION WITH RAILING

- FIRE ALARM SYSTEM

2 - AWNINGS, WOOD CONSTRUCTION, 10 X 16'

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1972

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: APARTMENT C  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 93,100.00    |
| SUPERSTRUCTURE:                   |              |
| FLOORS                            | 199,000.00   |
| FLOOR COVERINGS                   | 181,300.00   |
| CEILINGS                          | 60,000.00    |
| ROOF STRUCTURE                    | 66,700.00    |
| ROOF COVER                        | 40,800.00    |
| INTERIOR CONSTRUCTION             | 600,600.00   |
| BUILT-IN FIXTURES                 | 69,300.00    |
| ELECTRICAL                        | 208,000.00   |
| PLUMBING                          | 202,700.00   |
| HEATING                           | 201,400.00   |
| MISCELLANEOUS CONSTRUCTION        | 54,000.00    |
| EXTERIOR WALLS                    | 409,500.00   |
| TOTAL LABOR AND MATERIALS         | 2,386,900.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%           |

|                       |              |
|-----------------------|--------------|
| Replacement Value New | 2,554,000.00 |
| Depreciation %        | 51%          |
| Sound Valuation       | 1,251,500.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: APARTMENT C

KIND OF BUILDING: CLASS D

NO. OF STORIES: THREE

OCCUPANCY: APARTMENTS

|      |           |         |             |
|------|-----------|---------|-------------|
| SIZE | 1ST FLOOR | - 4,133 | SQUARE FEET |
|      | 2ND FLOOR | - 4,133 | SQUARE FEET |
|      | 3RD FLOOR | - 4,133 | SQUARE FEET |

TOTAL SQUARE FEET 12,399

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FLOORS - WOOD JOISTS, WOOD DECK; CONCRETE ON GROUND

FLOOR COVERINGS - CARPET IN APARTMENTS AND CORRIDORS  
- VINYL TILE IN KITCHENS, BATHROOMS, LAUNDRY ROOM

ROOF STRUCTURE - WOOD TRUSS, WOOD DECK, HIP

ROOF COVER - SHINGLES, INSULATION

CEILINGS - GYPSUM BOARD

INTERIOR CONSTRUCTION - WOOD FRAME PARTITIONS

BUILT-IN FIXTURES - KITCHEN CABINETS WITH 2 COMPARTMENT SINK IN EACH  
- 36 COMPARTMENT MAILBOX

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:  
12 - WATER CLOSETS  
23 - LAVATORIES  
12 - BATH TUBS  
2 - WATER HEATERS, 75 GALLON

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES

HEATING AND AIR CONDITIONING -  
- PUMPS AS REQUIRED  
- 40-GALLON EXPANSION TANK  
- BASEBOARD THROUGHOUT  
1 - LOCHINVAR MODEL FTXL GAS FIRED BOILER

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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APARTMENT C: continued

SUPERSTRUCTURE: continued

EXTERIOR WALLS - WOOD FRAME, FACE BRICK

MISCELLANEOUS:

8 - BALCONIES, WOOD CONSTRUCTION WITH RAILING

- FIRE ALARM SYSTEM

2 - AWNINGS, WOOD CONSTRUCTION, 10 X 16'

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1972



R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: EASTERN AVENUE STORAGE BUILDING

QUALITY OF CONSTRUCTION: AVERAGE

SIZE           WIDTH 24', LENGTH 56', HEIGHT 8'/13'

TOTAL SQUARE FEET = 1,344

KIND OF BUILDING: CLASS D

NO. OF STORIES: ONE

OCCUPANCY: STORAGE

FOUNDATION: WOOD

SUPERSTRUCTURE:

FRAME - WOOD

FLOORS - CONCRETE ON GROUND

CEILINGS - PARTICLE BOARD WITH INSULATION

ROOF STRUCTURE - WOOD JOISTS

ROOF COVER - METAL DECK

INTERIOR CONSTRUCTION - ONE WOOD FRAME PARTITION

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT

HEATING - 2 - ELECTROMODE SUSPENDED ELECTRIC UNIT HEATERS

EXTERIOR WALLS - WOOD FRAME, METAL SIDING, SINGLE WALL;  
                  SLIDING METAL DOOR, 99 X 89",  
                  - WOOD FRAME METAL SIDING WITH PARTICLE BOARD  
                  INTERIOR, INSULATION

BUILT: 1992 - ADDITION 1994

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: APPEL BIOLOGY LAB  
REAL ESTATE - BUILDING

| Description                       | 11/1/23    |
|-----------------------------------|------------|
| FOUNDATION:                       | 5,500.00   |
| SUPERSTRUCTURE:                   |            |
| FRAME                             | 3,600.00   |
| FLOORS                            | 15,800.00  |
| FLOOR COVERINGS                   | 18,800.00  |
| CEILINGS                          | 6,900.00   |
| ROOF STRUCTURE                    | 14,900.00  |
| ROOF COVER                        | 6,900.00   |
| INTERIOR CONSTRUCTION             | 30,800.00  |
| BUILT-IN FIXTURES                 | 13,300.00  |
| ELECTRICAL                        | 15,600.00  |
| PLUMBING                          | 19,900.00  |
| HEATING                           | 6,500.00   |
| EXTERIOR WALLS                    | 49,500.00  |
| TOTAL LABOR AND MATERIALS         | 208,000.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 5%         |
| Replacement Value New             | 218,400.00 |
| Depreciation %                    | 65%        |
| Sound Valuation                   | 76,400.00  |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: APPEL BIOLOGY LAB - 1891 SARNS RD.

TYPE OF BUILDING: RESIDENTIAL RANCH, CLASS D

NO. OF STORIES: ONE

OCCUPANCY: FIELD LABORATORY WITH CONFERENCE ROOM

TOTAL SQUARE FEET = 1,160, MORE OR LESS

FOUNDATION: CONCRETE BLOCK

SUPERSTRUCTURE:

FRAME - WOODEN FRAME

FLOORS - WOODEN DECK

FLOOR COVERINGS - ASPHALT TILE IN LABORATORY AND DINING AREA  
HARDWOOD IN CONFERENCE ROOM, CARPET TILES

CEILINGS - WOOD TOUNGUE AND GROOVE GYPSUM BOARD

ROOF STRUCTURE - WOODEN GABLE

ROOF COVER - ASPHALT SHINGLES

INTERIOR CONSTRUCTION - WOOD FRAME DRYWALL PARTITIONS  
- PINE SIDING IN CONFERENCE ROOM

BUILT-IN FIXTURES - 1 - FIREPLACE, BRICK MANTLE  
- LAB COUNTER, 30 LINEAR FT. WITH STAINLESS  
STEEL SINK  
1 - YOUNGSTOWN METAL KITCHEN SINK

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:  
1 - WATER CLOSET  
1 - LAVATORY  
1 - URINAL  
1 - KITCHEN SINK  
1 - WATER HEATER, 18 GALLON

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES, INCANDESCENT AND  
FLUORESCENT FIXTURES

HEATING - RUDD GAS FIRED FURNACE WITH DUCTWORK

EXTERIOR WALLS - VINYL SIDING, WINDOWS IN VINYL SASH

QUALITY OF CONSTRUCTION: AVERAGE  
BUILT: 1950'S, RENOVATED IN 1983



R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: AVIATION  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 149,700.00   |
| SUPERSTRUCTURE:                   |              |
| FRAME                             | 363,000.00   |
| FLOORS                            | 280,700.00   |
| FLOOR COVERINGS                   | 53,100.00    |
| CEILINGS                          | 46,200.00    |
| ROOF STRUCTURE                    | 271,800.00   |
| ROOF COVER                        | 279,400.00   |
| INTERIOR CONSTRUCTION             | 300,800.00   |
| BUILT-IN FIXTURES                 | 15,600.00    |
| ELECTRICAL                        | 410,400.00   |
| PLUMBING                          | 137,600.00   |
| HEATING                           | 122,400.00   |
| MISCELLANEOUS CONSTRUCTION        | 251,600.00   |
| EXTERIOR WALLS                    | 555,600.00   |
| TOTAL LABOR AND MATERIALS         | 3,237,900.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 6%           |
| Replacement Value New             | 3,432,200.00 |
| Depreciation %                    | 47%          |
| Sound Valuation                   | 1,819,100.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: AVIATION - 2550 AERO PARK DRIVE

KIND OF BUILDING: CLASS S/C

NO. OF STORIES: ONE

OCCUPANCY: AVIATION HANGAR WITH REPAIR AREA, OFFICES AND CLASSROOMS

TOTAL SQUARE FEET = 20,912 WITH 1,750 SQUARE FT. STORAGE MEZZANINE

FOUNDATION: POURED CONCRETE FOOTINGS, REINFORCED

SUPERSTRUCTURE:

FRAME - STEEL I BEAMS AND COLUMNS

FLOORS - 4" POURED CONCRETE ON SAND FILL  
- CONCRETE DECK, MEZZANINE

FLOOR COVERINGS - VINYL ASBESTOS  
- CARPETING IN OFFICES AND CLASSROOMS

ROOF STRUCTURE - 1/2" METAL DECK ON RIGID FRAME  
- OPEN STEEL FOR METAL

ROOF COVER - SINGLE MEMBRANE WITH INSULATION  
- METAL, PRE-ENGINEERED WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL IN OFFICES, CORRIDORS AND  
CLASSROOMS

INTERIOR CONSTRUCTION - MASONRY BLOCK PARTITIONS

BUILT-IN FIXTURES - 1 - FOLDING PARTITION WALL  
- CHALKBOARDS AND TACKBOARDS IN CLASSROOMS  
1 - LAMINATE KITCHENETTE COUNTER WITH  
STAINLESS STEEL SINK

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:  
4 - WATER CLOSETS  
5 - LAVATORIES  
2 - URINALS  
2 - SANITARY SINKS  
1 - RHEEM 50-GALLON WATER HEATER  
1 - WATER COOLER

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REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

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AVIATION: continued

SUPERSTRUCTURE: continued

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES, FLUORESCENT  
TUBE FIXTURES, LED LIGHT FIXTURES IN HANGAR  
SQUARE D PANEL BOARD

HEATING AND AIR CONDITIONING -

- 2 - RUUD GAS FIRED FORCED AIR FURNACES W/AIR CONDITIONING
- 1 - APPLIED AIR MODEL GIF-100LH UNIT HEATER, 1,250,000 BTU
- 2 - ARCOAIRE ROOFTOP CONDENSING UNITS WITH INSULATION

EXTERIOR WALLS - PRE-ENGINEERED METAL SIDING; 8" FLUTED BLOCK  
AND MAIN ENTRANCE

MISCELLANEOUS:

- 1 - ALUMINUM FOLD-UP HANGAR DOOR, 80' X 20' WITH ELECTRIC OPENING  
SYSTEM
- 1 - ALUMINUM FOLD-UP DOOR, 50 X 20' WITH ELECTRIC OPENING SYSTEM
- 1 - METAL STAIRWAY TO MEZZANINE
- 1 - FIRE ALARM SYSTEM WITH CONTROL BOX
  - ACCESS CONTROL SYSTEM
- 3 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: AVERAGE

BUILT: 1976

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: BECKETT  
REAL ESTATE - BUILDING

| Description                       | 11/1/23       |
|-----------------------------------|---------------|
| FOUNDATION:                       | 234,600.00    |
| SUPERSTRUCTURE:                   |               |
| FRAME                             | 535,800.00    |
| FLOORS                            | 665,100.00    |
| FLOOR COVERINGS                   | 400,100.00    |
| CEILINGS                          | 519,000.00    |
| ROOF STRUCTURE                    | 525,500.00    |
| ROOF COVER                        | 283,500.00    |
| INTERIOR CONSTRUCTION             | 2,478,500.00  |
| BUILT-IN FIXTURES                 | 16,300.00     |
| ELECTRICAL                        | 1,314,000.00  |
| PLUMBING                          | 776,500.00    |
| HEATING                           | 1,651,500.00  |
| MISCELLANEOUS                     | 65,800.00     |
| EXTERIOR WALLS                    | 1,074,200.00  |
| FIRE PROTECTION                   | 226,800.00    |
| ELEVATORS                         | 145,800.00    |
| TOTAL LABOR AND MATERIALS         | 10,913,000.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%            |
| Replacement Value New             | 11,676,900.00 |
| Depreciation %                    | 25%           |
| Sound Valuation                   | 8,757,700.00  |



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REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

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BECKETT: continued

SUPERSTRUCTURE: continued

MECHANICAL EQUIPMENT

PLUMBING - AN MODERN SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 19 - WATER CLOSETS
- 17 - LAVATORIES
- 8 - URINAL
- 2 - SANITARY SINKS
- 5 - DRINKING FOUNTAINS
- 1 - WATER HEATER

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES

- COMPUTER WIRING

HEATING AND AIR CONDITIONING -

- 2 - LOCHINVAR MODEL FTX850N GAS FIRED BOILER
- 25 - WATER FURNACE MODEL USV024TL004CVN HEAT PUMP
- PUMPS AS REQUIRED
- ABB VARIABLE FREQUENCY DRIVES
- 1 - NIMBUS VIRGAX3 ROOFTOP COOLING TOWER

EXTERIOR WALLS - CONCRETE BLOCK, FACE BRICK, 12"

MISCELLANEOUS:

- OTIS PASSENGER ELEVATOR, 2-STOP, 2500 LB. CAPACITY, #31455
- SPRINKLERS THRU-OUT
- BRIDGE WALKWAY, 12'5 X 20'
- 2 - AUTOMATIC DOOR OPENERS
- HONEYWELL NOTIFIER FIRE ALARM SYSTEM
- ACCESS CONTROL SYSTEM
- 4 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1996

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: FOUNDERS HALL  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 38,400.00    |
| SUPERSTRUCTURE:                   |              |
| FLOORS                            | 66,000.00    |
| FLOOR COVERINGS                   | 59,100.00    |
| CEILINGS                          | 49,000.00    |
| ROOF STRUCTURE                    | 106,100.00   |
| ROOF COVER                        | 69,100.00    |
| INTERIOR CONSTRUCTION             | 360,200.00   |
| BUILT-IN FIXTURES                 | 39,700.00    |
| ELECTRICAL                        | 188,600.00   |
| PLUMBING                          | 111,200.00   |
| HEATING                           | 152,300.00   |
| MISCELLANEOUS CONSTRUCTION        | 26,600.00    |
| EXTERIOR WALLS                    | 301,800.00   |
| TOTAL LABOR AND MATERIALS         | 1,568,100.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%           |
| Replacement Value New             | 1,677,900.00 |
| Depreciation %                    | 37%          |
| Sound Valuation                   | 1,057,100.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE  
NAME OF BUILDING: FOUNDERS HALL

KIND OF BUILDING: CLASS C

NO. OF STORIES: ONE

OCCUPANCY: OFFICES/CONFERENCE ROOMS

TOTAL SQUARE FEET = 4,950

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FLOORS - CONCRETE ON GROUND

FLOOR COVERINGS - VINYL TILE  
- CARPET  
- CERAMIC TILE

ROOF STRUCTURE - STEEL JOISTS, STEEL DECK

ROOF COVER - SINGLE PLY MEMBRANE WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL PANELS  
- GYPSUM BOARD, LOBBY

INTERIOR CONSTRUCTION - MASONRY PARTITIONS  
- METAL FRAME PARTITIONS

BUILT-IN FIXTURES - CABINETS IN CONFERENCE ROOMS AND WORK ROOM  
- RECEPTION DESK  
- BASE CABINET, OAK, 3.5 X 3.5  
- BASE CABINET, OAK, STAINLESS STEEL SINK, 7-1/2'  
2 - CABINETS, 2 DOOR, LAMINATE, 84" HEIGHT  
- WALL CABINETS, LAMINATE, 6 X 11 X 7 X 9'  
- BASE CABINETS, LAMINATE, 11 X 7  
- WALL CABINETS, OAK, 7-1/2'  
- BASE CABINETS, OAK, STAINLESS STEEL SINK, 5'

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:  
2 - WATER CLOSETS  
2 - LAVATORY  
1 - URINALS  
1 - SANITARY SINKS  
1 - DRINKING FOUNTAIN  
1 - WATER HEATER

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES



R. A. SCHESSLER, INC.  
Appraisal Engineers

page 2

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REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

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FOUNDERS HALL:continued

SUPERSTRUCTURE: continued

HEATING AND AIR CONDITIONING -

- 2 - TRANE MODEL VCD060C1HOBA COMBINATION COOLING AND HEATING UNITS, GAS FIRED, ROOF TOP
- 1 - TRANE YSC060 ROOFTOP GAS FIRED HEATING AND AIR CONDITIONING UNIT

EXTERIOR WALLS - FACE BRICK, BLOCK BACK-UP, 12"

MISCELLANEOUS:

- FIRE ALARM SYSTEM
- ACCESS CONTROL SYSTEM
- 1 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1976

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE Bldg.: EAST HALL  
REAL ESTATE - BUILDING

| Description                       | 11/1/23       |
|-----------------------------------|---------------|
| BASEMENT:                         |               |
| FRAME                             | 165,500.00    |
| FLOOR                             | 51,600.00     |
| CEILING                           | 48,000.00     |
| EXTERIOR WALLS                    | 59,000.00     |
| INTERIOR PARTITION                | 365,000.00    |
| ELECTRICAL                        | 203,400.00    |
| FOUNDATION:                       | 437,000.00    |
| SUPERSTRUCTURE:                   |               |
| FRAME                             | 1,548,500.00  |
| FLOORS                            | 1,201,200.00  |
| FLOOR COVERINGS                   | 369,600.00    |
| CEILINGS                          | 449,700.00    |
| ROOF STRUCTURE                    | 455,300.00    |
| ROOF COVER                        | 216,200.00    |
| INTERIOR CONSTRUCTION             | 3,764,000.00  |
| BUILT-IN FIXTURES                 | 300,600.00    |
| ELECTRICAL                        | 1,904,300.00  |
| PLUMBING                          | 1,451,300.00  |
| HEATING                           | 926,300.00    |
| MISCELLANEOUS CONSTRUCTION        | 462,000.00    |
| EXTERIOR WALLS                    | 1,631,100.00  |
| TOTAL LABOR AND MATERIALS         | 16,009,600.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%            |
| Replacement Value New             | 17,130,300.00 |
| Depreciation %                    | 45%           |
| Sound Valuation                   | 9,421,700.00  |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: EAST HALL

KIND OF BUILDING: CLASS B

NO. OF STORIES: ONE WITH BASEMENT  
THREE

OCCUPANCY - DORMITORY

SIZE:

|                   |                           |
|-------------------|---------------------------|
| BASEMENT          | 5,037 SQUARE FEET         |
| FIRST FLOOR       | 19,951 SQUARE FEET        |
| SECOND FLOOR      | 13,650 SQUARE FEET        |
| THIRD FLOOR       | <u>13,650 SQUARE FEET</u> |
| TOTAL SQUARE FEET | 52,288                    |

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - CONCRETE COLUMNS AND BEAMS  
- STEEL

FLOORS - CONCRETE ON GROUND C, CONCRETE JOISTS AND CONCRETE SLAB

FLOOR COVER - CARPET, OFFICES, LOUNGE AREAS, AND CORRIDORS  
- VINYL TILE IN RESIDENT ROOMS, CORRIDORS  
- CERAMIC TILE IN RESIDENT BATHROOMS

ROOF STRUCTURE - PRECAST CONCRETE TEE SLAB  
- STEEL JOISTS, METAL DECK

ROOF COVER - SINGLE PLY MEMBRANE, INSULATION

CEILINGS - SUSPENDED ACOUSTICAL TILE IN OFFICES AND LOUNGE AREA  
BLDG C, RESIDENT ROOMS AND CORRIDOR IN BLDG. A AND B  
- GYPSUM BOARD

INTERIOR CONSTRUCTION - 8" BLOCK PARTITIONS  
- DOUBLE SOLID GYPSUM WALL

BUILT-IN FIXTURES -

- 2 - 5-DRAWER 2-DOOR WARDROBE CABINETS, WOOD, 48 X 27 X 86" HEIGHT PER RESIDENT ROOM
- 2 - WOOD BASE CABINETS, LAMINATE MAPLE TOP, 60 X 24" AND STAINLESS STEEL SINK
- 1 - LAVATORY BASE CABINET, LAMINATE, OAK EDGING IN EACH RESIDENT BATHROOM
- 1 - RECESSED MEDICINE CABINET AND MIRROR IN EACH RESIDENT BATHROOM
- 1 - CENTRAL ELEVATOR, PASSENGER ELEVATOR, 3-STOP WITH POWER OPERATED REAR DOOR, 750 LB. CAPACITY

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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EAST HALL: continued

BUILT-IN FIXTURES: continued

- MAIL BOXES, 144 DOORS
- RECEPTION DESK, LAMINATE, 15 LINEAR FT.
- INFORMATION DESK, LAMINATE, 13 LINEAR FT.
- 22 LINEAR FT. OF LAMINATE BASE CABINETS
- 22 LINEAR FT. OF LAMINATE WALL CABINETS
- LAMINATE KITCHEN CABINETS IN SUPERVISOR'S APARTMENT

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 64 - WATER CLOSETS
- 64 - LAVATORIES
- 1 - URINALS
- 2 - SANITARY SINKS
- 2 - ELECTRIC WATER COOLERS
- 2 - BATH TUBS
- 60 - PREFABRICATED FIBERGLASS SHOWERS
- 2 - LAUNDRY TUBS
- 1 - WATER HEATER, STEAM HEATED, 6' DIAMETER X 9' LONG

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH NECESSARY WALL PLUGS AND SWITCH BOXES

HEATING AND AIR CONDITIONING -

- 2 - LOCHIVAR MODEL FTX850N-M13, GAS FIRED TUBE BOILER
- EXHAUST FANS AS REQUIRED
- PUMPS AS REQUIRED
- 3 - LIEBERT AIR CONDITIONING UNIT WITH CONDENSING UNIT
- 2 - DUCANE MODEL AC10B24A CONDENSING UNIT
- 1 - DUCANE MODEL AC10B36B CONDENSING UNIT
- 1 - DUCANE MODEL AC10B42 CONDENSING UNIT
- 1 - DUCANE MODEL AC10B60 CONDENSING UNIT
- 1 - DUCANE MODEL AC10B24 CONDENSING UNIT
- 1 - DUCANE MODEL AC10B18 CONDENSING UNIT
- 1 - MITSUBISHI CONDENSING UNIT
- UNIT AND CABINET HEATERS

EXTERIOR WALLS - FACE BRICK, BLOCK BACK-UP, 12"

- EIFS CANOPY
- INSULATED GLASS IN ALUMINUM FRAME

MISCELLANEOUS - HONEYWELL NOTIFIER FIRE ALARM SYSTEM WITH SMOKE DETECTORS

- SPRINKLERS THROUGHOUT
- ACCESS CONTROL SYSTEM
- 4 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1967; RENOVATION OF LOBBY AND BASEMENT, ADDITION OF GENERATOR ROOM,  
1999; RESIDENT ROOMS RENOVATED IN 2002

R. A. SCETTLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: FINE ARTS  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| BASEMENT:                         |              |
| FLOOR                             | 23,200.00    |
| EXTERIOR WALLS                    | 95,900.00    |
| INTERIOR PARTITION                | 9,300.00     |
| FOUNDATION:                       | 145,400.00   |
| SUPERSTRUCTURE:                   |              |
| FLOORS                            | 256,900.00   |
| FLOOR COVERINGS                   | 128,500.00   |
| CEILINGS                          | 2,300.00     |
| ROOF STRUCTURE                    | 572,400.00   |
| ROOF COVER                        | 226,800.00   |
| INTERIOR CONSTRUCTION             | 1,394,400.00 |
| BUILT-IN FIXTURES                 | 79,400.00    |
| ELECTRICAL                        | 805,600.00   |
| PLUMBING                          | 385,600.00   |
| HEATING                           | 1,016,500.00 |
| MISCELLANEOUS CONSTRUCTION        | 298,400.00   |
| EXTERIOR WALLS                    | 960,300.00   |
| TOTAL LABOR AND MATERIALS         | 6,400,900.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 8%           |
| Replacement Value New             | 6,913,000.00 |
| Depreciation %                    | 41%          |
| Sound Valuation                   | 4,078,700.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: FINE ARTS

KIND OF BUILDING: CLASS D

NO. OF STORIES: ONE WITH PARTIAL BASEMENT

OCCUPANCY - ART AND MUSIC CLASSROOMS AND OFFICES

SIZE:

|             |                    |
|-------------|--------------------|
| BASEMENT    | 2,076 SQUARE FEET  |
| FIRST FLOOR | 18,800 SQUARE FEET |

TOTAL SQUARE FEET 18,800

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - WOOD

FLOORS - CONCRETE ON GROUND

FLOOR COVER - CARPET, CORRIDORS, MUSIC, CLASSROOMS, OFFICES, AUDITORIUM  
CERAMIC TILE RESTROOMS

ROOF STRUCTURE - WOOD TRUSS EXPOSED T & G WOOD DECK, 1-1/2" ROD  
AND TURN BUCKLES  
- CONCRETE PLANK

ROOF COVER - ASPHALT SHINGLES, INSULATION  
- SINGLE PLY MEMBRANE WITH INSULATION

CEILINGS - GYPSUM BOARD IN RESTROOMS;  
- GLASS IN MUSIC PRACTICE ROOMS

INTERIOR CONSTRUCTION - MASONRY AND FRAME PARTITIONS

BUILT-IN FIXTURES -

- 175 LINEAR FEET OF CURVED OAK SEATING UNIT WITH FABRIC UPHOLSTERED CUSHIONS
- PROJECTION COUNTER CABINET, WOOD BASE, LAMINATE TOP
- 1 - ROLLING DOOR, METAL, 16 X 7', CERAMICS
- 4 - WOOD BASE CABINETS WITH STAINLESS STEEL SINK, 12'
- 1 - WOOD BASE CABINET WITH STAINLESS STEEL SINK, 4'
- 1 - WOOD BASE CABINET WITH STAINLESS STEEL SINK, 7'

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

FINE ARTS: continued

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 8 - WATER CLOSETS
- 8 - LAVATORIES
- 3 - URINALS
- 2 - SANITARY SINKS
- 1 - DRINKING FOUNTAINS
- 1 - HOT WATER GENERATOR, 150 GALLON CAPACITY
- 1 - WATER HEATER, ELECTRIC
- 1 - WATER COOLER

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES

- LITETRACK SYSTEM
- LED LIGHT FIXTURES

HEATING AND AIR CONDITIONING -

- RADIANT PANELS
- 7 - CABINET UNIT HEATERS
- PUMPS AS REQUIRED
- 1 - TRANE MODEL CGAFC25EAHA1A0ODE 25-TON CHILLER, #C04J07864
- 1 - TRANE MODEL RAUCC30EBX030BD00020 30-TON CONDENSING UNIT  
#CO4J07865
- 1 - TRANE MODEL MCCB014UAOA0UB AIR HANDLING UNIT, AHU-2
- 1 - TRANE MODEL MCCB010UAOA0UA AIR HANDLING UNIT, AHU-1
- 1 - TRANE MODEL MCCB025UADA0UA AIR HANDLING UNIT, AHU-3
- 1 - COOK RETURN AIR FAN, 2 HORSEPOWER
- 1 - TACO CHILLER, #T19843
- 1 - LOCHINVAR MODEL KBN800 GAS FIRED DIRECT VENT BOILER  
# G08H10057962
- 1 - LOCHINVAR MODEL KBN800 GAS FIRED DIRECT VENT BOILER  
# G08H10057984
- 1 - FUJITSU SPLIT SYSTEM HEATING/AIR CONDITIONING SYSTEM, RM 104
- 1 - FUJITSU MODEL A0U9RLS3H, CONDENSING UNIT, #QVN003966

EXTERIOR WALLS - WOOD STUD, RED CEDAR SIDING, PLYWOOD SHEATHING,  
- INSULATION

MISCELLANEOUS - NOTIFIER FIRE ALARM SYSTEM

- 36" DIAMETER KILN STACK, 30' HEIGHT
- SPRINKLERS THUR-OUT
- 1 - MECHANICAL BUILDING WOOD CONSTRUCTION, CONCRETE SLAB,  
CEDAR SIDING, SINGLE PLY MEMBRANE ROOF COVER, WITH  
STANDING RIDGES, 14' X 22' X 9/14'6", 308 SQ. FEET  
308 SQ. FT.
- ACCESS CONTROL SYSTEM
- 1 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1970; MECHANICAL BUILDING 2004

R. A. SCETTLE, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: OSTERLIN LIBRARY  
REAL ESTATE - BUILDING

| Description                              | 11/1/23              |
|--|----------------------|
| <b>BASEMENT:</b>                         |                      |
| FLOOR                                    | 94,300.00            |
| CEILING                                  | 44,900.00            |
| EXTERIOR WALLS                           | 201,200.00           |
| INTERIOR PARTITION                       | 504,000.00           |
| ELECTRICAL                               | 278,900.00           |
| <b>FOUNDATION:</b>                       | 408,100.00           |
| <b>SUPERSTRUCTURE:</b>                   |                      |
| FRAME                                    | 1,718,700.00         |
| FLOORS                                   | 753,200.00           |
| FLOOR COVERINGS                          | 772,700.00           |
| CEILINGS                                 | 427,500.00           |
| ROOF STRUCTURE                           | 768,400.00           |
| ROOF COVER                               | 447,100.00           |
| INTERIOR CONSTRUCTION                    | 2,901,200.00         |
| BUILT-IN FIXTURES                        | 293,300.00           |
| ELECTRICAL                               | 1,842,500.00         |
| PLUMBING                                 | 946,200.00           |
| HEATING                                  | 2,207,500.00         |
| MISCELLANEOUS CONSTRUCTION               | 344,500.00           |
| EXTERIOR WALLS                           | 1,168,600.00         |
| <b>TOTAL LABOR AND MATERIALS</b>         | <b>16,123,000.00</b> |
| <b>ARCHITECT'S PLANS AND SUPERVISION</b> | <b>7%</b>            |
| <b>Replacement Value New</b>             | <b>17,251,600.00</b> |
| <b>Depreciation %</b>                    | <b>46%</b>           |
| <b>Sound Valuation</b>                   | <b>9,315,900.00</b>  |



R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: OSTERLIN LIBRARY

KIND OF BUILDING: CLASS B

NO. OF STORIES: PARTIAL TWO WITH BASEMENT

OCCUPANCY - MEDIA CENTER, OFFICES AND CLASSROOMS

SIZE:

|              |                    |
|--------------|--------------------|
| BASEMENT     | 7,048 SQUARE FEET  |
| FIRST FLOOR  | 30,760 SQUARE FEET |
| SECOND FLOOR | 8,926 SQUARE FEET  |

TOTAL SQUARE FEET 46,734 MORE OR LESS

FOUNDATION: POURED REINFORCED CONCRETE FOOTINGS

SUPERSTRUCTURE:

FRAME - CONCRETE, REINFORCED I BEAMS AND COLUMNS

FLOORS - CONCRETE PRECAST TEES, SLAB ON GRADE

FLOOR COVER - CARPET, LIBRARY, OFFICES AND CLASSROOMS  
CERAMIC TILE RESTROOMS  
VINYL ASBESTOS TILE IN CORRIDORS  
TERRAZZO IN CIRCULATION AREA (UNDER CARPET)

ROOF STRUCTURE - PRECAST CONCRETE TEES, SKYLIGHTS IN ALUMINUM  
FRAME

ROOF COVER - SINGLE PLY MEMBRANE WITH INSULATION

CEILINGS - PARTIAL ACOUSTIC AND SUSPENDED ACOUSTICAL

INTERIOR CONSTRUCTION - MASONRY BLOCK PARTITIONS; SOME PAINTED  
DRYWALL

BUILT-IN FIXTURES -

- 1 - ELEVATOR, 2,500 LB. CAPACITY WITH 3 STOPS, 2 DOORS
- 2 - LAMINATE A.V. REPAIR COUNTERS
- 1 - KREONITE PLASTIC DARKROOM SINK WITH LAMINATE WORK COUNTERS
- 1 - REVOLVING DARKROOM DOOR
- 1 - WOODEN SHOWCASE, 19'6" X 4' X 90" HEIGHT, SLIDING GLASS  
DOORS
- ALUMINUM FRAME MARKING BOARDS IN CLASSROOMS
- 1 - SERVICE DESK, LAMINATE 'L' SHAPE, 18 L.F.
- 1 - SERVICE DESK, LAMINATE, 20 L.F.
- 1 - CIRCULATION DESK, LAMINATE 'D' SHAPE, 50 L.F.
- 1 - ISLAND CIRCULATION COUNTER, LAMINATE, 10 L.F.
- LOCKERS

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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OSTERLIN LIBRARY: continued

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 13 - WATER CLOSETS
- 18 - LAVATORIES
- 5 - URINALS
- 2 - SANITARY SINKS
- 4 - DRINKING FOUNTAINS
- 1 - HOT WATER HEATER, RHEEM, 82-GALLON

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH NECESSARY WALL PLUGS AND SWITCH BOXES

- FLUORESCENT TUBE FIXTURES;
- WIRING FOR T.V. PRODUCTION STUDIO WITH STAGE LIGHTING GRID
- 1 - 750 KVA TRANSFORMER

HEATING AND AIR CONDITIONING -

- 1 - TRANE MODEL MCCB025UAOCOUB AIR HANDLING UNIT, AHU-4
- 1 - TRANE MODEL RAUCD124BNC320D0010 125 TON CONDENSING UNIT, #CO4B01452
  - CABINET AND UNIT HEATERS AS REQUIRED
- 1 - BOHN MODEL HCS144LF AIR HANDLER
- 1 - BOHN MODEL HCSZ1AMF AIR HANDLER
- 1 - BOHN MODEL HMZ26ALF AIR HANDLER
- 1 - TACO CHILLER
  - STEAM FROM POWERHOUSE
  - ABB VARIABLE FREQUENCY DRIVES

EXTERIOR WALLS - FACE BRICK ON CONCRETE BLOCK

- WINDOWS IN ALUMINUM SASH
- DRYVIT ON BRICK - SOUTH ELEVATION

MISCELLANEOUS - FIRE ALARM SYSTEM WITH NOTIFIER AFP-200 CONTROL BOX

- 2 - AUTOMATIC DOOR OPENERS
  - SPRINKLERS THRU-OUT
  - ACCESS CONTROL SYSTEM
- 5 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1961 - MAIN BUILDING  
1983 - ADDITION

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: MUSEUM/AUDITORIUM  
REAL ESTATE - BUILDING

| Description                       | 11/1/23       |
|-----------------------------------|---------------|
| FOUNDATION:                       | 539,400.00    |
| SUPERSTRUCTURE                    |               |
| FRAME                             | 1,211,700.00  |
| FLOORS                            | 807,400.00    |
| FLOOR COVERINGS                   | 795,700.00    |
| CEILINGS                          | 382,200.00    |
| ROOF STRUCTURE                    | 1,295,900.00  |
| ROOF COVER                        | 1,513,700.00  |
| INTERIOR CONSTRUCTION             | 4,429,200.00  |
| BUILT-IN FIXTURES                 | 1,871,400.00  |
| ELECTRICAL                        | 2,423,300.00  |
| PLUMBING                          | 791,700.00    |
| HEATING                           | 2,976,700.00  |
| MISCELLANEOUS CONSTRUCTION        | 596,900.00    |
| EXTERIOR WALLS                    | 3,481,700.00  |
| TOTAL LABOR AND MATERIALS         | 23,116,900.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%            |
| Replacement Value New             | 24,735,100.00 |
| Depreciation %                    | 24%           |
| Sound Valuation                   | 18,798,700.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: MUSEUM/AUDITORIUM

KIND OF BUILDING: CLASS C

NO. OF STORIES: ONE

OCCUPANCY - MUSEUM/AUDITORIUM

SIZE: TOTAL SQUARE FEET 55,085

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL

FLOORS - CONCRETE ON GROUND

FLOOR COVER - CARPET IN OFFICES, LOBBY, GIFT SHOP, AUDITORIUM  
CERAMIC TILE IN RESTROOMS AND CLASSROOMS  
HARDWOOD FLOORS IN EXHIBIT A, B, AND C, STAGE  
MARBLE TILE IN LOBBY, RECEPTION, COATS, SCULPTURE  
COURT, CORRIDOR, VESTIBULE, VINYL TILE IN STORAGE  
SERVING

ROOF STRUCTURE - OPEN WEB STEEL JOISTS, 1-1/2" METAL DECK  
- 8' RADIUS QUARTER VAULT SKYLIGHT

ROOF COVER - STONE BALLAST ON SINGLE PLY ROOF MEMBRANE OVER  
STEPPED INSULATION OVER 3" RIGID INSULATION

CEILINGS - SUSPENDED ACOUSTICAL PANEL IN OFFICES  
- SUSPENDED GYPSUM BOARD  
- SUSPENDED CEILING PANELS, AUDITORIUM

INTERIOR CONSTRUCTION - MASONRY AND METAL FRAME PARTITIONS

BUILT-IN FIXTURES -

- 367 - PLASTIC FIXED THEATER SEATS WITH FABRIC UPHOLSTERED SEAT
- 3 - LOBBY DISPLAY CASES, SLIDING GLASS DOORS, 12 X 5'
- 32 - THEATER SEATS, PLASTIC FIXED WITH FABRIC UPHOLSTERED
- 1 - CURVED OAK RECEPTION DESK, 5' RADIUS LAMINATE WORK SURFACE
  - LOBBY CURVED BENCH, OAK TOP
  - OFFICE CASEWORK, LAMINATE
  - KITCHEN CASEWORK, LAMINATE
  - STAINLESS STEEL RINSE SINK
  - LIGHTING GRID WITH LED LIGHTS
- 2 - FOLDING PARTITIONS
  - PROJECTION SCREEN
  - WINDOW TREATMENT

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REAL ESTATE - BUILDING                      NORTHWESTERN MICHIGAN COLLEGE  
MUSEUM/AUDITORIUM: continued

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- PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:
- 15 - WATER CLOSETS
  - 14 - LAVATORIES
  - 4 - URINALS
  - 2 - DRINKING FOUNTAIN
  - 1 - LOCHINVAR 92-GALLON WATER HEATER
  - 1 - JOHNSON COMPUTERIZED
  - 2 - SHOWERS
  - 1 - ELECTRIC WATER HEATER

- ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES  
PHONE, DATA AND VIDEO LINES CONDUIT
- 1 - 1000 KVA TRANSFORMER

HEATING AND AIR CONDITIONING -

- 1 - TRANE MODEL CCDB35MEOM DRAW THROUGH CLIMATE CHANGER, #AHU-1
- 2 - NORTEC CONTROLLER HUMIDIFIERS
- 1 - JOHNSON THERMOSTATIC CONTROL
- 1 - TRANE MODEL 14-C CLIMATE CHANGER, #AHU-2
- 1 - TRANE MODEL 17-C CLIMATE CHANGER, #AHU-3
- PUMPS AS REQUIRE
- 1 - TRANE MODEL RAUJD10EBA132000010, 100 TON CHILLER  
#C10H04015
- 1 - LOCHINVAR KNIGHT MODEL KBN801 GAS FIRED BOILER,  
#F10H10143653
- 1 - LOCHINVAR KNIGHT MODEL KBN801 GAS FIRED BOILER,  
#F10H10143667
- 1 - TRANE MMDL CSAA021UAL00, CLIMATE CHANGER AIR HANDLING UNIT  
#K17A04961                      #AHU-4
- 1 - THERMA-STOR MODEL HI-E DRY 100 DEHUMIDIFIER
- 1 - DRI-STEEM MODEL GTS200, STEAM HUMIDIFIER
- 1 - LOCHINVAR MODEL WHN285, GAS , WALL-MOUNT BOILER,  
#1607102616001
- 1 - TRANE MODEL RAUJC30EB, ROOF TOP CONDENSING UNIT
- 1 - LOCHINVAR MODEL WHN285, GAS , WALL-MOUNT BOILER,  
#1603102505085
- 1 - ENVIRONMENTAL TECHNOLOGY MODEL APS-3C, SNOW/ICE  
MELTING CONTROLLER
- 77 - VAV BOXES

- EXTERIOR WALLS - 4" STONE VENEER, 2" RIGID INSULATION, BLOCK  
BACK-UP
- 8" WITH 4" LIMESTONE BELT COURSES AND COPING
  - ALUMINUM WINDOW FRAMING WITH 1" INSULATED LOW E  
GLAZI

R. A. SCHESSLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING                      NORTHWESTERN MICHIGAN COLLEGE

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MUSEUM/AUDITORIUM: continued

- MISCELLANEOUS - ART STORAGE RACKS, TRACK MOUNTED
- 1 - RECESSED TRUCK DOCK WITH LEVELER
  - 1 - SPRINKLERS THROUGHOUT
  - 2 - CATWALKS
    - AUDITORIUM AND MINI THEATER SOUND SYSTEM
    - HOUSE PAGING SYSTEM
  - 2 - ROLLING STEEL DOORS WITH ELECTRIC OPERATOR
    - ALARM SYSTEM
    - ACCESS CONTROL SYSTEM
    - SECURITY SYSTEM
  - 3 - CAMERA SECURITY SYSTEM
    - AUDITORIUM LED LIGHTING

QUALITY OF CONSTRUCTION: EXCELLENT  
BUILT: 1991, ADDITION 2017

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: OBSERVATORY  
REAL ESTATE - BUILDING

| Description                       | 11/1/23    |
|-----------------------------------|------------|
| FOUNDATION:                       | 13,100.00  |
| SUPERSTRUCTURE:                   |            |
| FLOORS                            | 22,100.00  |
| FLOOR COVERINGS                   | 16,100.00  |
| CEILINGS                          | 13,600.00  |
| ROOF STRUCTURE                    | 26,600.00  |
| ROOF COVER                        | 18,600.00  |
| INTERIOR CONSTRUCTION             | 77,900.00  |
| BUILT-IN FIXTURES                 | 91,000.00  |
| ELECTRICAL                        | 59,100.00  |
| PLUMBING                          | 33,800.00  |
| HEATING                           | 25,500.00  |
| MISCELLANEOUS                     | 18,600.00  |
| EXTERIOR WALLS                    | 129,800.00 |
| TOTAL LABOR AND MATERIALS         | 545,800.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 6%         |
| Replacement Value New             | 578,500.00 |
| Depreciation %                    | 42%        |
| Sound Valuation                   | 335,600.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: OBSERVATORY - BRIMLEY ROAD

KIND OF BUILDING: CLASS C

NO. OF STORIES: ONE WITH 2 STORY TELESCOPE RECESS

OCCUPANCY - OBSERVATORY WITH CLASSROOM

SIZE: TOTAL SQUARE FEET 1,624 MORE OR LESS

FOUNDATION: POURED CONCRETE

SUPERSTRUCTURE:

FRAME - STRUCTURAL STEEL

FLOORS - 4" REINFORCED CONCRETE

FLOOR COVER - CARPET IN CLASSROOMS, VINYL ASBESTOS TILE

ROOF STRUCTURE - STEEL DECK ON JOIST

ROOF COVER - SINGLE PLY MEMBRANE WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL

INTERIOR CONSTRUCTION - FEW MASONRY PARTITION:  
- GYPSUM BOARD WALL COVER

BUILT-IN FIXTURES -

- 1 - ASH-DOME HEMISPHERE ALUMINIZED STEEL TELESCOPE DOME,  
14' DIAMETER WITH SHUTTER SYSTEM
- 1 - CIRCULAR STAIRWAY TO TELESCOPE ACCESS
- 1 - LAMINATE DARKROOM COUNTER WITH STAINLESS STEEL SINK
- 1 - ALUMINUM FRAME CHALKBOARD, 20 X 4'

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 1 - WATER CLOSET
- 1 - LAVATORY
- 1 - SANITARY SINK
- 1 - DRINKING FOUNTAIN
- 1 - HOT WATER HEATER, 8 GALLON



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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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OBSERVATORY: continued

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES  
- FLUORESCENT TUBE FIXTURES

HEATING AND AIR CONDITIONING -

1 - TRANE MODEL GXX110F GAS FIRED FORCED AIR FURNACE  
110,000 BTU/HR

MISCELLANEOUS - ACCESS CONTROL SYSTEM  
1 - CAMERA SECURITY SYSTEM

EXTERIOR WALLS - CONCRETE BLOCK WITH EARTH BERM STUCCO FINISH  
- FEW WINDOWS IN ALUMINUM SASH

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1981

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: OLESON CENTER  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 77,800.00    |
| SUPERSTRUCTURE:                   |              |
| FRAME                             | 169,100.00   |
| FLOORS                            | 141,600.00   |
| FLOOR COVERINGS                   | 58,500.00    |
| CEILINGS                          | 87,200.00    |
| ROOF STRUCTURE                    | 220,400.00   |
| ROOF COVER                        | 149,000.00   |
| INTERIOR CONSTRUCTION             | 814,900.00   |
| BUILT-IN FIXTURES                 | 229,700.00   |
| ELECTRICAL                        | 414,000.00   |
| PLUMBING                          | 244,600.00   |
| HEATING AND AIR CONDITIONING      | 335,400.00   |
| MISCELLANEOUS CONSTRUCTION        | 143,900.00   |
| EXTERIOR WALLS                    | 271,600.00   |
| TOTAL LABOR AND MATERIALS         | 3,357,700.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%           |
| Replacement Value New             | 3,592,700.00 |
| Depreciation %                    | 29%          |
| Sound Valuation                   | 2,550,800.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: OLESON CENTER

KIND OF BUILDING: CLASS C

NO. OF STORIES: ONE

OCCUPANCY - CLASSROOM

SIZE: TOTAL SQUARE FEET 10,398

FOUNDATION: POURED CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL

FLOORS - 4" CONCRETE SLAB ON SAND FILL

FLOOR COVER - CARPET IN OFFICES, CLASSROOMS; CERAMIC TILE  
IN KITCHEN; VINYL IN BATHROOMS, CLASSROOM 112

ROOF STRUCTURE - STEEL DECK ON STEEL JOIST  
- HIP ROOF ON JOISTS AND TRUSSES, 1/2" PLYWOOD WITH  
INSULATION

ROOF COVER - ASPHALT SHINGLES, SINGLE PLY MEMBRANE WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL; GYPSUM BOARD

INTERIOR CONSTRUCTION - MASONRY BLOCK PARTITIONS

BUILT-IN FIXTURES -

- 1 - HARFORD WALK-IN COOLER, 6 X 12'
- 2 - FOLDING PARTITION WALLS, 30 X 9'
  - TOILET PARTITIONS
- 4 - PREP TABLES, 4-DOOR, LAMINATE, STAINLESS STEEL DOUBLE  
SINK, 84 X 30"
- 2 - GREENHECK STAINLESS STEEL GHEW900S CANOPY HOODS WITH  
EXHAUST FAN, LIGHTS, 108 X 42 X 24"
- 2 - DISH TABLES, STAINLESS STEEL WITH SINK, 96 X 30"
- 1 - HARFORD DURACOOOL 86025-1161OR ROOFTOP WALK-IN COOLER  
REFRIGERATION UNIT, #H192OAC
- 2 - HOBART LXIH STAINLESS STEEL WAREWASHER
- 2 - INSINKERATOR SS-150 DISPOSER AND PRERINSE
- 2 - ANSUL FIRE PROTECTION SYSTEMS
- 2 - WALL SHELVES, STAINLESS STEEL, 24 X 18"
  - VISUAL DISPLAY BOARDS
  - WINDOW TREATMENT
- 1 - WORKSURFACE LAMINATE WALL MOUNTED 'L' SHAPE 19 LINEAR FT.
  - BASE CABINET LAMINATE 2-STAINLESS STEEL SINK 22.5 LINEAR FT.
  - WALL CABINETS LAMINATE 25.5 LINEAR FT.

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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OLESON CENTER: continued

BUILT-IN FIXTURES - continued

- 3 - COAT RACKS, OAK WALL MOUNTED, 39X16"
- 3 - COAT RACKS, OAK WALL MOUNTED, 48X16"

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 7 - WATER CLOSETS
- 6 - LAVATORIES
- 2 - URINALS
- 2 - SANITARY SINKS
- 2 - DRINKING FOUNTAINS
- 1 - RHEEM RUUD 91 GALLON GAS WATER HEATER
- 1 - RHEEM WATER HEATER, ELECTRIC

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH NECESSARY WALL PLUGS AND SWITCH BOXES

- FLUORESCENT TUBE FIXTURES
- INCANDESCENT SPOTLIGHTS IN LOBBY AND MEETING ROOMS

HEATING AND AIR CONDITIONING -

- 1 - TRANE YSC092A3RLA2FDOAO10/0300 PACKAGED GAS/ELECTRIC ROOFTOP UNIT, 7-1/2 TON CAPACITY, #635102686L
- 1 - TRANE YSC092A3RHA2FDOAOF11B10300 PACKAGED GAS/ELECTRIC ROOFTOP UNIT, 7-1/2 TON CAPACITY, #635102986L
- 1 - TRANE YSC048A3RHA2MD2A101300 PACKAGED GAS/ELECTRIC ROOFTOP UNIT, 4-TON CAPACITY, #635102880L
- 1 - TRANE YSC060A3RHA2TD2AOA/B10300 PACKAGED GAS/ELECTRIC ROOFTOP UNIT, 5 TON CAPACITY, #635102790L
- 1 - TRANE YSCO60A3RHA2TD2AOA/B10300 PACKAGED GAS/ELECTRIC ROOFTOP UNIT, 5-TON CAPACITY, #6351026654L
- 1 - AAON INC. RM-013-8-0-AA02-367 PACKAGED GAS/ELECTRIC ROOFTOP UNIT, 13-TON CAPACITY, #200609-AMGK28824

EXTERIOR WALLS - 8" CONCRETE BLOCK WITH FLUSH WOOD SIDING

- WINDOWS IN ALUMINUM SASH
- 8" SPLIT FACED CONCRETE BLOCK

MISCELLANEOUS -

- 1 - SPRINKLER SYSTEM THRU-OUT
- 1 - NOTIFIER MODEL APF - 200 FIRE ALARM CONTROL SYSTEM
- 1 - CANOPY, CONCRETE/STEEL, 6 X 12'
  - ACCESS CONTROL SYSTEM
- 2 - CAMERA SECURITY SYSTEM
  - SPRINKLER SYSTEM, MODIFIED FOR PUBLIC SCHOOL

QUALITY OF CONSTRUCTION: VERY GOOD

BUILT: 1978; ADDITION AND RENOVATED IN 2006

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: PHYSICAL EDUCATION  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 235,200.00   |
| SUPERSTRUCTURE:                   |              |
| FRAME                             | 602,300.00   |
| FLOORS                            | 416,400.00   |
| FLOOR COVERINGS                   | 492,700.00   |
| CEILINGS                          | 184,100.00   |
| ROOF STRUCTURE                    | 413,400.00   |
| ROOF COVER                        | 192,800.00   |
| INTERIOR CONSTRUCTION             | 1,659,900.00 |
| BUILT-IN FIXTURES                 | 192,700.00   |
| ELECTRICAL                        | 797,000.00   |
| PLUMBING                          | 583,200.00   |
| HEATING AND AIR CONDITIONING      | 600,900.00   |
| MISCELLANEOUS CONSTRUCTION        | 184,900.00   |
| EXTERIOR WALLS                    | 956,000.00   |
| TOTAL LABOR AND MATERIALS         | 7,511,500.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%           |
| Replacement Value New             | 8,037,300.00 |
| Depreciation %                    | 55%          |
| Sound Valuation                   | 3,616,800.00 |

R. A. SCHESSLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: PHYSICAL EDUCATION

KIND OF BUILDING: CLASS C

NO. OF STORIES: ONE - PARTIAL TWO

OCCUPANCY - PHYSICAL EDUCATION

SIZE: LOWER LEVEL - 19,074 SQUARE FEET

UPPER LEVEL - 6,600 SQUARE FEET

TOTAL SQUARE FEET 25,674 MORE OR LESS

FOUNDATION: POURED REINFORCED CONCRETE

SUPERSTRUCTURE:

FRAME - STRUCTURAL STEEL WITH COLUMNS, BEAMS AND JOISTS

FLOORS - POURED CONCRETE ON GRADE, PRECAST CONCRETE

FLOOR COVER - CARPETING IN OFFICES, FITNESS CENTER; CERAMIC TILE  
IN SHOWER ROOMS, VINYL ASBESTOS IN CORRIDORS,  
HARDWOOD IN GYMNASIUM, DANCE ROOM

ROOF STRUCTURE - 2" FIBER ROOF TILE ON STEEL JOISTS

ROOF COVER - BUILT-UP COMPOSITION WITH INSULATION

CEILINGS - ACOUSTICAL TILE IN OFFICES, CLASSROOMS, LOCKER ROOMS  
CORRIDORS

INTERIOR CONSTRUCTION - BRICK ON BLOCK PARTITIONS INCLUDING  
BASKETBALL COURT, LOCKER ROOMS, CLASSROOMS  
OFFICE AND STORAGE ROOMS

BUILT-IN FIXTURES -

1 - ELEVATOR, 2,000 LB. CAPACITY, 2-STOPS

6 - RETRACTABLE BASKETBALL BACKSTOPS

1 - NEVCO ELECTRONIC SCOREBOARD

1 - POWER GYMNASIUM DIVIDER CURTAIN

1 - KITCHENETTE COUNTER

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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PHYSICAL EDUCATION: continued

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 14 - WATER CLOSETS
- 12 - LAVATORIES
- 5 - URINALS
- 2 - SANITARY SINKS
- 4 - DRINKING FOUNTAINS
- 8 - SHOWER HEADS
- 1 - SUPER STORE 120 GALLON WATER STORAGE TANK

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES

- FLUORESCENT AND INCANDESCENT FIXTURES
- HIGH PRESSURE SODIUM FIXTURES IN GYMNASIUM

HEATING AND AIR CONDITIONING -

- 1 - AMERICAN STANDARD 10AB 21,000 CFM HORIZONTAL AIR  
HANDLER UNIT
- 1 - AMERICAN STANDARD 104 5,400 CFM MULTIZONE VENTILATING  
UNIT
- 1 - AMERICAN STANDARD 5,600 CFM VERTICAL VENTILATING UNIT
- 1 - AMERICAN STANDARD 2,000 CFM VERTICAL VENTILATING UNIT
- PUMPS AS REQUIRED
- M-FLEX ADJUSTABLE SPEED CONTROLLER
- 1 - LOCHINVAR MODEL KBN800 GAS FIRED DIRECT VENT BOILER  
# G08H10057992
- 1 - LOCHINVAR MODEL KBN800 GAS FIRED DIRECT VENT BOILER  
# G08H10057954

EXTERIOR WALLS - CONCRETE BLOCK

- FACE BRICK AT VESTIBULE ENTRANCE
- DRYVITON BLOCK WALL COVER

MISCELLANEOUS -

- 1 - FIRE ALARM SYSTEM WITH CONTROL BOX
- 1 - AUTOMATIC DOOR OPENER
- SPRINKLER SYSTEM THRU-OUT
- ACCESS CONTROL SYSTEM
- 2 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1969

R. A. SCETTLE, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: POWERHOUSE  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 30,500.00    |
| SUPERSTRUCTURE:                   |              |
| FRAME                             | 72,800.00    |
| FLOORS                            | 48,900.00    |
| ROOF STRUCTURE                    | 73,800.00    |
| ROOF COVER                        | 53,000.00    |
| INTERIOR CONSTRUCTION             | 14,900.00    |
| ELECTRICAL                        | 447,100.00   |
| PLUMBING                          | 46,700.00    |
| HEATING                           | 1,718,400.00 |
| MISCELLANEOUS                     | 8,300.00     |
| EXTERIOR WALLS                    | 319,700.00   |
| TOTAL LABOR AND MATERIALS         | 2,834,100.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%           |

|                       |              |
|-----------------------|--------------|
| Replacement Value New | 3,032,500.00 |
| Depreciation %        | 59%          |
| Sound Valuation       | 1,243,300.00 |



R. A. SCHESSLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: POWERHOUSE

KIND OF BUILDING: CLASS C

NO. OF STORIES: ONE

OCCUPANCY - BOILER HOUSE

SIZE: TOTAL SQUARE FEET = 3,580

FOUNDATION: POURED REINFORCED CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL I BEAMS WITH JOISTS AND COLUMNS

FLOORS - CONCRETE ON GRADE

ROOF STRUCTURE - TECTUM DECK ON 18 GALLON BOX

ROOF COVER - SINGLE PLY MEMBRANE WITH INSULATION

INTERIOR CONSTRUCTION - CONCRETE BLOCK RESTROOM PARTITION,  
18 X 10'

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 1 - WATER CLOSET
- 1 - LAVATORY
- 1 - URINAL
- 1 - 80-GALLON WATER HEATER
- 1 - WATER COOLER
- 1 - SANITARY SINK

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES

- POWER WIRING DISTRIBUTION SYSTEM WITH SQUARE D  
SWITCHBOARD
- 1 - 500 KVA TRANSFORMER ON PAD

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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POWERHOUSE: continued

HEATING AND AIR CONDITIONING -

- 1 - CLEAVER BROOKS MODEL CB428-500 PACKAGED BOILER,  
# 1-80366 2,092,000 BTU INPUT
- 1 - CLEAVER BROOKS MODEL CB428-700 PACKAGED BOILER,  
#L42353, 2,929,100 BTU INPUT
- 1 - CLEAVER BROOKS CR-266-200 PACKAGED BOILER, #L-48323
- 2 - TRANE UNIT HEATERS
- 1 - CLEAVER BROOKS MODEL CB-700-50-150 GAS FIRED  
PACKAGED BOILER # OL106948

MISCELLANEOUS - ACCESS CONTROL SYSTEM

- EXTERIOR WALLS - FACE BRICK ON 12" CONCRETE BLOCK
- NORTH ELEVATION WINDOWS IN STEEL SASH
  - 1 - OVERHEAD DOOR METAL/GLASS 12 X 10' HEIGHT

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1963

R. A. SCHETTLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: SCHOLARS HALL  
REAL ESTATE - BUILDING

| Description                              | 11/1/23              |
|--|----------------------|
| <b>BASEMENT:</b>                         |                      |
| FRAME                                    | 779,400.00           |
| FLOOR                                    | 268,400.00           |
| CEILING                                  | 238,700.00           |
| EXTERIOR WALLS                           | 434,700.00           |
| INTERIOR PARTITION                       | 1,569,300.00         |
| ELECTRICAL                               | 783,300.00           |
| <b>FOUNDATION:</b>                       | 519,900.00           |
| <b>SUPERSTRUCTURE:</b>                   |                      |
| FRAME                                    | 1,561,900.00         |
| FLOORS                                   | 1,075,000.00         |
| FLOOR COVERINGS                          | 750,500.00           |
| CEILINGS                                 | 472,300.00           |
| ROOF STRUCTURE                           | 533,000.00           |
| ROOF COVER                               | 298,600.00           |
| INTERIOR CONSTRUCTION                    | 3,146,700.00         |
| BUILT-IN FIXTURES                        | 313,800.00           |
| ELECTRICAL                               | 1,568,400.00         |
| PLUMBING                                 | 1,465,000.00         |
| HEATING                                  | 2,986,400.00         |
| MISCELLANEOUS                            | 55,500.00            |
| EXTERIOR WALLS                           | 1,472,000.00         |
| FIRE PROTECTION                          | <u>371,700.00</u>    |
| <b>TOTAL LABOR AND MATERIALS</b>         | <b>20,664,500.00</b> |
| <b>ARCHITECT'S PLANS AND SUPERVISION</b> | <b>7%</b>            |
| <hr/>                                    |                      |
| Replacement Value New                    | 22,111,000.00        |
| Depreciation %                           | 44%                  |
| Sound Valuation                          | <u>12,382,200.00</u> |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: SCHOLARS HALL

KIND OF BUILDING: CLASS B

NO. OF STORIES: TWO WITH FULL BASEMENT

OCCUPANCY - CLASSROOMS, LECTURE ROOMS AND OFFICES

SIZE:

|              |                    |
|--------------|--------------------|
| BASEMENT     | 19,996 SQUARE FEET |
| FIRST FLOOR  | 20,951 SQUARE FEET |
| SECOND FLOOR | 19,092 SQUARE FEET |

TOTAL SQUARE FEET 62,812 MORE OR LESS

FOUNDATION: POURED REINFORCED CONCRETE FOOTINGS

SUPERSTRUCTURE:

FRAME - CONCRETE COLUMNS AND BEAMS WITH REINFORCED CONCRETE

FLOORS - SLAB ON GRADE, PRECAST CONCRETE TEES

FLOOR COVER - CARPET IN OFFICES CORRIDORS AND CLASSROOMS;  
VINYL TILE IN LABS

ROOF STRUCTURE - PRECAST CONCRETE TEES

ROOF COVER - SINGLE PLY MEMBRANE WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL THROUGHOUT

INTERIOR CONSTRUCTION - MASONRY AND DRYWALL PARTITIONS

BUILT-IN FIXTURES -

- 1 - OTIS ELEVATOR, 2,000 LB. CAPACITY WITH 3 STOPS, #40562
- 120 - WOOD TILT-UP CHAIRS WITH TABLET ARMS
- 77 - WOOD TILT-UP CHAIRS WITH TABLET ARMS
- 4 - CORRIDOR BENCHES, VINYL UPHOLSTERY
- RECEPTION WORK STATION
- WORK ROOM CABINETS
- CLASSROOM CABINETS

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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SCHOLARS HALL: continued

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 14 - WATER CLOSETS
- 16 - LAVATORIES
- 6 - URINALS
- 1 - 80-GALLON WATER HEATER
- 4 - WATER COOLERS
- 2 - SANITARY SINKS

- ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES
- FLUORESCENT AND INCANDESCENT FIXTURES
  - 2 - 500 KVA TRANSFORMER

HEATING AND AIR CONDITIONING -

- 1 - TRANE MODEL M-10 AIR HANDLING UNIT
- 1 - TRANE MODEL M-25 AIR HANDLING UNIT
- 3 - TRANE MODEL M-17 AIR HANDLING UNITS
- 1 - TRANE MODEL M-12 AIR HANDLING UNIT
- 1 - TRANE RTAC ROOFTOP AIR COOLED CHILLER, 160 TON CAPACITY
- STEAM FROM POWERHOUSE
- DIGITAL CONTROLLERS

- EXTERIOR WALLS - FACE BRICK ON CONCRETE BLOCK
- WINDOWS IN ALUMINUM SASH
  - 6" ALUMINUM CURTAIN WALL SYSTEM

MISCELLANEOUS -

- 1 - NOTIFIER FIRE ALARM SYSTEM WITH CONTROL BOX
- 1 - AUTOMATIC DOOR OPENER
- FIRE PROTECTION SPRINKLERS
- ACCESS CONTROL SYSTEM
- 3 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1963



R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: WEST HALL INNOVATION CENTER

KIND OF BUILDING: CLASS B/C

NO. OF STORIES: TWO WITH LOWER LEVEL, PENT HOUSE

OCCUPANCY - STUDENT CENTER, CAFETERIA, OFFICES AND LIBRARY

SIZE:

|              |                    |
|--------------|--------------------|
| LOWER LEVEL  | 19,063 SQUARE FEET |
| FIRST FLOOR  | 32,065 SQUARE FEET |
| SECOND FLOOR | 12,126 SQUARE FEET |
| PENT HOUSE   | 3,050 SQUARE FEET  |

TOTAL SQUARE FEET 66,304

FOUNDATION: CONCRETE FOOTINGS

SUPERSTRUCTURE:

FRAME - CONCRETE COLUMNS AND BEAMS  
- STEEL

FLOORS - 4" CONCRETE SLAB ON GRADE, 2" CONCRETE TOPPING ON DOX  
PLANK; STEEL JOIST, METAL DECK, CONCRETE TOPPING

FLOOR COVER - CARPET TILE, QUARRY TILE IN KITCHEN, PLANK TILE

ROOF STRUCTURE - 6" DOX PLANK-PRECAST CONCRETE  
- SKYLIGHTS AT COMMONS AREA

ROOF COVER - SINGLE PLY MEMBRANE WITH RIGID INSULATION

CEILINGS - SUSPENDED ACOUSTICAL TILE; GYPSUM BOARD

INTERIOR CONSTRUCTION - MASONRY PARTITIONS, AND FRAME PARTITIONS

BUILT-IN FIXTURES -

- 1 - HOBART CLPS66LN AUTOMATIC DISHWASHER WITH STAINLESS  
STEEL DRAINBOARD AND DISPOSAL
- 1 - RANGE VENTILATION HOOD, 13' X 60" WITH EXTINGUISHING SYSTEM
- 1 - RANGE VENTILATION HOOD, 13' X 54" WITH EXTINGUISHING SYSTEM
- 1 - COFFEE STATION STAINLESS STEEL WITH SINK, 120" X 30"
- 1 - TRAUlsen 2-DOOR PASS THRU FOOD WARMER
- 1 - STAINLESS STEEL 3 BASIN POT SINK
- 3 - STAINLESS STEEL PREP TABLE, 96" X 30"
- STAINLESS STEEL TABLE WITH SINK, 120" X 30"

REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

WEST HALL INNOVATION CENTER: continued

BUILT-IN FIXTURES - continued

- 1 - 3 COMPARTMENT STAINLESS STEEL SINK, 48" X 19"
- 1 - WALK-IN FREEZER, 16' X 9'
- 1 - MONTGOMERY 4,000 LB. ELEVATOR WITH 2-STOPS
- 1 - STAINLESS STEEL TABLE, 120" X 30"
  - LAMINATE SALES COUNTERS IN BOOKSTORE
- 1 - COFFEE COUNTER, LAMINATE WITH CORIAN TOP, REFRIDGERATED DISPLAY CASE
- 1 - DELI WELCOME COUNTER, IRREGULAR SHAPED WITH HOT FOOD WELL (4) COLD FOOD WELL (4), BREATH PROTECTOR
- 8 - HAND SINKS, STAINLESS STEEL
  - SALAD BAR COUNTER, LAMINATE WITH 3 COLD FOOD WELLS, BREATH PROTECTOR, CORIAN TOP
- 7 - LOCKERS
  - SOILED DISH TABLE, STAINLESS STEEL
- 9 - SHELVES, STAINLESS STEEL
- 1 - KOLPAK WALK-IN REFRIGERATOR, 10 X 16'
  - CIRCULATION DESK CASE WORK, LAMINATE, CORIAN TOP
- 1 - STAINLESS STEEL RANGE HOOD WITH EXTINGUISHER SYSTEM, 54" X 60"
- 1 - STAINLESS STEEL RANGE HOOD WITH EXTINGUISHER SYSTEM, 10' X 5'
- 1 - BEVERAGE WALK-IN COOLER, 23' X 7'9" X 8'6", 7 GLASS DOORS
- 1 - OPEN SHELF COUNTER, LAMINATE, CORIAN TOP, 64" X 25"
- 1 - MOBILFLEX GATE
- 1 - STAINLESS STEEL COUNTER, LAMINATE BASE, 2 SINKS, 14.5' X 30"
- 1 - COUNTER, STAINLESS STEEL LEGS, CORIAN TOP, 78" X 30"
- 1 - COUNTER, STAINLESS STEEL LEGS, CORIAN TOP, 28" X 30"
- 8 - BOOTHES, VINYL UPHOLSTERED, 78" X 36"
- 2 - WELCOME DESK, L SHAPE, LAMINATE, CORIAN TOP, 14 LINEAR FEET
- 6 - BOOTHES, VINYL UPHOLSTERED, 82" X 36"
- 1 - BASE CABINET, 3 DOOR, LAMINATE, CORIAN TOP, 82" X 24"
- 1 - FIREPLACE, GAS FIRED, 72" WIDE
- 1 - BOOKCASE, LAMINATE, 60" X 14" X 96"
- 1 - BOOKCASE, LAMINATE, 120" X 14" X 96"
- 1 - BOOKCASE, LAMINATE, 30" X 14" X 96"
- 1 - BASE COUNTER WITH STAINLESS STEEL SINK, CORIAN TOP, 111" X 25"
- 1 - WALL CABINET, LAMINATE, 111" X 12" X 30"
- 1 - BOOKCASE, LAMINATE, GLASS DOORS, 48" X 14" X 96"
- 1 - KONE ELEVATOR 3 STOP. 3500 LB. CAPACITY

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 19 - WATER CLOSETS
- 15 - LAVATORIES
- 7 - URINALS
- 3 - SANITARY SINKS
- 1 - WATER HEATER
- 3 - DRINKING FOUNTAIN/BOTTLE FILLER



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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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WEST HALL INNOVATION CENTER: continued

- ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES
- IT CABLE
  - FIRE ALARM SYSTEM

- HEATING AND AIR CONDITIONING - STEAM HEAT FROM POWERHOUSE
- 3 - LOCHINVAR MODEL FTXL850, GAS FIRED BOILER
  - 1 - RENEWAIRE MODEL HE3X1NV, ENERGY RECOVERY VENTILATOR INDOOR UNIT
  - 1 - TRANE MODEL CSAA-80, AIR HANDLING UNIT, #AHU-1
  - 1 - TRANE MODEL CSAA-25 AIR HANDLER UNIT, #AHU-2
  - 1 - TRANE MODEL CSAA-10 AIR HANDLER UNIT, #AHU-3
  - 1 - MITSUBISHI MODEL MSY-GL18NA, MINI-SPLIT SYSTEM
  - SNOW MELT SYSTEM
  - PUMPS AS REQUIRED
  - GEOTHERMAL SYSTEM

- EXTERIOR WALLS - FACE BRICK ON CONCRETE BLOCK
- ALUMINUM CURTAIN WALL
  - SOLID CORE ACM RAINSCREEN SYSTEM WITH DRY-LOC JOINTS
  - KAWNEER SUN SHADE SYSTEM
  - 4" HORIZONTAL INSULATED METAL PANEL SYSTEM
  - ALUMINUM STOREFRONT
  - BRICK VENEER, METAL STUDS

- MISCELLANEOUS -
- FIRE SPRINKLERS THROUGHOUT
  - 1 - PUBLIC ADDRESS SYSTEM, PUBLIC AREAS
  - 1 - RADIO BROADCAST ANTENNA, 100'
  - 1 - METAL OVERHEAD DOOR WITH DOCK LEVELER
  - ACCESS CONTROL SYSTEM

QUALITY OF CONSTRUCTION: VERY GOOD

BUILT: 1963

KITCHEN AND BOOKSTORE ADDITION 2003  
ADDITION AND RENOVATION 2019 AND 2020

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE Bldg.: UNIVERSITY CENTER  
REAL ESTATE - BUILDING CAMPUS BOARDMAN LAKE

| Description                       | 11/1/23       |
|-----------------------------------|---------------|
| FOUNDATION:                       | 461,400.00    |
| SUPERSTRUCTURE:                   |               |
| FRAME                             | 1,021,800.00  |
| FLOORS                            | 1,545,000.00  |
| FLOOR COVERINGS                   | 777,200.00    |
| CEILINGS                          | 625,600.00    |
| ROOF STRUCTURE                    | 468,700.00    |
| ROOF COVER                        | 307,900.00    |
| INTERIOR CONSTRUCTION             | 4,418,200.00  |
| BUILT-IN FIXTURES                 | 228,200.00    |
| ELECTRICAL                        | 2,346,700.00  |
| PLUMBING                          | 1,452,600.00  |
| HEATING                           | 1,894,800.00  |
| MISCELLANEOUS CONSTRUCTION        | 557,300.00    |
| EXTERIOR WALLS                    | 2,053,500.00  |
| TOTAL LABOR AND MATERIALS         | 18,158,900.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%            |

|                       |               |
|-----------------------|---------------|
| Replacement Value New | 19,430,000.00 |
| Depreciation %        | 34%           |
| Sound Valuation       | 12,823,800.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: UNIVERSITY CENTER CAMPUS/BOARDMAN LAKE

KIND OF BUILDING: CLASS C

NO. OF STORIES: THREE

OCCUPANCY - OFFICE RENTAL, CLASSROOMS, OFFICES

SIZE:

TOTAL SQUARE FEET 59,460 MORE OR LESS

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL

FLOORS - CONCRETE ON GROUND; STEEL PAN CONCRETE SLAB

FLOOR COVER - CARPET IN CLASSROOMS, OFFICES, CORRIDORS;  
- CERAMIC TILE RESTROOMS  
- VINYL TILE

ROOF STRUCTURE - STEEL JOIST, STEEL DECK

ROOF COVER - SINGLE PLY MEMBRANE WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL TILE; GYPSYM BOARD

INTERIOR CONSTRUCTION - METAL FRAME PARTITIONS  
- MASONRY PARTITIONS

BUILT-IN FIXTURES -

- KITCHEN CABINETS, LAMINATE WITH STAINLESS STEEL SINK
- OAK CREDENZAS, WALL MOUNTED
- LAMINATE BASE CABINETS
- MONTGOMERY HYDRAULICALLY OPERATED ELEVATOR, 3-STOP,  
2,000 LB. CAPACITY #23504
- ADDITIONAL STOP FOR EXISTING OTIS ELEVATOR, 2100 LB.  
CAPACITY, #30485
- FOLDING PARTITION, 32 X 9', ROOMS 202 / 203

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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UNIVERSITY CENTER CAMPUS/BOARDMAN LAKE: continued

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 33 - WATER CLOSETS
- 28 - LAVATORIES
- 9 - URINALS
- 6 - SANITARY SINKS
- 6 - WATER COOLERS
- 1 - HOT WATER HEATER, 85-GALLON

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES  
- TRANSFORMER

HEATING AND AIR CONDITIONING -

- MC QUAY AIR HANDLING UNIT
- MC QUAY AIR COOLED CONDENSING UNIT
- RITE MODEL 150 WATER HEATING BOILER, GAS FIRED
- PUMPS AS REQUIRED
- TRANE GAS FIRED ROOFTOP HEATING AND AIR CONDITIONING UNIT
  - 2 - RAYPACK MODEL H3-0514A GAS FIRED BOILER
  - 1 - LIEBERT AIR CONDITIONER
  - 1 - LIEBERT CONDENSING UNIT
- MC QUAY MODEL LSL-108 MAKE-UP AIR UNIT
- SNYDER - GENERAL MODEL ALP037C AIR CONDITIONING UNIT  
#5VM0507000
- VAV'S AND CONTROLS
- 1 - NIMBUS VIRGA III COOLING TOWER
- 26 - TRANE WATER FURANCE HEAT PUMP

EXTERIOR WALLS - FACE BRICK, BLOCK BACK-UP 12"  
- STEEL STUD WALLS, T & G CEDAR SIDING  
- 1" INSULATED GLASS, ALUMINUM FRAME

MISCELLANEOUS - FIRE SPRINKLERS THRU OUT  
- FIRELITE FIRE ALARM AND SECURITY SYSTEM

- 1 - AUTOMATIC DOOR OPENER
- 1 - BERGEY WINDPOWER WIND TURBINE WITH 70'18" TRIANGULAR  
GUYED TOWER, CABLE TO BUILDING, FOUNDATION, POWER  
INVERTER
- ACCESS CONTROL SYSTEM
- 5 - CAMERA SECURITY SYSTEM
- SPRINKLER SYSTEM MODIFIED FOR PUBLIC SCHOOL

QUALITY OF CONSTRUCTION: VERY GOOD

BUILT: 1986; THIRD FLOOR OVER 1995 ADDITION, 2000.

R. A. SCHETTLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: UTILITY TUNNELS  
REAL ESTATE - BUILDING

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| Description | 11/1/23 |
|-------------|---------|
|-------------|---------|

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APPROXIMATELY 6,925 SQUARE FEET OR 54,100 CUBIC FEET

STEAM TUNNELS CONNECTING BUILDINGS SERVICED BY  
CENTRAL HEATING SYSTEM

- INCLUDING LIGHTING AND DRAINAGE
- REINFORCED CONCRETE CONSTRUCTION

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|                       |              |
|-----------------------|--------------|
| Replacement Value New | 2,741,500.00 |
| Depreciation %        | 56%          |
| Sound Valuation       | 1,206,300.00 |

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R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: MAINTENANCE  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 155,100.00   |
| SUPERSTRUCTURE:                   |              |
| FRAME                             | 131,700.00   |
| FLOORS                            | 153,100.00   |
| FLOOR COVERINGS                   | 20,700.00    |
| CEILINGS                          | 20,700.00    |
| ROOF COVER                        | 91,700.00    |
| INTERIOR CONSTRUCTION             | 153,800.00   |
| BUILT-IN FIXTURES                 | 56,200.00    |
| ELECTRICAL                        | 154,200.00   |
| PLUMBING                          | 106,600.00   |
| HEATING                           | 47,000.00    |
| MISCELLANEOUS CONSTRUCTION        | 125,700.00   |
| EXTERIOR WALLS                    | 172,000.00   |
| TOTAL LABOR AND MATERIALS         | 1,388,500.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 5%           |
| Replacement Value New             | 1,457,900.00 |
| Depreciation %                    | 22%          |
| Sound Valuation                   | 1,137,200.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: MAINTENANCE

KIND OF BUILDING: CLASS S

NO. OF STORIES: ONE

OCCUPANCY - MAINTENANCE/STORAGE

TOTAL SQUARE FEET = 11,900

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL

FLOORS - 6" REINFORCED CONCRETE OVER VAPOR BARRIER ON COMPACTED SAND

FLOOR COVER - VINYL COMPOSITION TILE;  
- CARPET

ROOF STRUCTURE - STEEL

ROOF COVER - STANDING SEAM METAL ROOF WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL TILE; DRYWALL

INTERIOR CONSTRUCTION - FRAME PARTITIONS

BUILT-IN FIXTURES -

11 LINEAR FEET OF PLASTIC LAMINATE BASE CABINETS WITH LAMINATE TOP, CONFERENCE ROOM

11 LINEAR FEET OF PLASTIC LAMINATE WALL CABINETS, - CONFERENCE ROOM

7 LINEAR FEET OF PLASTIC LAMINATE BASE CABINET WITH SINK, LAMINATE TOP, - LUNCH ROOM

7 LINEAR FEET OF PLASTIC LAMINATE WALL CABINETS, - LUNCH ROOM

19 - LOCKERS

- TOILET PARTITIONS

6 - MINI BLINDS

175 - LINEAR FEET OF CYCLONE FENCE, 10' HEIGHT WITH 3 SWING GATES

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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MAINTENANCE: continued

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 4 - WATER CLOSETS
- 2 - LAVATORIES
- 1 - URINALS
- 1 - SANITARY SINKS
- 1 - ELECTRIC WATER COOLER
- 1 - HOT WATER HEATER
- 2 - SHOWER STALLS

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES

- FLUORESCENT FIXTURES
- 400 WATT HIGH BAY FIXTURES

HEATING AND AIR CONDITIONING -

- 2 - REZNOR MODEL FE250 GAS FIRED SUSPENDED UNIT HEATERS
- 1 - PHILCO MODEL 5-TON CONDENSING UNIT
- 1 - PHILCO GAS FIRED FORCED AIR FURNACE WITH AIR  
CONDITIONING

EXTERIOR WALLS - DECORATIVE BLOCK

- METAL SIDING WITH INSULATION
- 2 - 12 X 10' METAL OVERHEAD DOORS

MISCELLANEOUS - FIRE SUPPRESSION SYSTEM

- ACCESS CONTROL SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 2001



R. A. SCETTLE, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: LANDSCAPE BIN  
REAL ESTATE - BUILDING

| Description     | 11/1/23   |
|-----------------|-----------|
| FOUNDATION:     | 8,400.00  |
| SUPERSTRUCTURE: |           |
| FRAME           | 4,100.00  |
| FLOORS          | 8,300.00  |
| ROOF STRUCTURE  | 6,200.00  |
| ROOF COVER      | 6,400.00  |
| EXTERIOR WALLS  | 10,500.00 |

|                       |           |
|-----------------------|-----------|
| Replacement Value New | 43,900.00 |
| Depreciation %        | 22%       |
| Sound Valuation       | 34,200.00 |

R. A. SCETTLE, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: LANDSCAPE BINS

KIND OF BUILDING: CLASS D

NO. OF STORIES: ONE

OCCUPANCY: STORAGE

DIMENSIONS - 45' X 15' X 8'/11' HEIGHT  
- 60' X 20' X 11'/18' HEIGHT

TOTAL SQUARE FEET = 675

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - WOOD

FLOORS - CONCRETE ON SAND FILL

ROOF STRUCTURE - OPEN WOOD

ROOF COVER - METAL PANELS

INTERIOR CONSTRUCTION - FRAME PARTITIONS

EXTERIOR WALLS - WOOD

QUALITY OF CONSTRUCTION: GOOD

BUILT - 2001



R. A. SCHESSLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: AUTOMOTIVE SERVICE TECHNOLOGY

KIND OF BUILDING: CLASS C/S

NO. OF STORIES: ONE

OCCUPANCY - CLASSROOMS/TECHNOLOGY

TOTAL SQUARE FEET 18,328

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL

FLOORS - CONCRETE ON SAND FILL

FLOOR COVER - CONCRETE SEALER  
VINYL COMPOSITION TILE  
CARPET

ROOF STRUCTURE - STEEL - STEEL JOISTS, METAL DECK

ROOF COVER - METAL STANDING SEAM WITH INSULATION  
- BUILT UP COMPOSITION WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL TILE

INTERIOR CONSTRUCTION - MASONRY AND FRAME PARTITIONS;

BUILT-IN FIXTURES -  
95 LINEAR FEET OF CYCLONE FENCE, 8' HEIGHT WITH 3 SWING GATES

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:  
4 - WATER CLOSETS  
4 - LAVATORIES  
1 - URINALS  
1 - ELECTRIC WATER COOLER  
1 - WASH FOUNTAIN  
1 - WATER HEATER

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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AUTOMOTIVE SERVICE TECHNOLOGY: continued

MECHANICAL EQUIPMENT:

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES;  
FIRE ALARM SYSTEM

HEATING AND AIR CONDITIONING -

- VANTAGE II GAS FIRED SUSPENDED RADIANT HEAT
- 2 - EXHAUST WALL FANS
- ROOFTOP GAS HEATING UNIT WITH AIR CONDITIONING

EXTERIOR WALLS - FACE BRICK, BLOCK BACKUP

- 8" BLOCK
- METAL SIDING WITH INSULATION
- 3 - 14 X 12' OVERHEAD DOORS, METAL, ELECTRIC OPENER
- 1 - 16 X 12' OVERHEAD DOOR, METAL, ELECTRIC OPENER
- 1 - 14 X 14' OVERHEAD DOOR, METAL, ELECTRIC OPENER

MISCELLANEOUS: - AUTOMATIC FIRE SUPPRESSION SYSTEM  
- COMPRESSED AIR SYSTEM  
- VEHICLE EXHAUST FUME SYSTEM WITH 12 HOSE DROPS  
3000 CFM CAPACITY  
- ACCESS CONTROL SYSTEM  
2 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 1982

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: GREAT LAKES CAMPUS  
REAL ESTATE - BUILDING

| Description                       | 11/1/23       |
|-----------------------------------|---------------|
| FOUNDATION:                       | 632,000.00    |
| SUPERSTRUCTURE:                   |               |
| FRAME                             | 1,468,000.00  |
| FLOORS                            | 1,858,900.00  |
| FLOOR COVERINGS                   | 1,099,900.00  |
| CEILINGS                          | 296,100.00    |
| ROOF STRUCTURE                    | 811,500.00    |
| ROOF COVER                        | 1,761,700.00  |
| INTERIOR CONSTRUCTION             | 5,106,500.00  |
| BUILT-IN FIXTURES                 | 3,516,000.00  |
| ELECTRICAL                        | 3,328,600.00  |
| PLUMBING                          | 1,364,000.00  |
| HEATING                           | 3,570,000.00  |
| MISCELLANEOUS                     | 92,800.00     |
| EXTERIOR WALLS                    | 4,074,600.00  |
| FIRE PROTECTION                   | 354,100.00    |
| <br>                              |               |
| TOTAL LABOR AND MATERIALS         | 29,330,700.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 7%            |
| <br>                              |               |
| Replacement Value New             | 31,383,800.00 |
| Depreciation %                    | 20%           |
| Sound Valuation                   | 25,107,000.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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NAME OF BUILDING: GREAT LAKES CAMPUS

KIND OF BUILDING: CLASS C

NO. OF STORIES: TWO WITH PENTHOUSE

OCCUPANCY: MARITIME ACADEMY, CULINARY ARTS, CONFERENCE CENTER

SIZE: FIRST FLOOR 35,670 SQUARE FEET  
SECOND FLOOR 33,050 SQUARE FEET  
PENTHOUSE 6,644 SQUARE FEET

TOTAL SQUARE FEET = 75,364

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL

FLOORS - CONCRETE ON GROUND, VAPOR BARRIER  
- STEEL, CONCRETE FLOOR ON STEEL DECK

FLOOR COVERINGS - VINYL TILE  
- CARPET  
- CERAMIC TILE  
- CARPET TILE  
- LINOLEUM TILE  
- THINSET TERRAZZO FLOORING

ROOF STRUCTURE - LOWER ROOF, STEEL LONG SPAN BAR JOIST, STEEL DECK  
- UPPER ROOF, LIGHT GAUGE MONO-TRUSSES, METAL DECK

ROOF COVER - STANDING SEAM METAL DECK, INSULATION, VAPOR BARRIER  
ICE AND WATER SHIELD AT EAVE  
EPDM MEMBRANE WITH INSULATION  
PREFINISHED ENGINEERED SNOW RETENTION SYSTEM

CEILINGS - GYPSUM BOARD  
- ACOUSTICAL CEILING TILE  
- GLASS

INTERIOR CONSTRUCTION - MASONRY AND FRAME PARTITIONS

BUILT-IN FIXTURES -

INTRO LAB:

4 - PREP TABLES, STAINLESS STEEL WITH SINK  
1 - EXHAUST HOOD WITH FIRE PROTECTION SYSTEM  
2 - POT SINKS, 3 COMPARTMENT, STAINLESS STEEL  
1 - PREP TABLE, STAINLESS STEEL, 2 COMPARTMENT SINK

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

GREAT LAKES CAMPUS - continued

BUILT-IN FIXTURES - continued

INTRO LAB: continued

- 4 - HAND SINKS, STAINLESS STEEL
- 1 - COOKS TABLE, WITH SINK, STAINLESS STEEL

GARDE MGR LAB:

- 1 - EXHAUST HOOD WITH FIRE PROTECTION SYSTEM
- 2 - COOKS TABLE, STAINLESS STEEL WITH SINK, UTENSIL RACK, DOUBLE FACE
- 2 - WORK TABLES, STAINLESS STEEL WITH REFRIGERATED BASE, SINK
- 1 - POT SINK, 3 COMPARTMENT, STAINLESS STEEL
- 2 - HAND SINKS, STAINLESS STEEL

BAKERY LAB:

- 1 - WALK-IN COOLER
- 1 - WALK-IN FREEZER
- 2 - FIRE PROTECTION SYSTEMS
- 1 - PREP TABLE, STAINLESS STEEL, SINK, WATER METER/FILLER
- 1 - PREP TABLE, 2 COMPARTMENT SINK, STAINLESS STEEL, DISPOSAL
- 3 - HAND SINKS, STAINLESS STEEL
- 1 - POT SINK, 3 COMPARTMENT STAINLESS STEEL SINK, DISPOSAL, POT WASHER
- 1 - EXHAUST HOOD, STAINLESS STEEL WITH FIRE PROTECTION SYSTEM

FIRST FLOOR CONFERENCE DEMO KITCHEN:

- 1 - WALK-IN COOLER
- 1 - PREP TABLE, STAINLESS STEEL WITH SINK
- 1 - EXHAUST HOOD WITH FIRE PROTECTION SYSTEM
- 1 - DEMO TABLE, STAINLESS STEEL, SINK, MIRROR
- 1 - PLATING TABLE, STAINLESS STEEL
- 1 - UTILITY COUNTER, STAINLESS STEEL
- 2 - ICE BIN AND WATER FILLER, STAINLESS STEEL
- 4 - HAND SINKS, STAINLESS STEEL
- 1 - POT SINK, 3 COMPARTMENT, STAINLESS STEEL
- 1 - HOBART DISHWASHER WITH BOOSTER HEATER, DISPOSAL
- 1 - DISHWASHER HOOD WITH EXHAUST FAN, STAINLESS STEEL

ADVANCED COOLING LAB/SECOND FLOOR:

- 1 - WALK-THRU COOLER
- 2 - PREP TABLES, STAINLESS STEEL WITH SINK, 8'
- 2 - PREP TABLES, STAINLESS STEEL WITH SINK, 7 X 5'
- 1 - EXHAUST HOOD WITH FIRE PROTECTION SYSTEM
- 1 - FRONT SERVICE COUNTER
- 1 - BAKERY DISPLAY CASE
- 1 - HOT FOOD TABLE
- 3 - REFRIGERATED BASE
- 1 - UTILITY COUNTER
- 1 - UTILITY COUNTER WITH SINK
- 1 - BEVERAGE COUNTER 'L' SHAPE, 16'



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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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GREAT LAKES CAMPUS: continued

BUILT-IN FIXTURES - CONTINUED

ADVANCED COOKING LAB/ SECOND FLOOR: continued

- 2 - DISH TABLES, STAINLESS STEEL FOR DISHWASHER WITH SINK
- 1 - POT SINK, 3 COMPARTMENT, STAINLESS STEEL
- 1 - HOBART DISHWASHER WITH DISPOSAL
- 1 - DISHWASHER HOOD WITH EXHAUST FAN
- 1 - HOSE SPRAY UNIT
- 1 - SERVICE STATION, "L" SHAPE, STAINLESS STEEL TOP, 35 L.F.
- 1 - FRONT BAR
- 1 - BAR SERVICE STATION AND ICE BIN
- 2 - PERLICK BLENDER STATIONS
- 1 - PERLICK REFRIGERATED BACK BAR
- 5 - PERLICK DRAINBOARDS
- 2 - PERLICK ICE BIN AND SPEED RAILS
- 1 - BAR SINK
- 5 - CORNER FILLERS, STAINLESS STEEL
- 1 - "U" SHAPE CARIAN TOP FRONT BAR, 60 L.F.

MARITIME ACADEMY:

- 1 - EXHAUST FUME HOOD
- 15 - LOCKERS, 2 TIER
- 1 - OTIS ELEVATOR, 2 STOP
- 2 - ROLLING DOORS, METAL, 24 X 10'
- 3 - ROLLING DOORS, METAL, 78 X 120"
- 1 - ROLLING DOOR, METAL, 10 X 10'
- 1 - ROLLING DOOR, METAL, 15 X 10'
- 3 - MOVABLE PARTITIONS, 48'

CULINARY ARTS:

- 1 - OTIS ELEVATOR, 2-STOP
- 1 - WALK-IN FREEZER
- 2 - WALK-IN COOLERS

PLUMBING - AN MODERN SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 36 - WATER CLOSETS
- 30 - LAVATORIES
- 13 - URINAL
- 5 - JANITOR SINKS
- 12 - DRINKING FOUNTAINS
- 3 - SHOWERS
- 2 - STORAGE TANKS, 752 GALLON CAPACITY
- 3 - HELLEN BRAND MODEL H200M, WATER CONDITIONING SYSTEM

- ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES  
- EMERGENCY LIGHTING

REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

GREAT LAKES CAMPUS: continued

HEATING AND AIR CONDITIONING -

- 1 - LOCHINVAR MODEL FTX850N-M13, GAS FIRED TUBE BOILER,  
#1639103476412
- 12 - TRANE FNB04 CABINET UNIT HEATERS
- 3 - TRANE 90S UNIT HEATERS
- 4 - B & G HEATING EXCHANGERS
- 1 - TRANE MCC-40 AIR HANDLING UNIT, AHU-1
- 1 - TRANE MCC-40 AIR HANDLING UNIT, AHU-2
- 1 - TRANE MCC-25 AIR HANDLING UNIT, AHU-3
- 1 - TRANE MCC-35 AIR HANDLING UNIT, AHU-4
- 1 - TRANE MCC-40 AIR HANDLING UNIT, AHU-5
- 1 - TRANE RAUCC304 ROOFTOP CONDENSING UNIT, CU-3
- 1 - TRANE RAUCC504 ROOFTOP CONDENSING UNIT, CU-2
- 1 - TRANE RAUCC504 ROOFTOP CONDENSING UNIT, CU-1
- 1 - TRANE ROOFTOP CONDENSING UNIT, CU-4
- 1 - TRANE ROOFTOP CONDENSING UNIT, CU-5
- 2 - HEATWAY 1574 SNOW MELTING RADIANT FLOOR SYSTEM
- 87 - TRANE VAV BOXES (VARIABLE AIR VOLUME)
- 1 - DUO-AIRE MODEL CAA-2D ROOFTOP DIRECT GAS INDUSTRIAL MAKE-UP  
AIR UNIT, #565605B
- 1 - DUO-AIRE MODEL CAA-3D ROOFTOP DIRECT GAS INDUSTRIAL MAKE-UP  
AIR UNIT, #565605
- 1 - DUO-AIRE MODEL CAA-1D ROOFTOP DIRECT GAS INDUSTRIAL MAKE-UP  
AIR UNIT, #565605
- 1 - DUO-AIRE MODEL CAA-2D ROOFTOP DIRECT GAS INDUSTRIAL MAKE-UP  
AIR UNIT, #565605
- 1 - LOCHINVAR MODEL FTX850N-M13, GAS FIRED TUBE BOILER,  
#1639103476415
- 1 - LOCHINVAR MODEL FTX850N-M13, GAS FIRED TUBE BOILER,  
#1639103476426
- 1 - LOCHINVAR MODEL FTX850N-M13, GAS FIRED TUBE BOILER,  
#1639103476414
- 1 - LOCHINVAR MODEL FTX850N-M13, GAS FIRED TUBE BOILER,  
#1639103476425
- 1 - LOCHINVAR MODEL FTX850N-M13, GAS FIRED TUBE BOILER,  
#1639103476431
- 1 - LOCHINVAR MODEL FTX850N-M13, GAS FIRED TUBE BOILER,  
#1639103476428
- DIGITAL CONTROLLERS

EXTERIOR WALLS - FACE BEICK, BLOCK BACK-UP  
7-1/2" STRUCTURAL CURTAIN WALL SYSTEM  
WITH 1" INSULATED GLAZING UNITS  
OVERHEAD DOOR, GLASS/METAL  
WITH ELECTRIC OPERATOR, 20 X 16'

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

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GREAT LAKES CAMPUS: continued

MISCELLANEOUS:

- MARITIME ACADEMY DECK, STEEL FRAME, CONCRETE ON METAL DECK  
1,262 SQUARE FEET
- CULINARY ARTS DECK, STEEL FRAME, CONCRETE ON METAL DECK, 460  
SQUARE FEET
- ACCESS CONTROL SYSTEM
- 5 - CAMERA SECURITY SYSTEM

FIRE PROTECTION - FIRE PROTECTION SPRINKLERS

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: AERO PARK LAB  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 224,200.00   |
| SUPERSTRUCTURE:                   |              |
| FRAME                             | 698,100.00   |
| FLOORS                            | 273,500.00   |
| FLOOR COVERINGS                   | 31,000.00    |
| CEILINGS                          | 15,700.00    |
| ROOF STRUCTURE                    | 466,300.00   |
| ROOF COVER                        | 421,700.00   |
| INTERIOR CONSTRUCTION             | 656,600.00   |
| BUILDING FIXTURES                 | 65,100.00    |
| ELECTRICAL                        | 930,600.00   |
| PLUMBING                          | 378,100.00   |
| HEATING                           | 262,300.00   |
| MISCELLANEOUS CONSTRUCTION        | 590,100.00   |
| EXTERIOR WALLS                    | 557,800.00   |
| TOTAL LABOR AND MATERIALS         | 5,571,100.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 6%           |

|                       |              |
|-----------------------|--------------|
| Replacement Value New | 5,905,400.00 |
| Depreciation %        | 41%          |
| Sound Valuation       | 3,484,200.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

---

NAME OF BUILDING: AERO PARK LAB

TYPE OF BUILDING: CLASS C

NO. OF STORIES: ONE

OCCUPANCY: LABORATORY WITH CLASSROOM

TOTAL SQUARE FEET = 29,600, MORE OR LESS

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL  
- CRANEWAY

FLOORS - CONCRETE ON GROUND

FLOOR COVERINGS - CARPET AND CERAMIC TILE

CEILINGS - SUSPENDED ACDUSTICAL CEILING SYSTEM WITH EDGE TRIM,  
OFFICES

ROOF STRUCTURE - STEEL JOIST, METAL DECK

ROOF COVER - SINGLE PLY MEMBRANE WITH INSULATION

INTERIOR CONSTRUCTION - MASONRYAND FRAME PARTITIONS; STORE FRONT

BUILT-IN FIXTURES -

- 1 - COFFEE BAR, L SHAPE, LAMINATE, 15'6" X 8'4"
- 1 - BASE CABINET, LAMINATE, 3-DOOR/4-DRAWER WITH  
STAINLESS STEEL SINK
- 1 - WALL CABINET, LAMINATE, 2-DOOR WITH SHELF  
66" X 16" X 24"
- 1 - PALLET RACKING SYSTEM
- TOILET PARTITIONS
- 3 - ROLLING DOORS, METEL, 8' X 8'

PLUMBING - AN APPROVED SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 7 - WATER CLOSET
- 8 - LAVATORY
- 3 - URINAL
- 1 - SANITARY SINK
- 1 - SHOWER
- 4 - ELECTRIC WATER COOLER
- 1 - WATER HEATER

R. A. SCHETTLER, INC.  
Appraisal Engineers

page 2

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

---

AERO PARK LAB: continued

- ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH NECESSARY WALL PLUGS AND SWITCH BOXES
- 2000 AMP SWITCHBOARD
- SOLAR PANEL ARRAY, 3.6 KW

HEATING AND AIR CONDITIONING

- 1 - ABSOLUTAIRE MODEL AA6UMXDX, GAS DIRECT FIRED MAKE-UP AIR UNIT #25581
- 2 - AMANA HEAT PUMP SPLIT SYSTEM WITH CONDENSING AMBIENT PACKAGE
- 1 - RENEWAIRE MODEL HE2XRT ENERGY RECOVERY VENTILATOR
- 1 - FUJITSU MODEL PKA-A12GA DUCTLESS AIR CONDITIONER
- 1 - FUJITSU MODEL PVY-A12NHA CONDENSING UNIT
- 1 - BERKO MODEL SRA-2020DSAG ELECTRIC HEATER
- 5 - EXHAUST FANS
- 2 - AMERICAN STANDARD FREEDOM 95 DIRECT VENT GAS FURANCE
- 1 - ENERGY KNIGHT DUCTLESS AIR CONDITIONER
- 1 - SUSPENDED GAS FIRED UNIT HEATER
- 1 - TRANE MODEL 4TTA3048D4000CA, CONDENSING UNIT, #152452UE3F

- EXTERIOR WALLS - FACE BRICK, BLOCK BACK-UP
- HORIZONTAL RIBBED METAL, METAL FRAME
- METAL SIDING WITH INSULATION
- OVERHEAD DOORS

MISCELLANEOUS - AUTOMATIC FIRE SUPPRESSION SYSTEM

- 1 - AURORA 5 TON BRIDGE CRANE, 60' SPAN WITH YALE HOIST
- 1 - MEZZANINE WITH STAIRCASE
- ACOUSTICAL BAFFLES
- SKYSTREAM 3-7 WIND TURBINE, 45' TOWER
- GE EST FIRE ALARM SYSTEM
- 13 - WELDING BOOTHS MASONRY WITH FUME, HOODS, EXHAUST DUCT
- 1 - CRIB FENCE, 31 LINEAR FEET X 8' HEIGHT
- 1 - ATLAS COPCO MODEL GX7P, ROTARY SCREW AIR COMPRESSOR
- ACCESS CONTROL SYSTEM
- 12 - DOUBLE FACE WELDING BOOTHS WITH LIGHTS EXHAUST
- 3 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD, LEED CERTIFIED



R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING - NORTHWESTERN MICHIGAN COLLEGE

---

NAME OF BUILDING: PARSEN-STULLEN M-TEC

KIND OF BUILDING: CLASS C

NO. OF STORIES: TWO

OCCUPANCY - CLASSROOM

SIZE: FIRST FLOOR 42,800 SQUARE FEET  
SECOND FLOOR 22,200 SQUARE FEET

TOTAL SQUARE FEET - 65,000

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL

FLOORS - CONCRETE ON GROUND, 5 1/2" SLAB ON METAL DECK, STEEL  
JOISTS

FLOOR COVER - RESILIENT TILE  
- CERAMIC TILE  
- TERRAZZO  
- CARPET

ROOF STRUCTURE - PRE-ENGINEERED BOW SPRING STEEL ROOF TRUSSES  
STEEL JOIST, METAL DECK

ROOF COVER - SNAP-ON STANDING SEAM CURVED METAL ROOFING, PLYWOOD  
DECK WITH INSULATION  
- SINGLE PLY MEMBRANE WITH INSULATION

CEILINGS - SUSPENDED ACOUSTICAL PANELS  
- SUSPENDED GYPSUM BOARD  
- SUSPENDED PREFORMED FLUSH ALUMINUM PANELS  
- SUSPENDED ALUMINUM PANELS  
- SUSPENDED VINYL FACED GYPSUM PANELS

INTERIOR CONSTRUCTION - MASONRY AND FRAME PARTITION

BUILT-IN FIXTURES -

- 350 LINEAR FT. OF LAMINATE BASE CABINETS
- 225 LINEAR FT. OF LAMINATE WALL CABINETS
- 1 - INFORMATION DESK, LAMINATE, 20 LINEAR FT.
- 1 - INFORMATION DESK, LAMINATE, 13 LINEAR FT.
- 5 - FOLDING PARTITIONS, 28 X 9'
- LOT OF VISUAL DISPLAY BOARDS



REAL ESTATE - BUILDING -

NORTHWESTERN MICHIGAN COLLEGE

M-TEC: continued

BUILT-IN FIXTURES - continued

- 1 - STAINLESS STEEL SINK WITH DRAINBOARD, DISPOSAL, DISHWASHER
- 1 - DOUBLE COMPARTMENT SINK, STAINLESS STEEL
- 1 - TV CABINET, LAMINATE, 48 X 24 X 84"
- 10 - WARDROBE CABINETS, LAMINATE, 42 X 24 X 84"
- 1 - ISLAND CABINET, LAMINATE, 68 X 48 X 35"
- 1 - ISLAND CABINET, LAMINATE, 120 X 30 X 35"
  - 40 LINEAR FT. LAMINATE WITH 3-DRAWER PEDESTAL BASE, 2-DOOR BASE
  - 38 LINEAR FT. LAMINATE WITH 3-DRAWER PEDESTAL BASE
- 20 - LOCKERS, METAL, 2-TIER, 15 X 18 X 60"
- 28 - LOCKERS, METAL, 2-TIER, 12 X 12 X 60"
- 1 - OTIS PASSENGER ELEVATOR, 2-STOP
- 1 - LAB FUME HOOD, 47" WITH LAMINATE BASE CABINET
- 3 - PENINSULA LAB BASE CABINETS, LAMINATE WITH SINK, GAS, AIR, ACID PROOF TOP, 72 X 42"
  - 12 LINEAR FT. LAB BASE CABINETS, LAMINATE, ACID PROOF TOP
  - TOILET PARTITIONS
  - MINI BLIND WINDOW TREATMENTS
  - SIGNAGE
- 1 - DISPLAY CASE / DIRECTORY
- 12 - WELDING BOOTHS MASONARY

PLUMBING - A MODERN SYSTEM OF SANITARY FIXTURES CONSISTING OF:

- 22 - WATER CLOSETS
- 25 - LAVATORIES
- 8 - URINALS
- 2 - SANITARY SINKS
- 6 - ELECTRIC WATER COOLERS
- 1 - WASH FOUNTAIN
- 1 - SHOWER
- 1 - RAYPACK GAS FIRED DOMESTIC WATER BOILER WITH 115 GALLON STORAGE TANK

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH NECESSARY WALL PLUGS AND SWITCH BOXES

- 1 - 1500 KVA TRANSFORMER ON PAD

HEATING AND AIR CONDITIONING -

- 1 - RAYPACK MODEL H-ADB-500 GAS FIRED BOILER
- 2 - RAYPACK MODEL H-ADB-750 GAS FIRED BOILERS
- 2 - RAYPACK MODEL H-6-962 GAS FIRED BOILERS
- 2 - RAYPACK MODEL H-4-1000 GAS FIRED BOILERS
- 1 - ITT BELL & GOSSETT HEAT EXCHANGER
- 2 - YORK MODEL H2CA300A46D CONDENSING UNITS, 25 TON CAPACITY
- 7 - YORK AIR HANDLING UNITS
- 1 - BALTIMORE AIR COIL MODEL F1443-0 FLUID COOLER

REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

M-TEC: continued

HEATING AND AIR CONDITIONING - continued

- 1 - BALTIMORE AIR COIL MODEL F1463-P FLUID COOLER
  - PUMPS AS REQUIRED
  - BASEBOARD RADIATION
  - RADIANT FLOOR IN STUDENT ACTIVITIES ROOM
- 1 - LIEBERT AIR CONDITIONING UNIT
- 1 - LIEBERT CONDENSING UNIT
- 1 - TRANE 2TRW4024A100011 CONDENSING UNIT, #6135KWL4F
  - SOLAR THERMAL SYSTEM INCLUDING:
- 7 - MAZDON 30-TUBE SOLAR PANELS, 6 X 6' ON WALL MOUNTED STEEL FRAME
- 2 - STORAGE TANKS, 150 GALLON CAPACITY
  - PUMPS
- 1 - MITSUBISHI SPLIT SYSTEM AIR CONDITIONER, 3 TON, ROOM 204

- EXTERIOR WALLS - SPLIT FACE MASONRY WITH BLOCK BACK UP, 12"
  - BLOCK, 8"
  - HORIZONTAL METAL SIDING
  - INSULATED GLASS IN ALUMINUM FRAME
- 3 - OVERHEAD DOORS, ROLL UP WITH ELECTRIC OPERATOR, 16 X 15', 28 X 22', 13 X 10'

- MISCELLANEOUS - FIRE PROTECTION SPRINKLERS
- DATA/TELEPHONE/IT INFRASTRUCTURE
- DIGITAL FLOORING SYSTEM
- 2 - CANOPIES, STEEL FRAME, SPLIT FACE MASONRY, STEEL JOISTS, METAL DECK, STANDING SEAM METAL ROOF COVER, 13.5' X 14.5' X 10' HEIGHT
- 1 - SOLAR PV SYSTEM INCLUDING: 12 - BP SOLAR PANELS, 5 X 10'
  - STEEL FRAME FOR PANELS, 42' WIDE 10' HEIGHT
- 2 - FRONIUS IG INVERTER
  - WIRING
  - SIMPLEX FIRE ALARM SYSTEM
- 1 - USA TANK MODEL 2520, WATER TANK STEEL, 25' DIAMETER X 20' HEIGHT, 66800 GALLON CAPACITY, #150115100A WITH CRANE STAIRCASE, SAND FILTERS
  - FM200 FIRE SUPPRESSION SYSTEM FOR ROOMS 100 AND 204A
  - ACCESS CONTROL SYSTEM
- 5 - CAMERA SECURITY SYSTEM

QUALITY OF CONSTRUCTION: GOOD

BUILT: 2000

R. A. SCHESSLER, INC.  
Appraisal Engineers

Asset Acct.: NORTHWESTERN MICHIGAN COLLEGE    Bldg.: NORTH HALL  
REAL ESTATE - BUILDING

| Description                       | 11/1/23      |
|-----------------------------------|--------------|
| FOUNDATION:                       | 247,500.00   |
| SUPERSTRUCTURE:                   |              |
| FRAME                             | 220,900.00   |
| FLOORS                            | 666,400.00   |
| FLOOR COVERINGS                   | 291,400.00   |
| CEILINGS                          | 182,800.00   |
| ROOF STRUCTURE                    | 217,700.00   |
| ROOF COVER                        | 229,300.00   |
| INTERIOR CONSTRUCTION             | 2,055,900.00 |
| BUILT-IN FIXTURES                 | 1,183,000.00 |
| ELECTRICAL                        | 704,400.00   |
| PLUMBING                          | 871,000.00   |
| HEATING AND AIR CONDITIONING      | 1,082,800.00 |
| MISCELLANEOUS                     | 103,000.00   |
| EXTERIOR WALLS                    | 824,800.00   |
| FIRE PROTECTION                   | 133,900.00   |
| ELEVATORS                         | 211,800.00   |
| <br>                              |              |
| TOTAL LABOR AND MATERIALS         | 9,226,600.00 |
| ARCHITECT'S PLANS AND SUPERVISION | 6%           |
| <br>                              |              |
| Replacement Value New             | 9,780,200.00 |
| Depreciation %                    | 5%           |
| Sound Valuation                   | 9,291,200.00 |

R. A. SCHETTLER, INC.  
Appraisal Engineers

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

---

NAME OF BUILDING: NORTH HALL

KIND OF BUILDING: CLASS D

NO. OF STORIES: THREE

OCCUPANCY: STUDENT HOUSING

TOTAL SQUARE FEET = 46,730

FOUNDATION: CONCRETE

SUPERSTRUCTURE:

FRAME - STEEL

FLOORS - 4" CONCRETE SLAB, VAPOR BARRIER, INSULATION  
- WOOD TRUSSES, WOOD DECK  
- CONCRETE METAL PAN STAIRWAY

FLOOR COVERINGS - WOOD COMPOSITE, CERAMIC TILE, RUBBER BASE,  
CARPET, RESILIENT SHEET FLOORING

ROOF STRUCTURE - WOOD TRUSSES, WOOD DECK  
- STEEL JOIST, METAL DECK

ROOF COVER - SINGLE PLY MEMBRANE OVER RIGID INSULATION

CEILINGS - SUSPENDED ACOUSTICAL PANEL  
- GYPSUM BOARD WITH KNOCKDOWN FINISH, PAINTED  
- SUSPENDED WOOD SLAT PLANK CEILING SYSTEM

INTERIOR CONSTRUCTION - WOOD PARTITIONS, FEW MASONRY PARTITIONS

BUILT-IN FIXTURES - LAMINATE KITCHEN CABINETS  
- WOOD VANITY CABINETS  
- LAMINATE LAUNDRY CABINETS

PLUMBING - AN MODERN SYSTEM OF SANITARY FIXTURES CONSISTING OF:

47 - WATER CLOSETS

49 - LAVATORIES

1 - URINAL

3 - SANITARY SINK

3 - LOCHINVAR MODEL SIT1199, INDIRECT WATER HEATER,  
119 GALLON CAPACITY

2 - ELECTRIC WATER COOLERS

48 - SHOWERS

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REAL ESTATE - BUILDING

NORTHWESTERN MICHIGAN COLLEGE

---

NORTH HALL: continued

ELECTRICAL - AN APPROVED SYSTEM OF WIRING ALL IN CONDUIT WITH  
NECESSARY WALL PLUGS AND SWITCH BOXES

HEATING AND AIR CONDITIONING -

- 1 - LOCHINVAR MODEL FTX850, GAS FIRED TUBE BOILER, #239797
- 40 - CLIMATE MASTER HEAT PUMPS
- 6 - RENEWAIRE MODEL HEIXRT, ROOF TOP ENERGY RECOVERY UNITS
- 1 - LOCHINVAR MODEL FTX850, GAS FIRED TUBE BOILER, #216336
- 1 - LOCHINVAR MODEL FTX850, GAS FIRED TUBE BOILER, #216523
- 1 - GUNTNER MODEL GFH080, ROOFTOP DRY COOLER

MISCELLANEOUS - ACCESS CONTROL SYSTEM

- 6 - CAMERA SECURITY SYSTEM

EXTERIOR WALLS - HORIZONTAL CEMENTITIOUS SIDING PANELS  
- CEMENTITIOUS LAP SIDING  
- ALUMINUM CURTAIN WALL  
- ALUMINUM STOREFRONT  
- BUILT-UP EYEBROW TRIM

ELEVATOR - KONE 3 STOP PASSENGER ELEVATOR, 4000 LB. CAPACITY,  
#9960649

YEAR BUILT - 2017

QUALITY OF CONSTRUCTION - GOOD

# R.A. Schettler, Inc.

24634 W. FIVE MILE RD.  
SUITE/UNIT 30  
REDFORD, MI. 48239

Certified  
Appraisal Service

(248) 705-5801

Industrial - Commercial



Residential - Institutional

NOVEMBER 1, 2023

ASSOCIATED GROUP UNDERWRITERS, INC.  
39111 W. SIX MILE ROAD  
LIVONIA, MICHIGAN 48152

TO WHOM IT MAY CONCERN,

AS REQUESTED BY THE MICHIGAN COMMUNITY COLLEGE RISK MANAGEMENT AUTHORITY, WE SUBMIT HERewith OUR CERTIFIED APPRAISAL OF LIBRARY HOLDINGS BELONGING TO NORTHWESTERN MICHIGAN COLLEGE, 1701 E, FRONT STREET, TRAVERSE CITY, MICHIGAN. THIS APPRAISAL INCLUDES MEDIA CENTER COLLECTIONS ONLY.

THIS APPRAISAL IS REPORTED IN A NUMBER OF CATEGORIES AND FURNISHES AN UNBIASED STATEMENT OF VALUES. VALUES STATED ARE REPLACEMENT VALUE NEW, WHICH ARE DEFINED AS THE COST THAT WOULD BE INCURRED IN ACQUIRING AN EQUALLY DESIRABLE SUBSTITUTE FOR PROPERTY, WHICH IS DETERMINED IN ACCORDANCE WITH MARKET PRICES PREVAILING AT THE DATE OF THIS APPRAISAL AND REPRESENTS THE COST TO REPLACE NEW, THE PROPERTY IN LIKE KIND.

IN THIS ANALYSIS, WE HAVE RELIED ON THE BOWKERS ANNUAL GUIDE TO PROVIDE AVERAGE UNIT PRICES FOR COMMUNITY COLLEGE LIBRARY COLLECTIONS. WE HAVE MET WITH YOUR MEDIA DIRECTOR OR OTHER STAFF TO DISCUSS THESE VALUES AND TO MAKE ADJUSTMENTS FOR ANY SPECIAL CIRCUMSTANCES OR COLLECTIONS.

WE HAVE NOT EXAMINED THE LEGAL TITLES OF PROPERTY, THEREFORE WE DO NOT ASSUME RESPONSIBILITY REGARDING THE OWNERSHIP OF PROPERTY IN THIS APPRAISAL.

VERY TRULY YOURS,

R.A. SCHETTLER, INC.

# R.A. Schettler, Inc.

24834 W. FIVE MILE RD.  
SUITE/UNIT 30  
REDFORD, MI. 48239

Certified  
Appraisal Service

(248) 705-5801

Industrial - Commercial



Residential - Institutional

NOVEMBER 1, 2023

NORTHWESTERN MICHIGAN COLLEGE  
1701 E. FRONT STREET  
TRAVERSE CITY, MICHIGAN 49684

TO WHOM IT MAY CONCERN,

AS REQUESTED BY THE MICHIGAN COMMUNITY COLLEGE RISK MANAGEMENT AUTHORITY, WE SUBMIT HERewith OUR CERTIFIED APPRAISAL OF LIBRARY HOLDINGS BELONGING TO NORTHWESTERN MICHIGAN COLLEGE, 1701 E, FRONT STREET, TRAVERSE CITY, MICHIGAN. THIS APPRAISAL INCLUDES MEDIA CENTER COLLECTIONS ONLY.

THIS APPRAISAL IS REPORTED IN A NUMBER OF CATEGORIES AND FURNISHES AN UNBIASED STATEMENT OF VALUES. VALUES STATED ARE REPLACEMENT VALUE NEW, WHICH ARE DEFINED AS THE COST THAT WOULD BE INCURRED IN ACQUIRING AN EQUALLY DESIRABLE SUBSTITUTE FOR PROPERTY, WHICH IS DETERMINED IN ACCORDANCE WITH MARKET PRICES PREVAILING AT THE DATE OF THIS APPRAISAL AND REPRESENTS THE COST TO REPLACE NEW, THE PROPERTY IN LIKE KIND.

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WE HAVE NOT EXAMINED THE LEGAL TITLES OF PROPERTY, THEREFORE WE DO NOT ASSUME RESPONSIBILITY REGARDING THE OWNERSHIP OF PROPERTY IN THIS APPRAISAL.

VERY TRULY YOURS,

R.A. SCHETTLER, INC.

R. A. Schettler, Inc.  
Appraisal Engineers

Northwestern Michigan College  
Library Holdings by Building

DATE: NOVEMBER 2023

| <b>Building Name</b>     | <b>Circulating Books</b> | <b>Reference Books</b> | <b>Periodicals</b> | <b>Videotape</b> | <b>CD Rom</b> | <b>Sound Recordings</b> | <b>Other Holdings</b> | <b>Building Total</b> |
|--------------------------|--------------------------|------------------------|--------------------|------------------|---------------|-------------------------|-----------------------|-----------------------|
| <i>Innovation Center</i> | 1,602,600                | 190,320                | 69,200             | 28,690           | 0             | 0                       | 4,751                 | \$1,895,561           |
| <b>TOTAL</b>             | <b>\$1,602,600</b>       | <b>\$190,320</b>       | <b>\$69,200</b>    | <b>\$28,690</b>  | <b>\$0</b>    | <b>\$0</b>              | <b>\$4,751</b>        | <b>\$1,895,561</b>    |



# **Appendix I**

## **Campus Maps**

# NMC Main Campus

1701 E Front Street  
Traverse City, MI



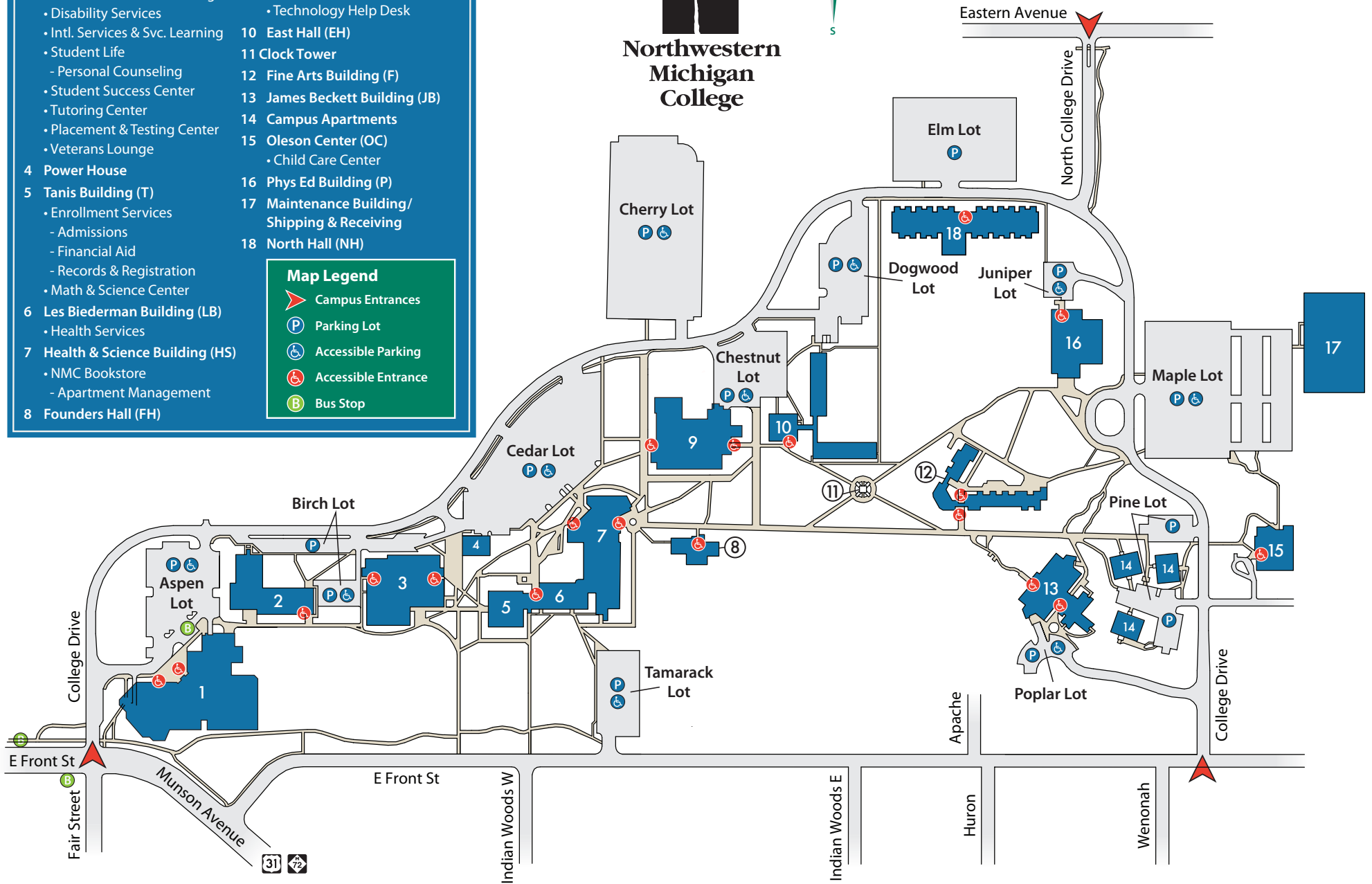
**Northwestern  
Michigan  
College**



- |                                   |  |
|-----------------------------------|--|
| 1 Dennos Museum (DMC)             | 9 Timothy J. Nelson Innovation Center & Library (IC) |
| 2 Scholars Hall (SH)              | • Campus Safety                                      |
| • Writing & Reading Center        | • Student IDs, Parking passes                        |
| 3 Osterlin Building (O)           | • Hawk Owl Café                                      |
| • Academic & Career Advising Ctr. | • Technology Help Desk                               |
| • Disability Services             | 10 East Hall (EH)                                    |
| • Intl. Services & Svc. Learning  | 11 Clock Tower                                       |
| • Student Life                    | 12 Fine Arts Building (F)                            |
| • Personal Counseling             | 13 James Beckett Building (JB)                       |
| • Student Success Center          | 14 Campus Apartments                                 |
| • Tutoring Center                 | 15 Oleson Center (OC)                                |
| • Placement & Testing Center      | • Child Care Center                                  |
| • Veterans Lounge                 | 16 Phys Ed Building (P)                              |
| 4 Power House                     | 17 Maintenance Building/<br>Shipping & Receiving     |
| 5 Tanis Building (T)              | 18 North Hall (NH)                                   |
| • Enrollment Services             |  |
| • Admissions                      |  |
| • Financial Aid                   |  |
| • Records & Registration          |  |
| • Math & Science Center           |  |
| 6 Les Biederman Building (LB)     |  |
| • Health Services                 |  |
| 7 Health & Science Building (HS)  |  |
| • NMC Bookstore                   |  |
| • Apartment Management            |  |
| 8 Founders Hall (FH)              |  |

### Map Legend

- Campus Entrances
- Parking Lot
- Accessible Parking
- Accessible Entrance
- Bus Stop



**NMC FY2026**  
**Capital Project Request**

**FISCAL YEAR 2026  
CAPITAL OUTLAY PROJECT REQUEST**

**Institution Name:** Northwestern Michigan College

**Project Title:** Integrated Student Services Hub

**Project Focus:**  Academic  Research  Administrative/Support

**Type of Project:**  Renovation  Addition  New Construction

**Program Focus of Occupants:** Student Academic and Administrative Support

**Approximate Square Footage:** 26,000 square feet

**Total Estimated Cost:** \$8,000,000

**Estimated Start/Completion Dates:** Project is ready for construction contingent upon authorization approval. Total build time is expected to be one-year.

Is the Five-Year Plan posted on the institution's public internet site?  Yes  No

Is the requested project the top priority of the Five-Year Capital Plan?  Yes  No

Is the requested project focused on a single, stand-alone facility?  Yes  No

**Note: Attached to this project request is a condensed, 1-page project summary.**

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**Executive Summary  
Student Services Hub – Renovation Project**

**Project Overview**

Northwestern Michigan College is applying for Capital Outlay funding to renovate and upgrade the Osterlin Building on central campus into an Integrated Student Services Hub (“the Hub”) or (“the project”). The Hub would become a central building for the College’s key student service departments including admissions, advising, tutoring, counseling, financial aid, cashier’s, international outreach, and more; it would add a Veteran’s Lounge, testing center, and talent development services area. These services are currently spread out among three different buildings on central campus.

Built in 1961 and expanded in 1984, Osterlin has reached the end of its functional life and is in need of significant repairs and upgrades. This includes upgrades to the building envelope, HVAC system and a reconfiguration of the layout to maximize use of the existing building footprint. The project will also include energy efficiency upgrades and student focused spaces to enable collaboration and learning. The project will not impact tuition and will be cost shared from existing NMC reserves. The last Capital Outlay project funded at NMC was in 2018 for the West Hall Innovation Center Renovation Project.

## Project Purpose

The purpose of this project is to address 3 main needs for NMC's central campus:

1. **Enhance an Existing Asset:** The Osterlin building is over 60 years old and has reached the end of its functional life. Instead of demolishing the structure, NMC intends to repurpose, transform, and extend the life of the building while creating a functional, centralized hub for key student services.
2. **Improve Student Efficiency:** Currently, students must travel to several different buildings for their support service needs. Consolidating all of our student support services into one area will allow students to access resources in one location. We believe this holistic customer service experience will lead to increased student retention and completion due to the enhanced experience.
3. **Improve Energy Efficiency:** The project would include a complete envelope overhaul including new energy efficient windows and doors, new insulation and a new exterior that would increase efficiency and sustainability. Additional project elements would include a new HVAC system and the installation of LED lights, all of which will help reduce the carbon footprint for this building.

## Describe the Scope of the Project

The project is the complete renovation and modernization of the 60 year old Osterlin Building. The scope includes addressing deficiencies identified in the facility assessment report (**Appendix E of Five-Year Capital Plan**) and other overdue upgrades to transform the space into a centrally located hub for student services.

Specific project elements include:

- Updated information technology infrastructure
- Revised or improved building entrances
- Replace existing windows and exterior doors to increase efficiency
- Replace deteriorating stucco with new insulated metal panels to increase efficiency and sustainable design
- Updated facility to address ADA accessibility
- Upgrade/replace lighting with LED lights
- Replace inefficient HVAC system with new energy efficient system
- Elevator upgrades
- Electrical upgrades
- New interior finish
- Flexible and adaptable learning spaces for group and individual learning, spaces for career advising and workforce readiness partners
- Breakout spaces to support services to students
- Improved operating efficiencies
- Consolidation of student support offices

Once completed the Osterlin Building will be home to:

- Admissions
- Financial Aid
- Student Financial Services / Cashiers
- Registrar
- Counseling
- Career Services
- Health Services
- Veterans Lounge
- Advising and Tutoring
- Learning Services and Student Testing Center
- International Outreach and Service Learning

The project outcomes for our learners include:

- Integrated student support services
- Holistic advising experience to help them with their student success
- Improved customer service to students
- Increased use of student support services
- Improved retention rates

**Describe how the project will address, incorporate, or enhance any equity efforts, policies , or goals for the academic programs within the scope of the project or as a component of your institution and campus at large.**

Northwestern Michigan College has built DEI efforts into our strategic plan and this extends to our planning for a one-stop hub for student services within the Osterlin building. The renovation would significantly benefit students from a DEI perspective by providing a centralized, accessible point of contact for all their needs, reducing barriers to support, streamlining processes, and ensuring that all students, regardless of background or identity, have equal access to crucial services, thus promoting equity and inclusion on campus.

In particular, the Osterlin building renovation will ensure:

**Reduced confusion and navigation challenges:** It will eliminate the need for students to navigate numerous services in different buildings, which can be especially difficult for first-generation students or those unfamiliar with college services.

**Culturally competent support:** Staff at the one-stop hub are trained to understand and address the unique needs of diverse student populations, including those from different cultural backgrounds, socioeconomic levels, or with disabilities.

**Culturally relevant programming:** Student group meeting space will allow events and resources that cater to the diverse cultural identities of our student body and seek to increase the cultural competency of students, staff and faculty.

**Disability-inclusive services:** Providing accessible technology and dedicated support for students with disabilities

**Early intervention and proactive support:** An integrated student services hub allows for early identification of potential issues and provides access to appropriate support services, preventing problems from escalating due to a lack of knowledge or access.

**Promotes a sense of belonging:** By offering a welcoming and inclusive environment where all students can access services without feeling isolated or stigmatized, a one-stop hub can foster a stronger sense of community.

**Data-driven insights:** By consolidating student services in a single location, it will be easier for multiple departments to collaborate using an intake and tracking system to identify disparities in service utilization across different student groups, enabling targeted interventions to address inequities.

*Please provide detailed, yet appropriately concise responses to the following questions that will enhance our understanding of the requested project:*

**1. How does the project enhance Michigan's job creation, talent enhancement and economic growth initiatives on a local, regional and/or statewide basis?**

Northwestern Michigan College plays a pivotal role in talent enhancement and economic growth initiatives at the local, regional, state and national basis. A 2017 study conducted by EMSI, a leading provider of economic impact studies and labor market data to educational institutions, concluded that NMC “benefits local businesses by increasing consumer spending in the region and supplying a steady flow of qualified, trained workers into the workers.” The study further found that NMC “benefits the state and local taxpayers through increased tax receipts” and “benefits society as a whole in Michigan by creating a more prosperous economy and generating a variety of savings through the improved lifestyles of students.”

Specifically, the study found that 1 out of every 22 jobs in the region is supported by the activities of NMC and its students. The study also reported that NMC added \$42.3 million in income to the region during the analysis year as a result of its day-to-day operations. Further, the 2017 economic impact study conducted by EMSI found that for every \$1.00 of public monies invested in NMC, taxpayers receive a cumulative value of \$2.90 over the course of the student’s working lives.

Therefore, the proposed integrated student services hub is critically important to ensure that NMC is able to continue meeting its goal of providing our communities and learners with the skills, experiences and values that help them create social and economic wealth during their lifetime.

**2. How does the project enhance the core academic and/or research mission of the institution?**

This project is closely aligned with NMC’s mission of “providing lifelong learning opportunities to our communities.” With an enrollment of approximately 4,000 students, services such as advising, tutoring, financial aid, and counseling play a key role in student success and completion.

In 2017, financial aid was offered to 67% of our student population. A 2016 RAND study<sup>1</sup> and a 2019 University of Chicago study<sup>2</sup> found that **providing community college students with comprehensive wraparound services increases full-time enrollment and completion rates**. The 2019 study by the University of Chicago Poverty Lab found that providing wraparound support for community college students can improve their chances of persisting, resulting in nearly doubling their retention to the next term and leading to a 35% increase in full-time enrollment.

Therefore, to support success and completion for our approximately 4,000 students, this project will allow NMC to provide a singular location to help students navigate enrollment, financial aid and advising. Delivering more consistent and timely answers will provide the project outcome of a more uniform, holistic customer service experience that will help attract and retain students.

### **3. How does the project support investment in or adaptive re-purposing of existing facilities and infrastructure?**

The integrated student services hub will be an adaptive re-purposing of a centrally located but outdated facility. The project maximizes the use of an existing building to accommodate the vast majority of our student support services in one location. In addition, the project leverages vacated space once home to the College's library, which has moved to our new Timothy J. Nelson Innovation Center. This transition leaves 26,000 square feet of centrally located space in the Osterlin Building that would not be repurposed in such a way to benefit all students.

#### **Does the project address or mitigate any current health/safety deficiencies relative to existing facilities? If yes, please explain.**

Yes, the project will address several health/safety deficiencies in the existing structure. The building was built in 1961 and expanded in 1984. A renovation and re-purposing of the building will allow us to update the building based on current emergency management protocol and today's ADA requirements. In summary, some of the deficiencies addressed with a project would include:

- Additional barrier free restrooms
- Remodel of interior of buildings to eliminate ramps that are not ADA compliant
  - Currently the building utilizes a series of ramps to access portions of the building that are not compliant with the current ADA standards
- HVAC heating and cooling upgrades
  - Dated equipment will be replaced with a higher efficiency and environmentally compliant system
- Window and exterior door replacement

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<sup>1</sup> <https://www.rand.org/news/press/2016/11/30/index2.html>

<sup>2</sup> <https://news.uchicago.edu/story/study-evaluates-model-helping-students-complete-community-college>



- Replace dated windows with energy-efficient windows

**4. How does the institution measure utilization of its existing facilities, and how does it compare relative to established benchmarks for educational facilities? How does the project help to improve the utilization of existing space and infrastructure, or conversely how does current utilization support the need for additional space and infrastructure?**

NMC utilizes a robust analytic process for determining efficient use and utilization of our classrooms and spaces. We were one of the first colleges to use classroom efficiency rather than “go numbers” to determine enrollment decisions. Starting in 2000, NMC adopted an efficiency model whereby the college set an ambitious target to achieve an average of 90% fill rate for our classes. While not reaching that goal in every area due to the need to support smaller efficiency in some key specialty areas, the college average has reached between 82% and 85% in the last five academic years. Classes in some disciplines are entirely full.

The College also analyzes the utilization of our current buildings using our R25 scheduling software. Our current utilization reports show that our adaptive learning spaces are at maximum use. These spaces are scheduled for large and small student study groups. Additionally, our reports show that simulation space is at capacity. These adaptive rooms are used by both credit and certificate programs. NMC was at capacity for our residential students and added an additional 150 new beds in 2017. Our residential halls are currently at 90% occupancy.

This project would greatly assist in improving the utilization of existing space on campus. Specifically, with the movement of the library to a new building on campus, a large portion of the Osterlin building will be vacant. Further, as the building is currently configured, space is non-congruent and prevents students from seamlessly utilizing space and service. Once completed, the project would create a more holistic space for student support service activity. With more students living on campus, we believe areas such as counseling and health services will see more activity. Both of these departments are strained for space in their current location. Offices that are currently being used by these departments will be able to be repurposed as additional classrooms or needed office space.

**5. How does the institution intend to integrate sustainable design principles to enhance the efficiency and operations of the facility?**

Over the years, NMC has shown a commitment to sustainable design principles in construction of both new buildings and renovation projects. Although this is a relatively small renovation project, we will once again incorporate facility efficiencies wherever appropriate. This project will see the same level of commitment to integrate sustainable design principles to enhance operating efficiency as all of our building and renovation projects have seen.

An example of how NMC's projects have adhered to sustainable design principals can be found in NMC's self-funded purchase and renovation of a former manufacturing facility in 2010 that has led to LEED certification. The new facility is used to teach our sustainable energy programs, construction trade and other technical programs that relate to the sustainable design fields. Each year the College commits to certain projects that will result in direct energy efficiencies. We have converted exterior and interior lighting to LED efficient lighting and installed occupancy sensors in classrooms, hallways, and restrooms.

The following sustainability elements are planned for the Student Services Hub:

- Upgraded lighting
- Occupancy sensors
- Energy efficient HVAC upgrades
- Improved building envelope design around exterior doors
- Improved roofing and other insulation

**6. Are match resources currently available for the project? If yes, what is the source of the match resources? If no, identify the intended source and the estimated timeline for securing said resources?**

Yes. The college has reserve funds available to match state dollars for this project as well as potential resources from private contributions through the NMC Foundation.

**If authorized for construction, the state typically provides a maximum of 75% of the total cost for university projects and 50% of the total cost for community college projects. Does the institution intend to commit additional resources that would reduce the state share from the amounts indicated? If so, by what amount?**

No, not at this time. NMC is committed to matching the required 50% for this project.

**7. Will the completed project increase operating costs to the institution? If yes, please provide an estimated cost (annually, and over a five-year period) and indicate whether the institution has identified available funds to support the additional cost.**

No, we do not anticipate an increase in operating costs if this project were funded. If anything, the improvements to the building should yield operating efficiencies in electrical and heating costs. Combining multiple departments should help reduce labor redundancies, and therefore the College will be able to save on labor costs in the long term after this project is completed.

The College has available funding in reserves to support 50% of the project.

**8. What impact, if any, will the project have on tuition costs?**

There will not be an impact on tuition costs as a result of the project because capital projects are planned for and built into a four-year budget model.

**If this project is not authorized, what are the impacts to the institution and its students?**

If this project is not authorized it will be a detriment to our current and future students. We would also be left with space that will be vacant- following the move of our library to a new location. Further, if not authorized, the space would not be able to provide a more robust student support services area that will give students the ability to access a multitude of student support services in one location. Once completed, the Student Services Hub will be a more efficient way for students to access these services, which translates to more use and fewer time constraints.

**12. What alternatives to this project were considered? Why is the requested project preferable to those alternatives?**

There is no viable alternative to this project. The project allows us to consolidate student support services in one area. This will result in a more holistic approach for our students and a more efficient delivery system for staff. We expect this to result in time savings for students with greater results.

Any alternative would only allow for us to make limited changes based on space capacity. This does not allow for a unified holistic experience for our students. Additionally, the alternative would not address many of the ADA compliance concerns we have with this dated facility.

Based on the age of the facility and the need for a unified student support service center we believe that this project will best meet all of the objectives for the Student Learning Support Services Renovation Project.

**13. History of prior appropriations received by the institution through the capital outlay process.**

| <b>Project</b>                            | <b>Year</b> |
|---|-------------|
| Integrated Science & Tech Learning Center | 2002        |
| West Bay Great Lakes Campus               | 2004        |
| Oleson Center Renovation Project          | 2006        |
| West Hall Innovation Center Project       | 2018        |

# Integrated Student Service Hub

Total Project Cost: \$8.0 million | State Funding Request: \$4.0 million



Northwestern Michigan College

## Summary

This project will transform Northwestern Michigan College's 60 year-old Osterlin Building on central campus into an integrated student service hub. The hub will efficiently serve student needs for admissions, financial aid, cashiers, advising, counseling, international outreach, health and veteran services. It features a dedicated Veterans Lounge, testing center, and talent development services area.

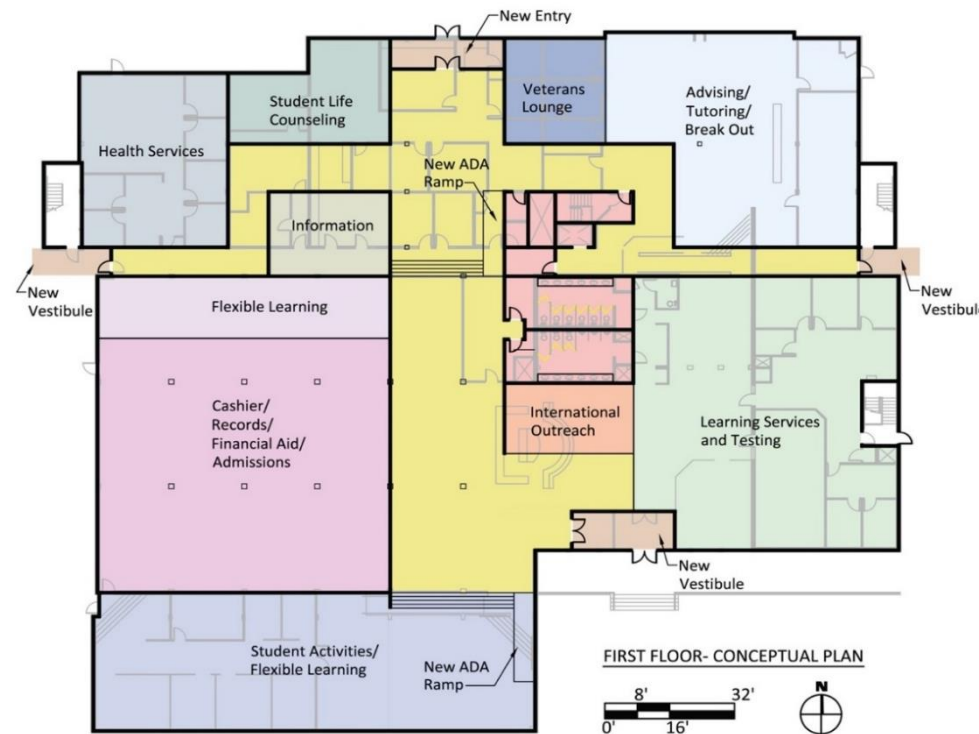
## Features

- Key student needs centralized from 3 buildings to 1
- Reduced environmental footprint through use of sustainable technologies
- Integrates with regional talent development strategy
- Veterans Lounge
- Reduced operating costs
- Local match (\$3.25 million)
- No impact on tuition
- Last state funded capital project was 2018

## Key Upgrades

- 26,000 ft.<sup>2</sup> renovation, includes demolition and reconstruction of 1<sup>st</sup> floor interior design
- HVAC modernization
- Energy efficient windows
- Exterior upgrades
- Improve ADA accessibility
- Lighting and electrical upgrades
- IT infrastructure upgrades
- Elevator upgrade

## Conceptual Floor Plan



## Student Outcomes

This project will increase student retention and completion due to an improved, holistic customer service experience via the Hub

### Current Condition



Osterlin Building – SE Exterior



Osterlin Building – Main Entrance



Osterlin Building – Student Success Ctr