Finance & Operations Committee

October 2023

October 12, 2023

1:30 p.m.

Boardroom, McNamara Alumni Center

FIN - OCT 2023

BOARD OF REGENTS
DOCKET ITEM SUMMARY

Finance & Operations **October 12, 2023**

AGENDA ITEM: Interim President's Recommended 2023 Six-Year Capital Plan and 2024 State Capital Request

☐ **Review** ☐ **Review + Action** ☒ **Action** ☐ **Discussion**

☐ *This is a report required by Board policy.*

PRESENTERS: Interim President Jeff Ettinger
Myron Frans, Senior Vice President
Alice Roberts-Davis, Vice President, University Services

PURPOSE & KEY POINTS

The purpose of this item is to act on the Interim President's Recommended 2023 Six-Year Capital Plan and 2024 State Capital Request.

The Interim President's Recommended 2023 Six-Year Capital Plan (Plan) includes major capital improvements planned for calendar years 2024 through 2029. The Plan includes projects to be funded with State of Minnesota (State) capital bonding as well as major projects funded by the University through a combination of debt, local unit resources, fundraising, and public/private partnerships. The Six-Year Capital Plan has been updated since the September meeting to reflect the Board's approval of the capital budget amendments for the dining center projects at Middlebrook Hall on the Twin Cities campus and the Main Production Kitchen at the Duluth campus, which were part of the committee's September 2023 Consent Report. These are the only changes to the plan since September.

2024 State Capital Request

The 2024 State Capital Request outlines the submission the University will make to the State for consideration during the 2024 legislative session. The submission consists of a $500 million request for asset preservation, known as Higher Education Asset Preservation and Replacement (HEAPR) funds. This request aligns with the University's MPact 2025 Systemwide Strategic Plan (MPact 2025) and the priority to preserve our existing physical assets through renovation and capital renewal projects to support the University's mission.

The request emphasizes reinvestment into the University's existing infrastructure. Growing deferred renewal backlog has widespread impacts on the student experience, academic programs, research initiatives, and general competitiveness. Asset preservation continues to be the smartest, most cost-effective investment that protects and extends the useful life of investments made by the taxpayers through capital bonding, by students who pay tuition, and by donors who give to support the University's vision.

2023 Six-Year Capital Plan

The format of the 2023 Six-Year Capital Plan has been updated to reflect the reality of how the University plans capital projects based on the funding status (additional information on the change is included in the background information). The attached report reflects the updated format and indicates three years of state capital requests (2024-2026), several 'projects in development' without specific years indicated, and a third section that lists emerging projects, most still in early planning stages, called 'under consideration.'

The Plan is based on a set of enduring institutional priorities aimed at realizing measurable, tangible benefits for students, for the State, for recruiting and retaining Minnesota talent, and for creating compelling reasons for students, staff, and faculty to choose the University as their academic and employment home. These desired outcomes direct many smaller decisions about prioritization for capital investment. Each priority is discussed below, with specific examples related to the projects listed in the Plan report.

1. Renew high-priority buildings and right-size the overall amount of campus space

The Plan puts the most significant emphasis on fixing or replacing some of the University's worst buildings. High-priority projects reinforce the commitments made in MPact 2025 by complementing institutional values and optimizing how resources are used across the campus system. HEAPR funding remains at the core of this strategy with investments in projects like renewal of the heating plant equipment and critical utility infrastructure at the Crookston campus.

The Facility Condition Assessment (FCA) identifies buildings' physical condition and their needs across the enterprise. This process identifies deferred, non-recurring, and projected renewal needs to determine a facility condition needs index (FCNI). The FCNI (the ten-year projected needs, divided by the estimated replacement value) determines where a building is rated on a scale that starts at 0.0 (excellent) and extends to 1.0 (critical). The table below is updated annually to monitor progress toward reducing poor and critical space.

CAMPUS	TOTAL GSF [1]	ESTIMATED REPLACEMENT VALUE [2]	PROJECTED 10-YEAR NEEDS [2]	10-YEAR NEEDS / REPLACEMENT VALUE (FCNI)	GSF POOR / CRITICAL
Twin Cities	25,183,826	$13,066,424,466	$4,995,271,164	0.38	7,605,765
Duluth	3,388,417	$1,449,171,780	$532,028,099	0.37	588,330
Morris	1,000,464	$524,089,731	$218,499,881	0.42	481,564
Crookston	726,565	$425,823,548	$117,845,574	0.28	106,981
ROCs	1,718,286	$382,516,509	$132,013,217	0.35	130,992
TOTALS	**32,017,558**	**$15,848,026,034**	**$5,995,657,935**	**0.38**	**8,913,632**

[1] Total Gross Square Feet from UM Analytics. Excludes Rochester Campus and parking ramp decks.

[2] Figures include formally assessed facilities plus actual or modeled values for non-assessed facilities less than 10 years old.

[3] Increase of approximately 1% from previous reporting year.

The Plan additionally places a strong emphasis on strategic projects that will enable the University to right-size the overall amount of campus space through geographic or building consolidations for colleges and academic units to improve programmatic alignment, space assignment changes in response to increased hybrid officing, and strategic redesign of poor/critical space when space moves are made possible through a domino-effect of projects. Further details on space reduction targets will be developed in this fiscal year.

2. Invest in high-demand academic programs and mission-support facilities

This priority supports the renewal of facilities that support research, teaching and learning, and scholarship across disciplines. High-demand academic programs have an established record of consistent enrollment and academic success. Proposed investments include the Duluth campus Science Building renewal, and on the Twin Cities campus, the Carlson School revitalization and the renovation of the Mondale Hall courtrooms used for teaching. HEAPR investments in projects such as Heller Hall on the Duluth campus as well as Food Science and Nutrition, Moos Tower, and the Biological Science Center on the Twin Cities campus, will optimize existing facilities and infrastructure to support teaching and research.

Strategic placeholders in the plan are targeted toward capital renewal prioritized based on high-demand academic programs. Future research improvements will result in investments in research infrastructure that support the University as an important contributor to Minnesota's economy, knowledge base, and workforce development.

3. Advance innovation in health sciences, agriculture, biotechnology, and MNtersections

This priority promotes a long-term investment strategy into core areas of research and scholarship specifically dedicated to improving human potential and the natural, physical, and social world. Representative projects include the agricultural research and education complex project (also known as FAARM), strategic research facility investments, and key lab renovation projects to support systemwide research. Clinical research and care across multiple health sciences disciplines are also part of this group of project targets.

4. Enhance student-facing facilities and services

To enhance the student experience, wellness, and success, aging facilities require medium to large-scale renewal to respond to a range of pressing needs, including libraries, unions, recreation, wellness, student counseling, and academic support. Project examples include a new Saint Paul campus center on the Twin Cities campus, improving student dining facilities on the Duluth and Twin Cities campuses, and renovating Griggs residence hall on the Duluth campus.

5. Create spaces and places that make campuses more inclusive, accessible, and welcoming

This priority focuses on how change to the physical campus can make University campuses more welcoming, foster a sense of belonging, and improve accessibility related to daily life. For example, projects might address Americans with Disabilities Act (ADA) accessibility on all campuses, the renewal of important public spaces and landscapes, the ability to provide identity space indoors or outdoors, and wayfinding systems, including how campus entry points are treated. This priority will also guide plans to balance the level of investment in specialized-use facilities while considering equity and diversity. HEAPR investments in projects such as the Multi-Ethnic Resource Center on the Morris campus will improve building accessibility for all.

BACKGROUND INFORMATION

Board of Regents Policy: *Board Operations and Agenda Guidelines* require a Six-Year Capital Plan that sets priorities and direction for ongoing academic and capital planning efforts. This policy specifically directs the administration to conduct capital planning with a "six-year time horizon, updated annually." It is the University's primary capital investment planning tool.

Six-Year Capital Plan Format Updates

The format of the 2023 Six-Year Capital Plan has been updated and incorporates two primary changes to reflect the reality of how the University plans capital projects based on the funding status.

The first change includes showing three sessions of the State Request section, instead of six. The previous format was used when the Minnesota Legislature provided capital funding during even number years and projects were funded in a more predictable manner. As funding from the State for capital projects became less predictable, the latter years of the Six-Year Plan became placeholders. This new plan format includes the next three years, which is sufficient time to conduct the necessary planning and predesign work while not raising expectations for projects that are unlikely to be funded in the six-year planning horizon.

The second format change groups the University-funded projects currently in development together rather than having them assigned to specific years. The exact timing of projects has proven hard to predict without specific funding information. The new format still shows the major projects that are likely to advance to the Annual Capital Budget in the next six years.

These two changes now provide a more accurate and concise view of the capital planning activities currently underway.

Consultation - Summer 2023

Over the course of three meetings between late June and early August, a broadly representative systemwide group including academic leadership, staff, faculty, student governance and administration, were convened to address possible changes to the University's operating and capital budget strategies. General information presented by staff framed the institution's key challenges in pursuing goals and strategies under MPact 2025. The majority opinion from these discussions is that success in appeals to the state for support depends on the University's ability to demonstrate its value to legislators as a place that attracts and retains Minnesota talent right out of high school and develops the future workforce. From this discussion about strategy for capital requests, the following capital priorities summarize the feedback received in these sessions:

- Focus investments where students heavily use facilities (learning, student life) to improve their experience.
- Prioritize reinvestment to existing buildings and facilities that support student life, teaching and learning, research and scholarship.
- Pursue strategic redesign of obsolete and poor-condition buildings and change how space is utilized to reduce overall growth in space. Develop multi-year plans that tie investment in asset preservation to specific goals on space utilization and consolidation.
- Increase funding to meet building energy standards and invest in energy infrastructure systems to achieve climate action goals across the system.
- Advance projects that will support excellence in the University's core mission (teaching/ learning, R-1 research, outreach)

Senior staff and leadership participated in these discussions and incorporated the feedback into shaping the Plan and State Capital Request.

Developing the Six-Year Plan

The Plan is shaped by University leadership, including the Executive Vice President and Provost, the Senior Vice President for Finance and Operations, and the Vice Presidents for Clinical Affairs, Equity and Diversity, Research, University Relations, and University Services. Projects at all stages of planning are included, reflecting the stages below as part of the typical University capital improvement planning process. This effort results in a draft plan for the Interim President's consideration and ultimate recommendation to the Board.

Stage 1 **Proposal**	Stage 2 **Planning and Feasibility**	Stage 3 **Predesign**	Stage 4 **Resource Acquisition**	Stage 5 **Implementation**
Define the problem or opportunity. • Programmatic needs • Facility conditions • Financial resources assessment	Evaluate scope, scale, and alternatives. • Strategic positioning • Academic priorities • Financial constraints • Space needs	Advance the optimal scenario. • Project scope • Project budget • Project schedule	Confirm source and availability of funds. • Financial impact • Debt capacity	Deliver Project • Schematic design and GMP approval by the Board.
Chancellors, vice presidents, and deans submit proposals.	**Budget 6/Capital Strategy Group authorizes proposals for feasibility.**	**The Six-Year Plan authorizes projects eligible to begin to predesign.**	**Predesign completion authorizes resource acquisition to begin.**	**Board of Regents authorize projects >$1 million to commence.**

Although many projects have academic and organizational value, the projects that demonstrate both a programmatic urgency and implementation readiness are advanced for further analysis in the six-year timeframe, either as named candidates for future state requests or as projects in development intended to progress through the named stages. Other factors considered before projects are placed in the Plan include:

- *Financial parameters* such as state economic forecasts, state debt capacity, past trends, University debt capacity, and project-specific fundraising potential.
- *Operating budget impacts* such as the ability to fund the incremental operating (facility and programmatic) and debt costs associated with proposed projects and assumed by the proposing unit, college, or campus.
- *Timing and sequencing of projects* to complete a sequence of related projects in process or other capital project "dominoes."
- *Impact on programs (both research and instructional)* to manage the level of disruption while still maintaining research and teaching functions.
- *Health, safety, and regulatory requirements* result in issues that require some projects to be included in the plan.
- *Geographic distribution* recognizes the University as a system and balances investment across the state.
- *Alignment with MPact 2025 Systemwide Strategic Plan objectives.*

Project Costs

Projects in the Plan that show a TBD in the cost magnitude column were not specific enough to define project costs for. Costs for projects in the feasibility or planning stage are sometimes supported by order-of-magnitude estimates if a feasibility study has been recently completed. Predesign studies are prepared as funding strategies have been better defined and operating costs understood to determine more accurate cost values. However, the time horizon to advance the

project may have a significant effect on project cost and could change significantly depending on conditions, location, and type of development. Total project costs and funding are confirmed for each project prior to inclusion in a state capital request.

RECOMMENDATIONS

The Interim President recommends approval of the resolution related to the 2023 Six-Year Capital Plan and the resolution related to the 2024 State Capital Request with the exception of items related to the Future of Advanced Agricultural Research in Minnesota (FAARM).

The Senior Vice President recommends approval of the items related to the Future of Advanced Agricultural Research in Minnesota (FAARM).

REGENTS OF THE UNIVERSITY OF MINNESOTA

RESOLUTION RELATED TO

The 2023 Six-Year Capital Plan

WHEREAS, preserving the University of Minnesota (University) campuses through stewardship of public investments that have been made over 165 years is a commitment the Board of Regents (Board) has made to the State of Minnesota (State); and

WHEREAS, advancing key academic priorities is critical for the University to achieve and maintain excellence; and

WHEREAS, continuing investment in research infrastructure is essential for the future competitiveness of the University and the State; and

WHEREAS, enhancing the student experience for both undergraduate education and graduate and professional education is required as the core of its mission in order to generate and disseminate knowledge; and

WHEREAS, improving outreach and engagement is necessary in order to transform State communities, fuel the State economy, address State social issues, and improve the State's health; and

WHEREAS, the administration has developed a capital-planning framework designed to focus its capital planning efforts toward projects that support the University's institutional priorities within a financial strategy that is responsible.

NOW, THEREFORE, BE IT RESOLVED that the Board approves the 2023 Six-Year Capital Plan in order to create and maintain facilities that serve as tools for accomplishing the University's threefold mission of education, research, and outreach.

REGENTS OF THE UNIVERSITY OF MINNESOTA

RESOLUTION RELATED TO

2024 State Capital Request

WHEREAS, the Board of Regents (Board) has directed the administration to annually submit a six-year capital plan and a capital improvement budget in support of the University of Minnesota's (University) strategic priorities; and

WHEREAS, the Board recognizes the importance of sustaining and improving the University's facilities in support of teaching, research, and outreach; and

WHEREAS, the administration has developed a capital planning framework designed to focus its capital planning efforts on projects that support the University's institutional priorities within a financial strategy that is realistic.

NOW THEREFORE, BE IT RESOLVED that the Board of Regents approves the University's 2024 State Capital Request for presentation to the State of Minnesota (State) in the amount of $500,000,000 consisting of $500,000,000 from the State and $0 from the University.

University of Minnesota

2024 - 2029 Six-Year Capital Plan

dollars in thousands

University of Minnesota

2024 - 2029 Six-Year Capital Plan

State Capital Request

State Capital Request projects are shown below in order of priority for the next three years.

Project costs included in the Six-Year Capital Plan are order-of-magnitude estimates. Project costs and funding will be verified prior to consideration for the Annual Capital Budget.

State Capital Request 2024		Total Funds	State Funds	University Funds	Project Description
Project	**Higher Education Asset Preservation and Replacement**				This project will maximize the effectiveness and life of the University's 30 million square feet of facilities and infrastructure. The University allocates HEAPR funding system wide for health, safety and accessibility; building systems; utility infrastructure; and energy efficiency.
Campus	Systemwide				
Unit	Systemwide	**$500,000**	$500,000	$0	
	Total:	**$500,000**	$500,000	$0	
	Running Total:	**$500,000**	$500,000	$0	

dollars in thousands

University of Minnesota

2024 - 2029 Six-Year Capital Plan

State Capital Request 2025		Total Funds	State Funds	University Funds	Project Description
Project	**Higher Education Asset Preservation and Replacement**				This project will maximize the effectiveness and life of the University's 30 million square feet of facilities and infrastructure. The University allocates HEAPR funding system wide for health, safety and accessibility; building systems; utility infrastructure; and energy efficiency.
Campus	Systemwide				
Unit	Systemwide	**$300,000**	$300,000	$0	
Project	**Agricultural Research and Education Complex (FAARM)**				The Agricultural Research and Education Complex project will create sites for the 'Future of Advanced Agricultural Research in Minnesota' (FAARM) for innovative solutions in food systems that will lead the evolution of regenerative, systems-based agriculture.
Campus	ROCs & Stations				
Unit	College of Food, Agricultural & Natural Resource Sciences	**$225,000**	$150,000	$75,000	
Project	**Strategic Space Consolidation and Decommissioning**				This project will consolidate space in response to increased hybrid officing. Objectives include improved programmatic alignment and overall space reductions.
Campus	Twin Cities				
Unit	University Services	**$45,000**	$30,000	$15,000	
	Total:	**$570,000**	$480,000	$90,000	
	Running Total:	**$1,070,000**	$980,000	$90,000	

dollars in thousands

University of Minnesota

2024 - 2029 Six-Year Capital Plan

State Capital Request 2026		Total Funds	State Funds	University Funds	Project Description
Project	**Higher Education Asset Preservation and Replacement**				This project will maximize the effectiveness and life of the University's 30 million square feet of facilities and infrastructure. The University allocates HEAPR funding system wide for health, safety and accessibility; building systems; utility infrastructure; and energy efficiency.
Campus	Systemwide				
Unit	Systemwide	**$300,000**	$300,000	$0	
Project	**Academic Health Center Duluth - Design**				This project will construct a new academic health facility for the College of Pharmacy and the School of Medicine to be located in the Duluth Medical District.
Campus	Duluth				
Unit	Academic Clinical Affairs, Ofc	**$22,500**	$15,000	$7,500	
Project	**Strategic Research Investment; Duluth**				This project will make a strategic investment to advance research on the Duluth Campus.
Campus	Duluth				
Unit	Research	**$60,000**	$40,000	$20,000	
Project	**Strategic Research Investment; Systemwide**				This project will make a strategic investment to advance research in the University system.
Campus	Systemwide				
Unit	Research	**$60,000**	$40,000	$20,000	
	Total:	**$442,500**	$395,000	$47,500	
	Running Total:	**$1,512,500**	$1,375,000	$137,500	

dollars in thousands

University of Minnesota

2024 - 2029 Six-Year Capital Plan

Projects in Development

The Projects in Development list identifies potential projects which may proceed in the Six-Year Plan reporting period. Projects in development in future years are not prioritized. They are shown in order by project phase (from most to least definition) and then alphabetically by project name.

Projects must complete predesign, obtain necessary funds, and receive approval in the Annual Capital Budget to proceed with design and construction.

*** Projects with asterisk indicate potential future State Capital Request items.**

Projects in Development 2024 - 2029		Project Phase	Cost Magnitude	Project Description
Project	**Carlson School Revitalization**			This project will improve space in CSOM and Hanson Hall to better meet the needs of students, faculty, staff and external partners, maximize existing space resources, and support current teaching methods and technologies.
Campus	Twin Cities			
Unit	Carlson School of Management	Design	>$20,000	
Project	**MCPF - First Floor Improvements**			This project will provide improvements to undesignated first floor space to accommodate the expansion of advanced research, training, and support in biotechnology. [This building on St Paul Campus is presently called the Microbial Cell Production Facility (MCPF), however an official building name is TBD.]
Campus	Twin Cities			
Unit	Research	Design	>$20,000	
Project	**Middlebrook Hall HVAC Renovation**			This project will modernize the heating, ventilation, and air conditioning system throughout Middlebrook Hall for safety, reliability and efficiency.
Campus	Twin Cities			
Unit	Auxiliary Services	Design	$5,000 - $20,000	
Project	**Molecular Cellular Biology - Tunnel Washer Replacement**			This project will replace the built-in tunnel washer and address any related code issues.
Campus	Twin Cities			
Unit	Research	Design	$1,000 - $5,000	
Project	**3M Arena at Mariucci and Ridder Arena Centennial Improvements - Phase 2**			This project will update fan amenities including seating, concessions, and branding in both facilities, and Improve team spaces in Ridder to include locker room, training room and coaching area for the women's hockey program. Phase 1 was authorized in the FY23 capital budget to replace ice refrigerant systems in both arenas.
Campus	Twin Cities			
Unit	Intercollegiate Athletics	Predesign	$5,000 - $20,000	
Project	**Advanced Operations Center**			This project will design and construct a replacement facility to replace the Office of Information Technology's Network Operations Center currently located in the Information Technology Building. Partial funding was authorized in the FY24 capital budget for ongoing design efforts and procurement of long lead time equipment and materials.
Campus	Twin Cities			
Unit	Information Technology	Predesign	>$20,000	
Project	**Griggs Hall Renovation**			This project will improve residence hall space by completing code upgrades, new interiors, and re-roofing, in a series of phases.
Campus	Duluth			
Unit	UMN Duluth	Predesign	$5,000 - $20,000	

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Projects in Development 2024 - 2029		Project Phase	Cost Magnitude	Project Description
Project	**Labowitz School of Business Sales Center Renovation**			This project will renovate the second floor of the Library Annex into an adaptable, state of the art Labovitz School of Business and Economics (LSBE) sales center of excellence to be heavily utilized by students, staff, and community members.
Campus	Duluth			
Unit	UMN Duluth	Predesign	$5,000 - $20,000	
Project	**Molecular Cellular Biology 3rd Floor Repurposing**			This project will convert vacated teaching labs to research labs.
Campus	Twin Cities			
Unit	Medical School	Predesign	$1,000 - $5,000	
Project	**Molecular Cellular Biology 5th Floor Lab Repurposing**			This project will repurpose space to accommodate the relocation of Institute of Translational Neuroscience labs from Wallin Medical Biosciences Building.
Campus	Twin Cities			
Unit	Medical School	Predesign	$1,000 - $5,000	
Project	**Mondale Hall Courtroom Renovation**			This project will renovate existing courtrooms used for teaching and adjacent spaces.
Campus	Twin Cities			
Unit	Law School	Predesign	$1,000 - $5,000	
Project	**Pattee Hall Interior Refresh**			This project will refresh interior finishes and office systems to accommodate new occupants.
Campus	Twin Cities			
Unit	College of Liberal Arts	Predesign	$1,000 - $5,000	
Project	**Poultry Teaching and Research Facility Partial HVAC Renewal**			This project will replace all heating, ventilation, air conditioning, mechanical exhaust and lighting to support year-round research use.
Campus	Twin Cities			
Unit	College of Food, Agricultural & Natural Resource Sciences	Predesign	$1,000 - $5,000	
Project	**St Paul Campus Center**			This project will create replacement space for the St Paul Student Center.
Campus	Twin Cities			
Unit	Student Affairs	Predesign	>$20,000	
Project	**UMD Science Building Renewal***			This project will provide students and faculty in the Swenson College of Science and Engineering with spaces for learning, active learning classrooms, laboratories, and research spaces.
Campus	Duluth			
Unit	UMN Duluth	Predesign	>$20,000	
Project	**WMBB Diverse Microbial Exposures Facility Expansion**			This project will create a Diverse Microbial Exposures Facility in the Wallin Medical Biosciences Building.
Campus	Twin Cities			
Unit	Medical School	Predesign	$5,000 - $20,000	

dollars in thousands

University of Minnesota

2024 - 2029 Six-Year Capital Plan

Under Consideration List

Proposals included on the Under Consideration list have been identified as priorities by the responsible unit and are recommended to complete further assessment to support decision making. Under Consideration projects are not prioritized. They are shown alphabetically by project name.

*** Projects with asterisk indicate potential future State Capital Request items.**

Under Consideration List 2024 - 2029		Project Phase	Cost Magnitude	Project Description
Project	**Andersen Caverns Fire Protection**			This project will implement an enhanced fire hazard remediation solution in the collections storage area once the under-construction Collections Facility is complete.
Campus	Twin Cities			
Unit	University Libraries	Predesign	$1,000 - $5,000	
Project	**Arboretum Apple House**			This project will construct a new Apple House retail location near the intersection of Minnewashta Parkway and Arboretum Boulevard.
Campus	ROCs & Stations			
Unit	College of Food, Agricultural & Natural Resource Sciences	Proposal	$5,000 - $20,000	
Project	**Arboretum: Chinese Garden Phase III**			This project will create a new Chinese Garden that incorporates various existing features including Centerpiece Pond, Moon Gate, Pond Overlook Deck, Peony Pavilion and donated Massive Boulders from Qinling Mountains.
Campus	ROCs & Stations			
Unit	College of Food, Agricultural & Natural Resource Sciences	Proposal	TBD	
Project	**Athletic Facilities Targeted Improvement Projects**			This project will implement targeted investments to improve gender equity in Athletics facilities across the University system.
Campus	Systemwide			
Unit	Systemwide	Feasibility	TBD	
Project	**Briggs Library Capital Renewal***			This project will renovate the existing library and construct a new east link/entry addition and west entry. Improvements will include full replacement of building systems, technology infrastructure, new elevator, and ADA/Code compliant restrooms.
Campus	Morris			
Unit	UMN Morris	Predesign	>$20,000	
Project	**Coffman Program and Retail Renovation**			This project will renovate portions of Coffman Memorial Union including upgrades to retail facilities.
Campus	Twin Cities			
Unit	Student Affairs	Feasibility	$5,000 - $20,000	
Project	**Combined Softball Hitting and Baseball Pitching Lab**			This project will construct a dedicated softball hitting facility adjacent to the pitching bullpen at Siebert Field. The shared facility will also include a baseball pitching lab with dedicated biomechanic feedback and arm strengthening resources for pitcher development.
Campus	Twin Cities			
Unit	Intercollegiate Athletics	Predesign	$1,000 - $5,000	

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Under Consideration List 2024 - 2029		Project Phase	Cost Magnitude	Project Description
Project	**Comstock Hall Dining Renovation**			This project will renovate all dining areas in Comstock Hall.
Campus	Twin Cities			
Unit	Auxiliary Services	Proposal	$5,000 - $20,000	
Project	**CUHCC Clinic Renewal**			This project will construct a replacement facility for the Community University Health Care Center.
Campus	Twin Cities			
Unit	Academic Clinical Affairs, Ofc	Feasibility	TBD	
Project	**Dentistry Remodel***			This project will renovate the 4th floor to accommodate access to simulation teaching and learning spaces for all student groups, and redesign the 8th floor to improve clinical workflow and patient care.
Campus	Twin Cities			
Unit	School of Dentistry	Feasibility	>$20,000	
Project	**Eddy Hall Capital Renewal***			This project will preserve and renew historic Eddy Hall, the oldest building on UMTC campus, decommissioned in 2011.
Campus	Twin Cities			
Unit	Academic Affairs and Provost	Proposal	$5,000 - $20,000	
Project	**Glensheen Welcome Center**			This project will better define a clear arrival experience into the historic property and provide an enhanced visitor experience.
Campus	Duluth			
Unit	UMN Duluth	Proposal	TBD	
Project	**Gortner Avenue Reconstruction**			This project will reconstruct Gortner Avenue between Folwell Avenue and Commonwealth Avenue on the St Paul Campus due to curb, gutter and pavement failures including subgrade issues.
Campus	Twin Cities			
Unit	Auxiliary Services	Proposal	$1,000 - $5,000	
Project	**Large Animal Clinical Area and Isolation Consolidation**			This project will consolidate all large animal care, related clinical teaching, and large animal isolation into a single facility, allowing decommisioning of the large animal hospital in Vet Med Center South.
Campus	Twin Cities			
Unit	College of Veterinary Medicine	Proposal	TBD	
Project	**Large Lakes Observatory***			This project will develop a research facility in the Duluth harbor area with City of Duluth and private sector partners.
Campus	Duluth			
Unit	UMN Duluth	Proposal	>$20,000	
Project	**Minnesota BioImaging Center**			This project will advance development of the BioImaging Center at Hormel Institute.
Campus	Systemwide			
Unit	Research	Proposal	TBD	

dollars in thousands

University of Minnesota

2024 - 2029 Six-Year Capital Plan

Under Consideration List 2024 - 2029		Project Phase	Cost Magnitude	Project Description
Project	**Morrill Hall Renewal**			This project will renovate Morrill Hall.
Campus	Twin Cities			
Unit	Office of the President	Feasibility	TBD	
Project	**Natural Resources Research Institute (NRRI) Building Improvements***			This project will replace outdated building systems and upgrade research areas to allow for the integration of new capabilities and keep pace with projected research growth.
Campus	Duluth			
Unit	UMN Duluth	Feasibility	TBD	
Project	**Onsite Solar Phase 1**			This project will install solar technologies to achieve the University's Climate Action Plan goal to reach 6 megawatts of solar renewable energy on the Twin Cities campus by 2030.
Campus	Twin Cities			
Unit	University Services	Proposal	TBD	
Project	**Parking Lot Development - St Paul Campus**			This project will make improvements to the existing surface parking along Upper Buford Circle in St Paul.
Campus	Twin Cities			
Unit	Auxiliary Services	Proposal	$1,000 - $5,000	
Project	**Public Health Consolidation - Phase 1**			This project will move the School of Public Health out of the West Bank Office Building (WBOB) and onto the East Bank.
Campus	Twin Cities			
Unit	School of Public Health	Proposal	TBD	
Project	**Public Health Consolidation - Phase 2**			This project will consolidate the School of Public Health and its four divisions into a new building or into contiguous space to improve programmatic and administrative effectiveness.
Campus	Twin Cities			
Unit	School of Public Health	Proposal	>$20,000	
Project	**Renovation for College of Design Consolidation***			This project will consolidate the majority of the academic units from McNeal Hall on the St Paul Campus to sites in and around Rapson Hall.
Campus	Twin Cities			
Unit	College of Design	Proposal	TBD	
Project	**Research Data Facility**			This project will create a specialized research facility to enable computational analysis and secured research.
Campus	Twin Cities			
Unit	Research	Proposal	TBD	
Project	**Research Support Infrastructure Renewal**			This project will improve research support resources based on operational and research priorities to support growing and forward-looking areas of research.
Campus	Twin Cities			
Unit	Research	Feasibility	TBD	

dollars in thousands

University of Minnesota

2024 - 2029 Six-Year Capital Plan

Under Consideration List 2024 - 2029		Project Phase	Cost Magnitude	Project Description
Project	**Ruttan Space Refresh for Hybrid Work**			This project will refurbish suite 20 in Ruttan Hall to accommodate flexible and hybrid work.
Campus	Twin Cities			
Unit	College of Continuing & Professional Studies	Proposal	$1,000 - $5,000	
Project	**Small Animal Hospital Addition in Vet Med Center North**			This project will expand the small animal hospital to allow for new treatment areas, clinical teaching spaces, rounds rooms and new small animal isolation spaces. The scope would also include improvements to HVAC, backup power, and security for the existing hospital.
Campus	Twin Cities			
Unit	College of Veterinary Medicine	Proposal	TBD	
Project	**Soil Science Building Space Consolidation**			This project will make strategic renewal investments in College of Food, Agriculture and Natural Resource Science (CFANS) buildings in St Paul to consolidate labs out of the Soil Science building.
Campus	Twin Cities			
Unit	College of Food, Agricultural & Natural Resource Sciences	Proposal	$1,000 - $5,000	
Project	**Specialized Research Support Facility**			This project will expand existing specialized research support space to accommodate expanded capacity due to growth in activity.
Campus	Twin Cities			
Unit	Research	Feasibility	TBD	
Project	**Strategic Campus Development**			The project will create academic space for the growing UMR student community
Campus	Rochester			
Unit	UMN Rochester	Proposal	>$20,000	
Project	**Strategic Land Acquisitions**			This item is noted to reflect the routine opportunities for strategic land and asset acquisitions that support University mission.
Campus	Twin Cities			
Unit	Planning, Space, and Real Estate	Proposal	>$20,000	
Project	**Strategic Plan Renewal; East Bank***			This project will enhance facilities along upper Church Street. Possible outcomes include capital renewal in one or more of the following facilities: 10 Church Street (former Bell Museum), Armory, and Nolte.
Campus	Twin Cities			
Unit	Academic Affairs and Provost	Proposal	>$20,000	
Project	**Systemwide Climate Action Plan Implementation**			This project will implement systemwide investments to acheive Climate Action Plan goals.
Campus	Twin Cities			
Unit	University Services	Proposal	TBD	
Project	**Washington Avenue Bridge Pedestrian Deck Structure Replacement**			This project will rehabilitate a deteriorated campus icon by providing a safe and welcoming structure, addressing heating and ventilation issues contributing to accelerated deterioration, and renewing routes for major utility infrastructure spanning the bridge.
Campus	Twin Cities			
Unit	University Services	Proposal	$5,000 - $20,000	

dollars in thousands

University of Minnesota

2024 - 2029 Six-Year Capital Plan

Under Consideration List 2024 - 2029		Project Phase	Cost Magnitude	Project Description
Project	**Wilkins Hall HVAC Renovation**			This project will modernize building systems throughout Wilkins Hall for user comfort, safety, reliability and efficiency.
Campus	Twin Cities			
Unit	Auxiliary Services	Proposal	$5,000 - $20,000	
Project	**Wilson Library - Contemporary Learning***			This project will renovate Wilson Library to better support contemporary learning and scholarship with services focused on enabling new discovery, interaction with digital media and technology tools, community engagement, teaching, and study areas.
Campus	Twin Cities			
Unit	University Libraries	Predesign	>$20,000	

dollars in thousands

Interim President's Recommended 2023 Six-Year Capital Plan and 2024 State Capital Request

Interim President Jeff Ettinger
Myron Frans, Senior Vice President
Alice Roberts-Davis, Vice President, University Services

Finance & Operations Committee

October 12, 2023

SENIOR VICE PRESIDENT FOR FINANCE AND OPERATIONS

World Class Services for a World Class University

University Services

We Make the University Work

Two items for approval

Six-Year Capital Plan

2024 State Capital Request

Six-Year Capital Plan

- Prescribed in Board Policy
- Primary long-range capital planning tool
- Aligned with MPact 2025 Systemwide Strategic Plan
- Reflects the University's five highest priorities
- Foundation for state requests and annual capital budget
- Organized into categories (new format)
  - Projects for state requests
  - University projects in development
  - University projects under consideration

2024 State Capital Request: $500M in asset preservation (HEAPR)

$500 million for asset preservation across the system to preserve and maintain what we have, allocated to five campuses:

- $10 million - Crookston, 2%
- $45 million - Duluth, 9%
- $15 million - Morris, 3%
- $13 million - Research and Field Stations, 2.5%
- $417 million - Twin Cities, 83.5%

The University's commitment to excellence and the future

With $500 million for asset preservation, we will:

- Enhance student-facing facilities and services, including libraries, unions, recreation, wellness, academic support, and student counseling facilities
- Invest in high-demand academic programs and mission-support facilities
- Right-size the overall amount of campus space
- Advance innovation in health sciences, agriculture, biotechnology, and other research priorities (MNtersections)
- Ensure updates support inclusive, accessible, and welcoming campuses

UNIVERSITY OF MINNESOTA

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BOARD OF REGENTS
DOCKET ITEM SUMMARY

Finance & Operations **October 12, 2023**

AGENDA ITEM: Interim President's Recommended Supplemental FY 2025 State Budget Request

☐ **Review** ☐ **Review + Action** ☒ **Action** ☐ **Discussion**

☐ *This is a report required by Board policy.*

PRESENTERS: Interim President Jeff Ettinger
Myron Frans, Senior Vice President
Julie Tonneson, Vice President and Budget Director

PURPOSE & KEY POINTS

The purpose of this item is to act on the University's FY 2025 Supplemental Budget Request to the State of Minnesota. No changes have been made since the committee reviewed the proposed supplemental budget request at the September 2023 meeting.

As a part of the State of Minnesota's FY 2024-25 Biennial Budget request process, the University requested recurring Operations and Maintenance (O&M) funding for its core mission activities of an incremental $45,000,000 beginning in FY 2024 and an additional $45,000,000 recurring beginning in FY 2025. This request was based on an expectation that the University would raise tuition moderately and continue to internally reallocate funding to pay for cost increases associated with:

- expanded services and service levels to support the needs of University students across all campuses;
- growth in research activities and associated infrastructure costs;
- the labor market – additional costs to attract and retain talented faculty and staff who are critical for delivering the University's education, research, and outreach missions; and
- inflation on purchased goods and services.

Toward that portion of the request, combined with the need to address the FY 2023 tuition revenue shortfall compared to budget, the State of Minnesota generously provided $50,000,000 recurring in FY 2024, and the University, as promised, utilized its reallocation process and kept tuition increases to modest levels for its students (the increase was 3.5 percent for the Twin Cities campus and 1.0 percent for the greater Minnesota campuses) to balance the FY 2024 budget. The final bill did not include an appropriation increase for core mission activities in FY 2025.

As the University moves into its internal FY 2025 budgeting process this fall, it continues to face the same challenges it faced a year ago – limited resources and increased projected costs. With this in mind, the University proposes to resubmit its FY 2025 request for $45,000,000 recurring – to help address a portion of those cost increases and keep costs lower for students by leveraging only

modest increases in tuition. The University again plans to cover a portion of projected cost increases through its reallocation methodology, which involves reducing expenses in one area of its budget to fund required framework cost increases elsewhere (most often accomplished through efficiencies, targeted scope reductions, reorganizations, and restructuring of operations). The University cannot maintain the depth and breadth of its programming and impact by limiting tuition increases to low or modest levels and cutting to a balanced budget: additional state support is needed to fill the gap.

Of the University's $4.5 billion revenue budget for FY 2024 (excluding internal sales), the majority (~60 percent) is restricted to use by the source of the funds or is directly related to sales and other miscellaneous revenue generating activity where the revenues pay for the direct costs of the associated goods and services. For that portion of the budget, revenue must grow to cover cost increases, or decisions must be made to reduce spending. Only on rare occasions can those funds be used to support cost increases in state and tuition-funded activities. Therefore, the remaining 40 percent of University revenues from the unrestricted Operations and Maintenance (O&M) appropriation and tuition must be directed to increasing core mission costs and pressing needs as well as the necessary infrastructure. The only way these general operating revenues grow is through enrollment growth, increasing tuition rates, or a decision by the state to increase the University's O&M appropriation.

The Request Items

As noted above, the University's request includes a recurring increase in its general fund O&M appropriation by $45,000,000 beginning in FY 2025.

Core Mission: Maintaining Student Success, Research, and Outreach

This supplemental budget request is focused on maintaining the University's strong national and international reputation for educating students, driving innovation across all disciplines, and connecting with Minnesota communities while simultaneously keeping costs low for students. Each year, the University faces inflationary cost increases for programs, services, and infrastructure to:

- educate learners across a broad spectrum of ages and education levels (from youth programs such as 4-H through Ph.D. candidates);
- maintain student support services, such as academic planning, health and wellbeing services, disability resources, career development, etc.;
- drive economic growth in Minnesota and beyond through cutting-edge research, innovation, and industry partnerships across all sectors; and
- provide services to people and communities across the state through clinical care for patients and animals, MN Extension, public health efforts, research and outreach centers, library services, etc.

The $45,000,000 recurring request will be used in combination with internal reallocations to keep cost increases low for University of Minnesota students and fund a portion of what is needed to address:

- salary and fringe increases for faculty, educators, student services staff, research technicians, trades and other bargaining unit employees, student employees, and many others. The University employs approximately 27,000 people who live and work in communities in every corner of the state, over 52 percent of whom earn less than $63,640, which is the annual mean wage for all occupations in Minnesota, according to the Bureau of Labor Statistics (May 2022 State Occupational Employment and Wage Estimates);

- inflation on supplies, equipment, and other non-capital operating expenses for current programs and services (including library materials, lab supplies, instructional technology, restroom supplies, cleaning agents, etc.);
- facility operating costs and capital expenses, including utilities, building and landscape operations, debt service, leases, etc.; and
- cost increases for current technology licenses and maintenance agreements.

An additional $45,000,000 recurring in FY 2025 represents a 1 percent increase in the University's total revenues (excluding internal sales) and a 5.8 percent increase in its Operations and Maintenance and State Specials funding. Although the University is working to keep costs down for its students, this request assumes that a moderate tuition increase for all students across all campuses will still be necessary to cover the University's FY 2025 costs.

An increase in general fund support at this level would allow the University to continue to work towards achieving its mission-driven goals and priorities while practicing sound fiscal stewardship through ensuring average student debt for those who borrow is below the national average, increasing on-campus employment opportunities for students; targeting student aid; promoting operational efficiencies by maintaining spending on administration; and reporting on continuous improvement processes – all Commitment 5, Fiscal Stewardship goals, as identified in the MPact 2025 Systemwide Strategic Plan. Specific allocation of the additional $45 million in recurring base appropriation would be implemented consistent with those systemwide strategic priorities and determined through the annual internal budget development process.

BACKGROUND INFORMATION

The Board discussed its FY 2024-205 biennial budget request to the State of Minnesota at two Finance & Operations Committee meetings in September 2022 and October 2022 and the Full Board meeting in March 2023:

- March 2023: *Amendments to the FY 2024-25 Biennial Budget Request – Review/Action*
- October 2022: *President's Recommended FY 2024-25 Biennial Budget Request – Action*
- September 2022: *President's Recommended FY 2024-25 Biennial Budget Request – Review*

Board of Regents Policy: *Reservation and Delegation of Authority* reserves to the Board the authority to approve all requests for appropriations from the State of Minnesota.

INTERIM PRESIDENT'S RECOMMENDATION

The Interim President recommends approval of the resolution related to the Supplemental FY 2025 Budget Request to the State of Minnesota.

REGENTS OF THE UNIVERSITY OF MINNESOTA

RESOLUTION RELATED TO

Supplemental FY 2025 Budget Request to the State of Minnesota

WHEREAS, the University of Minnesota (University), the State of Minnesota's (State) only public, land-grant university, is charged with the responsibility to pursue knowledge through research and discovery, apply this knowledge through teaching and learning, and outreach and public engagement; and

WHEREAS, the University is committed to a continuous process of reevaluating priorities and increasing the efficiency and effectiveness of both direct mission and support activities, reinvesting budget savings into mission-critical strategies; and

WHEREAS, the University, in partnership with the State, can better support financial access and affordability to postsecondary education for Minnesota students and families; and

WHEREAS, the University is committed to supporting students through services that enhance their educational experience and by equitably reducing financial barriers to student achievement; and

WHEREAS, the University has an economic impact on the State by educating the State's workforce, developing new technologies, partnering with business and industry, and delivering outreach programs in partnership with local communities; and

WHEREAS, the University's annual budget process is designed to surface and act on the most pressing priorities each year to maintain excellence across its three missions, including compensation, compliance with federal and state regulations, research and technology infrastructure, facility maintenance, and student support; and

WHEREAS, the University recognizes the many competing priorities for State general fund support.

NOW, THEREFORE, BE IT RESOLVED that the Board of Regents approves the supplemental budget request for FY 2025 for presentation to the State, which includes an increase of $45,000,000 to the operations and maintenance appropriation from the general fund for a total operations and

maintenance appropriation of $721,294,000 in fiscal year 2025 and a biennial total of $1,407,852,000.

Interim President's Recommended FY 2025 Supplemental Budget Request

Interim President Jeff Ettinger
Myron Frans, Senior Vice President
Julie Tonneson, Vice President and Budget Director

Finance & Operations Committee

October 12, 2023

SENIOR VICE PRESIDENT FOR FINANCE AND OPERATIONS

World Class Services for a World Class University

UNIVERSITY BUDGET

UNIVERSITY OF MINNESOTA

Supplemental Budget Request: $45M for Core Mission

Description	Request FY24	Final Bill FY24		Request FY25	Final Bill FY25
Core Mission	45,000,000	50,000,000		45,000,000	0
Tuition Shortfall	24,000,000	0		0	0

A $45M Impact

- Limit tuition increases for students
- Invest in more student services such as counseling, advising, and academic support
- Maintain classrooms and instructional labs for students
- Increase compensation for faculty and staff - retain our talent
- Support research and technology infrastructure
- Preserve and maintain safe, functional, sustainable, and accessible facilities

UNIVERSITY OF MINNESOTA

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BOARD OF REGENTS
DOCKET ITEM SUMMARY

Finance & Operations **October 12, 2023**

AGENDA ITEM: Duluth Campus Plan

☐ **Review** ☐ **Review + Action** ☒ **Action** ☐ **Discussion**

☐ *This is a report required by Board policy.*

PRESENTERS: David McMillan, Interim Chancellor, Duluth Campus
Monique MacKenzie, Director, Campus Planning

PURPOSE & KEY POINTS

The purpose of this item is to act on the Duluth Campus Plan, the core components of which (Vision, Drivers, Big Ideas, and Recommendations) are included in the docket along with supporting narrative, imagery, and illustrations of future opportunities related to recommendations on the Duluth campus. Supplemental material on the Duluth Climate Action Plan is also provided for reference and in support of the goals of the Campus Plan. No changes have been made to the campus plan since the committee reviewed it at the September 2023 meeting.

BACKGROUND INFORMATION

Board of Regents Policy: *Reservation and Delegation of Authority*, Article I, Section VIII, Subd. 5 states: "The Board reserves to itself authority to approve campus master plans and amendments thereto." Board engagement on this plan has occurred at several phases of the process:

- September 2023: *Duluth Campus Plan – Review,* Finance & Operations Committee
- June 2023: *Duluth Campus and Climate Plan Framework,* Finance & Operations Committee
- February 2021: *Systemwide Campus Master Planning Principles,* Finance & Operations Committee
- December 2020: *Systemwide Campus Master Planning Principles,* Finance & Operations Committee

UMD Campus Plan
Coordinated Campus and Climate Action Plans

Finance & Operations Committee
October 12, 2023

Overview, Systemwide Coordinated Campus and Climate Action Plans

In 2022, University leadership directed staff to create an integrated, seamless set of plans that will shape the future of each campus in terms of physical changes and the system's climate action commitment. This approach will be pursued sequentially through 2025 as follows: Duluth, Rochester, Crookston, and Morris. This effort follows the Twin Cities Campus Plan Update (approved in December 2021) and the Twin Cities Climate Action Plan (presented in May 2023).

The campus and climate action plans describe key recommendations related to physical changes at UMD over the next 30 years. The plans are developed from primary drivers and reflect the values of the institution at a systemwide and campus-specific level. For campus planning the key questions are related to development and physical changes to buildings, open spaces, and other infrastructure, driven by mission activity. For climate action planning, this work has resulted in a plan to ultimately eliminate greenhouse gas pollution and make the campus more resilient to the effects of climate change.

Both plan documents also serve as a foundation to guide and inform near- and long-term planning for capital investments. Future Six-Year Capital Plans identifying specific projects as well as funding sources are examples of how the campus and climate action plans are implemented.

Response to Regents Questions, June 2023

At the June 2023 Finance & Operations meeting, the Board shared their comments and questions in response to this item, summarized below:

Enrollment and Future Campus Growth

- Knowing the target demographic number of enrolled students can support efforts to make UMD's aspirational vision for the future more achievable. The target of 10,000 students at UMD is the intersection of fiscal health, supportive campus facilities, and capacity.
- Regarding land designated for campus expansion, one area to the northeast of campus has been marked for potential housing acquisition for a horizon beyond this plan. Based on the expectation for steady enrollment of 10,000 students, and an understanding that not all UMD students will be housed on campus, the sites indicated in the 30-year horizon of the plan as replacement for current-day apartments are likely to be sufficient to meet this demand.

Campus Life and Student Experience

- For physical accessibility to and around campus, particularly in winter conditions, operational adjustments due to weather are very important on a daily basis.
- Services such as daycare and places that host student organizations/groups are stretched but also necessary for successful student experience.
- It's understood that new students are interested in opportunities to get outdoors close to campus but they have trouble connecting to trails and green space. Plans need to promote good connections to existing links, help inform people about how to find their way to these destinations, like Bagley Nature Area and other recreation areas close to campus.

Parking and Mobility

- Regents expressed concerns about reducing parking supply on campus, as so many in the campus community come from distant locations and transit is not sufficient, therefore vehicles will be part of the future state of campus for some time. EV vehicle use should continue to be supported but it isn't practical for a majority of people.
- In continuing efforts to make it easier to get to campus without a car, Regents asked if personal transportation such as e-bikes could be subsidized, while acknowledging the unique challenges presented by the combination of Duluth's winter weather and topography.

Climate Action

- Members of the committee proposed that calculating the financial renewal requirements on all energy and buildings as they currently operate, compared to future state, size, and energy systems could support decisions about the order of magnitude of investment.
- This measure could support efforts to make bigger upfront investments as long-term costs of ownership are reduced.

I. UMD Campus Plan

Purpose of Campus Plans

The Board of Regents approved campus planning principles in February 2021. This document establishes expectations that ensure the effectiveness of the process and outcomes, and are the foundation of Regents' review and ultimate approval of each location's campus plans. These have traditionally been known as campus master plans, however, best practices in planning has shifted to less divisive language and reflect a more flexible, adaptable view of guidance towards a desired future state. Accordingly, the systemwide effort has adopted the term 'campus plan.'

Physical plans for each of our campuses address questions of growth, capital renewal, and interaction with the surrounding community, all based on the priorities shaped by the institution's mission of research, learning, and outreach. These principles are a strong foundation for best practices in campus planning, they reflect changes in good planning practice by integrating themes such as sustainability, inclusion, diversity, and innovation in the face of an uncertain future.

Time Horizon for UMD Campus Plan

The near-term horizon for the UMD Coordinated Campus and Climate Action plans is fifteen years, through 2038. Other recommendations for physical change are linked to a long-term horizon of thirty years, to 2053. Geographically, the scope of this effort addresses the core UMD campus, supplemented with information about its facilities located throughout Duluth.

Mission and Vision

For more information on UMD vision and core values, see https://about.d.umn.edu/mission-and-values

Physical Setting and Surrounding Geography

UMD contains over 50 buildings located on 250 acres overlooking Lake Superior. Neighboring residential areas have been established since the campus was located at this site in the early 1950s after migrating from the Normal School location on 5th Street, as service offerings to the region were expanded and sites with capacity for growth were considered for the next phase in UMD's evolution.

Other campus facilities removed from the campus core include the Natural Resources Research Institute (NRRI), Research and Field Studies Center (RFSC) aka 'The Farm,' Glensheen Historic Mansion*, Limnology Building*, and Research Laboratory Building* (RLB). Some of these (noted with an * asterisk) are also listed on the National Register of Historic Places, which mandates specific stewardship responsibilities by the University of Minnesota.

Enrollment and Demographics

The plan assumes campus population will remain essentially steady in the near-term horizon (within 10 years). Faculty and staff population will reflect enrollment and supportive services. UMD campus demographics will evolve over time to reflect diversity in the state of Minnesota, within the entering student classes as well as the transfer cohort of students. Including renewal of priority academic buildings and essential investments in campus facilities like dining and health facilities, the campus will have adequate capacity to serve this population. The following assumptions reflect the plan's parameters about future campus population.

a. Enrollment data for fall 2022 indicated 9,675 students at UMD, including undergraduate, graduate, and UMD Medical School and Pharmacy students as well as other non-degree seeking students.

b. The systemwide strategic plan (MPact 2025) campus enrollment target is projected at 9,100. Future change on campus as represented in the longest time horizon of this document is a maximum of 10,000 students.

c. Faculty and staff will be maintained with adjustments as per requirements for teaching and support services

d. Student, faculty, and staff populations will become more diverse, with an increase in new transfer enrollment from community and Tribal colleges.

Engagement during the Planning Process

Consistent with one of the Regents' approved campus planning principles, the plan was developed around an inclusive, accountable planning process. As in any community of diverse stakeholders, the work used many channels to seek input and direction at every step of the effort.

One of the key tools was to develop an interactive mapping exercise that asked respondents to designate places of significance (live, eat, study, work, and play). In the fall semester, the mapping tool was available for all members of the campus community for three weeks. 671 distinct responses were received. More than 7,700 campus locations were marked, and the mapping collected close to 2,000 individual comments. A report on the respondents affiliation is included in the docket slides for reference.

A series of monthly meetings was held for the campus community from October 2022 through April 2023, with the exception of December 2022. In November 2022 and March 2023 workshops were held in person at UMD, with the remainder being held virtually via Zoom.

A Climate Action Plan (CAP) subcommittee, made up of facilities management and sustainability staff, convened throughout the project to focus on energy systems and UMD infrastructure. Engagement included a meeting with regional and state DNR staff to learn more about recent state projects using geo-exchange and solar technologies.

Supporters and neighbors of UMD were invited to the April 2023 campus-wide plan forum, and a meeting was held with City of Duluth Planning, Transportation, and Sustainability staff in May 2023 to share the Plan and look for partnership opportunities, such as a city-sponsored campus connector trail now under construction can make the most of its alignment adjacent to campus, a great example of common purpose between UMD and the City of Duluth.

Big Ideas: Plan Recommendations

The plan's 'Big Ideas' grew out of the analysis of conditions and feedback received from a range of stakeholders. Together they describe a vision for the future campus that will enhance the distinctive and unique physical attributes of the campus, and represent the potential physical and climate impact transformation:

1. The Sustainability Corridor: Creation of a new green corridor at the heart of campus serves as gathering space for the UMD community with enhanced connections on the north and south boundary of campus to adjacent city neighborhoods and parks. The Sustainability Corridor will enhance the entry experience to campus and strengthen

pedestrian, cycling, and transit use enhanced by a new mobility hub and dining expansion along Kirby Drive. Open space serves a dual purpose as geo-exchange well sites for heating and cooling and passive use recreation areas in the heart of a renewed student housing neighborhood.

2. The Recreation Park: Renovation of athletic and recreation fields for greater range of use, enhanced with naturalized areas and pedestrian circulation. The Recreation Park will serve as an amenity and allow for technology to support decarbonized energy systems (geo-exchange and wastewater heat recapture infrastructure) to be introduced to support the eastern edge of campus buildings' energy needs. This new open space will collect stormwater via a new detention pond and green the campus edges by reducing the views of surface parking lots.

3. Greening the Campus Edge: The eventual relocation and reconstruction of campus housing from the north side to the west side of campus, with the potential reduction in parking demand, will allow some of the impervious surface (parking lots) to be reforested close to Bagley Nature Area and the northern and southern edges of the core campus. University Drive would serve as the primary vehicular through-street and gateway to campus. Some of the surface parking areas may convert to a parking structure. Reduced impervious surface will enhance experience of travel on foot and by bike, reduce need for snow removal and storage during Duluth's snowy winters, as well as reduce urban heat island effects.

4. Reinvest in the Campus Core: Selective renovation of priority academic buildings supports teaching, learning, and outreach missions and will reduce emissions from energy demand. Renovation of the Main Production Kitchen and future dining expansion with creation of a Mobility Hub in the Sustainability Corridor reinforce existing patterns of student and academic life. The conversion of existing, obsolete housing at Vermilion and Burntside to a lively recreation space in the heart of the campus' residential neighborhood is another aspect of this investment in the core. Progressive attention to opening up some key spaces within the connected buildings to allow views and access to courtyards will also reinvest in some of the highest used spaces in the campus core.

Implementation/ Phasing Strategy

The UMD Campus Plan strategies and initiatives are defined in the near term (15 years) and long term (30 years). The campus plan focuses recommendations on changes to land, buildings, mobility, and circulation through the lens of key campus activities in the near and long-time horizons, based on collective thinking and anticipating future conditions.

<u>Near term improvement strategies (15 years)</u>

Campus Life

- Demolition: Vermilion Hall, Burntside Hall, and Health Services Building
- New residence hall to address demand/ student enrollment
- New health center (potential tunnel connection to library)

- Dining Expansion
- Renovation: Alworth, Heller Hall, Old Chemistry, Library Annex, Humanities, and Voss-Kovach (to include exploration of solar roof feasibility)
- Divestment: Research Laboratory Building

Mobility and Circulation

- Mobility hub (paired w/Dining Expansion)
- Campus gateway
- Multi-modal Kirby Drive
- Potential parking structure
- Resolution of Woodland Ave access

Recreation and Open Space

- New linear park
- Reconfigured recreation space
- Multi-modal Kirby Drive
- Ped access to Bagley Nature Area and Chester Park Building
- Reforestation

Long term improvement strategies (30 years):

Campus Life

- Demolition: Oakland Apartments, Goldfine Hall, Heaney Hall, Junction Apartments
- Construct new student housing to west side of campus core with no net loss of beds
- Possible relocation of childcare, pending demand and financial support
- Explore housing acquisition at NE corner of campus

Mobility and Circulation

- More aggressive mode shift to public transportation, pedestrian, and cycling travel to advance sustainability and further reduce dedicated parking
- Long-term mobility shift could reduce permit parking spaces

Recreation and Open Space

- Reforest areas of former parking and housing locations, and augment tree cover at Bagley Nature Area

II. UMD Climate Action Plan

Climate change has been referred to as the greatest challenge of the 21st century and an existential threat to humanity that is already causing harm to people, communities, and ecosystems, here in Minnesota and around the world. Those impacts will become more severe and pronounced if the causes and symptoms of climate change go unchecked. As a result, it has been identified as a key area for action in MPact 2025.

In MPact 2025, the University committed to building a fully sustainable future and identified three actions to advance this goal:

- Demonstrate state and worldwide leadership in sustainability and environmental teaching, research, and convening power.
- Develop system leadership and governance coordination for sustainability initiatives.
- Establish next-generation systemwide Climate Action Plan.

In response, UMD has developed a climate action plan to meet the systemwide commitment of eliminating greenhouse gas pollution by 2050 and making the campus more resilient to the effects of climate change.

Since 2007, the Duluth campus has reduced its emissions over 25%. The 2023 Duluth CAP builds on this history of climate action by identifying strategies that align with the 2023 Duluth Campus Plan. UMD currently tracks emissions from heating and cooling, the University's fleet, fugitive emissions (refrigerants and fertilizers), commuting, University sponsored air travel, and solid waste. UMD's total carbon emissions can be split into the following:

- 47% of emissions are Scope 1 or direct emissions from burning natural gas and fuel oil for heating and cooling, fleet vehicles, and other fugitive emissions (fertilizers and refrigerants)
- 44% of emissions are from Scope 2 or indirect emissions from purchased electricity
- 9% of emissions are from Scope 3 or other indirect emissions, like commuting and waste

UMD's decarbonization framework addresses carbon pollution across the three scopes of emissions.

Scope 1:

- Replace the fossil fuel, steam heating system with decarbonization-supporting technologies, such as:
  - Low-temperature hot water heating
  - Geothermal heating and cooling technology
  - Thermal storage
  - Alternative fuel sources or electrification
- Ensure new buildings meet net zero emission standards
- Install energy conservation measures throughout the campus in existing buildings
- Transition UMD's fleet to electric vehicles or low- or zero-emission options
- Eliminate fugitive emissions

Scope 2:

- Install solar on rooftops of new and renovated campus buildings
- Rely on electricity grid transformation to renewable sources by 2040

Scope 3:

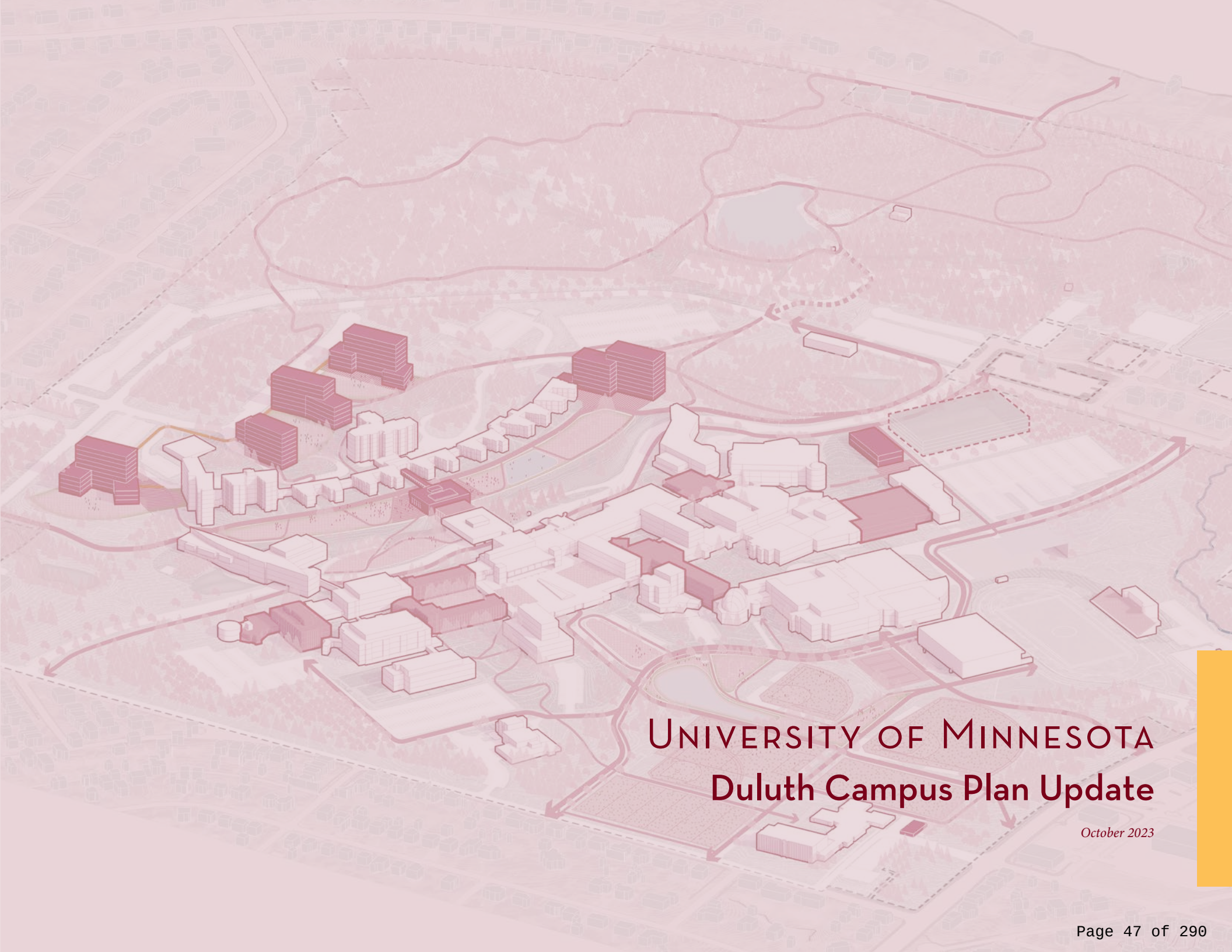
- Increase walking and the use of bicycles, public transit and carpooling
- Support commuters transitioning to walking, biking, transit, and electric vehicles

Note: Waste is a small part of UMD's footprint and being addressed through ongoing initiatives that will be reviewed and enhanced independent of the CAP. Emissions from air travel are largely out of UMD's control. High-quality offsets may be a strategy to address these emissions and this is being explored at a systemwide level rather than a campus-specific strategy.

The CAP also identifies vulnerabilities of the Duluth campus relative to climate change. Current and anticipated future warming is expected to result in changes in temperature, precipitation, and

severe weather. As a place-based institution, the campus will be unable to escape these impacts and will need to become more resilient to the effects. The CAP identifies portions of the campus plan that have climate resilience benefits, such as:

- Incorporate climate change projections of precipitation and warming trends into campus design
- Maintain redundancy of infrastructure systems
- Increase native plantings and reforestation for habitat and shade
- Enhance surface water protection and stormwater management
- Improve physical access to health services and recreation
- Create welcoming spaces to build community social resilience



University of Minnesota
Duluth Campus Plan Update

October 2023

The University of Minnesota Duluth's Land Acknowledgement

We collectively acknowledge that the University of Minnesota Duluth is located on the traditional, ancestral, and contemporary lands of Indigenous people. The University resides on land that was cared for and called home by the Ojibwe people, before them the Dakota and Northern Cheyenne people, and other Native peoples from time immemorial. Ceded by the Ojibwe in an 1854 treaty, this land holds great historical, spiritual, and personal significance for its original stewards, the Native nations and peoples of this region. We recognize and continually support and advocate for the sovereignty of the Native nations in this territory and beyond. By offering this land acknowledgment, we affirm tribal sovereignty and will work to hold the University of Minnesota Duluth accountable to American Indian peoples and nations.

Table of Contents

Introduction 1

Purpose of the Campus & Climate Action Plans Framework

The University of Minnesota set out to develop an integrated, seamless set of campus and climate plans to shape the future of each campus in terms of physical changes and alignment with the System's climate action commitment. The purpose of completing a campus plan is to develop consensus around a shared vision for the future of the campus, establishing a framework with a set of actionable steps that the institution can take to realize this vision in a way that advances its goals and mission. The University of Minnesota Duluth's (UMD's) coordinated Campus and Climate Action Plans describe the vision and key recommendations for the campus. The plans were developed from primary drivers and reflected the values of the institution at a systemwide and campus-specific level. The plans also serve as a foundation to guide and inform near- and long- term planning for capital investments.

The UMD Campus Plan presents an overview of plan drivers, existing campus conditions, and community input that have informed the inception of four "Big Ideas" for the future campus. These Big Ideas are strategic opportunities for meaningful and positive change for the UMD community experience and campus operations. These Big Ideas are supported by planning frameworks, which present a vision for how campus improvements may be made at a systems level. Finally, the plan presents suggestions on which capital projects UMD should prioritize to maximize efficiency and impact over a fifteen- and thirty-year time horizon.

A Systems Approach

Each campus of the University of Minnesota System plays a pivotal role in fulfilling the tripartite mission of the University, advancing learning, research, and outreach throughout Minnesota. Each has its own unique identity, valued by students, faculty, staff, and the surrounding community. This integrated planning effort will provide each campus with a framework for future decision-making and implementation to support each individual institution's needs while advancing goals identified in the system-wide strategic plan, MPact 2025.

Planning Purpose and Goals

The purpose of this campus plan is to establish consensus and outline an approach to achieving shared goals in mobility, infrastructure, community connection, and resilience over a thirty-year time horizon. The recommendations that follow reflect UMD's unique needs as identified during the campus analysis stage, input and ideas shared by the UMD campus community, and areas for further study and evaluation. All of these recommendations are intended to support MPact 2025's commitment to building a fully sustainable future for UMN campuses. In a parallel effort, the project team has identified steps that UMD may take to eliminate greenhouse gas emissions by 2050; they are described in a companion document, "University of Minnesota Duluth Climate Action Plan."

2013 Plan Update

The most recent UMD campus plan update was completed in 2013. A notable accomplishment since the 2013 plan was the 2019 addition of the Heikkila Chemistry and Advanced Materials Science building, which is situated on a site that the 2013 plan had identified for future building expansion. The stated goals for the 2013 plan were:

- Create a "Front Door" for the UMD Campus
- Develop a "Focal Point" for the UMD Campus
- Make the UMD Campus "Visible"
- Enhance the "Visual Quality" of the UMD Campus
- Create a "Pedestrian and Bicycle Friendly" UMD Campus
- Connect and "Integrate" the UMD Campus into the City of Duluth

Though certain priorities have shifted, several of the goals and strategies proposed in 2013 are also supported in the current plan. These include the addition of a visitor gateway off West College Street and proposed realignment of University Drive east of the power plant, the greening of the campus edge through strategic removal of surface parking, and the greening of the Solon Campus Center's entrance courtyard. Further alignments with or departures from the recommendations of the 2013 plan are noted in more detail in the following pages.

The near-term horizon for the UMD Campus Plan is fifteen years, through 2038. Other recommendations for physical change are linked to a long-term horizon of thirty years, to 2053. Geographically, the scope of this effort addresses the core UMD campus, supplemented with information about its facilities located throughout Duluth. Periodic updates to the plan will occur approximately every ten years to accommodate shifting needs and priorities for the UMD campus.

2013 Proposed UMD Master Plan - Long Term Plan

Planning Process

The UMD planning process progressed over the course of nine months, beginning in November 2022 and concluding with the completion of the final draft in August 2023. The planning process for UMD included the following phases of work:

Phase 1: Visioning

This initial phase developed a compelling vision for UMD and a framework for implementation based on input from stakeholders, review of past planning efforts, and MPact 2025 goals. A core component of this phase was conducting an inclusive and informed engagement process which was tailored to each campus in order to define this vision based on input from key stakeholder groups. The visioning phase was carried out in conjunction with leadership, established committees, and other members of each campus community.

The Visioning phase for the UMD plan was the longest of the four project phases. It began in November 2022 with a site visit and building and grounds tour, a comprehensive data collection and inventory process, stakeholder interviews, and community listening sessions. The project team then launched the MyCampus interactive mapping tool and the project website to collect input and share information virtually. Following site reconnaissance and data collection, the consultant team shared campus analysis findings with the UMD community in February. Findings drew upon site visit observations, map and site survey-based analysis, and community input and ideation garnered over the four month period.

Further detail about the UMD community engagement process and outcomes is provided in subsequent sections.

Phase 2: Assumptions, Scenario Planning, and Modeling

During the second phase of work, the project team began to develop and test alternative approaches to addressing the campus needs and community priorities identified in Phase 1. This included developing consensus among campus leadership and stakeholders on assumptions about future changes, including demographic, financial, cultural, and climate system trends that impact campus activities, facilities, and infrastructure. At the conclusion of this phase, the project team reached consensus with campus leadership and community stakeholders on preferred alternatives to refine during Phase 3.

Phase 2 of the UMD planning process began in February 2023 following the presentation of campus analysis findings. During the two month phase, the project team explored and developed a series of alternative approaches to address campus systems including but not limited to student life, mobility and wayfinding, landscape, and infrastructure. The project team also began to model and analyze proposed climate mitigation and adaptation solutions to validate UMD's ability to meet climate targets while adapting to projected climatic changes. These alternatives were shared with campus leadership as well as the broader campus community during a series of in-person meetings and workshops in March 2023. The project team recorded feedback on the concept alternatives and presented preliminary campus plan recommendations during a virtual campus forum in April 2023.

Phase 3: Draft Plan Production

The project team refined preliminary recommendations into a preferred direction during Phase 3, consolidating the selected strategies into a cohesive vision for the future of the campus. With approval from campus leadership, the project team began to develop documentation of their recommendations for preliminary review and feedback from the Board of Regents.

Phase 3 of the UMD planning process spanned two months, and included the development of presentation and docket materials showcasing the project team's recommendations for review by the Board of Regents in May 2023. Based on preliminary comments provided by the Board of Regents, the project team proceeded to draft a coordinated plan for Regent review in September 2023.

Phase 4: Final Plan Production

During the final project phase, the team gathered feedback from UMD stakeholders and University leadership on the draft plan, making final refinements as needed to plan contents and recommendations. The team then prepared the final planning document in both digital and print-ready formats for action to approve by the Board of Regents in October 2023.

Below: Aerial view of University of Minnesota Duluth Main Campus
Right: UMD students at Kirby Student Center

Plan Drivers 2

Each campus plan is informed by a combination of key drivers. The Systemwide Strategic Plan: MPact 2025 is a planning resource common to all of the UMN system campuses, and outlines a vision for the future of the University as a whole. In addition to this document, other drivers which inform each distinctive campus plan include campus-level strategic plans and visions, preceding planning studies, community stakeholder input, and the unique set of conditions at each campus. The key drivers that have informed the UMD campus plan are described below; existing campus conditions are described in further detail in subsequent sections.

Systemwide Strategic Plan: MPact 2025

The UMD campus plan, and the climate action plan, are aligned with the systemwide strategic plan, MPact 2025, related to campus planning (Commitment 5, Action Items 5.3) and climate action planning (Commitment 2, Action Items 3.2). Many of the plans' recommendations embody the commitments outlined in the MPACT 2025 plan, as noted below.

Student Success

Continued investment in housing and wellness to support recruitment and retention. Development of the proposed Sustainability Corridor and Recreation Park will create places of respite and recreation and could be used for applied learning opportunities.

Discovery, Innovation, & Impact

Reinvestment in academic buildings supports innovation and applied research across multiple colleges and units.

MNtersections

This plan provides a decarbonization framework to meet the University's commitment to eliminate carbon emissions by 2050.

Community & Belonging

The proposed Sustainability Corridor and the Recreation Park create places for the UMD Community to gather with each other to foster belonging, and to connect with adjacent city neighborhoods and parks.

Fiscal Stewardship

This plan denotes building divestment and demolition for buildings that no longer adequately serve UMD's mission, and renovate other facilities to advance UMD's commitment to building a sustainable future.

MPact 2025 Sustainability, Climate Action, & Resiliency Goals

Climate change has been referred to as the greatest challenge of the 21st century and an existential threat to humanity that is already causing harm to people, communities, and ecosystems, here in Minnesota and around the world. Those impacts will become more severe and pronounced if the causes and symptoms of climate change go unchecked. In MPact 2025 (Commitment 3, Action Items 3.2), the University committed to building a fully sustainable future and identified three actions to advance this goal:

- Demonstrate state and worldwide leadership in sustainability and environmental teaching, research, and convening power.
- Develop system leadership and governance coordination for sustainability initiatives.
- Establish a next-generation systemwide Climate Action Plan.

Systemwide Planning Principles

The Board of Regents approved campus planning principles in February 2021, listed below. These serve as expectations that ensure the effectiveness of campus plans and are the foundation of Regents' review and ultimate approval of each location's campus plans. The UMN system has a long history of regularly updated campus physical plans, which have traditionally been known as campus master plans.

1. Establish a sustainable vision of how the physical setting of each campus will embody its distinctive history, mission, and future.
2. Create an inclusive and welcoming experience for the increasingly diverse range of people who come to campus.
3. Optimize existing physical assets to facilitate flexible and innovative solutions toward an enduring future.
4. Consider the cost of attendance, investment, and operations when planning for each campus' future.
5. Integrate each campus' master plan with the Systemwide Strategic Plan.
6. Ensure an inclusive, accountable, and forward-looking process for developing and implementing the master plan.

Committments of the Systemwide Strategic Plan: MPact 2025
(Source: Office of the President, MPact 2025: Systemwide Strategic Plan)

UMD Mission and Vision

Mission

The University of Minnesota Duluth integrates liberal education, research, creative activity, and public engagement and prepares students to thrive as lifelong learners and globally engaged citizens.

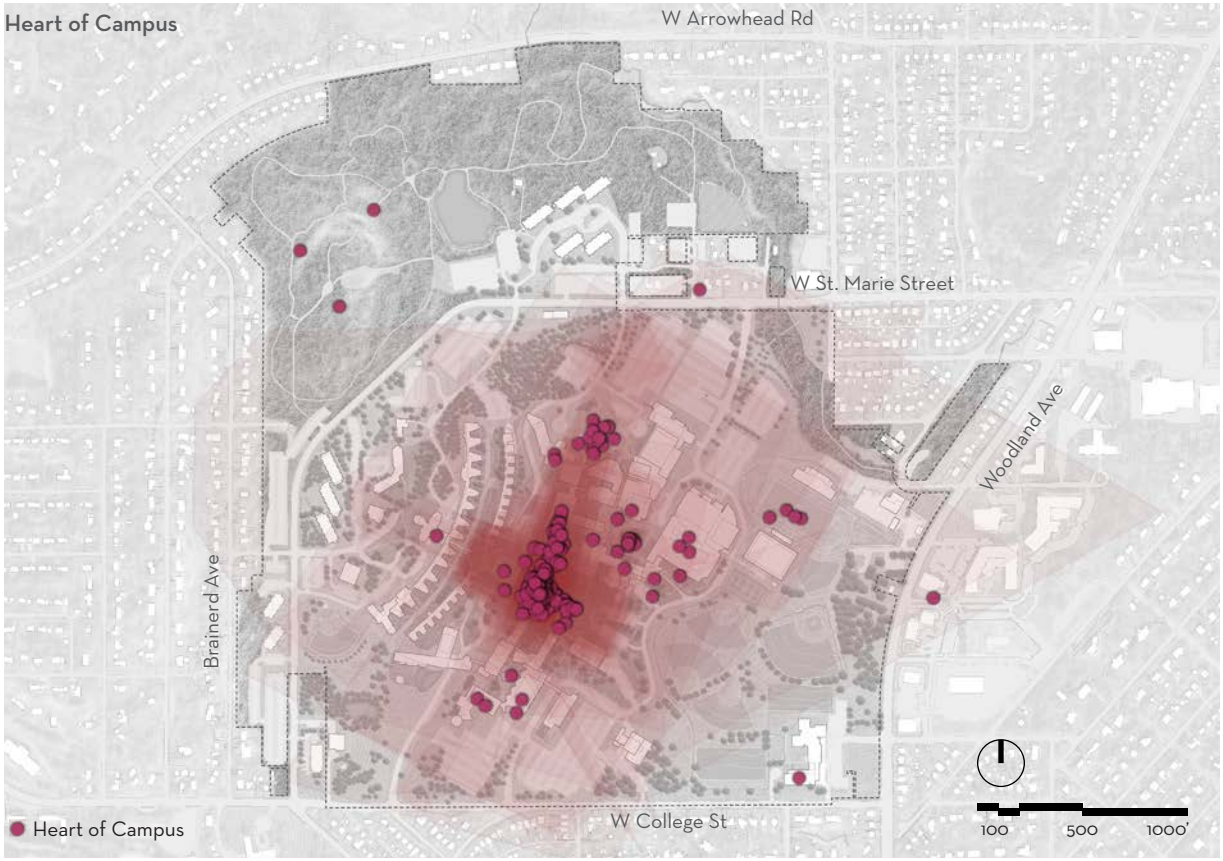
Vision

UMD will be agile in pursuing a dynamic future that builds upon our strengths and successfully confronts evolving challenges and opportunities. UMD will deliver an array of academic programs and student experiences that capitalize on our excellence and impact, as well as our scholarly strengths and external partnerships. In this way UMD will serve as a platform for success and achievement beyond graduation for students from all diverse and cultural backgrounds. By accomplishing this vision UMD assures that Minnesota has a highly qualified and innovative workforce to meet our future economic, environmental, social, and cultural challenges.[1]

1 https://about.d.umn.edu/strategic-plan/vision

Campus Community Input

Consistent with the Regents' approved campus planning principles, the planning work completed for UMD was designed to ensure an inclusive, accountable planning process. One of the key features of this work was to engage the campus community with an interactive mapping tool, MyCampus, which asked respondents to designate places of significance (live, eat, study, work, and play, among others). In the fall semester of 2022,



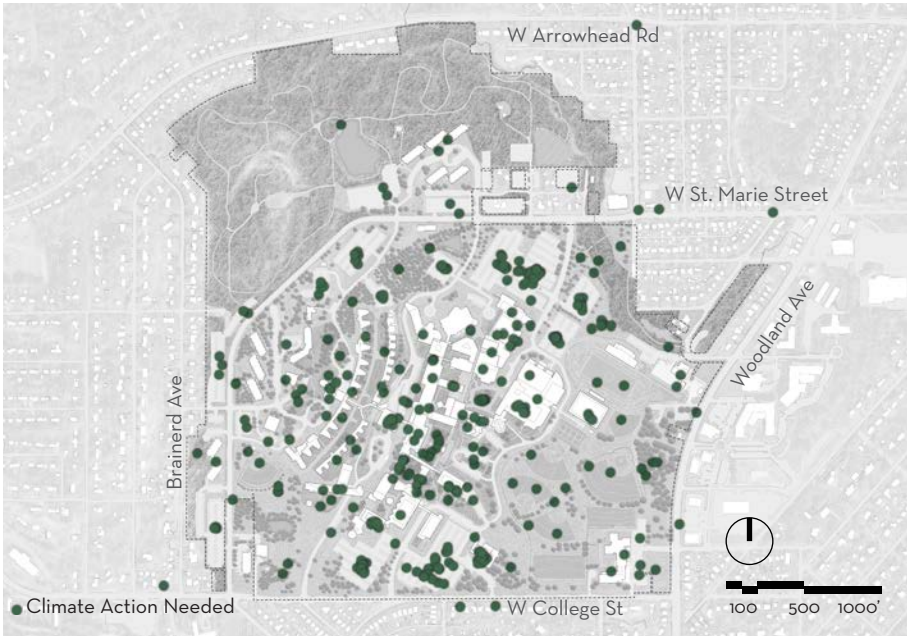
the mapping tool was available for all members of the campus community for three weeks. 671 individuals recorded responses. More than 7,700 campus locations were marked, and the mapping collected close to 2,000 individual comments. Of the participants who identified themselves, the majority were students (60%), with staff and faculty accounting for more than one-third of respondents- 26% staff and 12% faculty - in addition to small numbers of alumni and 'other' affiliation. 92% of student respondents were undergraduate students, with approximately one-third being first year students, and one-third being seniors.

In addition to virtual engagement with the MyCampus tool, the planning team prioritized keeping the campus community apprised of the planning process through virtual and in-person touchpoints. A series of monthly meetings were held for the campus community from October 2022 through April 2023, with the exception of December 2022. November 2022 and March 2023 workshops were held in person at UMD, with the remainder being held virtually.

Below and left: Results from the MyCampus mapping activity, in which each point represents UMD perspectives about campus activities, assets, and conditions

Places to Study

Climate Action Needed

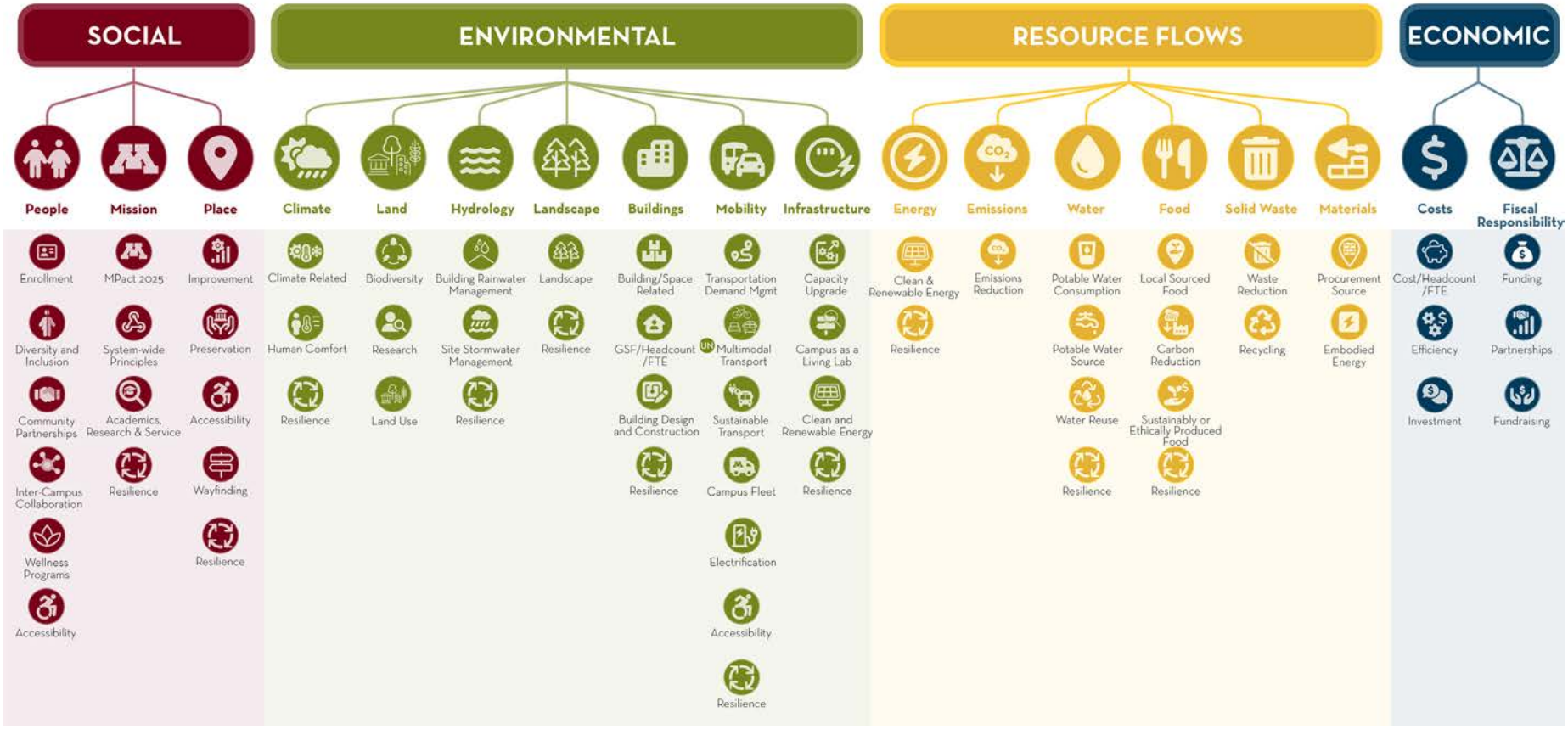


A Climate Action Plan (CAP) Advisory Committee, made up of facilities management and sustainability staff, convened throughout the project to focus on energy systems and UMD infrastructure. Engagement included a meeting with regional and state Department of Natural Resources (DNR) staff to learn more about recent state projects using geothermal and solar technologies.

Supporters and neighbors of UMD were invited to the April 2023 campus forum, and a meeting was held with City of Duluth Planning, Transportation, and Sustainability staff in May 2023 to share the Plan and look for partnership opportunities. The City of Duluth is in the process of constructing a city-wide connector trail which is currently shown along University Drive on campus. The UMD Coordinated Campus and Climate Action Plans' proposed Sustainability Corridor on the Kirby Drive alignment appears to match the City's campus connector trail in purpose and character.

Below (left and right): Campus engagement activities included an open house-format community event, during which the planning team sought feedback on preliminary concepts.

Planning Framework



Above: The Planning Framework was developed as a discussion tool to illustrate all the considerations that a campus plan can make. Many of these topics are given strategic thoughts and commitment under other plans and initiatives at UMD and may not be heavily covered in the plan given these other dedicated efforts.

Existing Conditions Analysis 3

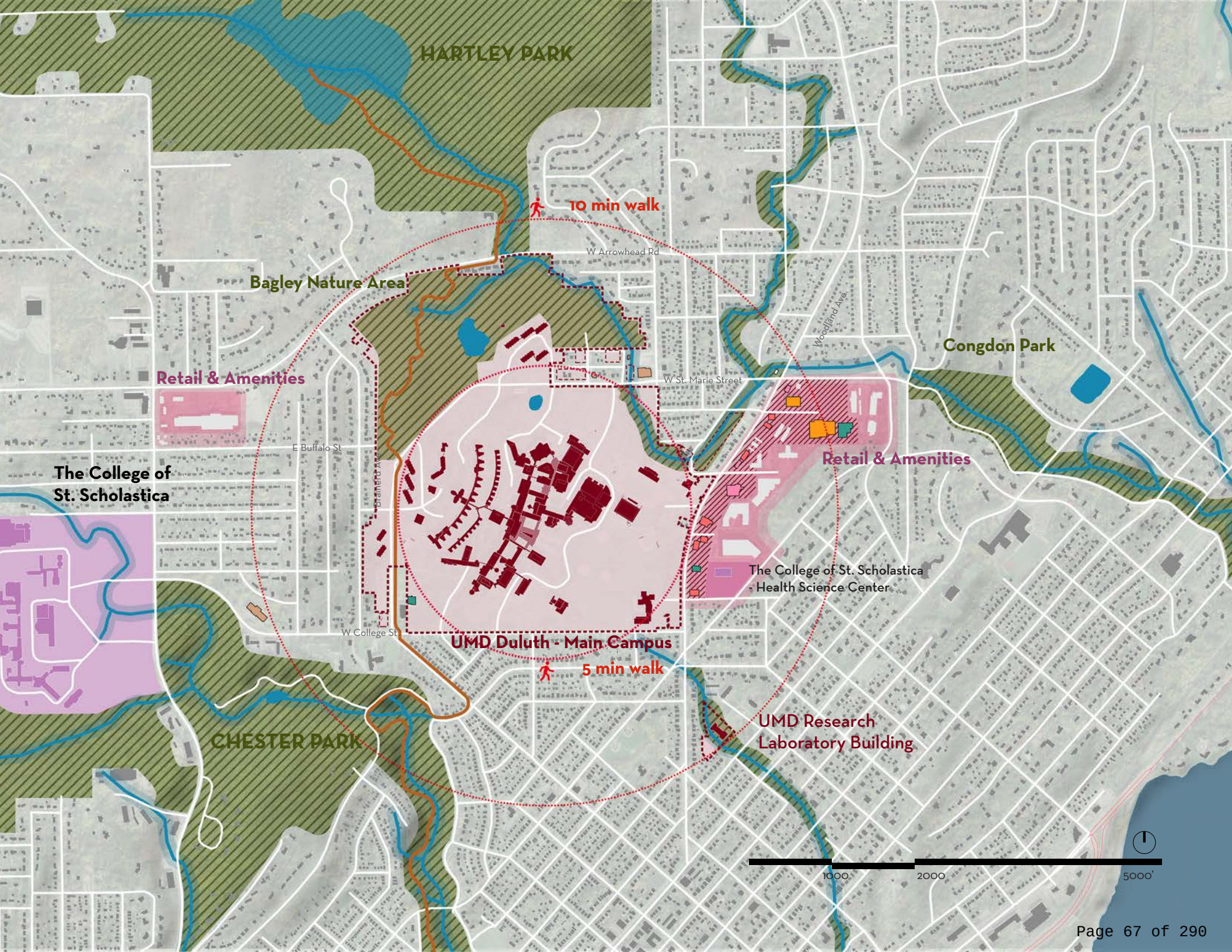
Duluth Campus

The existing conditions analysis occurred during the first phase of the planning process. The project team utilized a combination of stakeholder input, desktop analysis, and on-the-ground observations to develop a synthesized understanding of campus conditions and future needs. Where existing data was limited, the project team made assumptions based on best available information. Any such assumptions are noted below.

The UMD campus is located in the City of Duluth between Hartley Park and Chester Park, and is surrounded primarily by residential neighborhoods, with mixed development to the east and northwest. The campus contains over 50 buildings located on 250 acres overlooking Lake Superior. A prime resource for education, research, and recreation for both campus and the surrounding community is UMD's Bagley Nature Area on 60 acres of land on the north end of campus.

The planning process primarily focused on envisioning the future of the campus core, including the Bagley Nature Center and the Research Lab Building, located on the former UMD lower campus. The campus core does not include the Natural Resource Research Institute (NRRI), Glensheen, Limnology, Research and Field Studies Center (RFSC) or other affiliated properties. Although these properties are not the focus of the plan, they are significant contributors to the UMD experience and their relationships with the campus core was considered. (Reference appendix)

An aerial view of Bagley Nature Area


HARTLEY PARK
10 min walk
W Arrowhead Rd
Bagley Nature Area
Woodland Ave
Congdon Park
Retail & Amenities
W St. Marie Street
E Buffalo St
Retail & Amenities
The College of
St. Scholastica
Branard Ave
The College of St. Scholastica
- Health Science Center
W College St
UMD Duluth - Main Campus
5 min walk
UMD Research
Laboratory Building
CHESTER PARK
1000
2000
5000'

UMD Campus Community

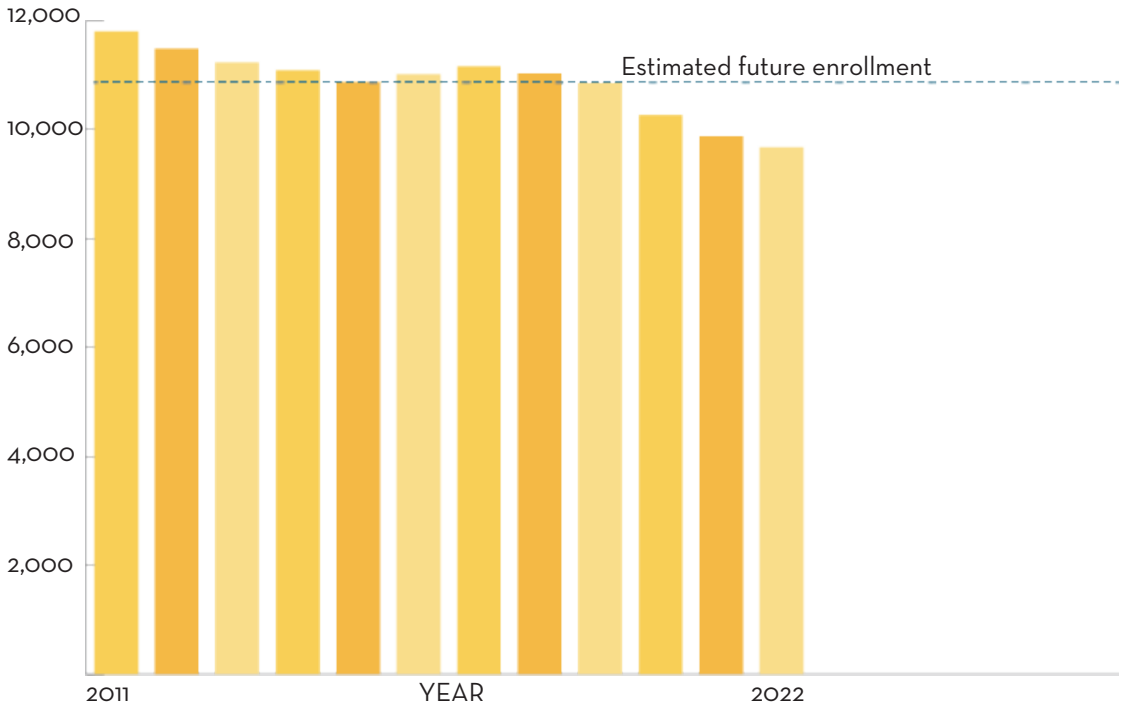
Almost 9,675 students were attending UMD during the fall semester of 2022, including UMD Medical School and Pharmacy students; with 35% living on campus, and 65% living off campus. The number of undergrad students was 8,810. The graduate student population was 865. Prior to the pandemic, the MPact 2025 undergraduate enrollment target for UMD was set at 9,100 total enrollment and future change on campus is linked to the MPact 2025 target population. Faculty and staff will be maintained with adjustments as per requirements for teaching and support services.

Student, faculty, and staff populations are projected to become more racially diverse, with an increase in new transfer enrollment from community and Tribal colleges.

The plan assumes the relative share of undergraduate and graduate students will remain the same. Faculty and staff population will reflect enrollment and supportive services. UMD campus demographics will evolve over time to reflect diversity in the state of Minnesota, within the entering student classes, as well as the transfer cohort of students.

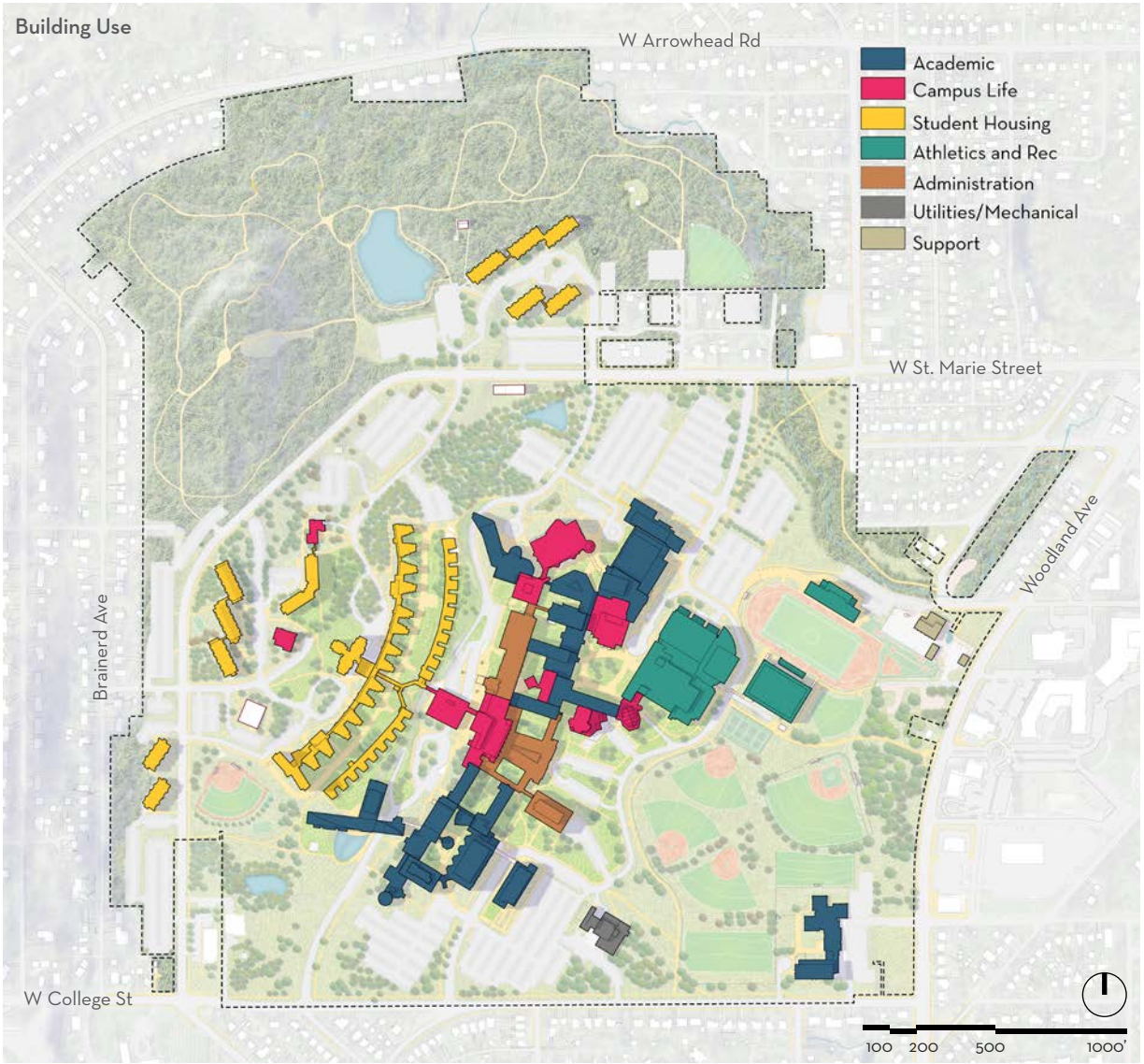
2,700 on campus residents

7,000 off campus residents

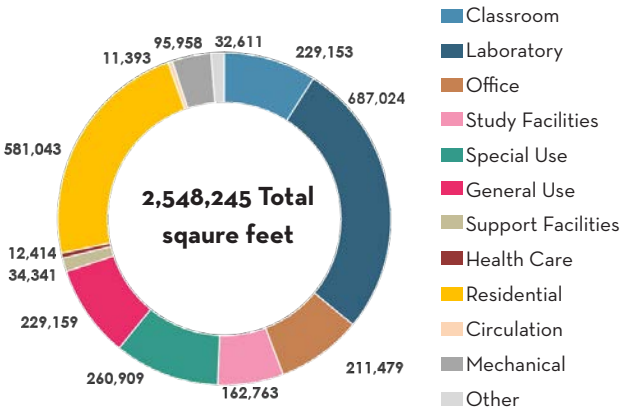


For planning purposes, future enrollment figures represent the mean enrollment from the past 12 fall semesters

Building Use and Condition

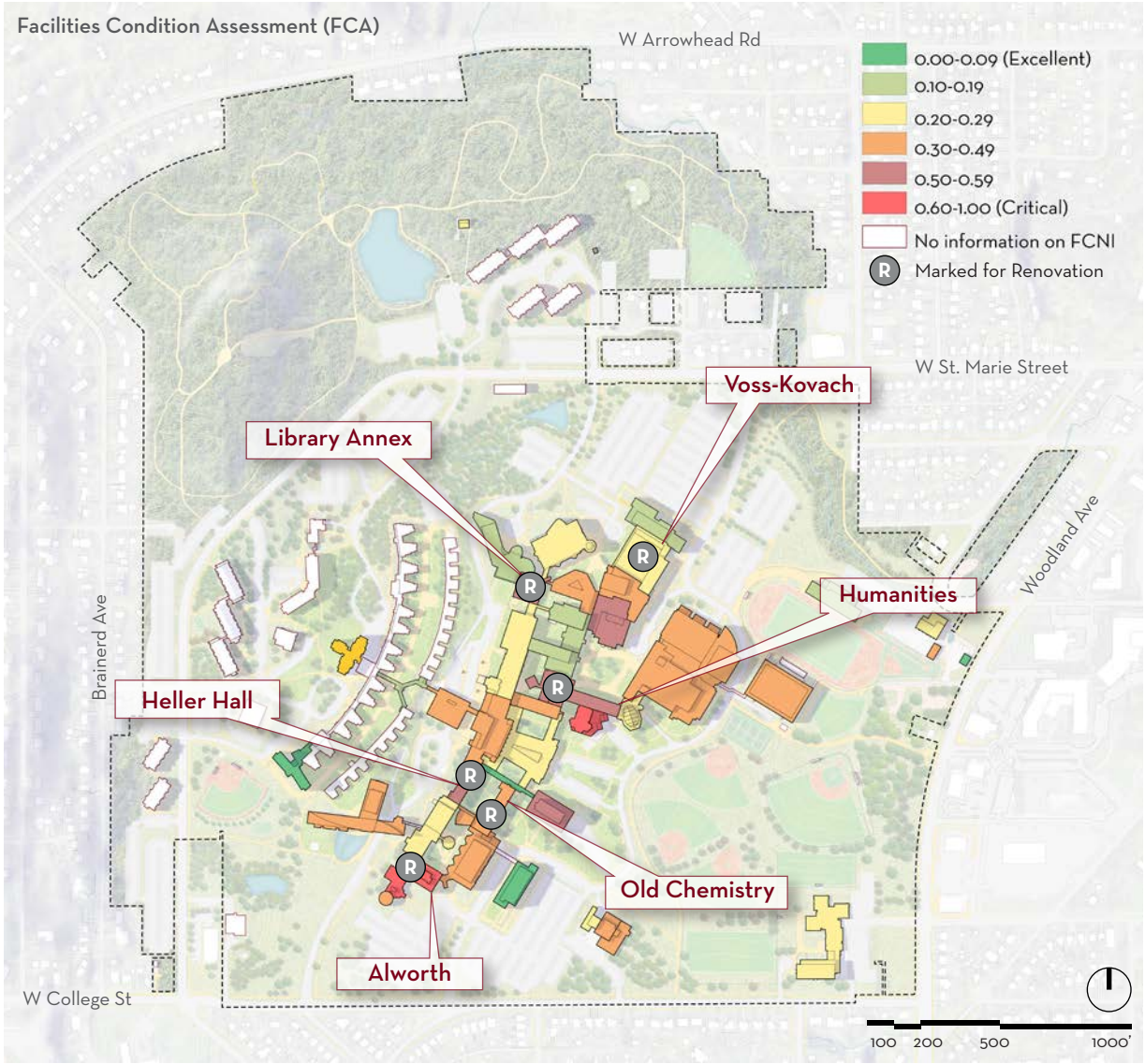


There are presently over 50 buildings on the UMD campus. The location and orientation of the buildings reflect the campus's topographic conditions as well as the climate of Duluth. Many of the buildings in the campus core, which primarily support academic, administrative, and student life functions, are connected by means of an interior corridor system. This reduces the amount of time students, staff, and faculty need to spend outside during the cold winter months. The residence halls, Residence Dining Center, and the Sports and Health Center are also accessible through indoor passageways. Building use distribution is striated, with residential and dining uses primarily concentrated north and west of the campus core and recreational programs concentrated to the south and east. Campus buildings are primarily oriented facing southeast towards Lake Superior; topographic changes on campus allow for views of the lake from certain vantage points. This orientation



is not optimized for solar gain; southern-facing buildings would allow for passive solar gain.

UMD building ages and conditions vary. Campus buildings were noted to be well-constructed, though the majority of buildings are over 30 years old. At the time of this study, a comprehensive facility conditions assessment (FCA) was ongoing. While data was available from a partial assessment in 2021, the most recent comprehensive FCA was completed in 2013. The partial 2021 data noted that AB Anderson Hall and MW Alworth Hall each had a facility conditions need index (FCNI) score over 0.8, indicating critical needs. AB Anderson Hall is currently undergoing comprehensive renovations. Additional buildings the University has identified for future renovations include Heller Hall, Chemistry, Library Annex, Humanities, and Voss-Kovach.



Above: Limnology Building (Source: UMD News Center, https://news.d.umn.edu/news-center/articles/limnology-building-preserved

Cultural Resources

The University of Minnesota is one of the largest owners of historic assets, referred to as cultural resources (cultural landscapes, historic districts, and buildings) in the State of Minnesota.

The University is guided by Board of Regents (BOR) Policy on Historic Preservation and Minnesota State Statute. BOR policy articulates the University's commitment to preserving its historic resources and states that the University will take reasonable measures to ensure such preservation. Minnesota statutes require the University to cooperate with the State Historic Preservation Office (SHPO) to preserve the state's historic resources.

The University of Minnesota Duluth has several buildings that are listed on the National Register:

- Glensheen, a.k.a. Chester and Clara Congdon estate - 1905 to 1909
- Limnological Research Station, a.k.a. U.S. Fisheries Station- Duluth - 1880's
- Research Laboratory Building, a.k.a. Model School Building - 1926

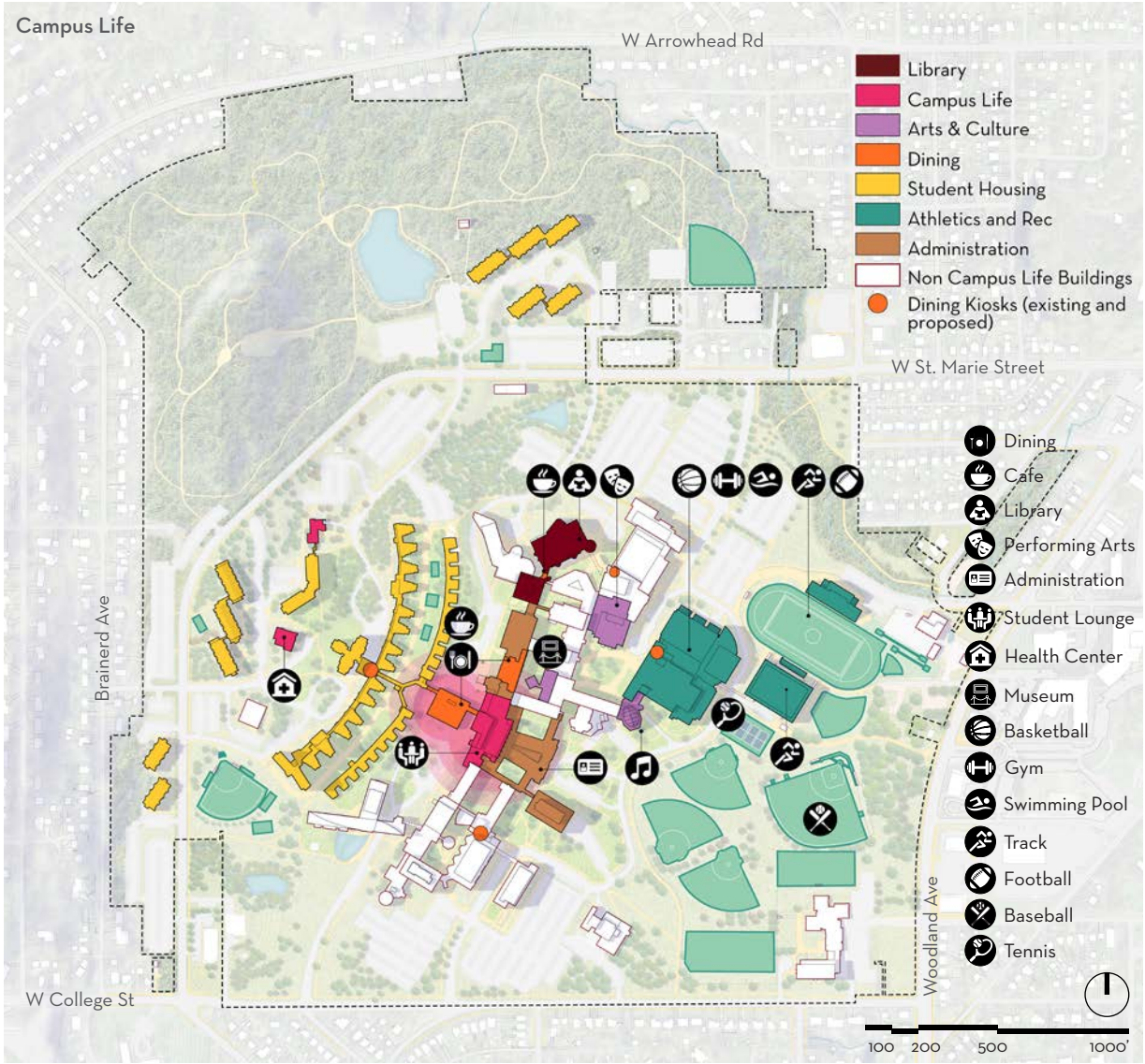
Left: Glensheen in 2015 (Source: https://www.minnpost.com/mnopedia/2017/01/duluth-s-glensheen-estate-one-best-preserved-mansions-its-kind-minnesota/

Campus Life Facilities

UMD has nine residence halls with over 3,000 beds total. Over 90% of first year students live on campus, but only 12-13% of upper division students do. Vermilion Hall and Burntside Hall, constructed in the 1950s, are the oldest residence halls on campus, and also have the lowest bed capacity. There are plans to demolish both Burntside and Vermilion, potentially replacing them with a new residence hall with 351 beds, assuming future enrollment stabilizes. The new residence hall will be located on the northern end of Griggs Hall. While most student housing is co-located on the west side of campus, 490 beds are located in the Oakland Apartments north of West St. Marie Street, abutting the Bagley Nature Area. The Junction Apartments, west of Junction Avenue, have 136 beds.

Multiple dining venues operate on campus. Superior Dining Hall, located on the second floor of the Residence Dining Center, has inadequate seating during peak meal periods and inefficient soiled dish return[1]. The main production kitchen which handles food production for Superior Dining and other food service locations on campus, has not been renovated since its construction in 1971. A campus dining feasibility study was completed in February 2023, which explores renovation alternatives for

1 UMD Campus Dining Master Plan, Oct. 2018, prepared by Envision Strategies



food services venues on campus. UMD has elected to renovate the main production kitchen and is presently in the pre-design phase.

Health and Wellness

Student health services are housed in the former Provost's residence, which is situated among student housing on the west side of campus. The accreditation body for Health Services is the AAAHC. The Accreditation Association for Ambulatory Health Care (AAAHC) has cited clinic space as a significant issue to address. The facility is inadequate for the size of the student population, and will need to approximately double to meet existing demand.

UMD has a highly subscribed outdoor recreation and sports programs that engage students year-round. Recreational Sports Outdoor Programs (RSOP) and Applied Human Sciences share the Sports and Health Center facilities with varsity athletic teams. The building is difficult to navigate, and a lack of control points make the facilities challenging to manage. Fitness spaces are reported to be undersized to serve the current student population.

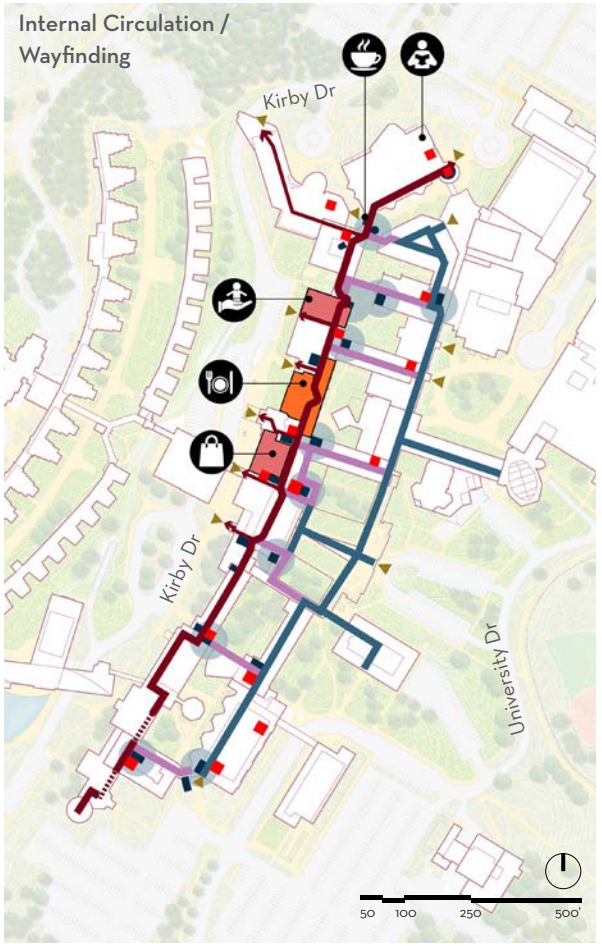
Existing spaces are repurposed to accommodate campus community requests where feasible. Improvements should reflect the diversity of students, faculty, and staff from art selection to wellness spaces.

Accessibility

One of the values of UMD is to create a welcoming and inclusive campus by making it more physically accessible. The accessibility of older buildings, particularly student housing, is a key concern for UMD. As new facilities are constructed and buildings are renovated, accessibility will be a primary goal. When major renovations occur, programming should consider a diversity of needs. The campus' commitment to providing equitable access to all future building, interior, and site design projects would allow for an improved experience by students, employees, and visitors.

Interior Circulation

The UMD campus is notable for its extensive interior system of connected corridors. The system features two major routes that offer consistent accessible connections north to south through the main complex of interconnected academic and administrative buildings. The red concourse is associated with Kirby Drive level of the campus and the blue concourse is roughly associated with the University Drive level of the campus. While at different elevations, these routes serve as the backbone of the interior circulation network and are connected by other interior corridors, stairways and elevators.

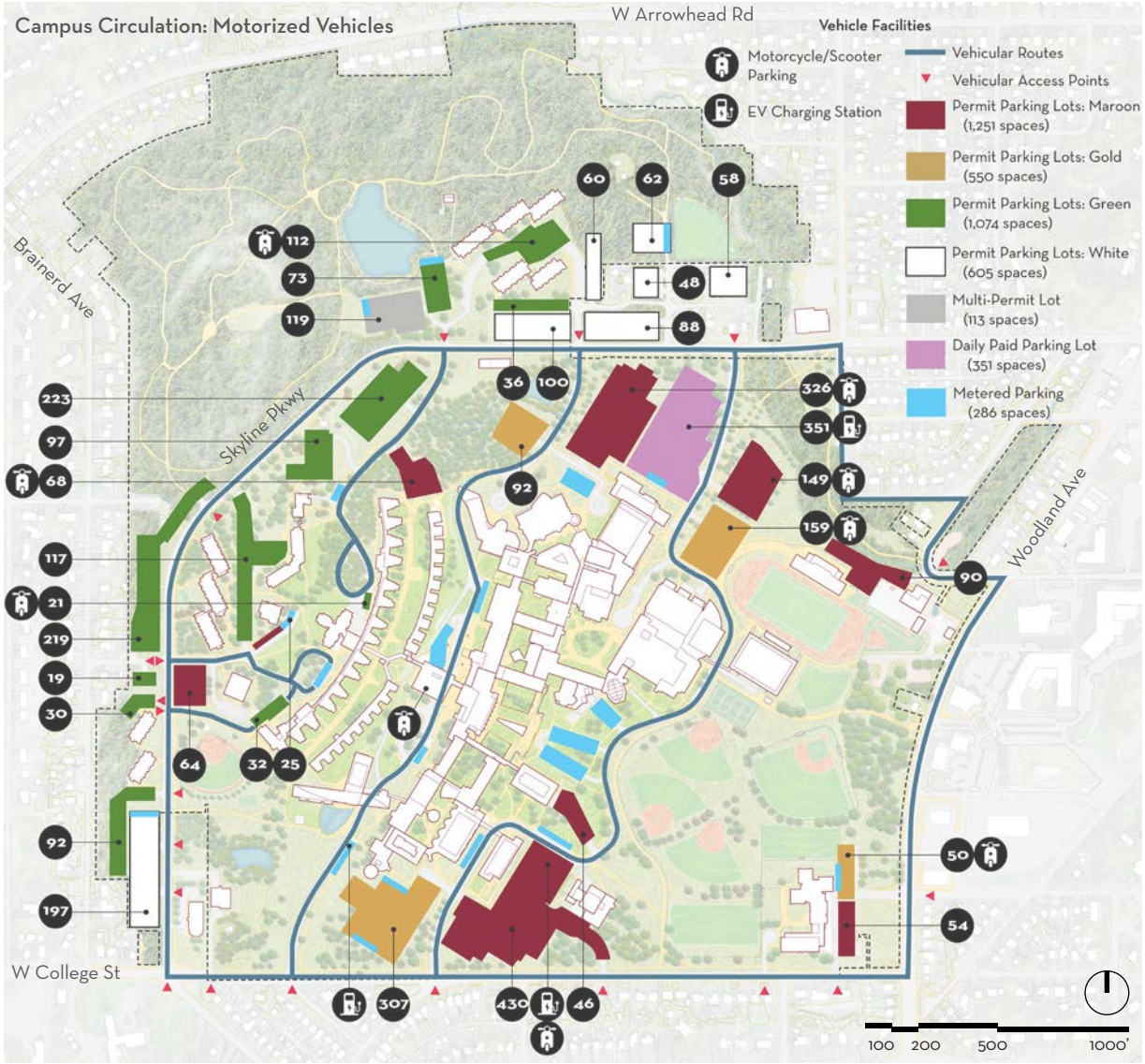


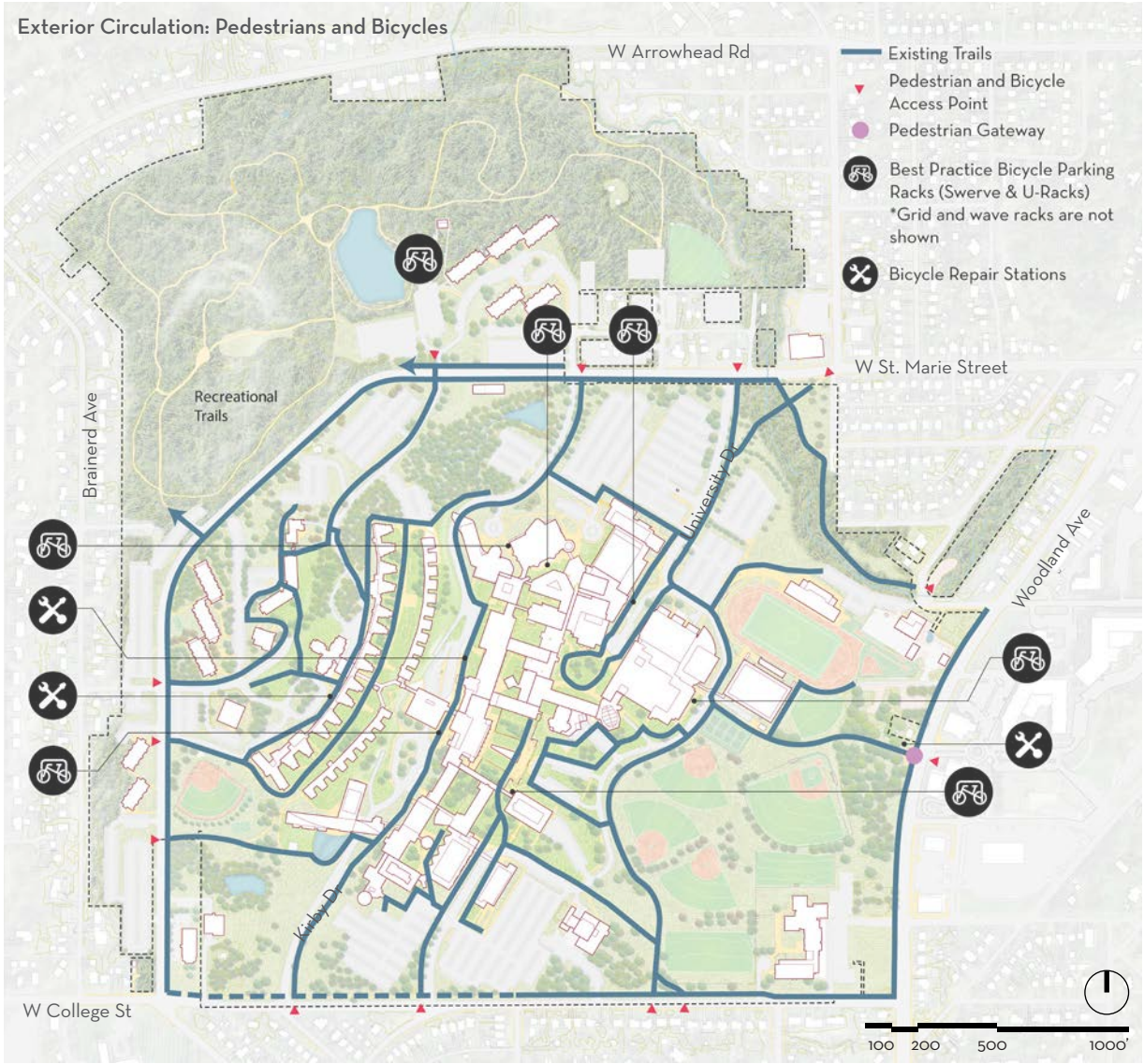
Mobility and Connectivity

Vehicular Circulation

Campus transportation and circulation systems on the UMD campus today are primarily designed around vehicles. Key vehicular routes through campus include north-south connections via University and Kirby Drives. Brainerd Avenue serves as the western edge of campus. West St. Marie Street bisects the northern part of campus from east to west separating Oakland Apartments and the Bagley Nature Area from the rest of the UMD campus. Gateway signage is visible at the intersections of University Drive with West College Street to the south and West St. Marie Street to the north. Besides these locations, there are minimal vehicular-scale gateway, wayfinding, or branding elements at entry points or edges, and existing signage is primarily directional.

Parking facilities are placed strategically to provide vehicular users with convenient and direct access to campus buildings and facilities. UMD has 4,370 total vehicular parking spaces on campus, of which 83% are permit parking, 15% are metered, and 2% are accessible spaces. Parking permits are color-coded by user type (such as residential, commuter or faculty/staff) and inform where each user may park. Seventy-five percent of parking permits are issued to students, of which 32% are residential on-campus permits. Parking utilization for all permitted surface lots in 2022 averaged 77%, and ranged from 90% (highest) to 62% (lowest). EV charging stations are available at two parking lots and at metered parking on Kirby Drive.





Pedestrian and Bike Circulation

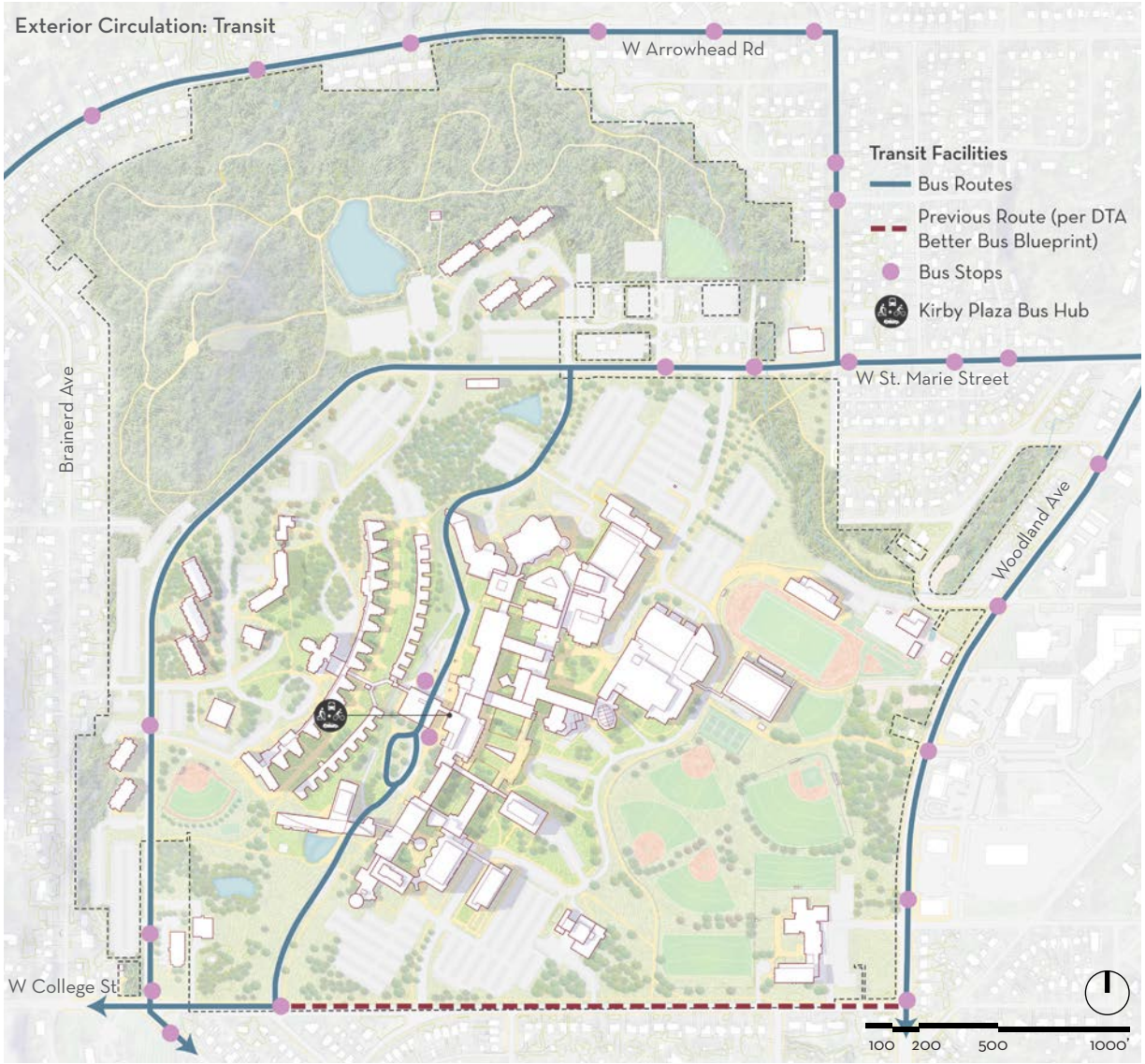
Exterior pedestrian pathways on campus are segmented. Kirby Drive is the only complete pedestrian route through campus. Minimal pedestrian crossing facilities or pedestrian access points to campus exist. One pedestrian-scale gateway at Woodland Avenue and Summit Street features landscape elements, lighting, and a pedestrian cross signal. The City of Duluth's plans for a campus connector trail will include a route through the UMD campus roughly following the existing alignment of University Drive, which will improve safety and fill gaps in the pedestrian network. Potential for additional pedestrian-realm improvements include more consistent pedestrian-scale lighting, seating, signage, and wayfinding.

There are no designated bike routes on or around campus. In addition to the lack of designated bike routes, campus topography and the cold climate may be impediments to those who otherwise might cycle to, from, and around campus. Unless it is their only transportation option, travelers are unlikely to choose active transportation that is not convenient, comfortable, and accessible. In interviews with the planning team, UMD staff confirmed that the weather and surrounding topography during most of the standard academic semester months presents a challenge for people desiring to walk or bike to and around campus.

Existing bicycle and micromobility amenities include a bike rental program, three bicycle repair stations, the ZAP bike-to-campus program, end-of-trip facilities (changing area, showers,and lockers) are available by pass or membership, 43 bike racks (11 of which meet best-practice guidelines), and bike racks on all Duluth Transit Authority (DTA) buses. Best practice guidelines for bike parking racks recommend that racks are accessible, support upright bike position, provide two points of contact with the bike frame, and allow for locking of the frame and a minimum of one wheel. The UMD campus u-racks and swerve racks would be considered recommended racks, while the grid and wave racks would not. The UMD campus provides a total of 22 parking spaces at recommended racks and 244 parking spaces at non-recommended racks.

Transit

Local transit service to UMD is provided by Duluth Transit Authority (DTA). Jefferson Lines provides regional Intercity bus service. Buses service the campus core from Kirby Drive. The Kirby Plaza Bus Hub is the only bus stop in the campus interior, and is strategically located adjacent to the Kirby Student Center entrance. While most bus stops serving campus have signage only, the Kirby Plaza Bus Hub features lighting, seating, and shelter.

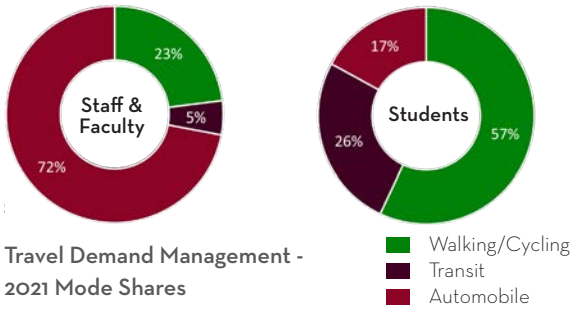


DTA amenities and services for students and UMD employees include free or discounted passes and tickets. The current DTA bus routes that provide access to campus include 6, 11, 11M, and 13, which circulate campus via Woodland Avenue, College Street, West St. Marie Street/Junction Avenue, Carver Avenue, and West Arrowhead Road. All routes access Kirby Plaza via Kirby Drive. DTA will be launching new routes throughout the service area in August of 2023. Per the Better Bus Blueprint, bus service will be removed along College Street from Woodland Avenue to Kirby Drive. The remaining roads will still be serviced by bus via routes 101, 104, 105, 106, and 112.

Modal Split

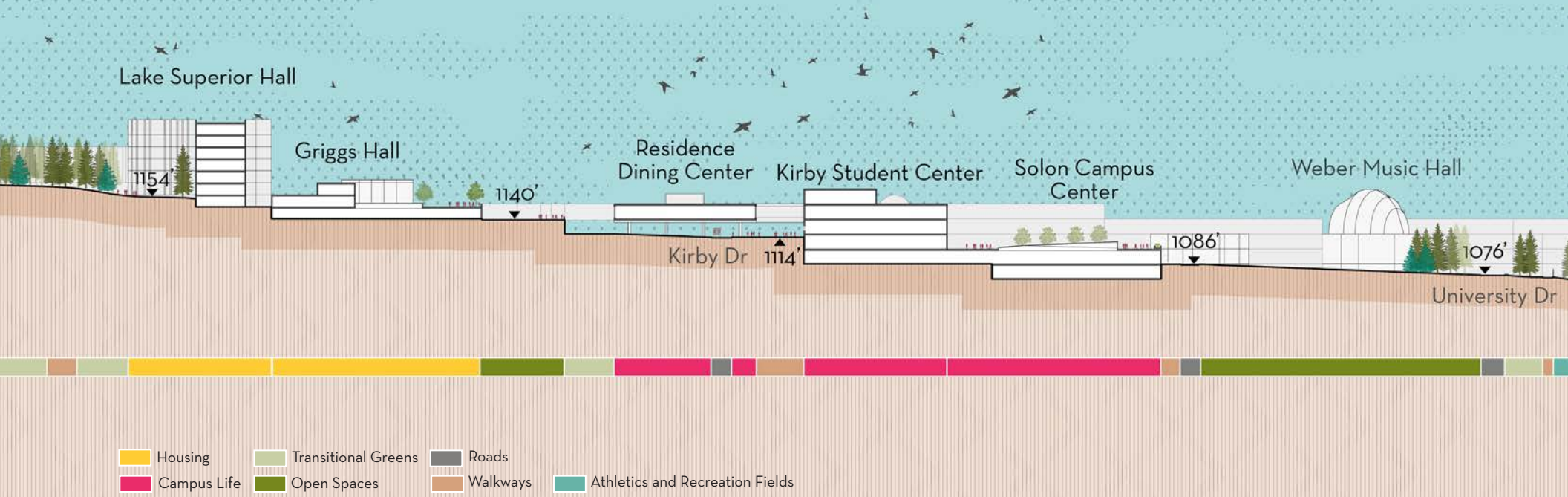
Commuting patterns impact land use on campus. Similar to the patterns seen on other UMN system campuses, there is a significant difference in how students get to and from campus compared to the faculty and staff. Estimates provided by the University for the 2021 Sustainability Indicator Management and Analysis Platform (SIMAP) report were informed by the total number of commuters, distribution of bus passes, and distance of residences to campus. The estimates suggest that 57% of the UMD student population were either walking or cycling to campus, 26% were taking public transit, and 17% were driving a personal vehicle. However, parking permits distributed to off-campus students suggest those commuting by automobile could be as high as 36%. In contrast, 72% of staff and faculty were driving, 23% were walking or cycling, and 5% were taking public transit. This creates demand both to support vehicle use for the trip to and from campus, and to expand and maintain sidewalks, lanes, and trails for pedestrians and cyclists.

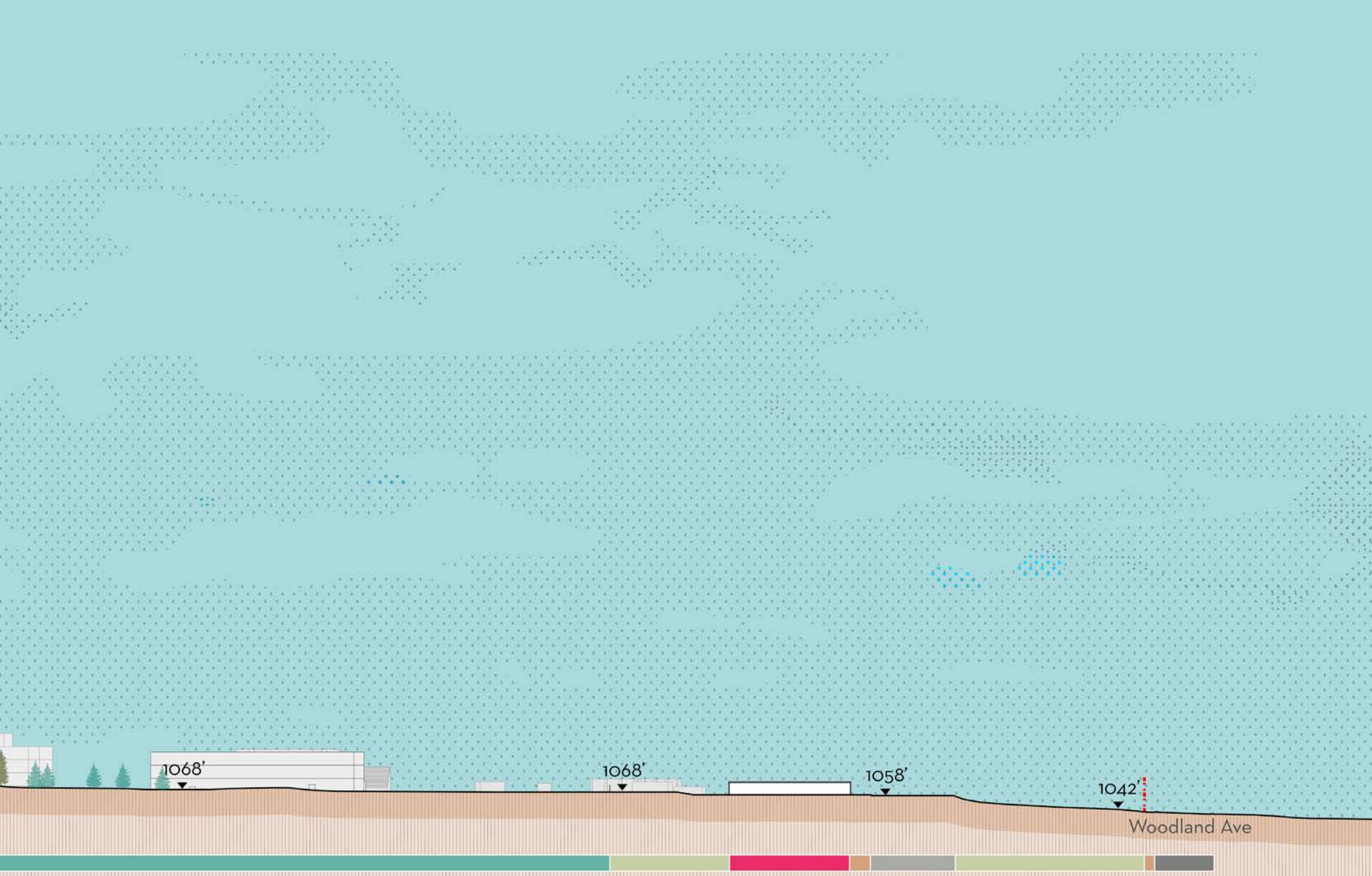
The plan seeks to support how people prioritize moving around, as well as embrace sustainable modes of transportation to improve transportation efficiency, reduce greenhouse gas emissions and impervious surface parking area. Maintaining access and circulation for vehicles as transit and other vehicle types create a greater presence on campus is a necessary shift in campus culture, if these goals are to be met.



Travel Demand Management - 2021 Mode Shares

A cross section view of campus, looking north, indicates the extent of grade change that occurs from west to east (page left to right). Much of the topographic change on campus is currently navigated within the campus buildings themselves; the extensive network of connected buildings is a unique attribute of the UMD campus.

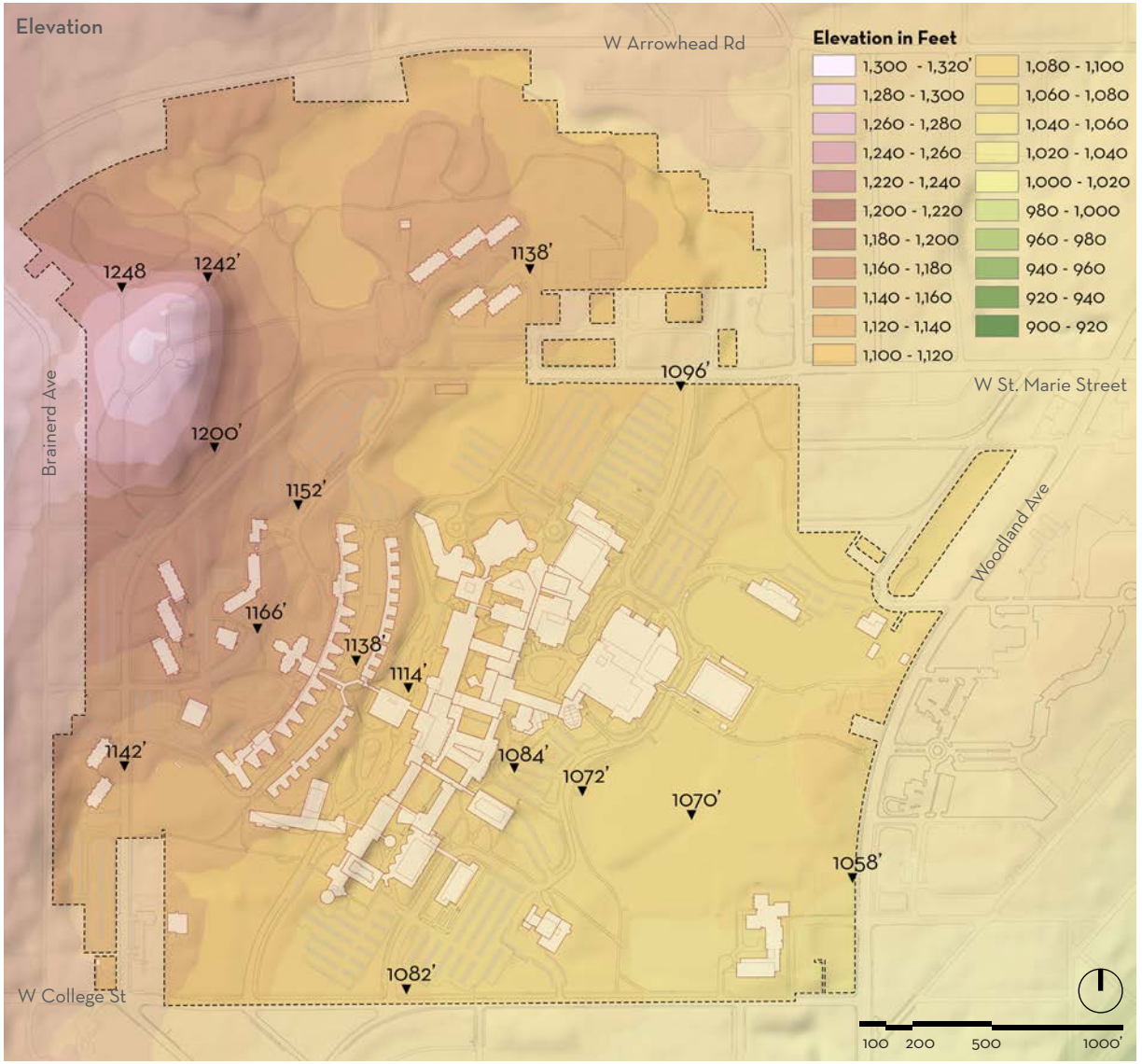


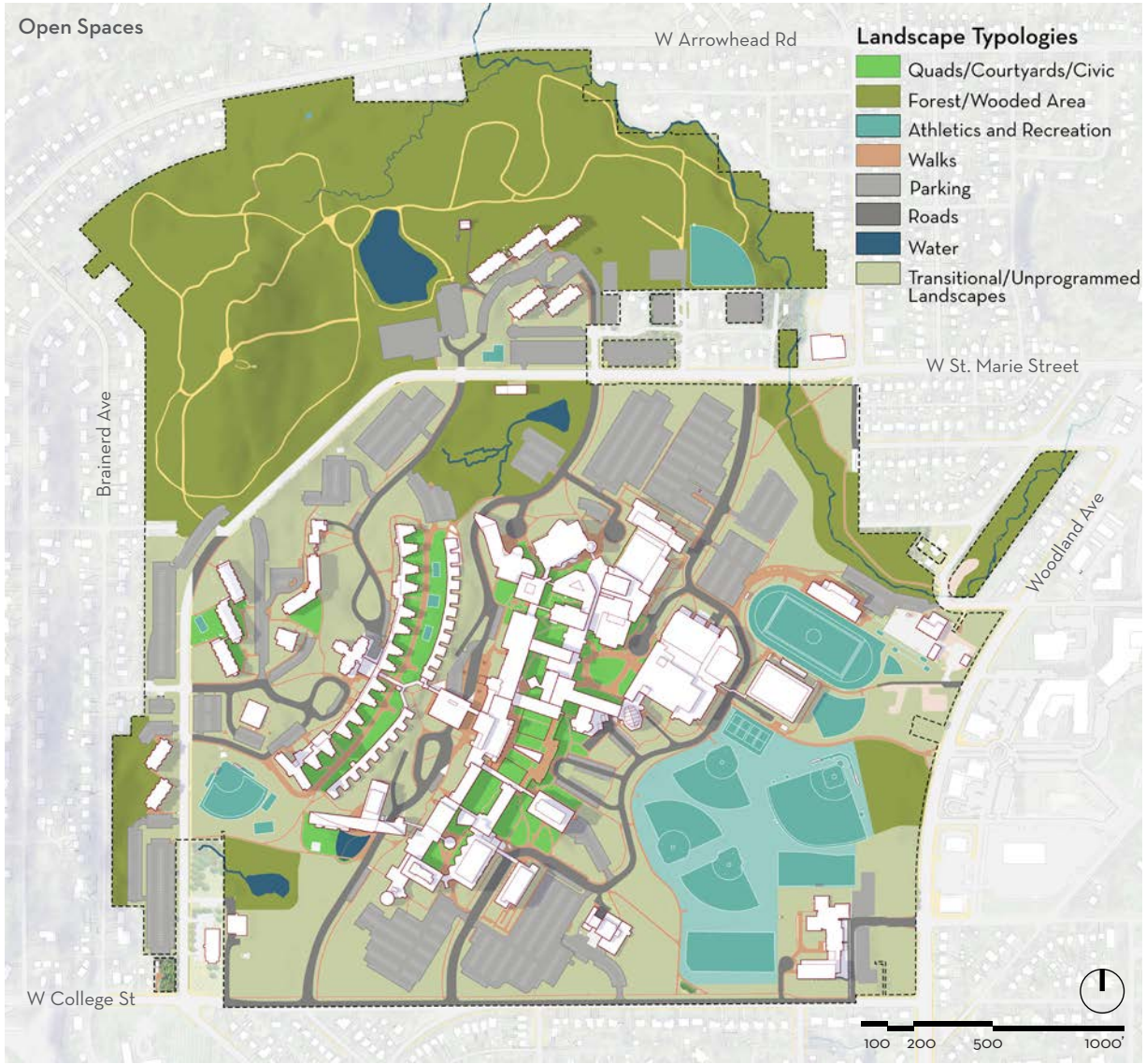

1068'
1068'
1058'
1042'
Woodland Ave

Topography and Open Space

Topography

The UMD campus is characterized by its dramatic topographic grade change from northwest to southeast. There is a nearly 200' grade change from the highest elevation on campus, located in Bagley Nature Area, to the lowest point by Woodland Avenue. There is a steep grade change between Residence Dining Center and Vermilion Hall due to a retaining wall. In many places on campus, grade change is negotiated with connected buildings; however, accessibility of outdoor spaces will remain an important consideration for future investments.





Open Space Resources

The Bagley Nature Area is a significant educational, research, and recreational resource for the campus community, and comprises nearly 25% of the UMD campus land area. While it is primarily wooded with a blend of young growth, secondary growth, and old growth forest, it also features Rock Pond, which drains into the Tischer Creek headwaters. Bagley contains a network of trails and a 1,400 square foot field station utilized as a classroom.

While the Bagley Nature Area is a prominent feature on the northern edge of campus, the campus core presently lacks a central, memorable open space. Approximately 50 acres of grounds are high-maintenance turf. Quads, courtyards, and other civic spaces are small and fragmented by campus buildings and surface parking. Outdoor recreation fields have limited seasonal use due to the long winter, and access is further restricted by perimeter fencing meant to prevent damage from foot traffic. This contributes to a perceived lack of accessible green space.

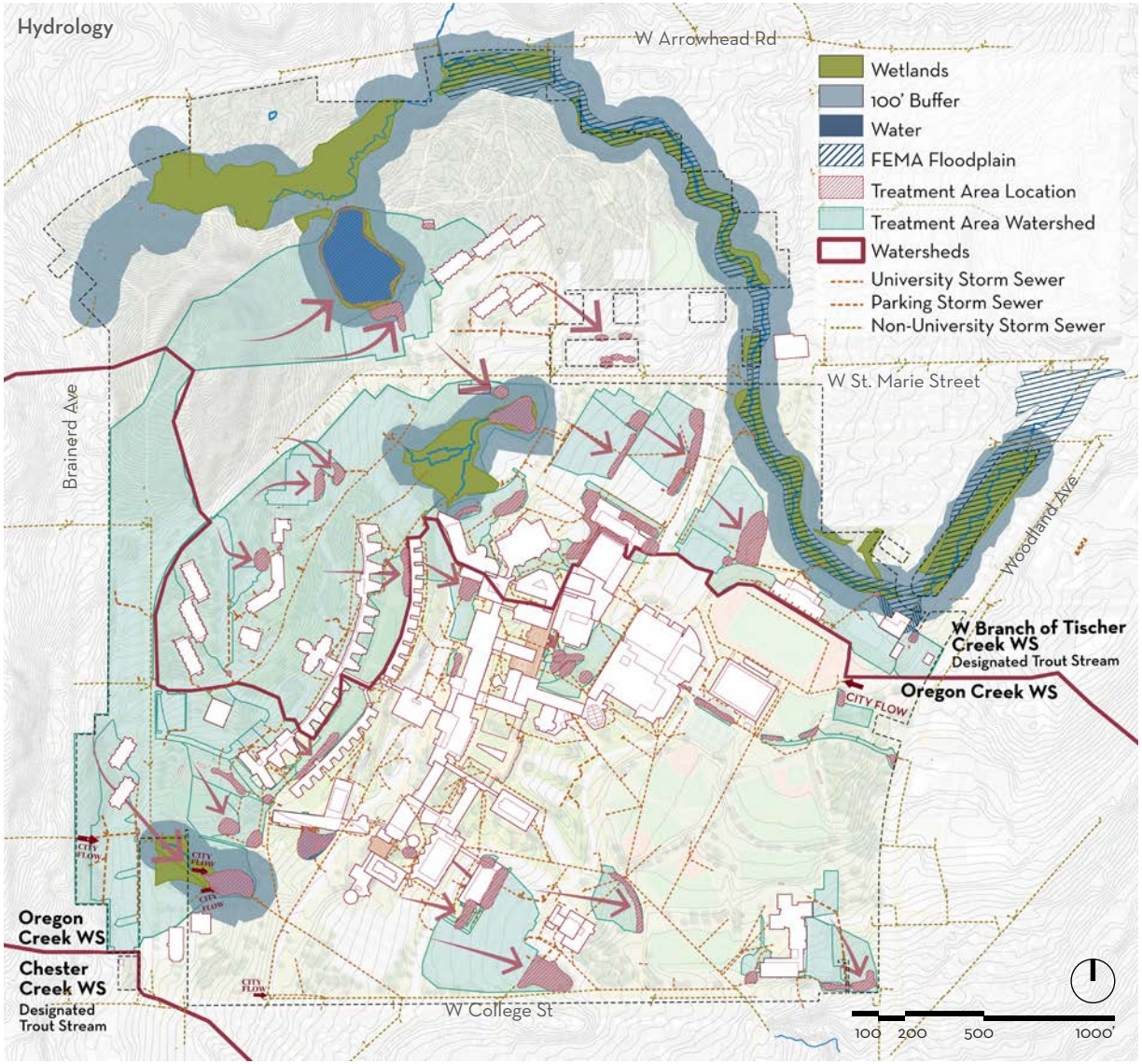
The 2013 campus plan recommended establishing a large green space east of the Solon Campus Center, to serve as the primary formal open space on campus, positioned to welcome visitors at this prominent entryway into the heart of campus. Today, this space is primarily dedicated to surface parking

serving UMD visitors. Almost 34% of the UMD campus is impervious surface (surface parking lots, roads, sidewalks, and building roofs). Surface parking is a highly visible feature along the campus edge and by major entry points. Reduction in surface parking lots would open up opportunities for reforestation, and provide a more welcoming 'green' entry experience to campus by allowing for the creation of new central open spaces for the campus community.

Landcover by Area

TYPE	ACRES	PERCENT %
BUILDINGS	27.32	10.60%
ROADS	16.60	6.40%
PARKING LOTS	29.87	11.60%
WALKWAYS	13.63	5.30%
TOTAL IMPERVIOUS	87.42	33.90%
SPORTS FIELDS	15.93	6.20%
OPEN SPACES	151.19	58.80%
TRAILS	2.76	1.10%

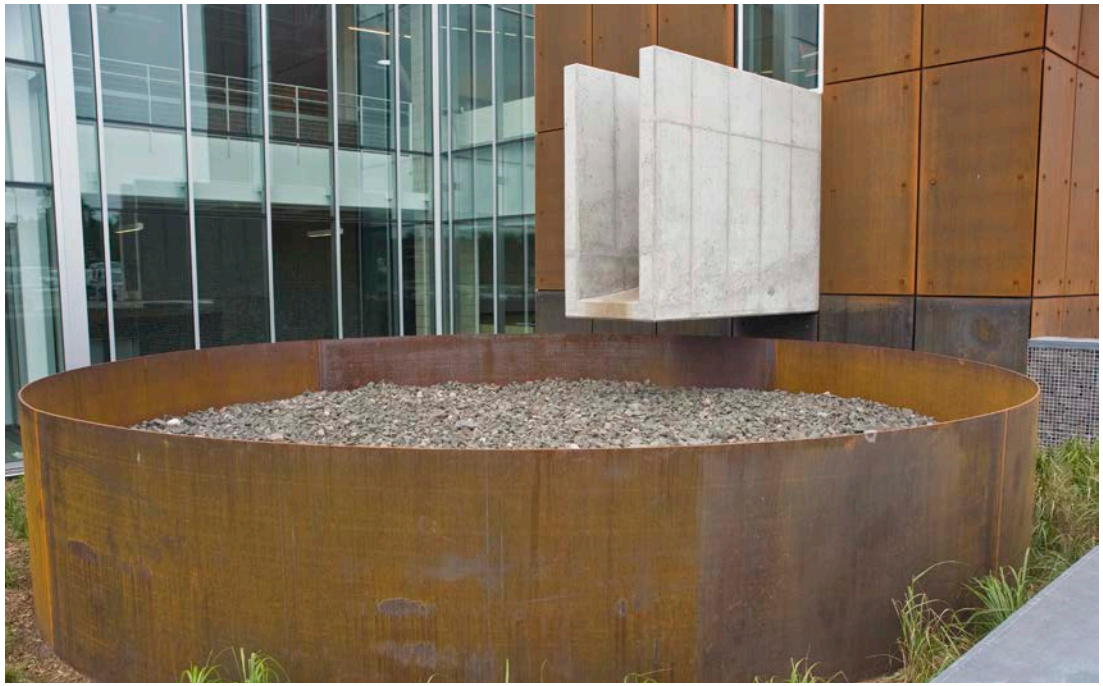
Hydrology



The majority of the UMD campus is situated in two watersheds– the Oregon Creek watershed and the West Branch of Tischer Creek watershed. A small area in the southwest corner of campus lies within the Chester Creek watershed. Chester and Tischer Creek are both designated trout streams, and EPA designated impaired waters.

Stormwater from UMD campus drains into multiple University and City of Duluth stormwater sewer systems which then empty into these local streams and ultimately Lake Superior, an EPA designated restricted waters, making it critically important to treat stormwater. There are presently about 60 stormwater features on campus, such as sump structures, rain gardens, sand filters, underground tanks, and permeable pavements areas. As a MPCA permitted MS4, UMD is required to inspect these stormwater treatment facilities every year and maintain them as necessary.

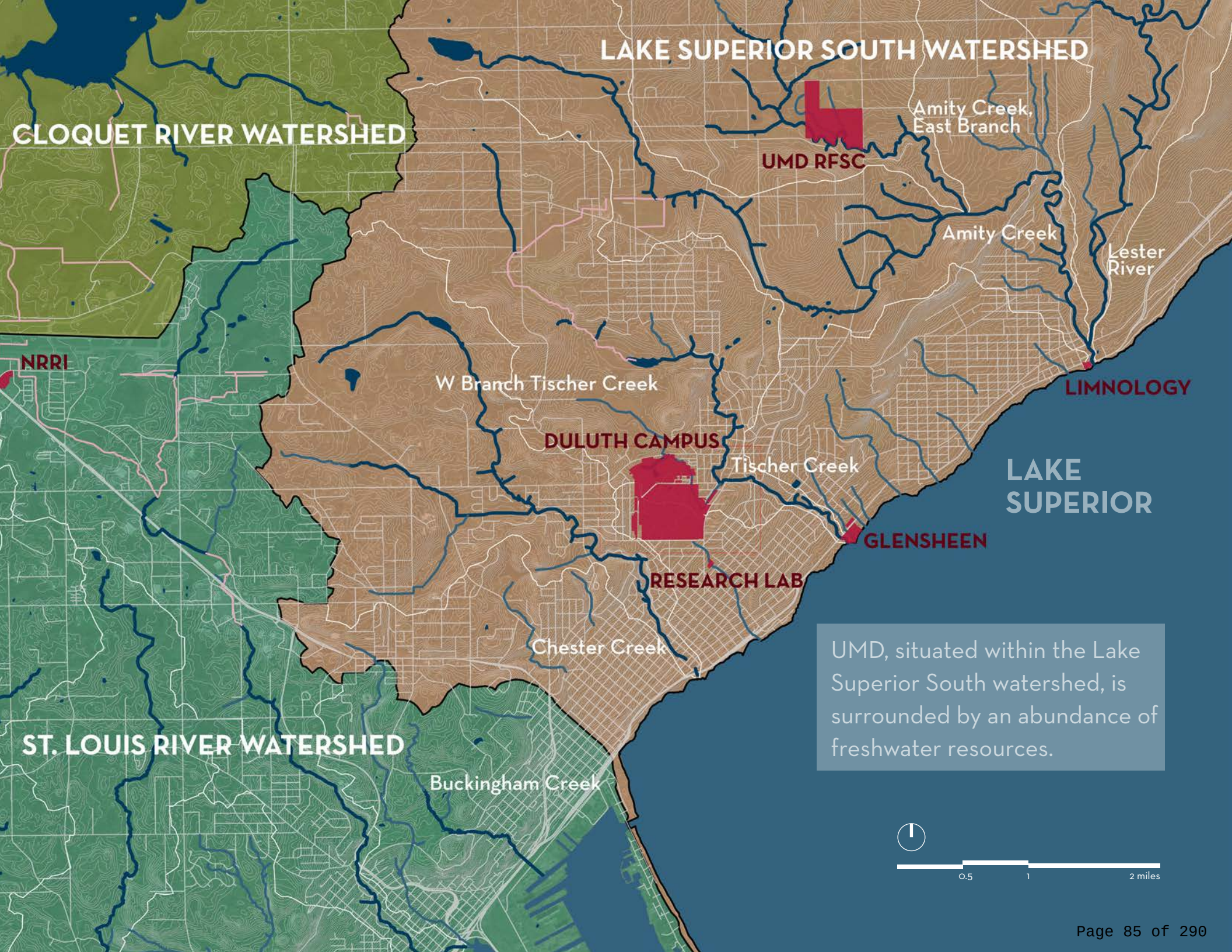
There is presently no information available on the existing capacity of the storm sewer systems versus the projected capacity needed to meet future rainfall projections under climate change, however, the City of Duluth currently has downstream flooding issues implying that the streams are “at capacity” during larger rain events. MS4 requirements, downstream flooding, trout streams, and impaired and restricted waters make stormwater treatment and rate control on campus an important design component for future



development and/or redevelopment. Additional stormwater information can be found on UMD's Stormwater Pollution Prevention Program website at https://fm.d.umn.edu/stormwater-pollution-prevention-program-swppp

Long lines of interconnected building foundations perpendicular to the general flow of groundwater tend to act as underground dams potentially creating basements moisture issues on the northwesterly side of the buildings. Future development should take this phenomenon into consideration when designing drain tile systems.

Left Above: HCAMS outdoor landscape
Left Below: Swenson Civil Engineering stormwater management


LAKE SUPERIOR SOUTH WATERSHED
CLOQUET RIVER WATERSHED
Amity Creek, East Branch
UMD RFSC
Amity Creek
Lester River
NRRI
W Branch Tischer Creek
LIMNOLOGY
DULUTH CAMPUS
Tischer Creek
LAKE SUPERIOR
GLENSHEEN
RESEARCH LAB
Chester Creek
ST. LOUIS RIVER WATERSHED
Buckingham Creek
UMD, situated within the Lake Superior South watershed, is surrounded by an abundance of freshwater resources.
0.5
1
2 miles

Emissions and Climate Projections

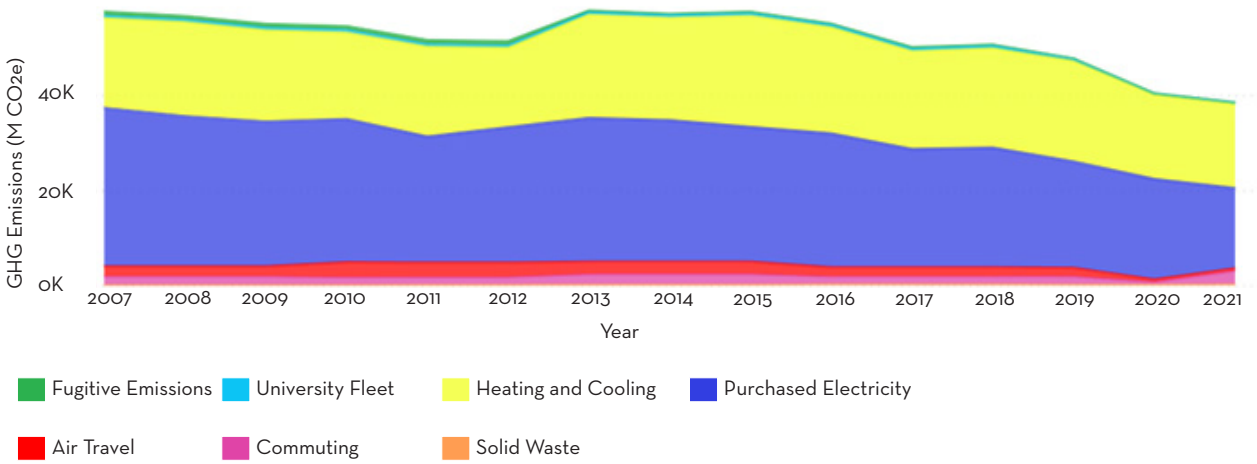
Shifts in climate have already occurred in Minnesota and globally. Many climate impacts are expected to worsen. Extreme events, like flooding, drought, and heat waves, will likely become more frequent and more intense with climate change in the future. Duluth is projected to have a slight increase in daily average temperature and high heat days due to climate change. Days with heavy rainfall (exceeding 4" of rain) are also projected to increase.

UMD currently tracks its greenhouse gas emissions from heating and cooling, the University's fleet, fugitive emissions (refrigerants and fertilizers), commuting, University-sponsored air travel, and solid waste. UMD's total emissions can be split into the following categories or "scopes":

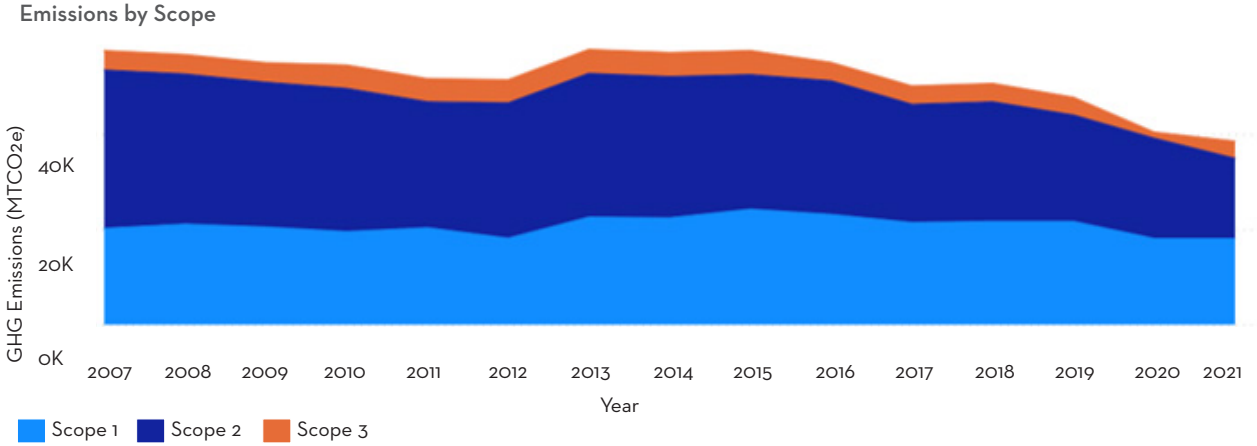
- 47% of emissions are Scope 1 or direct emissions from burning natural gas and fuel oil for heating and cooling, internal combustion fleet vehicles, and other fugitive emissions
- 44% of emissions are from Scope 2 or indirect emissions from purchased electricity
- 9% of emissions are from Scope 3 or other indirect emissions, like commuting and waste

While UMD successfully reduced emissions by 29% in 2020 over its 2007 baseline, further action will be required to meet system-wide climate commitments.

Emissions Timeline



Emissions by Scope



Planning Vision: The Big Ideas 4

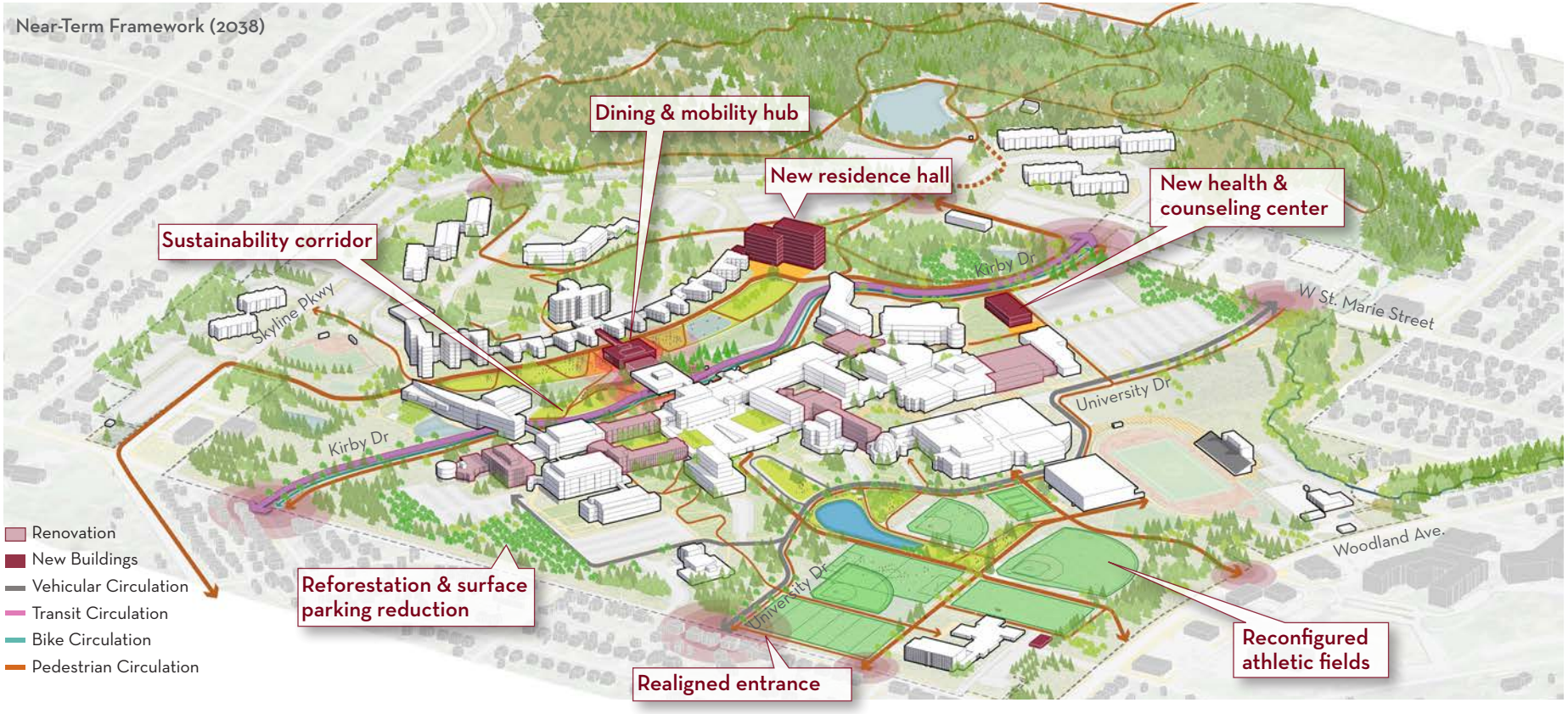
Near-Term Framework

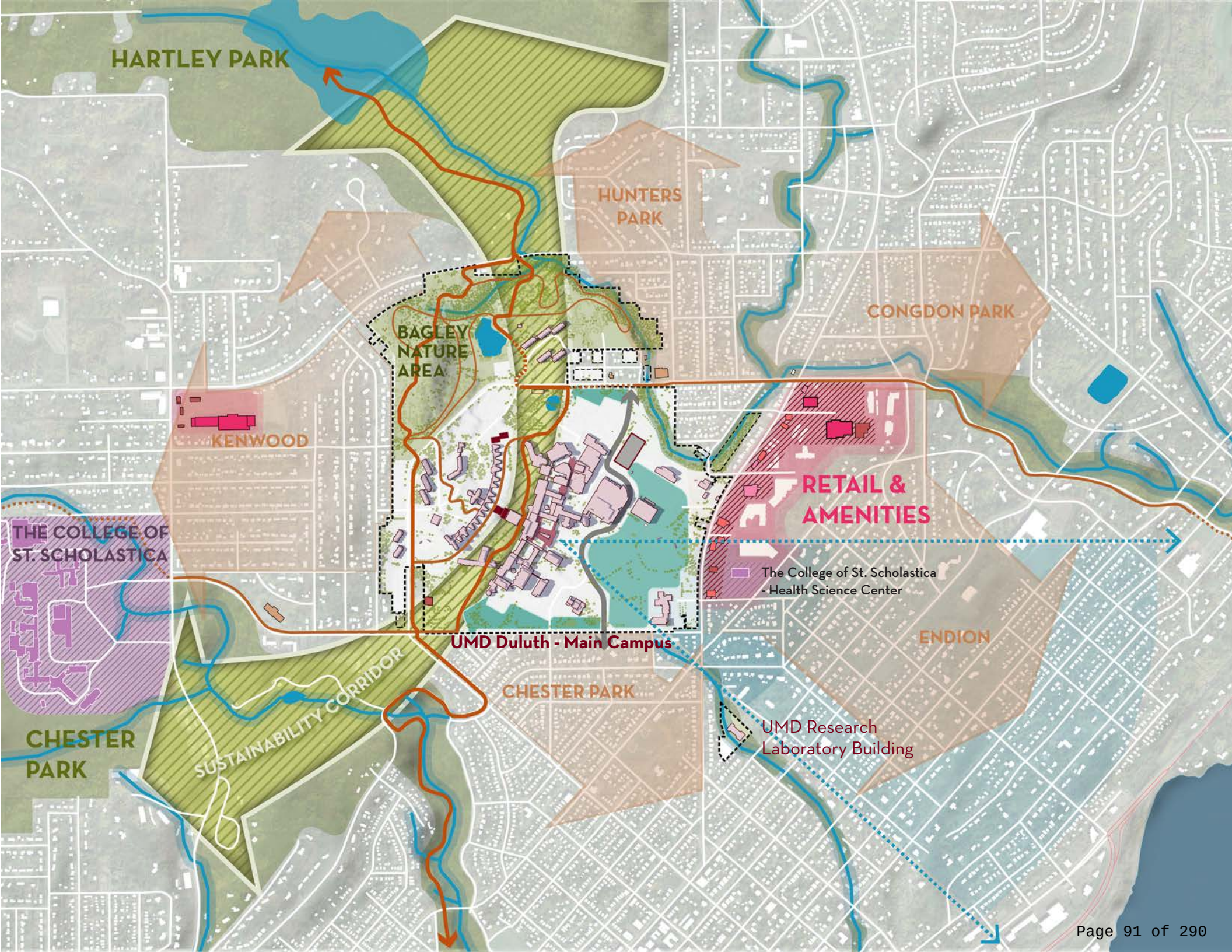
In the case of the Duluth campus and its unique features and conditions, the 'Big Ideas' of the Campus Plan grew out of the analysis of conditions and feedback received from a range of stakeholders. The alignment of the Strategic Plan commitments to this framework unites a view of how the campus could change and has influenced key recommendations contained in the plan.

The UMD Campus Plan describes a future that strengthens the distinctive and unique physical attributes of the campus in service of UMD's vision and mission while providing opportunities for implementation of campus decarbonization and resilience strategies detailed in the Climate Action Plan. To summarize this, the following four "Big Ideas" represent the potential physical transformation of campus.

The Big Ideas contribute to an overarching vision to reimagine the campus as a model of sustainability and carbon neutrality taking into account the existing conditions of the campus and opportunities for future development.

Right: Plan view of the Sustainability Corridor big idea, and the campus as a green connection between Hartley Park and Chester Park




HARTLEY PARK
HUNTERS PARK
CONGDON PARK
BAGLEY NATURE AREA
KENWOOD
RETAIL & AMENITIES
THE COLLEGE OF ST. SCHOLASTICA
The College of St. Scholastica - Health Science Center
UMD Duluth - Main Campus
ENDION
CHESTER PARK
SUSTAINABILITY CORRIDOR
CHESTER PARK
UMD Research Laboratory Building

Big Ideas

Big Idea 1: Sustainability Corridor

Big Idea 2: Recreation Park

Big Idea 3: Greening the Campus Edge

Big Idea 4: Reinvest in the Campus Core


UMD
DINING CENER

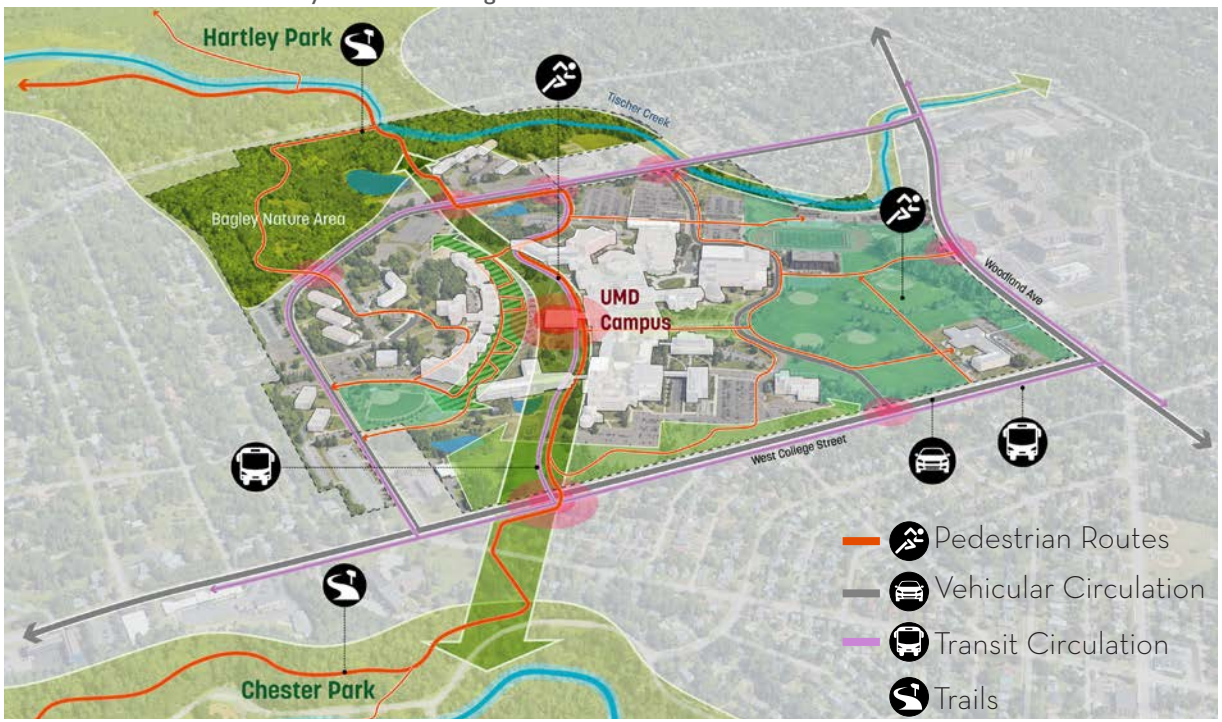
View of the upper landscape on the Sustainability Corridor

Big Idea 1: Sustainability Corridor

A new green corridor through the heart of campus will serve as gathering space for the UMD community, and will provide enhanced connections on the north and south boundary of campus to adjacent city neighborhoods and parks. The Sustainability Corridor will improve the entry experience into campus and strengthen pedestrian, cycling, and transit use enhanced by a new mobility hub and dining expansion along Kirby Drive. A gathering space for students to observe cultural traditions will be identified and developed with indigenous members of the campus community. New open spaces along the Sustainability Corridor will provide recreation opportunities in the heart of a renewed student housing neighborhood, while simultaneously serving as sites for potential infrastructure instrumental to UMD's decarbonization goals, such as geothermal technologies.[1] University Drive will serve as the primary vehicular through-street and gateway to campus, alleviating automobile traffic along Kirby Drive.

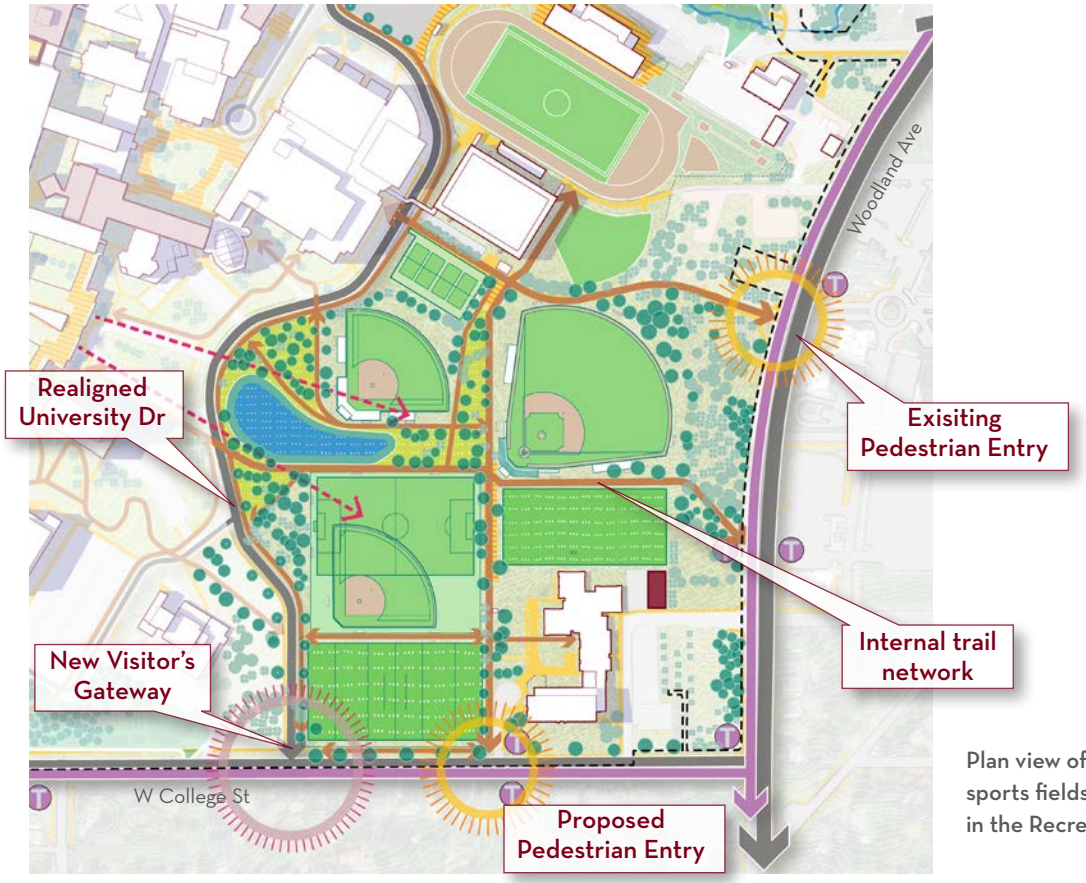
1 More information on low-temperature geothermal technology ("geothermal") can be found on page 76.

Aerial view of the Sustainability Corridor as a big idea



Big Idea 2: Recreation Park

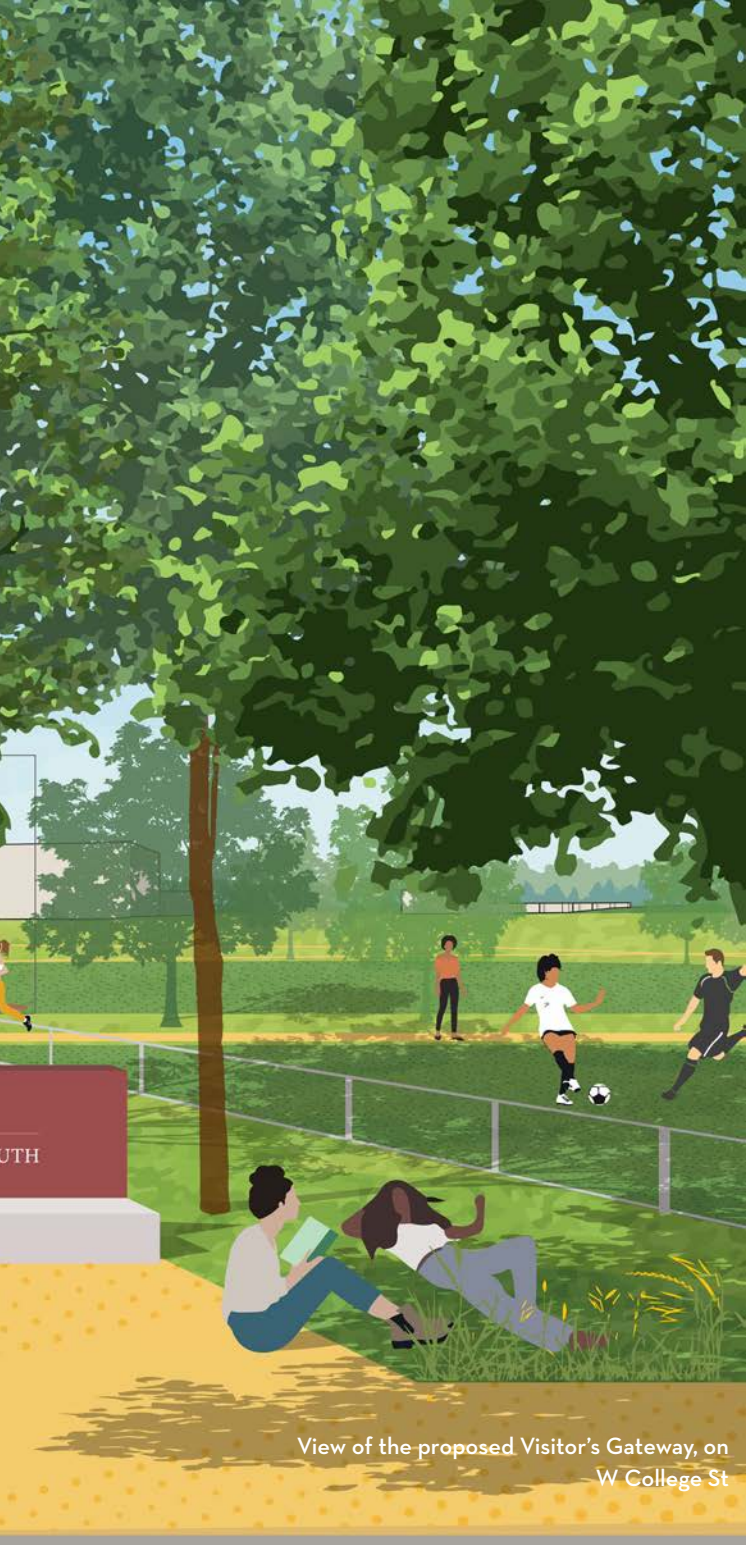
The strategic renovation and reorientation of athletic and recreation fields will allow for a greater range of use while enhancing the eastern edge of campus with naturalized areas and pedestrian circulation. In addition to the ecological benefits that newly naturalized areas will provide, the Recreation Park will feature a stormwater pond, improving UMD's ability to manage runoff with a feature that provides habitat and visual interest to this central campus space. Besides supporting both active recreation and passive landscapes, the Recreation Park could be another site for new infrastructure to support the decarbonization of campus energy systems.



Plan view of the proposed sports fields and walkways in the Recreation Park

View of the Recreation Park, looking towards the campus

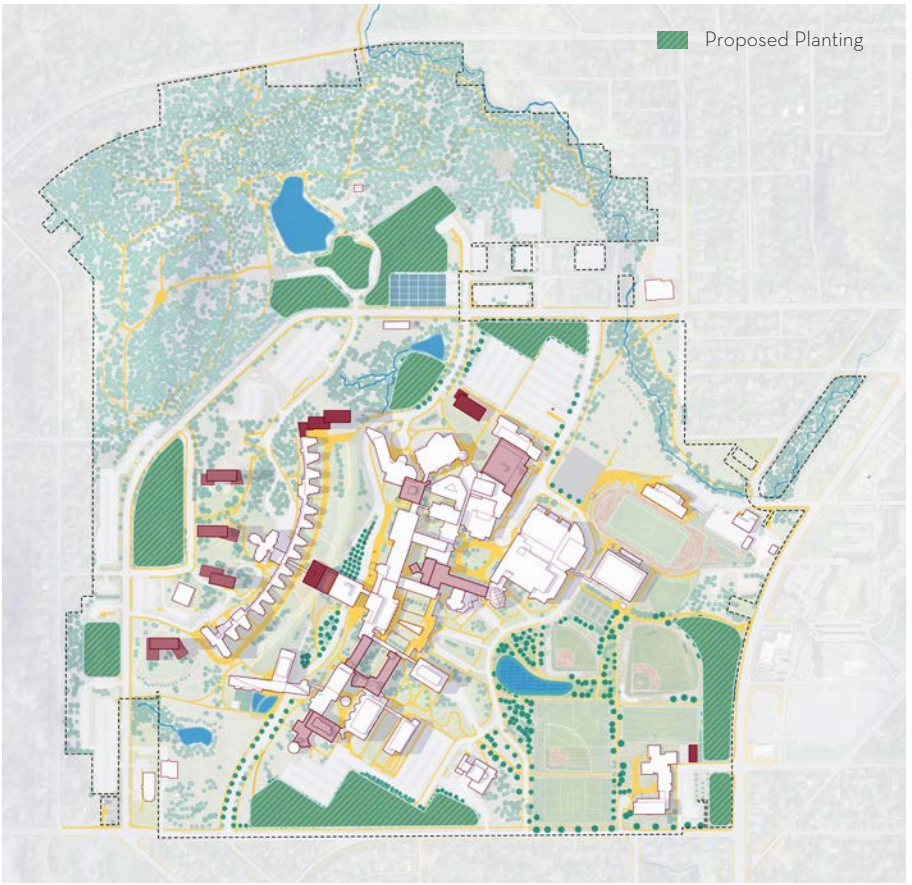

UMD
DULUTH
UMD
KIRBY
STUDENT CENTER
UNIVERSITY DR
UMD
UNIVERSITY OF MINNESOTA DUL



View of the proposed Visitor's Gateway, on W College St

Big Idea 3: Greening the Campus Edge

The eventual relocation and reconstruction of campus housing from the north side to the west side of campus, with the potential reduction in parking demand, will allow some existing impervious surfaces (parking lots) close to Bagley Nature Area and along the northern and southern edges of the core campus, to be returned to a more planted state. Some of the surface parking areas may be converted to a parking structure if future parking demand necessitates. Reduced impervious surface will enhance the experience of travel on foot and by bike, reduce need for snow storage and removal during Duluth's snowy winters, as well as reduce urban heat island effects.

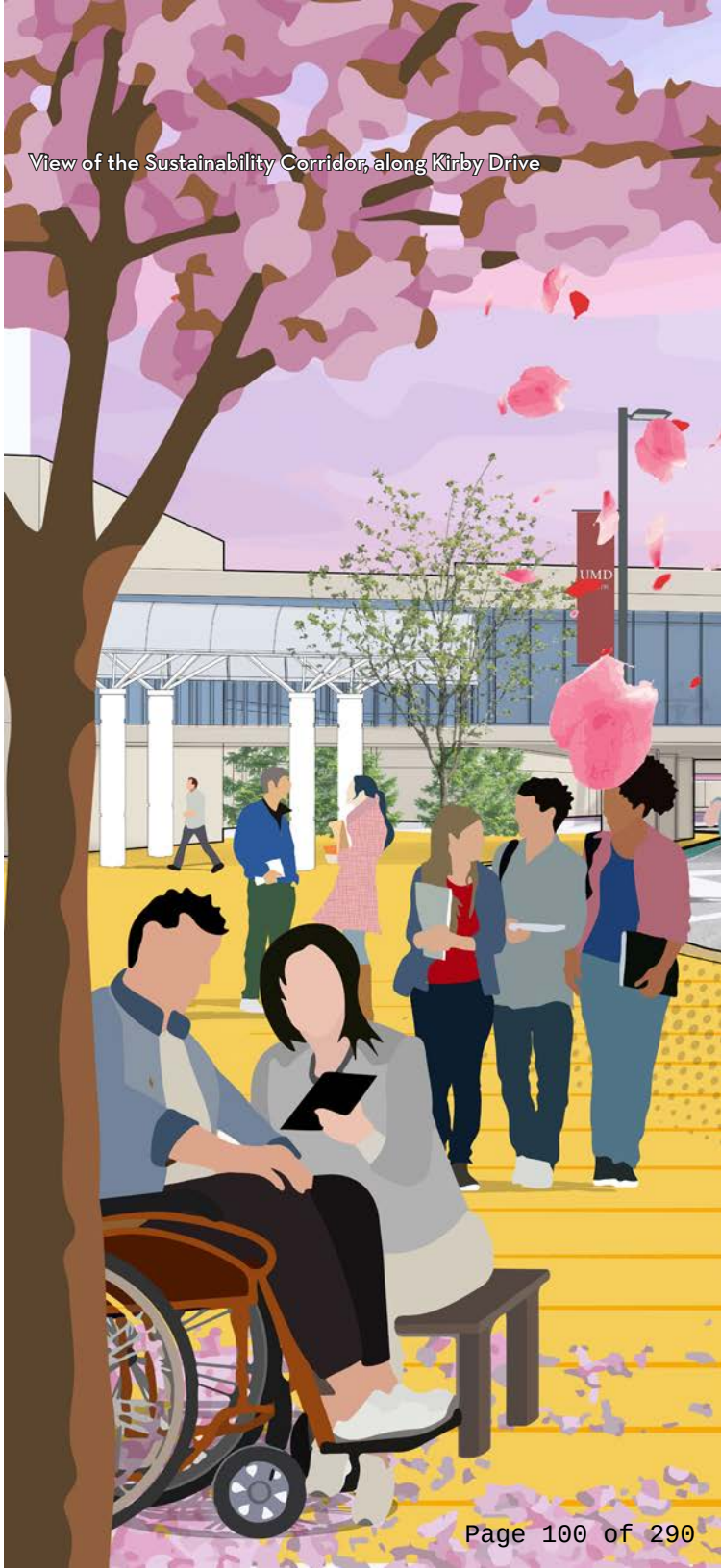


Plan showing the proposed planting on the edges of the campus

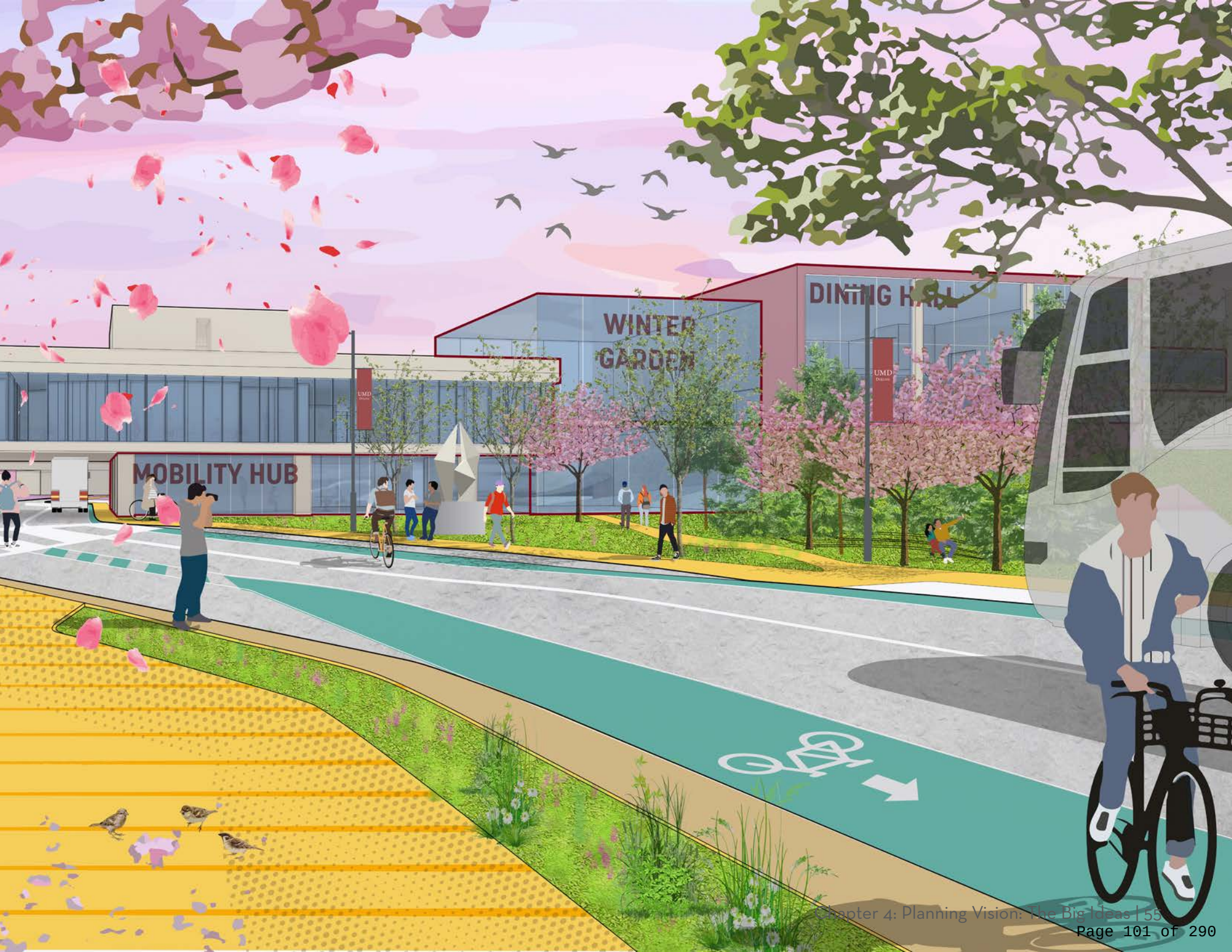
Big Idea 4: Reinvest in the Campus Core

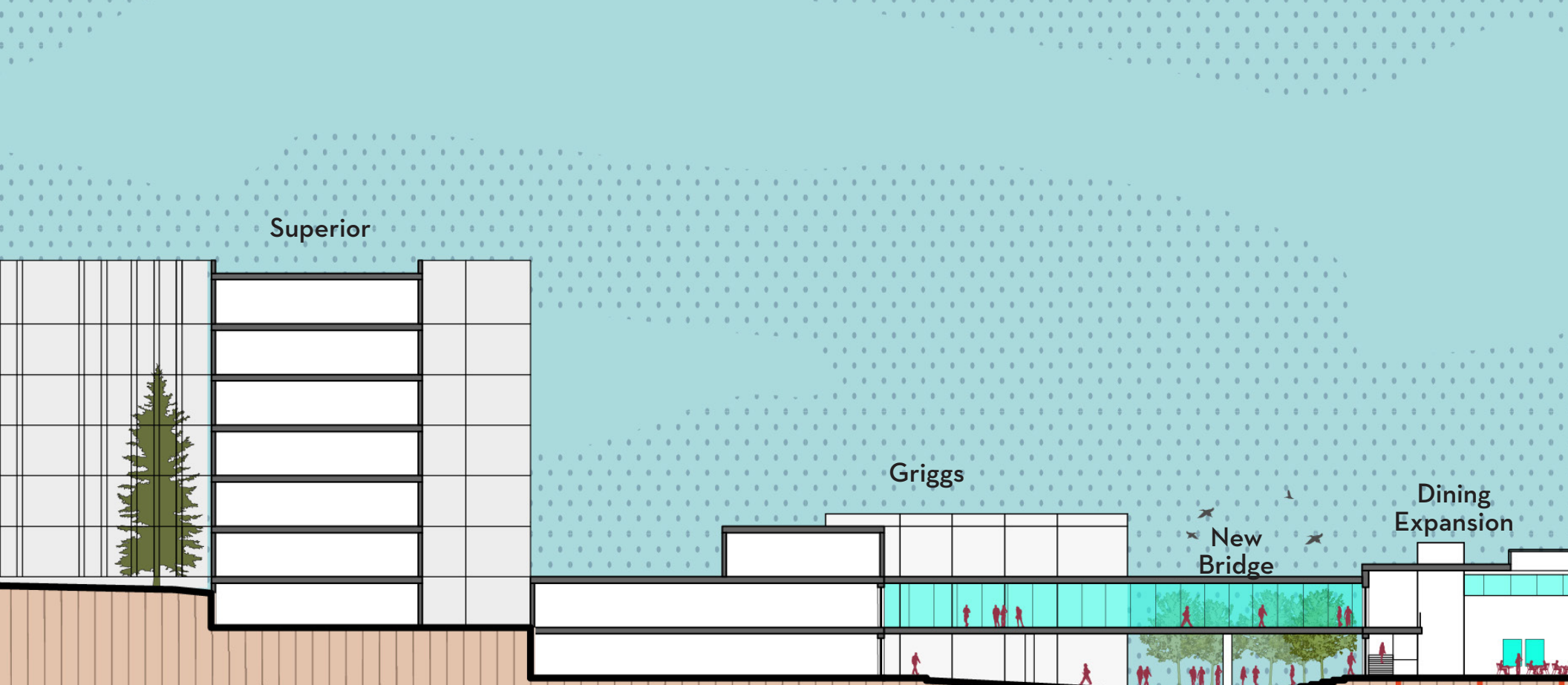
Selective renovation of primary academic buildings in the connected campus supports teaching, learning and outreach mission and will reduce emissions associated with energy use. Renovation of the Main Production Kitchen and future dining expansion with creation of a Mobility Hub in the Sustainability Corridor will reinforce existing patterns of student and academic life. The conversion of Vermilion and Burntside to a lively, intensively-used recreation space in the heart of the campus' residential neighborhood is another aspect of this investment in the core. Progressive attention to opening up some key spaces within the connected buildings to allow views and access to courtyards is another recommendation associated with reinvesting in the campus core. These spatial connections through existing buildings will offer physical and visual connectivity between the Sustainability Corridor and internal courtyards of existing academic and administrative buildings. The connections also offer the opportunity to create internal "winter gardens," spaces featuring plants and natural materials, notionally carrying the exterior landscape through the buildings.

Right: A plan view of the upper and lower levels of the Sustainability Corridor with landscape and visual connections to the buildings in the campus core



View of the Sustainability Corridor, along Kirby Drive


WINTER
GARDEN
MOBILITY HUB



A conceptual section view of the reconfigured campus core illustrates proposed changes to dining and transit on campus, including the expansion of existing dining facilities, the addition of an interior winter garden, and an enclosed mobility hub. Future excavation at the campus core also provides opportunities for integration of geothermal technology to support campus decarbonization goals.

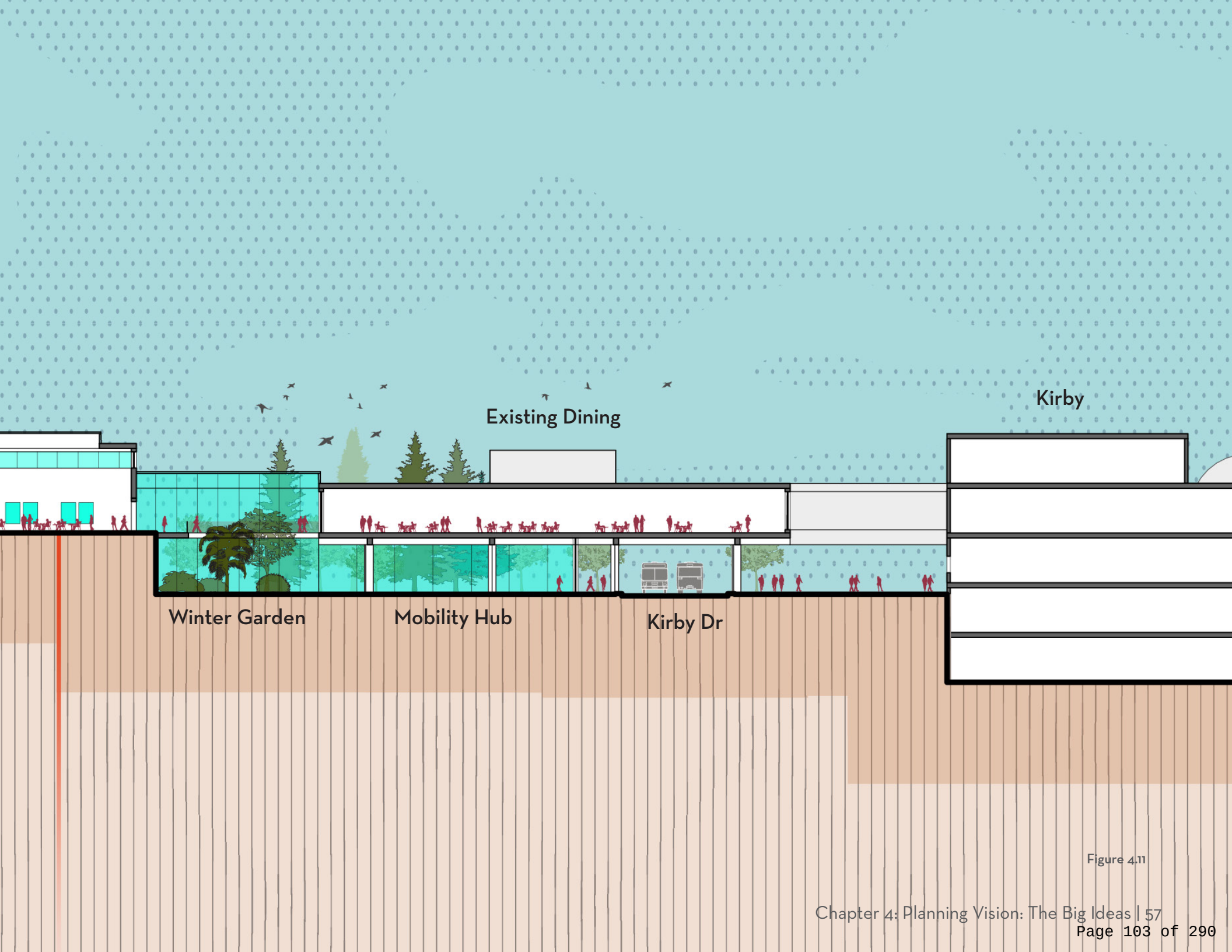


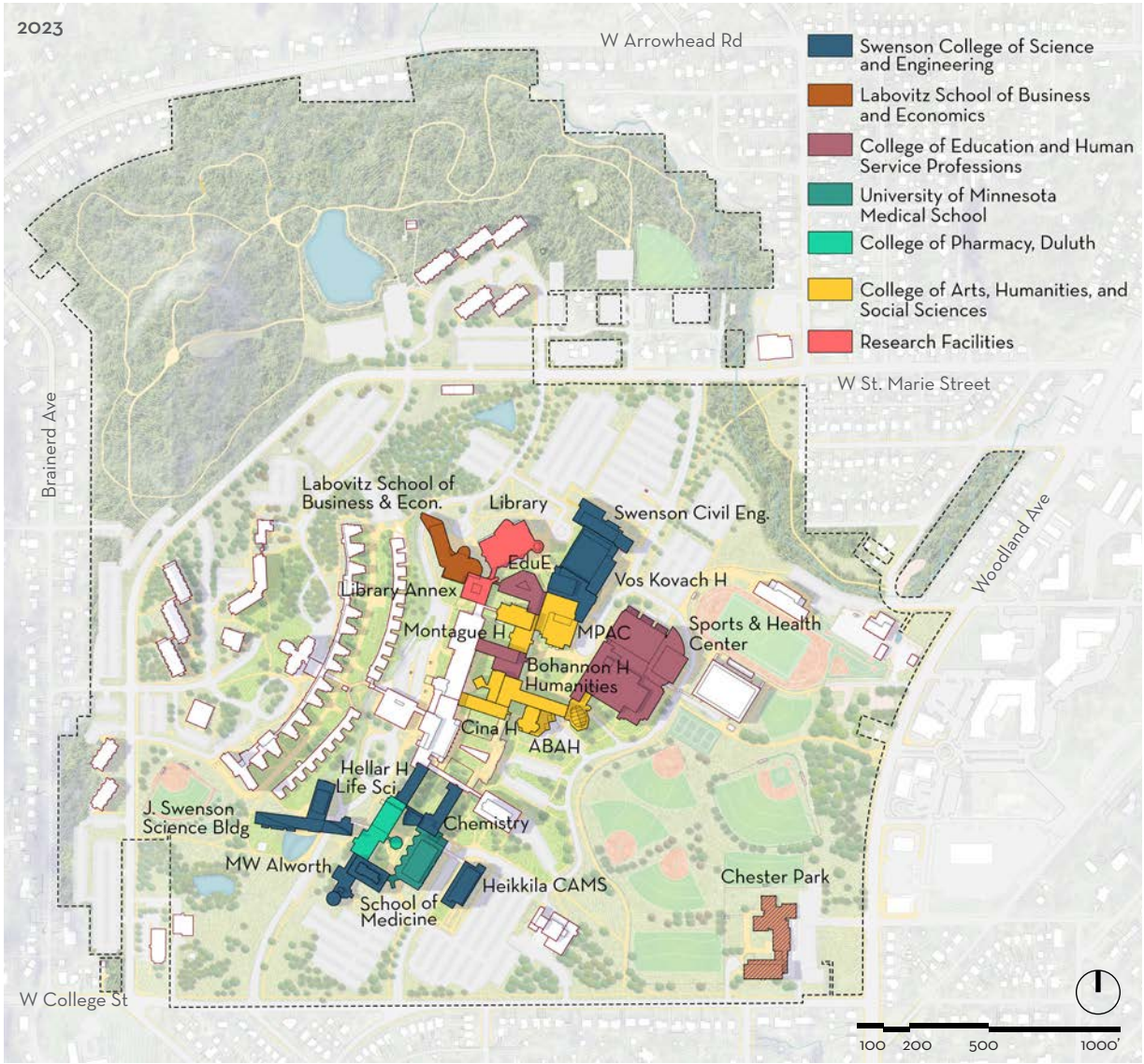
Figure 4.11

Campus Frameworks 5

Academic and Research Facilities Framework

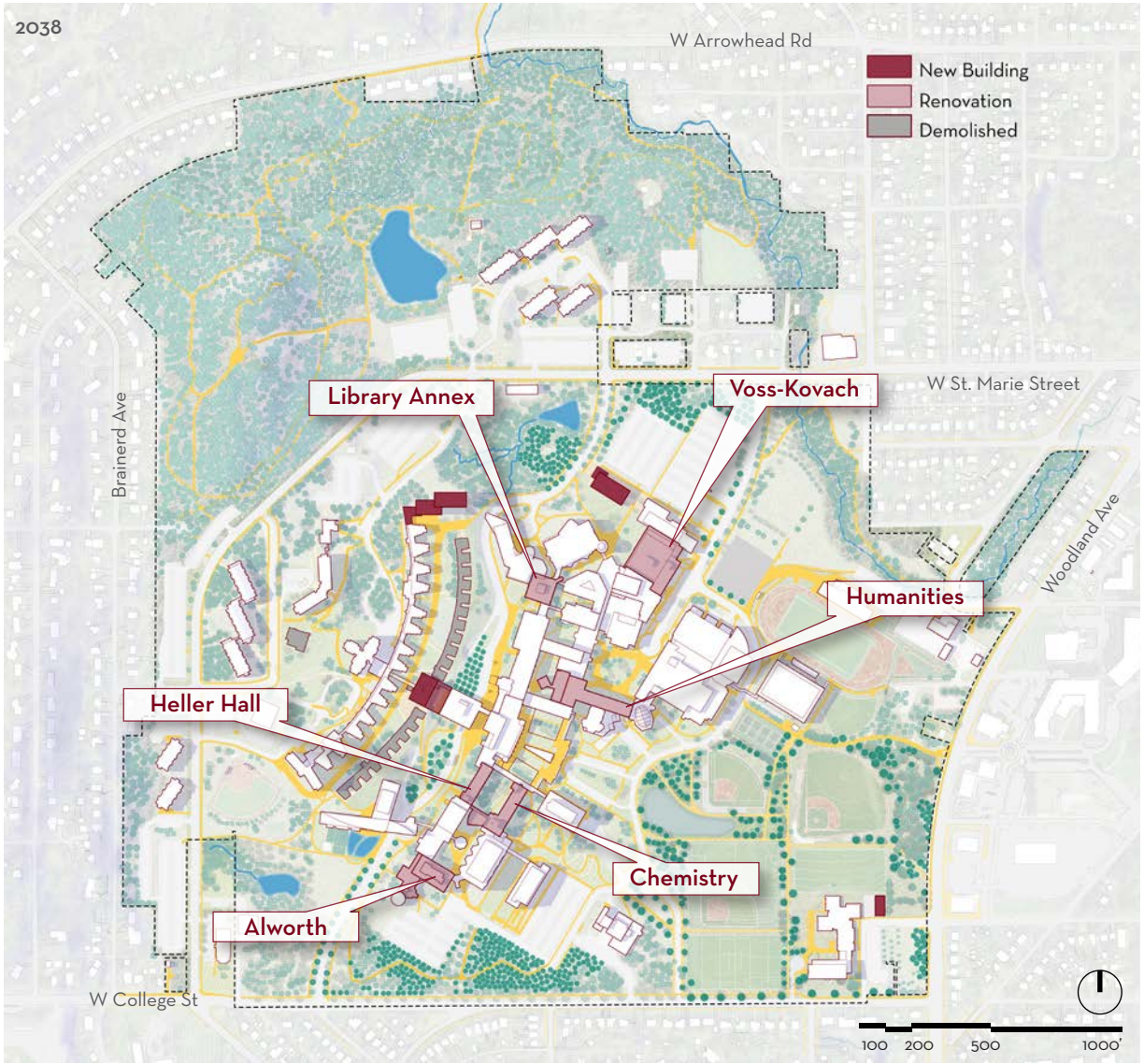
2023

The Academic and Research Facilities Framework identifies opportunities to improve existing facilities to support UMD's educational mission. UMD's capital request list includes several building renovations that will collectively address known deficiencies and shortcomings in existing academic and research space. Based on current and projected space needs, no new construction of academic or research space is proposed on the campus. Instead, renovation and the reallocation of space within existing buildings will provide opportunities for addressing known office, lab, and collaboration space needs. Academic and research facilities proposed for renovation include Heller Hall, Chemistry, Library Annex, Humanities, and Voss-Kovach. Renovation to these academic buildings offers opportunities to improve internal circulation and new potential for visual connectivity between interior and exterior spaces. This could improve how people experience the Duluth campus, strengthening their sense of orientation and promoting an enhanced sense of place through visual cues such as landmarks and wayfinding. Renovation of the buildings also provides the opportunity to improve the energy efficiency and contribution each makes to the campus experience by integrating new social and engagement spaces; by offering visual and physical connections to the campus landscape, notably, the Sustainability Corridor; and, by introducing new wayfinding features.



2038

2053



The extensive interior corridor system is a boon to the campus community during the winter months. The system includes two main north-to-south routes within the buildings: the red concourse located at the Kirby Drive elevation of the academic buildings and the blue concourse located at the University Drive elevation. Any construction of new academic and research facilities proposed over the long term should prioritize proximity and potential connectivity with the existing complex of academic and campus life buildings that define the UMD core. New facilities could be constructed on the parking lots on the south side of campus as required in the longer term.

Below: Building renovations create visual and physical connections to the Sustainability Corridor

Campus Life

2023

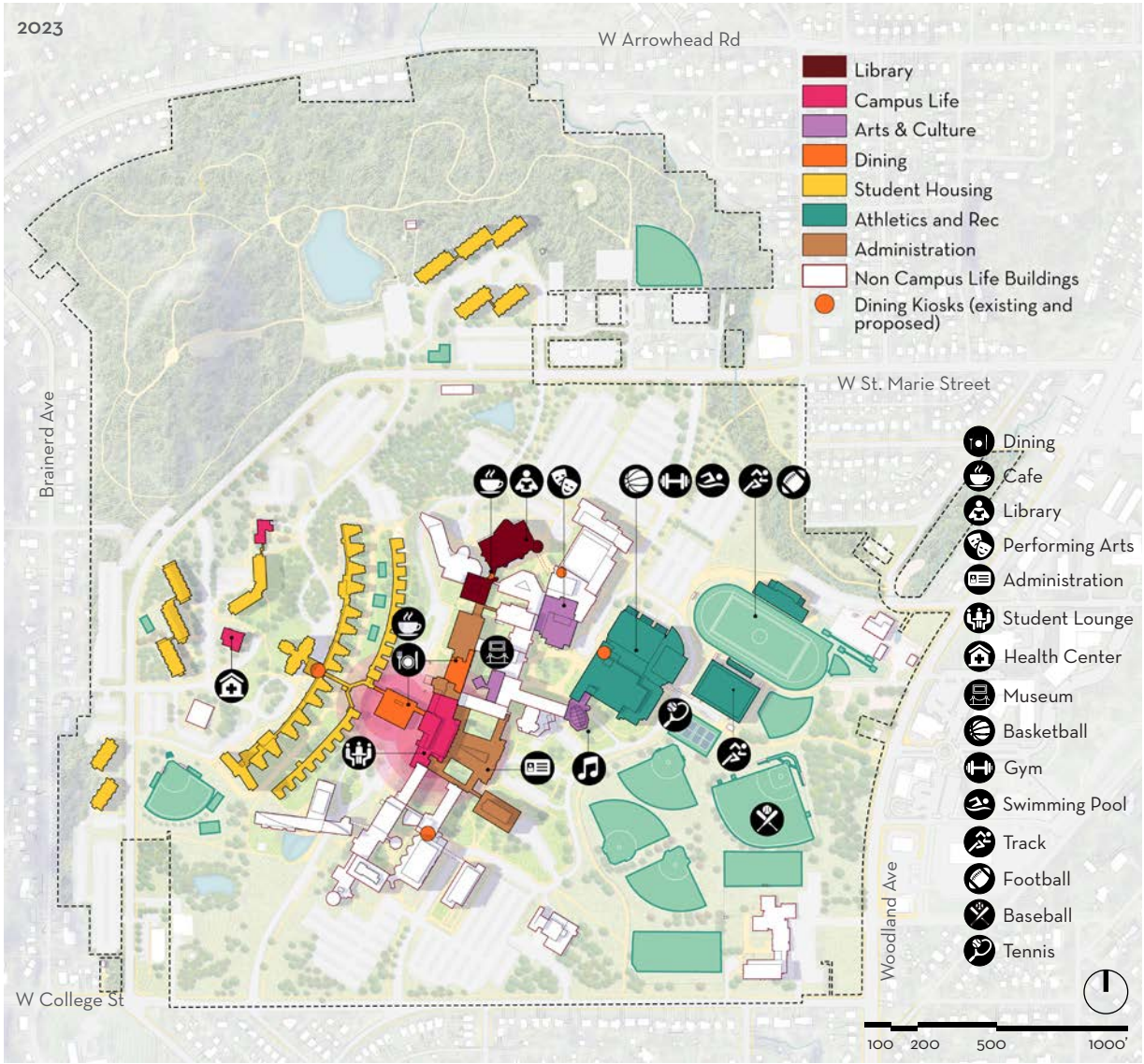
The Campus Life Framework highlights the gathering, dining, residential and student support facilities that contribute to the quality of life on campus. It takes into consideration existing student life facilities and provides recommendations for several new facilities.

Superior Dining Hall and Mobility Hub

Centrally positioned, the existing Superior Dining Hall connects the academic buildings on the lower slopes of the campus with the crescent of residential buildings on the upper slopes (Lake Superior, Griggs, Vermilion and Burntside Halls). Superior Dining Hall serves as the main dining facility for the residential population.

The building is unique in that it is elevated on columns above Kirby Drive. The main dining spaces are one story above Kirby Drive, which passes under a portion of the building. Space below the Superior Dining Hall is unoccupied and open to the elements with limited bicycle parking. The kitchens, storage and service areas are located below grade.

The Campus Plan calls for additional dining space on the west side of the building to address the capacity challenges and operational deficiencies of the existing facility. Recommendations for the existing building include enclosure of the ground level to create a café and transit hub associated with the bus services utilizing Kirby Drive. The café will include a two-story winter garden connecting the ground



level of the building with the upper level where the dining expansion is proposed. The winter garden will incorporate the retaining wall located between the Griggs residential crescent area and the Kirby Drive level. The dining expansion will be located on the upper level, where it will connect to Griggs Hall.

The renovated and expanded dining hall is imagined as a beacon at the center of the proposed recreational areas associated with the Sustainability Corridor. It will include social engagement spaces and serve to bridge the residential and academic areas of the campus. Envisioned as a light-filled transparent space, the proposed expansion will offer direct connection to the landscapes and recreational areas of the Sustainability Corridor.

Housing

The Campus Plan includes demolition of Vermillion and Burntside residence halls and, depending upon increasing and sustaining undergraduate enrollment to pre-pandemic levels, a new residential tower. The new tower would support up to 351 beds, which would replace beds lost from Vermillion and Burntside and allow for additional capacity. The nine-story building will be south-facing to maximize passive solar gain and to connect with the landscapes and recreational areas proposed along the Sustainability Corridor (existing Burntside and Vermilion Halls site).


UMD

View from the proposed dining extension, looking out onto the upper level of the Sustainability Corridor

Over the long-term, future replacement housing is proposed west of Lake Superior Hall on the upper slopes of the campus. The framework illustrates a series of new residence halls designed to replace peripheral housing such as the Oakland and Junction Apartments. It provides recommendations for the eventual replacement of Goldfine Apartments and Heaney Hall, which are both located west of Lake Superior Hall, with new facilities optimally oriented for passive heating and cooling. The project team recommends that all future housing be oriented on the east-west axis to maximize passive solar gain and to facilitate the installation of solar panels. A detailed site planning study will be required to determine an optimal development and grading strategy given the presence of existing buildings and topographic challenges. Accessibility, building orientation, geothermal potential, and stormwater management will be key objectives in a comprehensive site development strategy. No net reduction of beds is proposed at this time.

Health and Counseling Center

A new health and counseling center is proposed north of the Kathryn A. Martin Library to replace the aging, outdated and undersized student health facility located south of Heaney Hall. The consolidated facility will form a new gateway to the campus from the commuter parking lots on the north. It will be located for ease of access from the residential areas of the campus, as well as from the "red concourse" of the academic buildings, from bus services on Kirby Drive, and from the commuter parking areas. Future studies are recommended to determine the building program and total square footage required to meet UMD's needs.

Sustainability Corridor

The vision for the Sustainability Corridor includes recreation fields, courts, terraces and patios, all of which are intended to enhance the residential experience for students living on campus. Located on the upper level of the Sustainability Corridor, these campus life amenities will be linked to Bagley Nature Area and to the parks and trail networks beyond campus by means of new pathways for pedestrians and cyclists.

Recreation Park

The Recreation Park will contribute to the campus life experience for resident students, commuters and the broader campus community. It will include new baseball, softball, soccer and multipurpose fields for athletic and recreational activities. The network of paths and interstitial landscape features between the fields will contribute to campus health and wellness objectives by providing walking and jogging routes. Low fences will protect the fields and be more likely to invite onlookers to support events and participate in future events.

Landscape

2023

The Landscape Framework provides the overall organizational structure for the campus. The Framework responds to the broader open space context of Duluth, notably Hartley and Chester Parks, and to the landform, drainage patterns, existing open space structure, and existing landscapes of the campus.

The Landscape Framework defines the landscape character of the following areas of the campus:

- the Bagley Nature Area;
- the Sustainability Corridor;
- the Recreation Park; and
- Campus Edges

It also provides recommendations for interstitial areas of the campus landscape as well as courtyards defined by campus buildings.

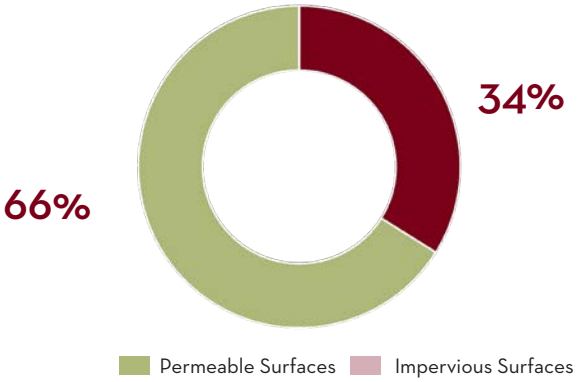
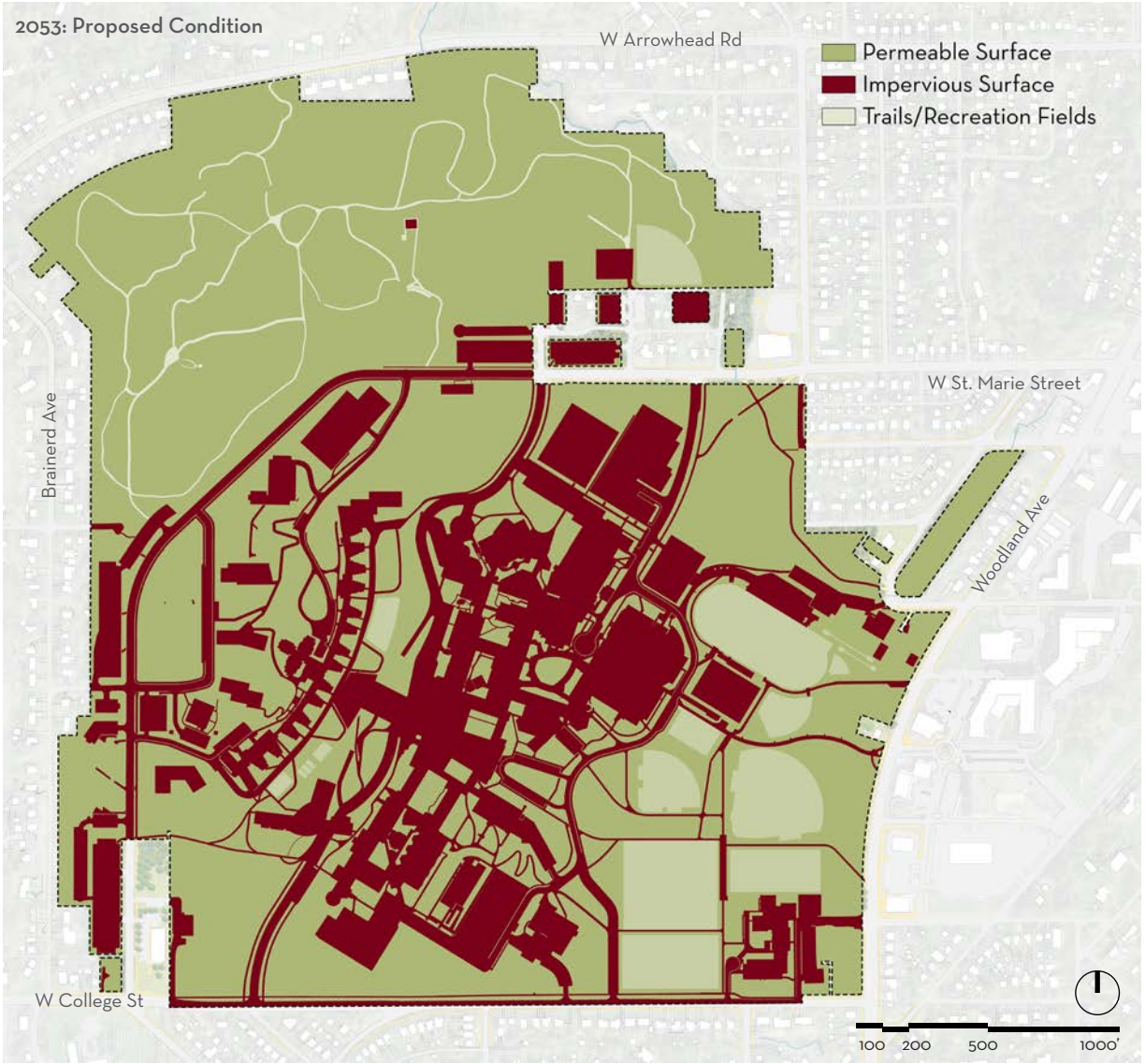


Figure 5.07: Existing Condition

2053



Bagley Nature Area

The Landscape Framework calls for the preservation of existing campus woodlands, primarily the Bagley Nature Area, and for reforestation of previously developed areas. The demolition of the aging and inefficient Oakland Apartments and the associated parking will allow for reforestation north of W. St. Marie Street, offering co-benefits of carbon sequestration and habitat restoration while contributing to the greening of campus edges.

Sustainability Corridor

The proposed Sustainability Corridor is envisioned as the central "park" of the campus; the type of centrally -located gathering space, lacking on the campus today. Conceptually, it establishes a linear park linking Hartley Park and the Bagley Nature Area on the

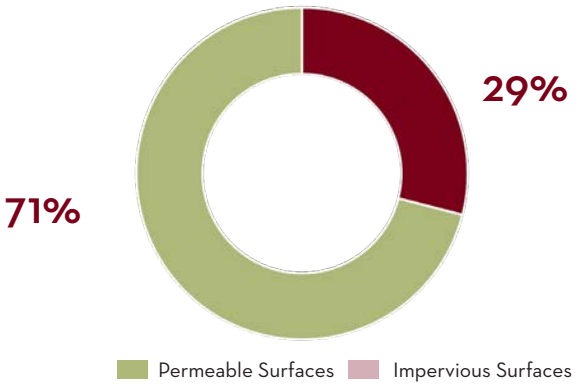


Figure 5.07: Proposed Condition

north to Chester Park on the south. At this broadest level, the Corridor will connect the campus with Duluth's system of parks and trails.

The Sustainability Corridor defines a strong organizational structure for campus development-- a structure that can be implemented incrementally over time in conjunction with investments in infrastructure and new facilities. It encompasses a wide swath of land through the center of the campus along Kirby Drive and features upper and lower topographic levels separated by the existing retaining wall located west of Kirby Drive. Burntside and Vermilion Halls define the upper level with the lower level defined by Kirby Drive.

In addition to aesthetic goals, the Sustainability Corridor includes a number of functional features that support UMD's sustainability initiatives:

1. North-south pedestrian, bicycle and transit circulation routes through the campus, the intent of which is to promote sustainable mobility. Personal cars will be prohibited with the exception of those traveling to the bookstore, child care center or ADA parking areas.
2. Stormwater management features to address water quality concerns and slow the rate of runoff.
3. A recreation corridor featuring pathway connections to the parks north and south of the campus and recreation lawns, courts and plazas on the upper level and following the footprint of Griggs Hall.
4. Opportunity to incorporate geothermal wells under the recreation areas proposed on the sites of Burntside and Vermillion Halls (both planned for demolition).

Campus Edges / Reforestation Areas

The Landscape Framework identifies opportunities for reforestation along W. College Street and W. St. Marie Street. The reorganization of surface parking along the public edges of the campus will enable reforestation while improving the appearance of the campus.

Bagley Nature Area and Classroom

Stormwater Management

The UMD campus includes three watersheds: Chester Creek, Oregon Creek, and the West Branch of Tischer Creek. Chester and Tischer Creeks are designated trout streams both of which are protected in the Landscape Framework by means of buffer areas and landscape corridors. While further study is needed, stormwater best management practices (BMPs) are proposed for all major landscape and building projects. Notable opportunities include along the Sustainability Corridor, where impervious parking and building areas could be replaced by water receiving landscapes. Similar opportunities exist in the proposed Recreation Park where a stormwater retention pond and BMPs are recommended.

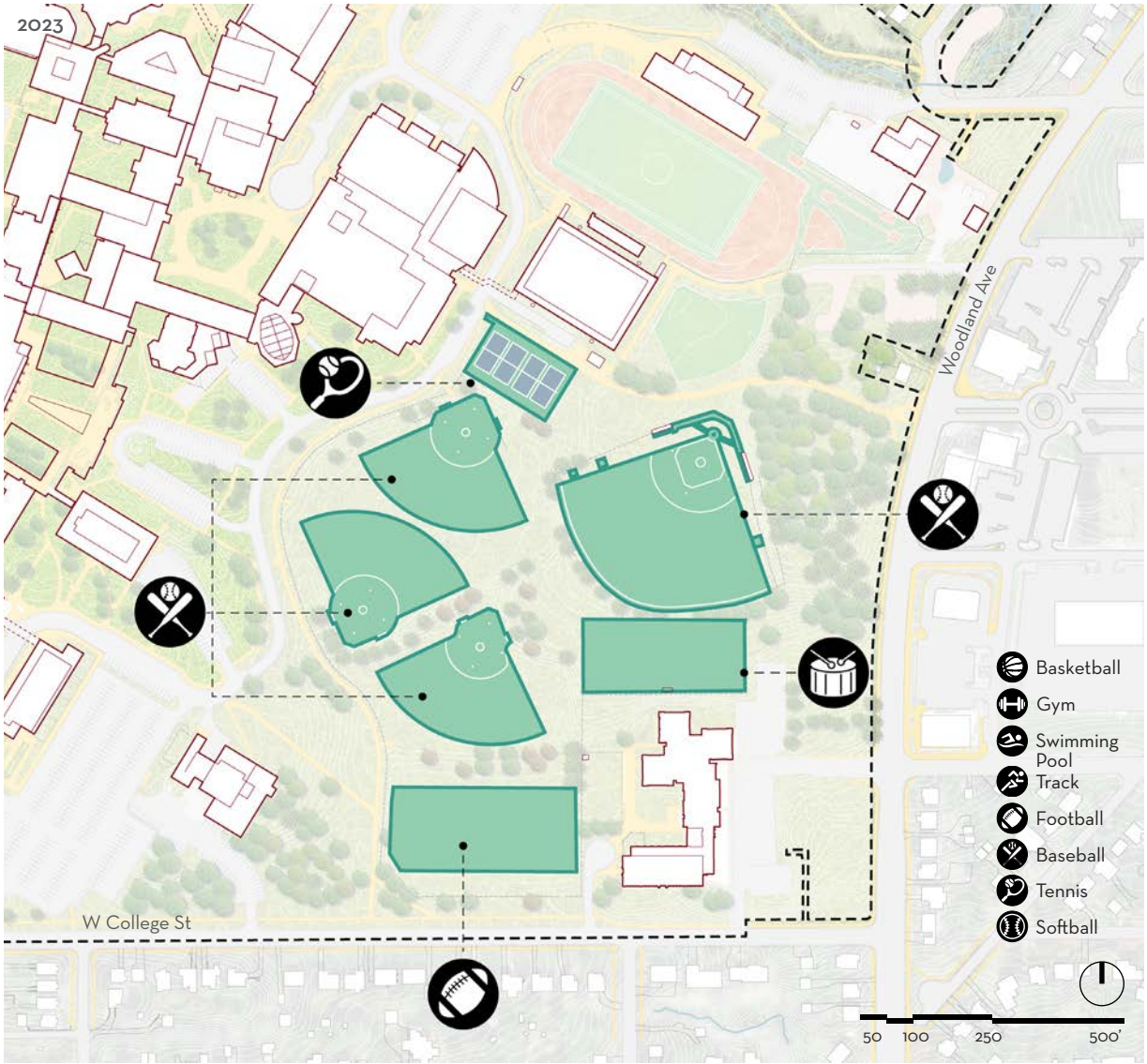
Top Right: Bagley Nature Area campgrounds
Bottom Right: Swenson Civil Engineering stormwater management

Recreation

2023

Recreation Park

The Recreation Framework is integrated with the Landscape Framework, reimagining the arrangement of existing east campus recreation fields in response to programmatic needs, required upgrades and opportunities for incorporating geothermal on campus. In doing so, the intent is to create a park-like environment and pathway network between and around the fields. The pathways, combined with a central stormwater retention pond, contribute to the idea of a “park” for both recreational and formal athletic activities. Eliminating the existing fence around the entire perimeter of the field area will open up the park for circulation and passive recreation. The proposed fields will be fenced along their respective perimeters for movement through the park on the proposed pathways.



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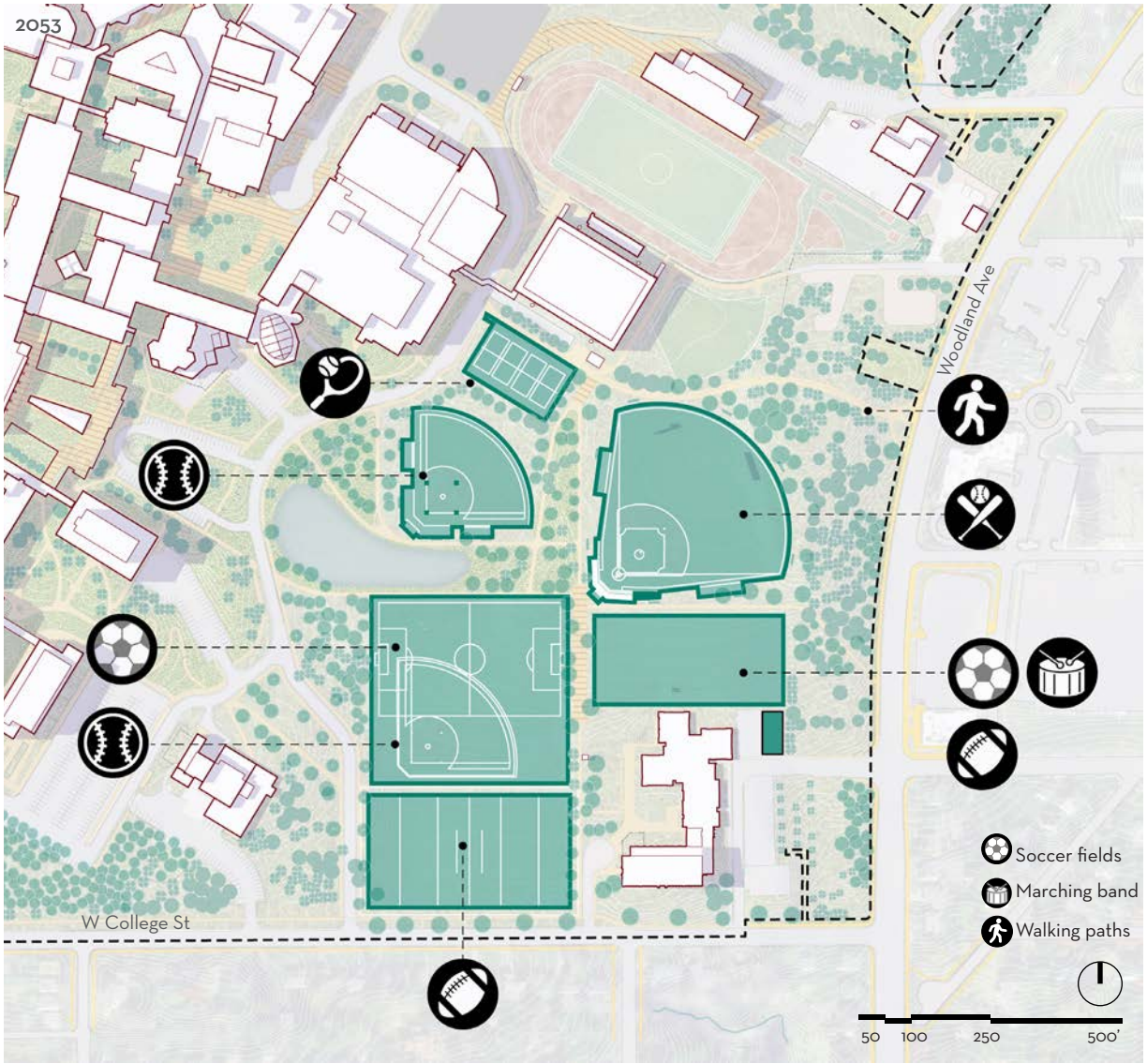


The Recreation Park will contribute to the campus life experience for resident students, commuters and the broader campus community. It will include new baseball, softball, soccer and multipurpose fields for athletic and recreational activities. It will also feature a new storage shed to support recreational activities, which is proposed to the east of the Chester Park building.

The network of paths and interstitial landscape features between the fields will contribute to campus health and wellness objectives by providing walking and jogging routes. Low fences will protect the fields and be more likely to invite onlookers to support events and participate in future events.

Mobility

2023

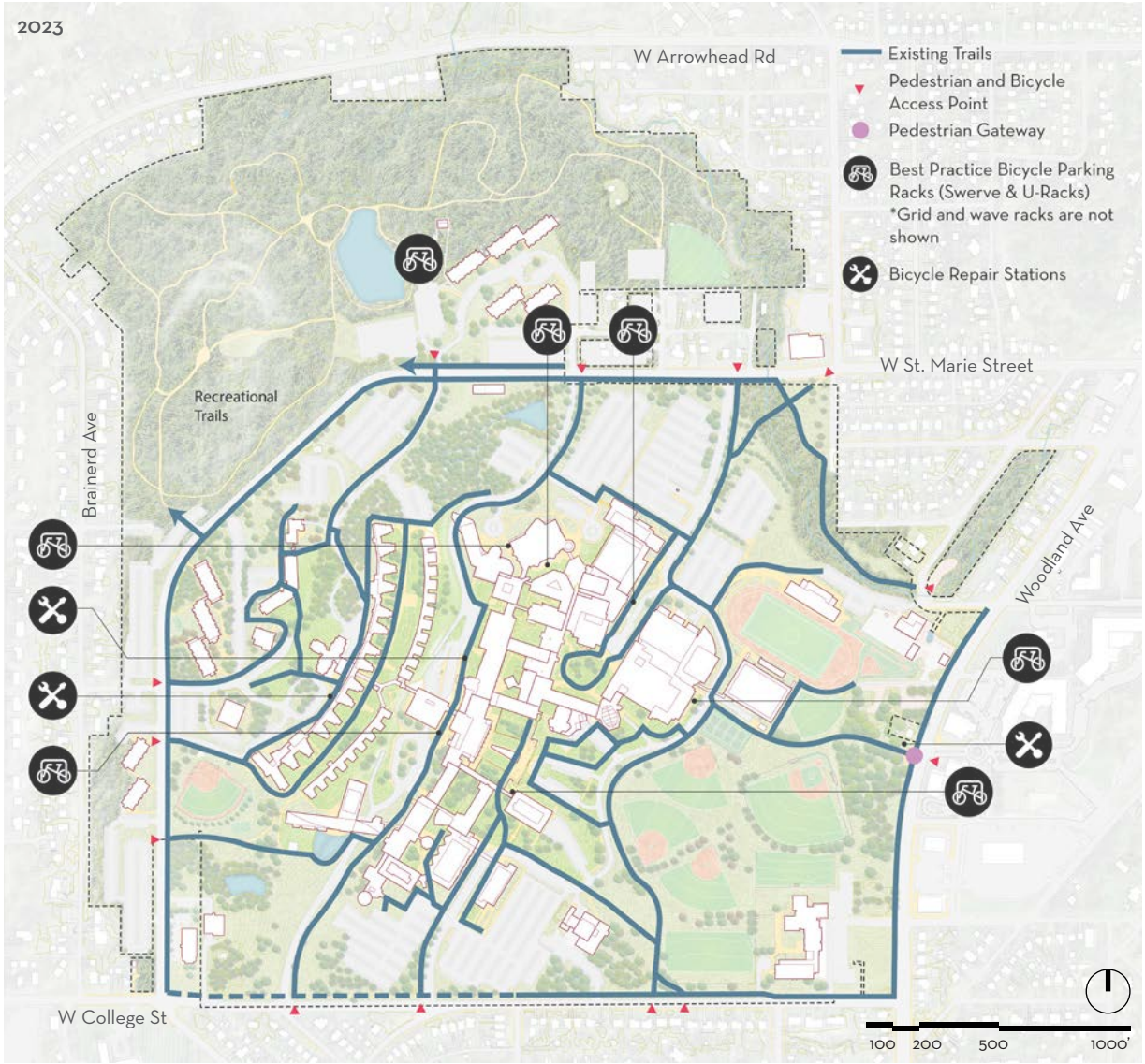
Accessibility and Pathways

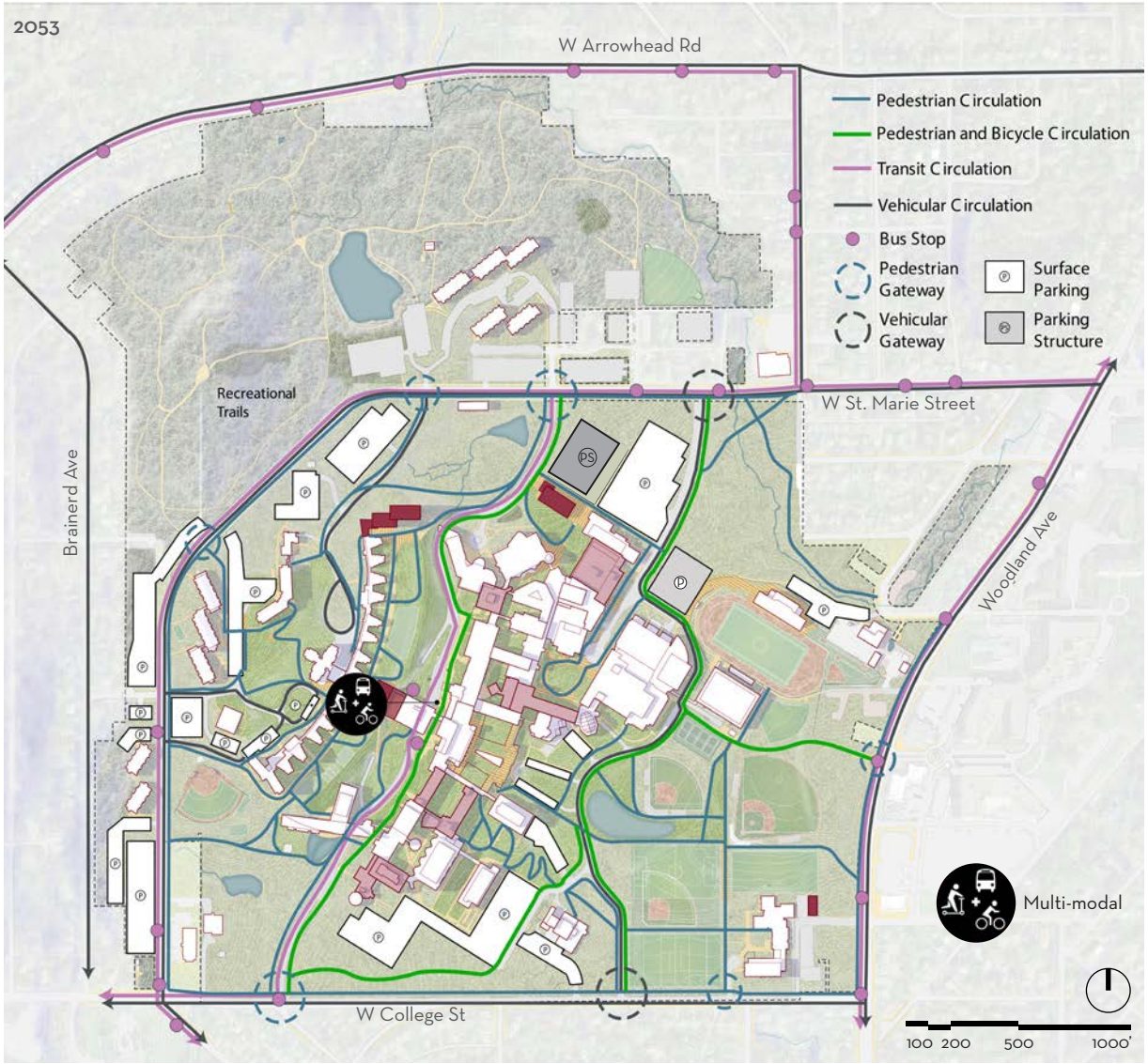
Continued expansion of the interior concourse system is proposed to connect with major academic buildings that may be constructed in the future. Accessible connections of the interior concourse system to external pathways is recommended as part of future site and building projects. It is also recommended that an interior wayfinding and signage strategy be developed to facilitate navigation and movement across the campus such as a strategy for demarcating distance north and south from the center of the Kirby Student Center.

Exterior pathway improvements are proposed on the upper and lower elevations of the Sustainability Corridor. On the upper level directly, following the Griggs curve, pathways and bike routes are proposed to connect the campus north to the Bagley Nature Area / Hartley Park and south to Chester Park. Other exterior pathway improvements are proposed within the Recreation Park to create an open accessible network across the campus.

Transit

Increasing transit ridership among students, faculty, and staff will have multiple benefits, including reduction of demand for surface parking and reduction of commuter-associated emissions. In order for UMD to strengthen its multi-modality transit culture, further investments in supportive





programming and transit infrastructure are recommended. A sheltered mobility hub at the core of campus, connected to the Kirby Student Center and the expanded Residence Dining Center, will give prominence and visibility to transit access while improving the user experience. Close coordination with the City of Duluth will be instrumental in updating other bus stops and shelters servicing campus to incentivize ridership, as well as identifying opportunities for improved service routes. Based on conversations with representatives of the City of Duluth, future transit connectivity between the mobility hub and nearby destinations including Kenwood Village and the College of St. Scholastica should be considered.

Improvements to wayfinding and enhanced interconnectivity between and within the campus activity center (Kirby) and other campus destinations will likely encourage more members of the UMD campus community to make the trip on foot or by bike. Coordination with the City of Duluth to support the implementation of the Campus Connector Trail Plan through campus– the first paved, vertical commuter corridor in Duluth– will realize additional benefits for pedestrians and cyclists in the community and improve connectivity between UMD and the surrounding community.

Kirby Drive

The Mobility Framework envisions the future of Kirby Drive as closely linked to the implementation and success of the Sustainability Corridor. By redirecting personal automobiles to University Drive and restricting parking on Kirby Drive, this key corridor will become a route into the heart of campus accessed by pedestrians, cyclists, and transit riders. The proposed transit hub on Kirby Drive will encourage ridership, offering shelter and supporting micromobility with co-located bike or scooter-sharing hubs. A well-lit and sheltered interior could double as social or study space to serve waiting transit riders. The removal of most automobile traffic from Kirby will positively impact the efficiency of transit operations, and strategic elimination of surface parking will offer opportunities for iconic new social spaces or planted areas along the corridor.

Automobiles and Parking

The Mobility Framework supports the reduction of single-occupant vehicle use on campus and associated surface parking area. To realize this vision, UMD may elect to cap parking space permitting, gradually reducing surface parking in tandem with the implementation of transportation demand management (TDM) policy and program support. Repurposing excess surface parking into green space will enhance the campus environment aesthetically, increase stormwater percolation, and improve ecosystem function. It will also facilitate reforestation in key areas notably along Kirby Drive and along W. College Street and W St Marie Street.

Gateways

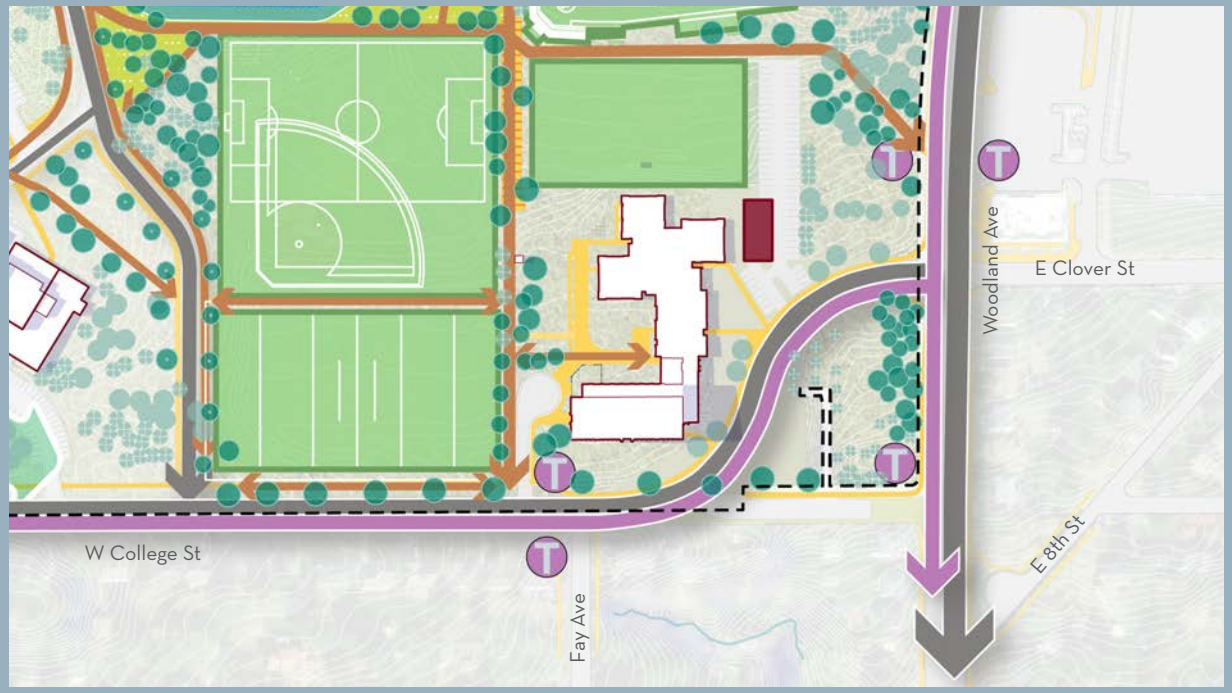
The Mobility Framework recommends landscape and wayfinding enhancements at both existing and new gateways with the intent of improving the arrival sequence to the campus. The campus plan defines a new visitor gateway on W. College Street, east of the power plant. A new segment of University Drive will provide a more direct route to Solon Campus Center and other visitor destinations, including the arts and sporting venues on the north side of campus.

Gateways to the Sustainability Corridor occur at the intersection of Kirby Drive and W. College Street, and at the intersection of Kirby Drive and W. St. Marie Street. These gateways are envisioned to be part of the linear landscape corridor through the center of campus.

Woodland Avenue Gateway Study

The 2013 Master Plan recommended realigning West College Street to intersect with Woodland Avenue at Clover Street, identifying this reconfiguration as a strategy to improve the experience of arriving to campus.

This concept was studied further during the 2023 planning process. Based on transportation planning and urban design best practices, the realignment of W. College Street would create an awkward gateway experience and sense of arrival, particularly for visitors coming from the south, because the building contains active UMD programs and is expected to remain in place. Uniting the two sides of the Woodland Avenue neighborhoods at a future intersection would require significant public investment in infrastructure and would displace surface parking at Chester Park building, resulting in reduction of green space along this prominent campus edge if surface parking is shifted north. As future circulation and development in the area around campus brings additional demand for improved intersection at Woodland and College, UMD should continue to work with affected stakeholders and the City of Duluth to arrive at a workable solution without sacrificing campus facilities or land, or negatively affecting the entry experience for vehicles and non-motorized traffic.



The 2013 plan considers re-alignment of W College St to intersect with Woodland Avenue at E. Clover St, depicted above

Decarbonization and Resilience

2023

New Constuction and Substantial Renovation

Substantial renovation of campus buildings will support decarbonization goals, described in the Climate Action Plan, through improvements such as energy efficiency and the addition of rooftop solar infrastructure. Prioritization of adaptive reuse over new construction, where feasible, will be another strategy to reduce UMD's embodied carbon. New construction will include the future health and counseling center as well as the proposed residence hall. New facilities will be oriented to optimize energy performance, maximize passive heating and cooling potential, and support rooftop solar infrastructure. The design of future buildings will also account for climate change projections, such as more intense precipitation events and annual warming trends.

Where feasible, the installation of energy-conserving infrastructure such as geothermal and wastewater heat recovery technology will occur in conjunction with substantial renovation, demolition, and new construction projects to minimize the need for additional disturbance in the future. The site of the proposed residence hall is recommended as a location for a cooling thermal energy storage tank; the future demolition of Burntside and Vermilion will similarly provide the opportunity to install geothermal infrastructure on those sites (refer to 2023 Climate Action Plan for additional details).

Landscape

Where feasible, the reduction of impervious surfaces will enhance opportunities for climate-resilient native plantings and reforestation, increasing UMD's ability to sequester carbon dioxide while improving the ecological value of the campus to support habitat and provide shade. The reduction of impervious surfaces will also reduce stormwater runoff, thereby contributing to the health of the surrounding watershed. Improvements to the campus landscape will also positively impact the campus community; enhanced opportunities for outdoor circulation and recreation will promote the physical and mental health of community constituents, thereby contributing to the resiliency of the UMD community as a whole.

Mobility

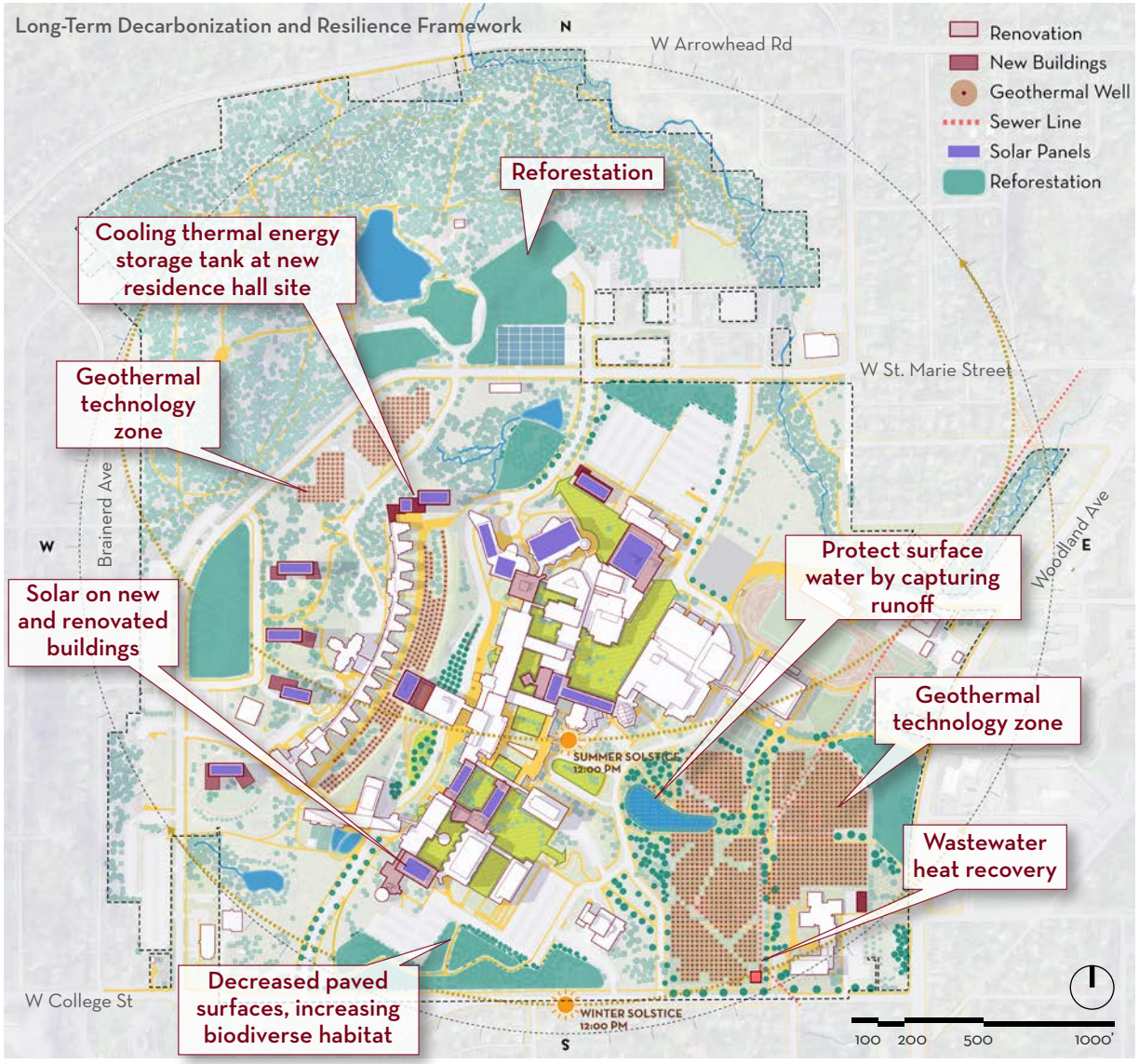
The strategic reduction of vehicular traffic along Kirby Drive, improvements to pedestrian and cyclist circulation, and the introduction of a new mobility hub at the center of campus will support decarbonization goals by incentivizing UMD community members to use more sustainable means of accessing and navigating campus. A more walkable, accessible campus with improved pedestrian safety will additionally contribute to the health and safety of community members.

Low-temperature geothermal technology involves circulating chilled water or another thermal fluid through closed-loop piping that is buried underground. Refer to the accompanying Climate Action Plan for futher information about the application of this technology for efficient heating and cooling.

Community Wellness

Improved access to wellness resources, ease of circulation, and the activation of community spaces will support the health and resilience of the campus community in the future. The relocation and expansion of health and counseling facilities will improve how UMD students are able to access and receive health care, better supporting their physical and emotional wellbeing. Expanding opportunities for passive and active recreation through activated outdoor spaces and improved connections to neighborhood resources will further boost the health of the campus community. Incorporating art and cultural spaces that acknowledge and celebrate the diversity of the campus constituents and the indigenous history of the land will build community and foster social resilience.

2053


Long-Term Decarbonization and Resilience Framework
N
W Arrowhead Rd
Renovation
New Buildings
Geothermal Well
Sewer Line
Solar Panels
Reforestation
Reforestation
Cooling thermal energy storage tank at new residence hall site
Geothermal technology zone
W St. Marie Street
Brainerd Ave
W
Woodland Ave
E
Solar on new and renovated buildings
Protect surface water by capturing runoff
Geothermal technology zone
SUMMER SOLSTICE 12:00 PM
Wastewater heat recovery
Decreased paved surfaces, increasing biodiverse habitat
W College St
WINTER SOLSTICE 12:00 PM
S
100 200 500 1000'

Implementation and Phasing Strategy 6

Near Term Strategies (2038)

Academic and Research Facilities

- Renovation of Alworth, Heller, Old Chemistry, Library Annex, Humanities, and Voss-Kovach
- Relocation of Large Lakes Observatory and subsequent divestment of the Research Lab Building
- Substantial renovation of any buildings on campus should support decarbonization goals as discussed in the accompanying Climate Action Plan, such as upgrades to heating and cooling systems and addition of rooftop solar infrastructure

Campus Life

- Further coordination is needed with indigenous UMD community members to identify meaningful placemaking
- Demolition of Vermilion Hall, Burntside Hall, and Health Services
- Construction of a new residence hall[1], a new health center, and expansion of the Residence Dining Center facilities (Main Production Kitchen and dining hall)

1 The construction of a new residence hall is recommended assuming student enrollment remains stable. The location, design, and timeline for construction of new campus facilities, including athletic fields, should align with the goals and strategies identified in the Climate Action Plan.

Landscape

- Construct a linear park on the former site of Vermilion and Burntside Halls as part of the proposed Sustainability Corridor
- Enhance pedestrian access to the Bagley Nature Area/Hartley Park and the Chester Park building with an expanded network of pedestrian paths
- Reforest campus edges following strategic removal of surface parking on the campus perimeter
- Expansion of park facilities to support the Sustainability Corridor concept should occur in coordination with the implementation of sustainability and decarbonization measures described in the Climate Action Plan. Removal of surface parking to support reforestation along the campus perimeter will require further study

Recreation

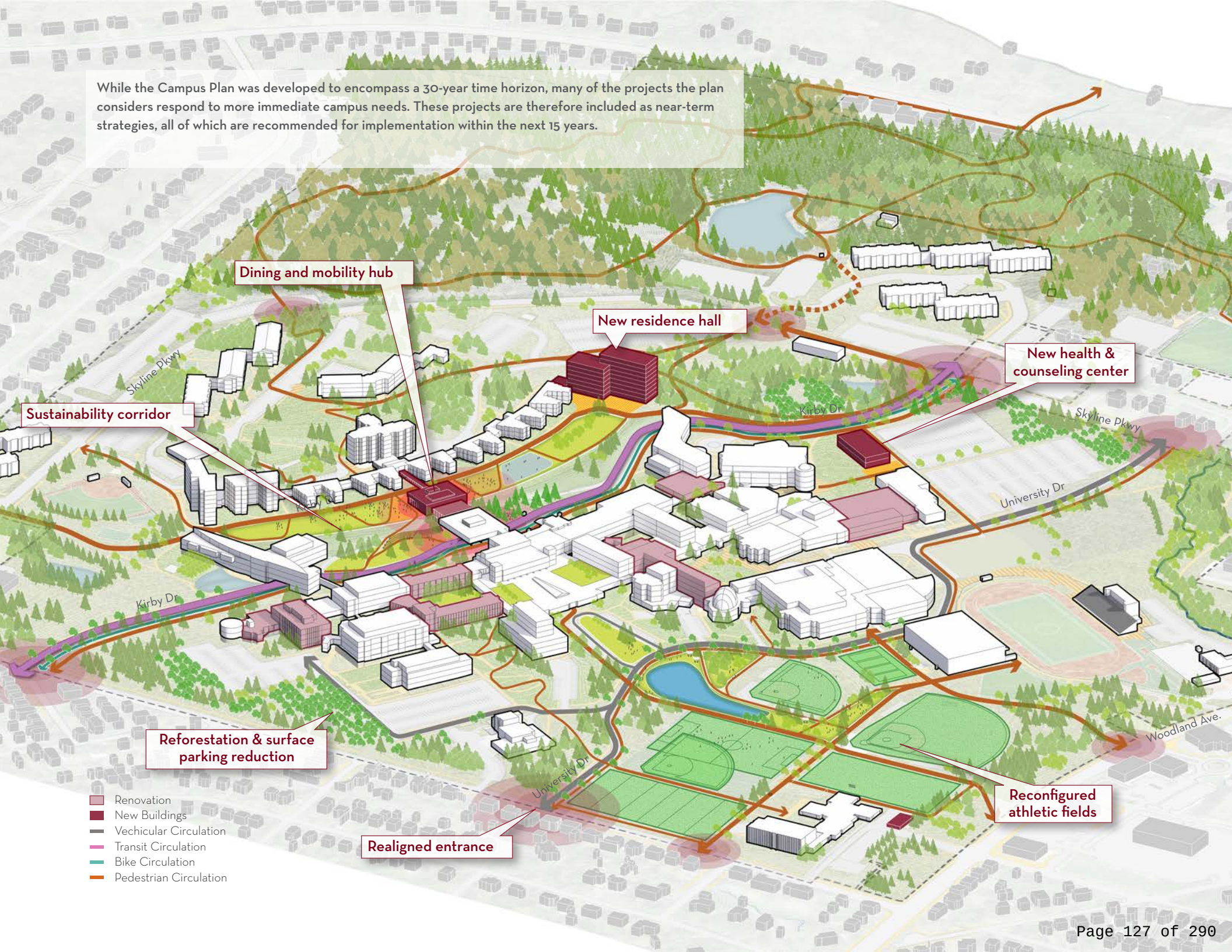
- Reconfiguration of athletic fields and addition of a new storage shed to support athletic and recreational programming in coordination with decarbonization measures

Mobility

- Develop a Transportation Demand Management (TDM) Plan and program to reduce single occupant vehicle commuting and increase carpooling, shared rides, transit, walking and biking trips (1-5 Years)[2]
- Coordinate with the City of Duluth to provide complete, safe, connected and quality networks of pedestrian and bicycling facilities to campus, including crossings
- Construct a new campus mobility hub for transit and micro-mobility users in conjunction with the expansion of dining facilities (associated with the Superior Dining Hall renovation)
- Realign University Drive at the West College Street entrance, creating a new campus gateway sequence and improving the visitor experience
- Limit parking and personal vehicular use on Kirby Drive, increasing multi-modal and transit use through this key campus corridor
- Improve Woodland Avenue access (provisionary)

2 A TDM Plan should include well-defined measures and accountability; baseline and ongoing data collection, including annual travel survey and standardized count programs that are integrated with Greenhouse Gases (GHG) data collection and development; targets for travel mode shares coordinated with targets for Scope 3 commuter greenhouse gas reduction; modified policies to align with targets and timelines; parking management and reduction strategies; programs and technologies to streamline and progress TDM efforts; a timeline for implementation milestones, and a public-facing dashboard showing progress towards targets. The TDM Plan is recommended for implementation before other near-term mobility strategies listed above.

While the Campus Plan was developed to encompass a 30-year time horizon, many of the projects the plan considers respond to more immediate campus needs. These projects are therefore included as near-term strategies, all of which are recommended for implementation within the next 15 years.



Implementation Activities

The UMD Campus Plan is a framework for future growth and change. It will be adapted over time in response to strategic decisions and the mission-driven needs of the University.

The campus plan defines concepts for change for all areas of the campus, with the expectation that specific investments will require further exploration and discussion. Some of the recommended changes are small in scale; others are transformative and must happen through a series of incremental steps over time. Still others are dependent on the involvement of other parties to effect significant change, such as on the edges of the UMD Campus. The plan does not define project- level details for facilities, either in physical form or in cost, for most concepts outlined in the document. Future project development will result in better knowledge and awareness of the scope and timeline for these events.

Given all the unknowns associated with future events, the 'Big Ideas' and recommended initiatives serve as the core guidance for ongoing decision-making about capital projects. This flexibility is intended so that the decision-making process for future projects can uphold the intent of the plan.

A number of significant ongoing UMD planning efforts are expected to follow the 2023 Campus Plan Update, as described below.

UMD Cultural Resources Inventory

Staff will compile an inventory of eligible historic resources consistent with state requirements. For resources listed on the National Register of Historic Places, impacts to historic landscapes, districts, and/ or buildings, consideration must be given to maintaining the integrity of such resources while also meeting University needs for teaching, research, and outreach, maintenance and operations, accessibility and other factors.

Energy Master Plan

In alignment with the Climate Action Plan goals established as part of the integrated campus and climate action plan effort, this work will itemize the scope of work needed to effect change in energy supply systems and utilities on the UMD campus.

Ongoing Transit Service Planning

In tandem with the Duluth Transit Authority, to support improved ridership option for students, staff and faculty.

Other non-motorized transportation (bike/ scooters/ pedestrian) plans

A campus-wide assessment of near and long term improvements to address access (universal design) and mobility needs for non-motorized transportation.


UMD
UMD

Near-Term Framework (2038)

2023

Existing Site

UMD's main campus today, pictured right, consists of over 50 buildings. Although the buildings are positioned to allow users to enjoy the views of the surrounding scenery, the building orientation is not necessarily optimal for the cold climate of Duluth, which requires energy-intensive heating.

Transit via personal vehicle is popular, particularly in winter months; roughly one third of campus landcover is impermeable due to buildings and paved surfaces, such as parking and roads.

2038

2053

Campus in 2038 (Approx)

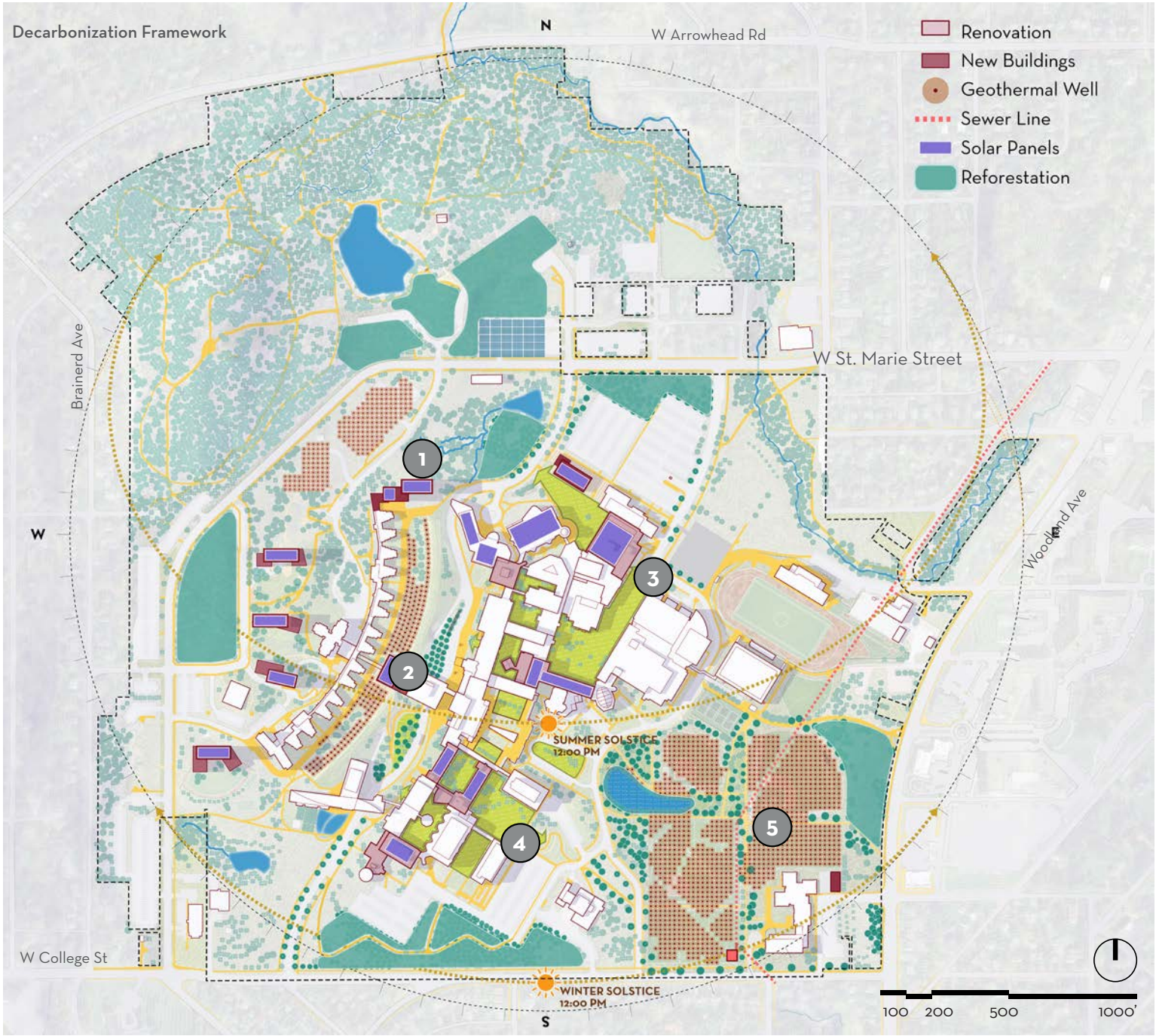
- A New health center
- B New residence hall
- C Sustainability corridor
- D Dining and mobility hub
- E Reconfigured athletic fields
- F Reforestation & parking reduction
- G New visitor's gateway
- H Planned building renovations

Near-Term Framework (2038)

Decarbonization and Resilience

The Climate Action Plan articulates five geographic areas of campus, or "nodes," for phasing of decarbonization projects that may be implemented within a 15 year time horizon.

- **Node 1:** Construct all-electric residence hall that houses heat pumps heating and cooling plant, and construct thermal energy storage tanks and geothermal field proximate to the residence hall
- **Node 2**: Install geothermal field following the demolition of Vermilion and Burntside, removing steam piping in the residence halls and expanding hot water system in its place; add temporary steam to hot water converter and pumps in expanded dining facility for hot water system resiliency during the conversion process; install exhaust/relief air heat recovery.
- **Node 3**: Install steam to hot water converter and hot water distribution pumps in Lund plant; direct bury hot water lines from Lund to the Sports and Health Center; convert the Sports and Health center to hot water; demolish steam and condensate lines and expand the hot water system throughout the northern half of campus buildings; connect the two hot water systems at the dining hall expansion site and at the new residence hall; install exhaust/relief air heat recovery.
- **Node 4:** Demolish steam and condensate lines and expand the hot water system throughout the southern half of campus buildings; remove converter and pumps at dining hall expansion site; complete hot water loop back to Lund plant; install exhaust/relief air heat recovery.
- **Node 5**: Install wastewater heat recovery and geothermal fields during reconstruction of the Recreation Park.


Decarbonization Framework
N
W Arrowhead Rd
Renovation
New Buildings
Geothermal Well
Sewer Line
Solar Panels
Reforestation
Brainerd Ave
W St. Marie Street
Woodland Ave
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1
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3
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5
SUMMER SOLSTICE
12:00 PM
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Long Term Strategies (2053)

Campus in 2053 (30 years)

Academic and Research Facilities

- Continue to reinvest in existing academic and research facilities
- Demolish obsolete buildings when they can no longer be adaptively reused

Campus Life

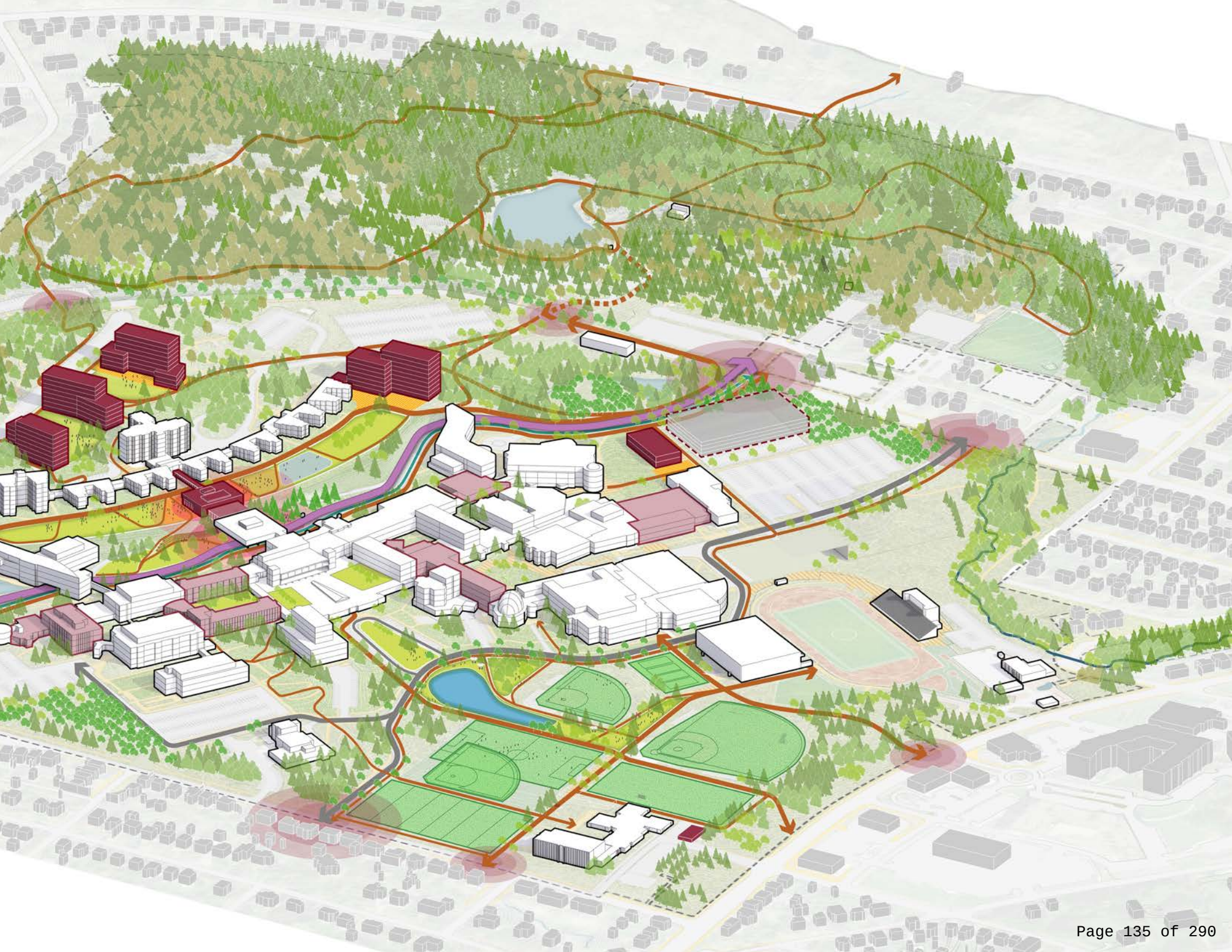
- Demolish Oakland Apartments, Junction Apartments, Goldfine Apartments, and Heaney Hall, replacing them with new housing to the west of the campus core. No net loss of beds is recommended at this time, but should be reevaluated based on future need and enrollment trends.
- Relocate the child care center (UMD Children's Place) to the Chester Park building, assuming there is sufficient financial support and continued demand.

Landscape

- Reforest areas of former surface parking and housing locations, augmenting tree cover at Bagley Nature Area and other forested areas on campus with climate-resilient species

Mobility

- Realize a focused mode shift away from single-personal vehicles to public transportation, pedestrian, and cycling
- Complete long-term strategic reduction of surface parking
- Construct a potential parking structure in coordination with the removal of surface parking (no net addition of parking is recommended)



Long Term Strategies (2053)

2023 — 2038

Campus in 2038 (Approx)

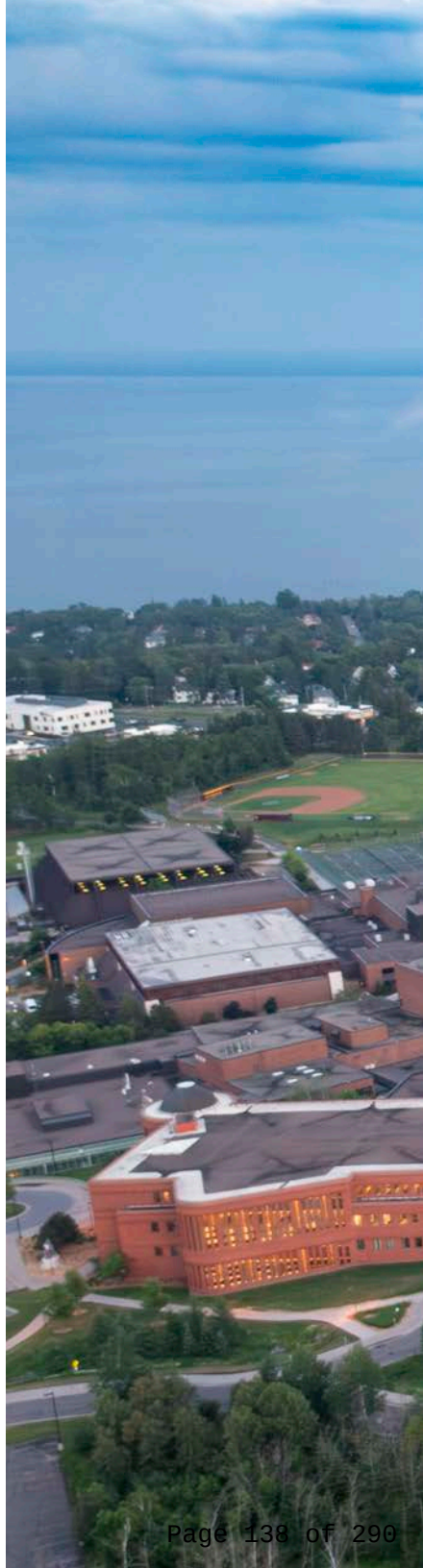
- A New Health Center
- B New residence hall
- C Parking ramp
- D Sustainability corridor
- E Dining and mobility hub
- F Reconfigured athletic fields
- G Reforestation & parking reduction
- H New visitor's gateway

Campus in 2053 (Approx)

- (A) Reforestation
- (B) New residence halls
- (C) Parking ramp

Campus Growth and Property Acquisition

In the near future horizon, campus growth is expected to be accommodated on land already owned by the University. However, as enrollment and other mission support activity expands beyond the capacity of the current footprint, it may be appropriate to consider additional land purchase consistent with the Regents' policy on land acquisition. Maintaining a stable, vibrant surrounding edge to the campus is a high priority for UMD as a good neighbor within the City of Duluth. Consideration of impact to municipal tax base, maintenance of city systems and preservation of physical and natural resources are all contributing factors to long term decisions about land assembly immediately adjacent to current campus holdings on the core UMD campus site.



Acknowledgements 7

UMD Campus Plan Update and Climate Action Plan Acknowledgements

Interim Chancellor McMillan and the Executive Committee; Interim Vice Chancellor for Finance & Operations Bosell, Vice Chancellor for Student Life Erwin, Interim Executive Vice Chancellor for Academic Affairs Hietapelto, and Associate Vice Chancellor for Academic Affairs Mencl, provided direction and made sure recommendations of the Campus Plan and Climate Action Plan align with University of Minnesota Duluth goals.

The Executive Committee selected an advisory committee made up of representatives across UMD to provide guidance and direction to the planning team. The Advisory Committee included the following:

- Chuck Bosell, ITSS
- Kim Dauner, Faculty Senate Rep
- Julie Etterson, Biology, Institute on the Environment
- Forrest Karr, Athletics
- Pat Keenan, Student Life
- Jonna Korpi, Facilities Management/Sustainability
- Katy Morgan, Staff Senate Rep
- Susana Pelayo-Woodward, Diversity & Inclusion
- Shane Peterson, Facilities Management
- John Rashid, Facilities Management
- John Sawyer, Facilities Management
- Ella Stewart, Student Association Representative

The coordinated Campus and Climate Action Plans were informed through the participation of the following UMD campus community members:

- Climate Action Plan Subcommittee
- Facilities Subcommittee
- Multicultural Student Center
- Student Leader Open Forum
- Focus Groups
  - Athletics & Recreation
  - Deans & Research Directors
  - Dining Services & UMD Stores
  - Facilities Management
  - Health Services
  - Housing & Residential Life
  - Kirby Student Center
  - Sustainability
  - Transportation & Parking Services & Student Affairs

Thanks to all the students, faculty, and staff for their time and contributions to develop the UMD Campus Plan Update and Climate Action Plans, September 2023.

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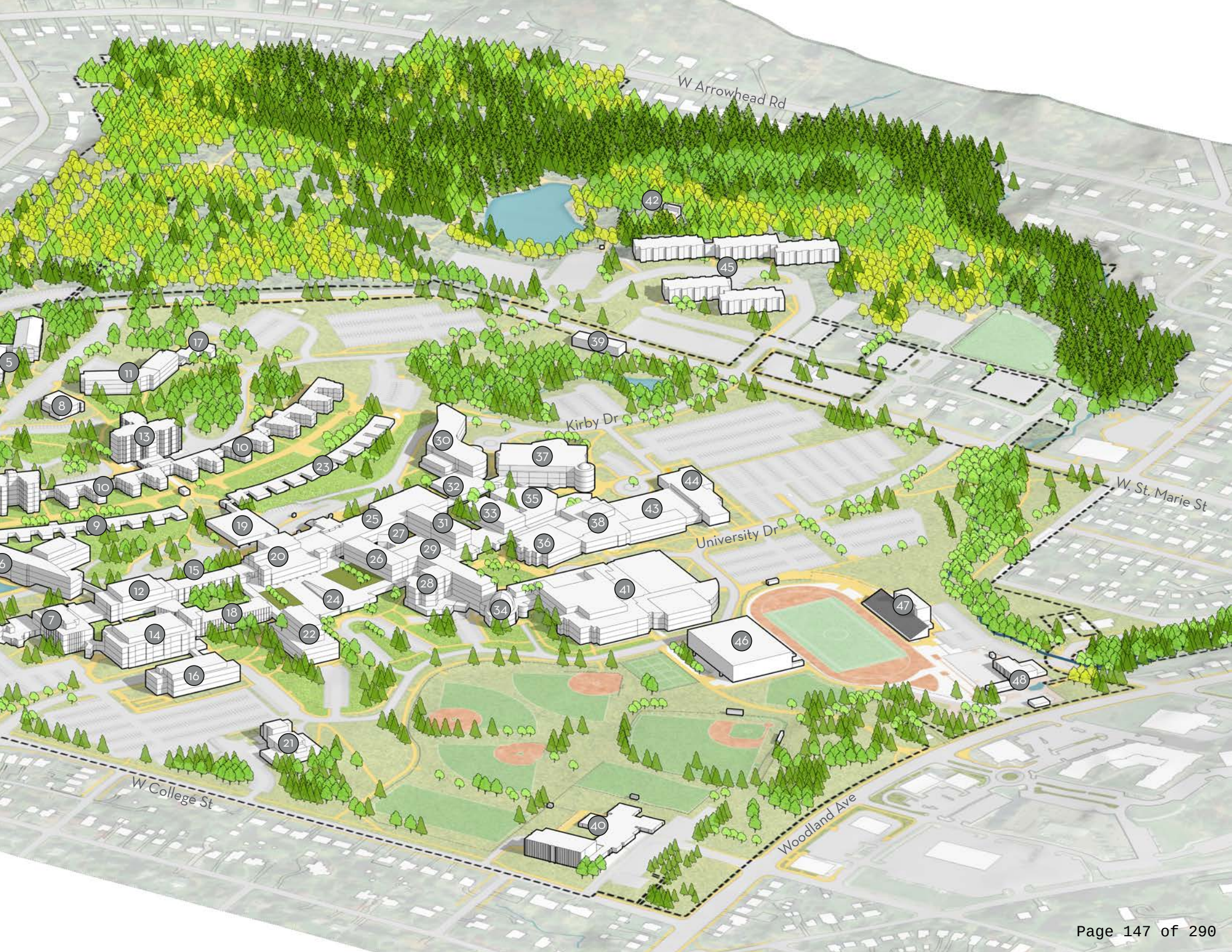
Appendix 8

2023 UMD Campus Buildings

1. Junction Apartments
2. WDSE
3. Ianni Hall
4. M.W. Alworth Planetarium
5. Goldfine Hall
6. James I. Swenson Science Building
7. M.W. Alworth Hall
8. Health Services
9. Vermilion Hall
10. Griggs Hall
11. Heaney Hall
12. Life Science
13. Lake Superior Hall
14. School of Medicine
15. Heller Hall
16. Heikkila Chemistry and Advanced Material Sciences
17. Heaney Hall Service Center
18. Chemistry
19. Residence Dining Center
20. Kirby Student Center
21. Lund
22. Darland Administration Building
23. Burntside Hall
24. Solon Campus Center
25. Kirby Plaza
26. Cina Hall
27. Tweed Museum of Art
28. A.B. Anderson Hall
29. Humanities
30. Labovitz School of Business
31. Bohannon Hall
32. Library Annex
33. Montague Hall
34. Weber Music Hall
35. Education Endazhi-ginkinoo'amaading
36. Marshall Performing Arts Center
37. Kathryn A. Martin Library
38. Engineering
39. CUB
40. Chester Park
41. Sports and Health Center
42. Bagley Classroom
43. Voss-Kovach Hall
44. Swenson Civil Engineering
45. Oakland Apartments
46. Ward Wells Field House
47. Malosky Stadium
48. Robert W. Bridges Fleet Ground Maintenance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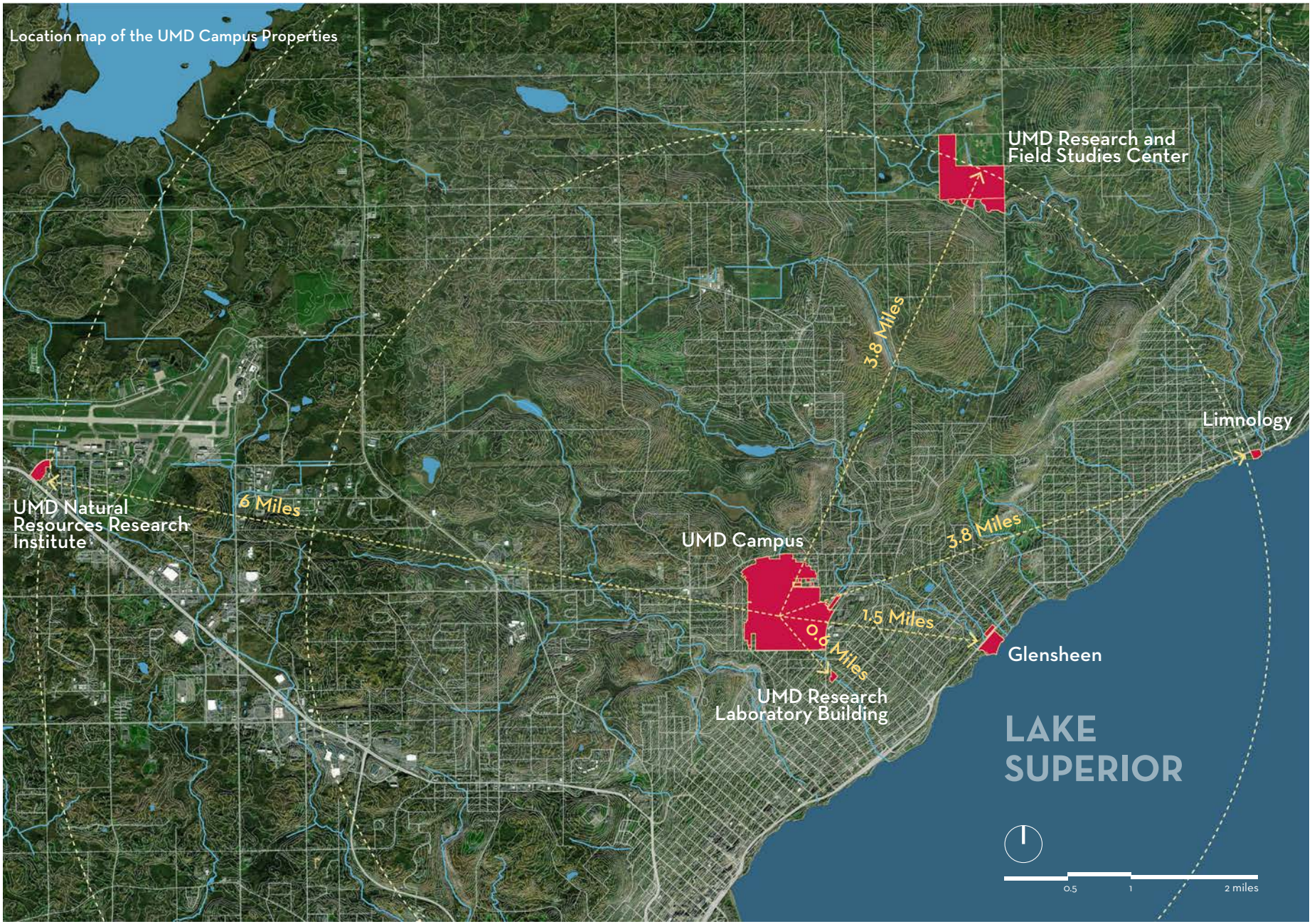

Location map of the UMD Campus Properties
UMD Research and Field Studies Center
3.8 Miles
Limnology
UMD Natural Resources Research Institute
6 Miles
UMD Campus
3.8 Miles
1.5 Miles
0.6 Miles
Glensheen
UMD Research Laboratory Building
LAKE SUPERIOR
0.5
1
2 miles

Aerial photo of the Glensheen Campus

Glensheen

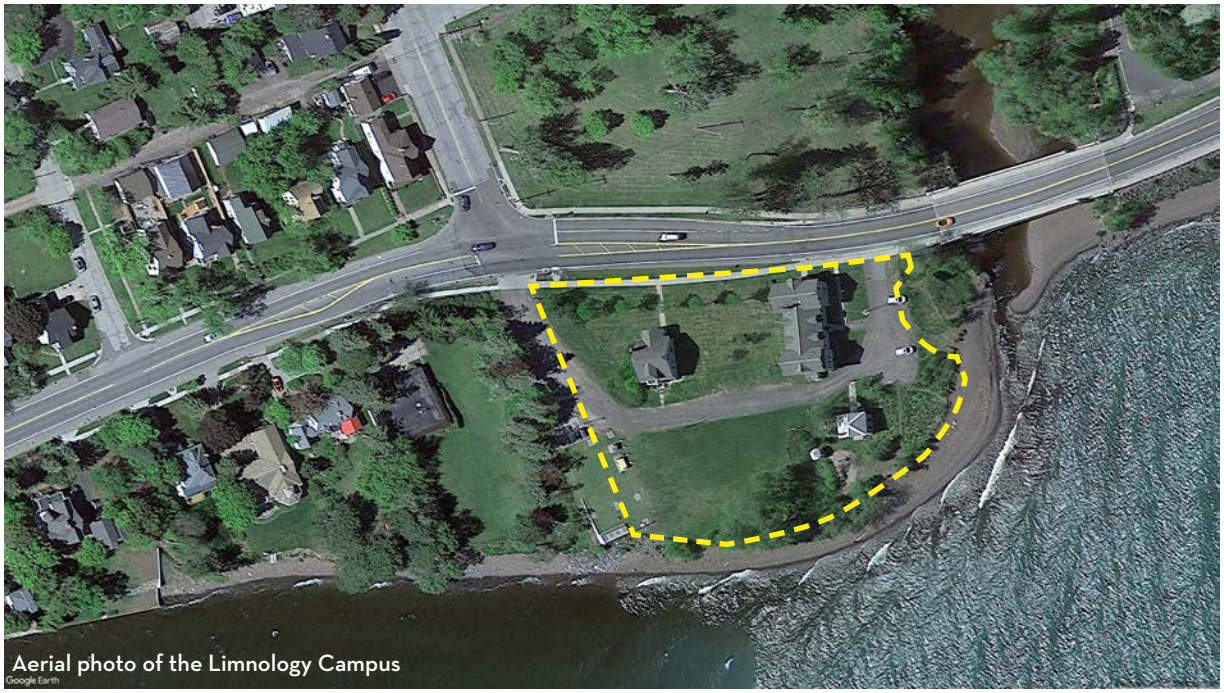
The Glensheen Mansion is a historic property located on a 22-acre lakefront parcel. Built as a home for the Congdon family, construction was completed in 1908. The property was transferred to the University of Minnesota in 1979, restored, and opened for public use as a museum. In addition to the Glensheen Mansion, the property also features the Boat House, Carriage House, and Gardener's Cottage.

The Glensheen Mansion today receives 110,000 – 120,000 visitors annually. It is used as a venue for community and corporate events, as well as leadership events for the UMN system. The property is also used for UMD classes, including museum studies, art history, and environmental education.

Potential improvements include expanded visitor parking, bus parking, and a public welcome center with restrooms. Deferred maintenance includes improvements to humidity control and cooling systems, electric infrastructure upgrades, and enhanced ADA accessibility.

Limnology

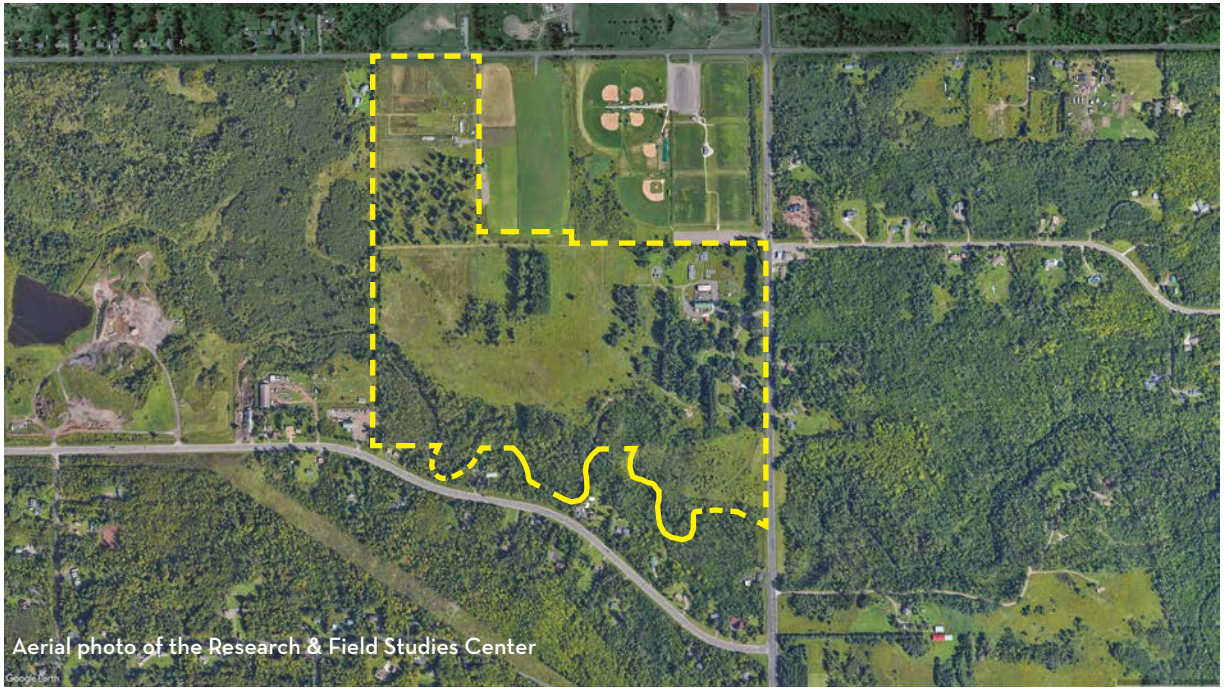
The Limonology building is located where the Lester River meets Lake Superior, approximately four miles from the UMD main campus. A former US Fisheries station, the University acquired the property in 1947. It has since supported a variety of functions, including limnology (freshwater research). The building was placed on the National Register of Historic Places in 1978. Renovated in 2012, the building today houses the UMD recreation sports and outdoor program (RSOP). Spaces on the first floor are also used by UMD departments for office and meeting space.



Aerial photo of the Limnology Campus

Research & Field Studies Center

Also referred to as the "Land Lab" or "The Farm", the Research & Field Studies Center is operated as an experiential learning resource for UMD students and faculty. The 114-acre property is located approximately four miles from campus, and is used primarily for research associated with UMD's Environment, Sustainability, and Geography departments. Some instructional work also occurs at the site. The Research & Field Studies Center has provided food grown on site to UMD Dining Services in the past. A master plan was completed for the property in 2014. Recommendations focused on making the property more accessible to visitors with enhanced pathways and wayfinding. No transit routes service the site; students and faculty must provide their own transportation.



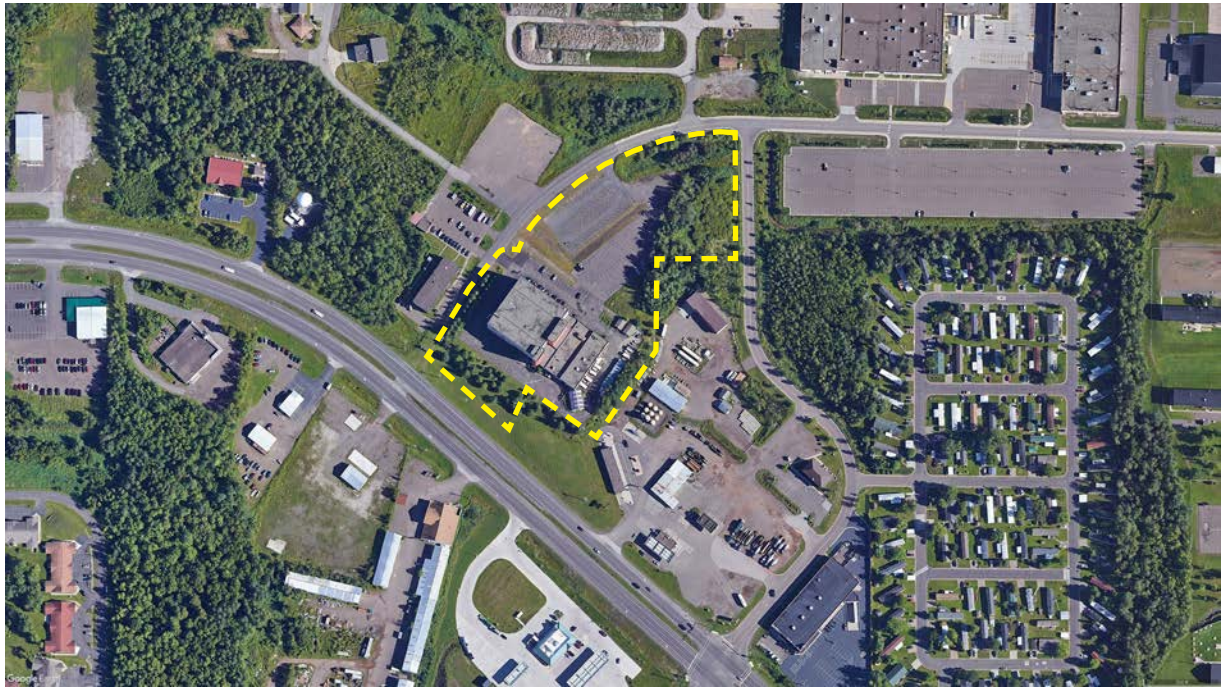
Aerial photo of the Research & Field Studies Center

Natural Resources Research Institute (NRRI)

The Natural Resources Research Institute (NRRI) is an applied research institute supporting approximately 150 permanent staff, as well as additional student researchers. NRRI has two industrial research facilities in the state.

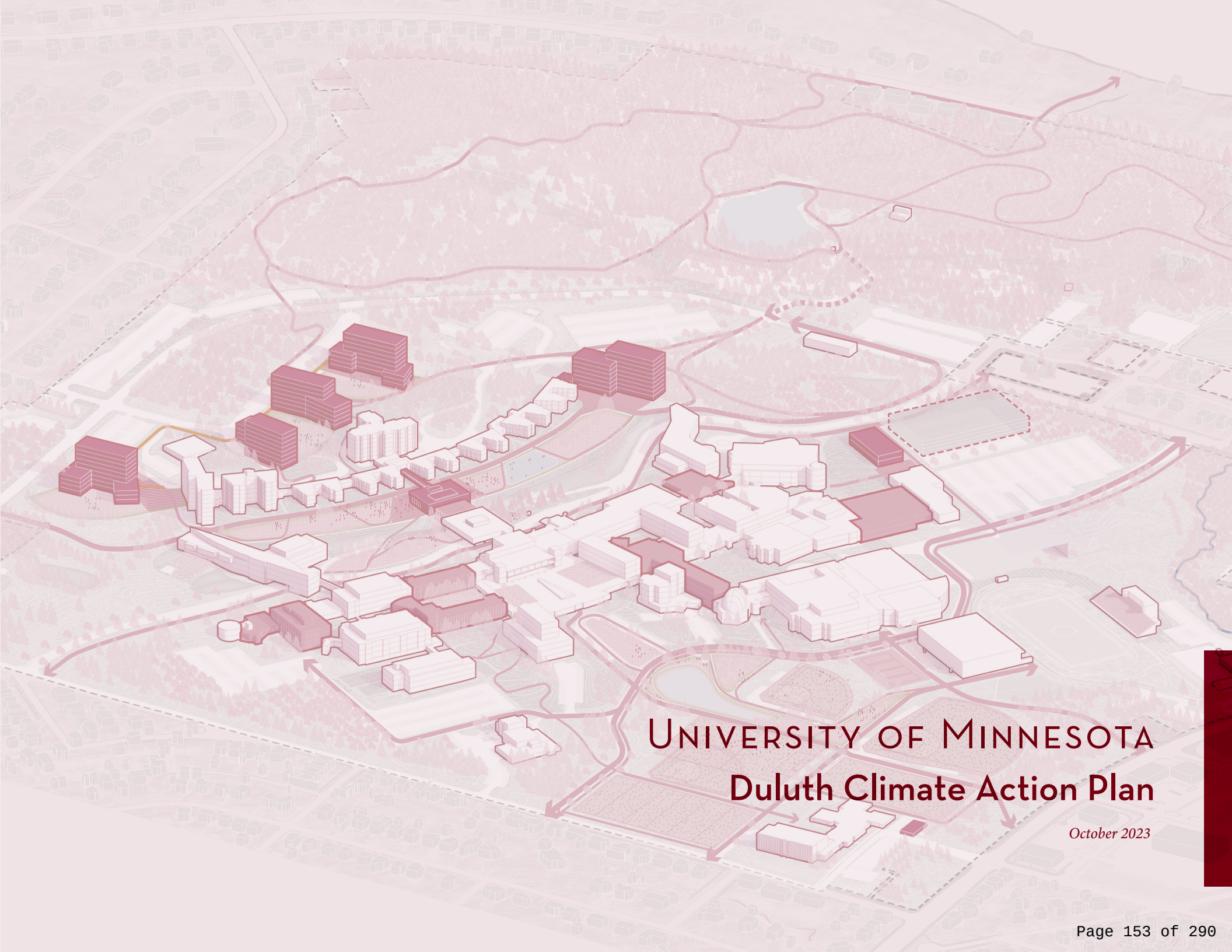
The Hermantown location is situated at the headwaters of Miller Creek, in close proximity to the Duluth airport. The building which houses the research was constructed in the 1980s as an air defense command center. Today, it houses central NRRI administration, 19 research labs, and flexible pilot space serving the needs of land, wildlife, water, and mineral research. mineral research. Potential needs include expanded laboratory facilities, and converting office spaces into flexible laboratories to increase research capacity and enhance opportunities for collaboration with research partners, faculty, and students.

The 27-acre NRRI site in Coleraine focuses on minerals, metallurgy, and bio-based research. Formerly the property of the United States Steel Corporation, buildings on the site were built in 1930s and earlier. Potential needs include a new process technology building for metallurgy research



Aerial photo of the Natural Resources Research Institute (NRRI)

SASAKI AEI Affiliated Engineers TOOLE DESIGN



University of Minnesota
Duluth Climate Action Plan

October 2023

The University of Minnesota Duluth's Land Acknowledgement

We collectively acknowledge that the University of Minnesota Duluth is located on the traditional, ancestral, and contemporary lands of Indigenous people. The University resides on land that was cared for and called home by the Ojibwe people, before them the Dakota and Northern Cheyenne people, and other Native peoples from time immemorial. Ceded by the Ojibwe in an 1854 treaty, this land holds great historical, spiritual, and personal significance for its original stewards, the Native nations and peoples of this region. We recognize and continually support and advocate for the sovereignty of the Native nations in this territory and beyond. By offering this land acknowledgment, we affirm tribal sovereignty and will work to hold the University of Minnesota Duluth accountable to American Indian peoples and nations.

Table of Contents

Introduction 1

Introduction

In its Sixth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC)[1] finds that human-induced global warming is responsible for 2°F of warming and documents its impacts. Human generated emissions of carbon dioxide and methane are primary drivers of climate change, and thus are the focus of global and local activity to reduce emissions. Impacts of climate change in Minnesota are evident, including destruction or accelerated deterioration of property, new and exaggerated challenges to public health and reduced agricultural yield. Residents of St. Louis County, home to the City of Duluth, will continue to see a gradual increase in the average daily maximum temperature and in the number of high heat days[2] (Figure 1).

The Minnesota Pollution Control Agency, Minnesota Department of Health, and the Department of Natural Resources are state government entities which apply the findings of the IPCC, the US government, their own research, and that of the academic community to inform the Minnesota Legislature and public about climate change. These entities enact programs and policies to limit in-state activity that contributes to climate change, while mitigating its impacts, and documenting the consequences of climate change in the state such as higher temperatures, more extreme storms with intense flooding, and alterations to ecosystems. The Minnesota Climate Change Subcabinet, inclusive of the aforementioned agencies along with the Governor's Advisory Council on Climate Change, has developed the Minnesota Climate Framework that sets a vision on how to address and prepare for climate change. The State of Minnesota has committed to carbon neutrality by 2050.[3]

The University's strategic plan, MPact 2025, operationalizes the historical and institutional commitments to climate mitigation and adaptation by stipulating that each campus must have a climate action plan in place by 2025. The burdens of environmental pollution, including those associated with climate change, are disproportionately borne by Black, Indigenous, and people of color (BIPOC), people in poverty, and the disenfranchised. While the Climate Action Plan will lead to reducing carbon pollution and other local air pollutants that negatively impact human and environmental health in census tracts identified as environmental justice areas of concern by the Minnesota Pollution Control Agency, much more work remains to be done. As such, environmental justice endures as an important issue to the University.

The University of Minnesota Climate Adaptation Partnership brings together the University's resources of research and learning with the state's communities to advance capacity-building and climate-informed activity. The City of Duluth's Climate Action Work Plan 2022-2027[4] follows the city's 2021 declaration of a climate emergency, recognizing the effects of climate change that are occurring in the region and the urgent need for action. The action plan commits to reducing emissions related to city operations, strengthening community resilience, and activity to enable climate action effectiveness.

The University of Minnesota Duluth 2023 Climate Action Plan (CAP) was developed in coordination with the 2023 Campus Plan, and aims to complement the City of Duluth's efforts. The CAP documents UMD's commitment and action plan to reduce its greenhouse gas emissions and mitigate climate change impact on campus. It provides a 30-year planning horizon for UMD to mitigate its greenhouse gas (GHG) emissions (Scopes 1, 2, and 3 emissions associated with commuting to and from campus)[5]

1 The Intergovernmental Panel on Climate Change synthesizes the work of nearly 1,000 of the world's top scientists in the study of climate change, its impacts, mitigation, adaptation, and vulnerability. It issues publications used throughout the globe as the guide in setting national policy, rules and practices to mitigate climate change.
2 https://crt-climate-explorer.nemac.org/

3 https://climate.state.mn.us/minnesotas-climate-action-framework

4 Created in collaboration with the Great Plains Institute
5 Scope 1 emissions are direct GHG emissions that occur from sources that the campus controls. UMD annually inventories fugitive emissions, fertilizers, fleet, heating and cooling (Scope 1 emissions); purchased electricity (Scope 2);

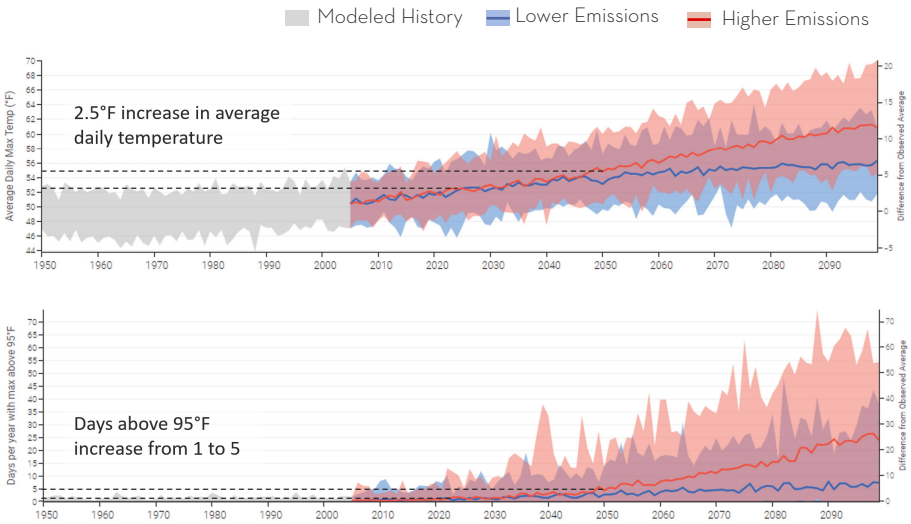


Figure 1: St. Louis County, Minnesota modeled gradual change in temperature. Source: NOAA

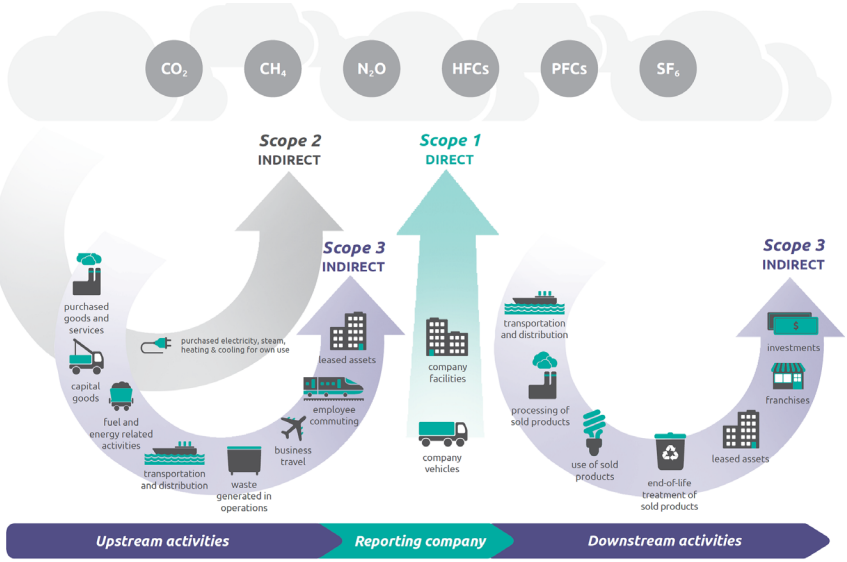


Figure 2: Scope emissions. Source: USEPA.

while providing for the projected energy needs associated with modeled climate change for St. Louis County. The plan also outlines preliminary findings related to climate adaptation and resilience as it relates to UMD's infrastructure, environment, and community. The CAP was guided by campus leadership and supported with detailed attention from Duluth campus staff responsible for campus sustainability and energy and utility systems.

and air travel, commuting, and waste generated in operations (Scope 3).

The goals established for the CAP are:

1. Realize carbon neutrality by 2050, or sooner
2. Reduce the operating cost associated with use of natural gas and electricity
3. Increase reliance on renewable energy, particularly on-campus installations
4. Preference to avoid entering into power purchase agreements or procuring renewable energy credits or offsets
5. Ensure performance standards are met in replacing heating and cooling systems, specifically by:

a. Providing the same or improved thermal comfort and air quality

b. Providing the same or reduced maintenance burden

c. Ensuring the same or enhanced reliability and redundancy

d. Employing technologies that are proven and can be readily approved by the authority having jurisdiction

e. Providing for a system that can be phased in its installation and that anticipates the operational life constraint associated with central heating plant boiler #4 .

UMD Climate Action Heritage 2

UMD Climate Action Heritage

UMD first inventoried its GHG emissions in 2007; in 2008 the University of Minnesota system committed to carbon neutrality by 2050 and to integrate climate change into curriculum, research, and outreach. In response, UMD issued the 2011 Energy Action Plan – Version 2.0, formalizing its target of 25% GHG emissions reduction by 2020 from the campus' 2007 emissions (57,653 metric tons of carbon dioxide equivalent or MTCO2e) and carbon neutrality by 2050. The 2011 plan observes that 92% of its total emissions are attributed to operating campus buildings. It recommends:

- Ensuring the new construction is more energy efficient compared to the existing building stock
- Investing in energy savings measures in existing buildings
- Scheduling and setting points for heating and cooling to reduce energy use
- Evaluating the opportunity to eliminate use of Number 6 fuel oil in generating steam and combined heat and power
- Enhanced campus engagement – education, research and outreach

The 2011 plan addresses the campus interest in renewable energy and provides insights into the cost and other barriers to on-campus implementation. It outlines interest in decreasing emissions related to campus commuting and waste management. Activity has continued as evidenced in the campus exceeding its 2020 GHG emissions reduction goal.

Using 2007 as the base, the campus intended to reduce its GHG emissions by 25%, and ultimately realized a 29% reduction in 2020. It is also evidenced in UMD's participation in the AASHE STARS program[6] (2011, 2016 and 2019 reports), for which UMD earned Gold status in 2019. The 2019 STARS report shows comprehensive involvement in campus sustainability and a reduction in Scope 1 and Scope 2 GHG emissions from 5.22 metric tons of CO_2 equivalent per in weighted campus user in 2007 to 4.77 tons per campus user in 2018. This is a 9% reduction of emissions per campus user[7] (Figure 3).

6 The Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking, Assessment & Rating System

7 Weighted campus users is the calculation of campus occupants proportionate to the time spent on-campus. This calculation can normalize emissions data overtime. Between 2007 and 2018, UMD experienced a 12% emissions reduction, some of which can be attributed to the 4% reduction in weighted campus users. By normalizing the data by users, UMD can show emissions reduction progress unattributed to a decline in campus users.

Bagley outdoor classroom

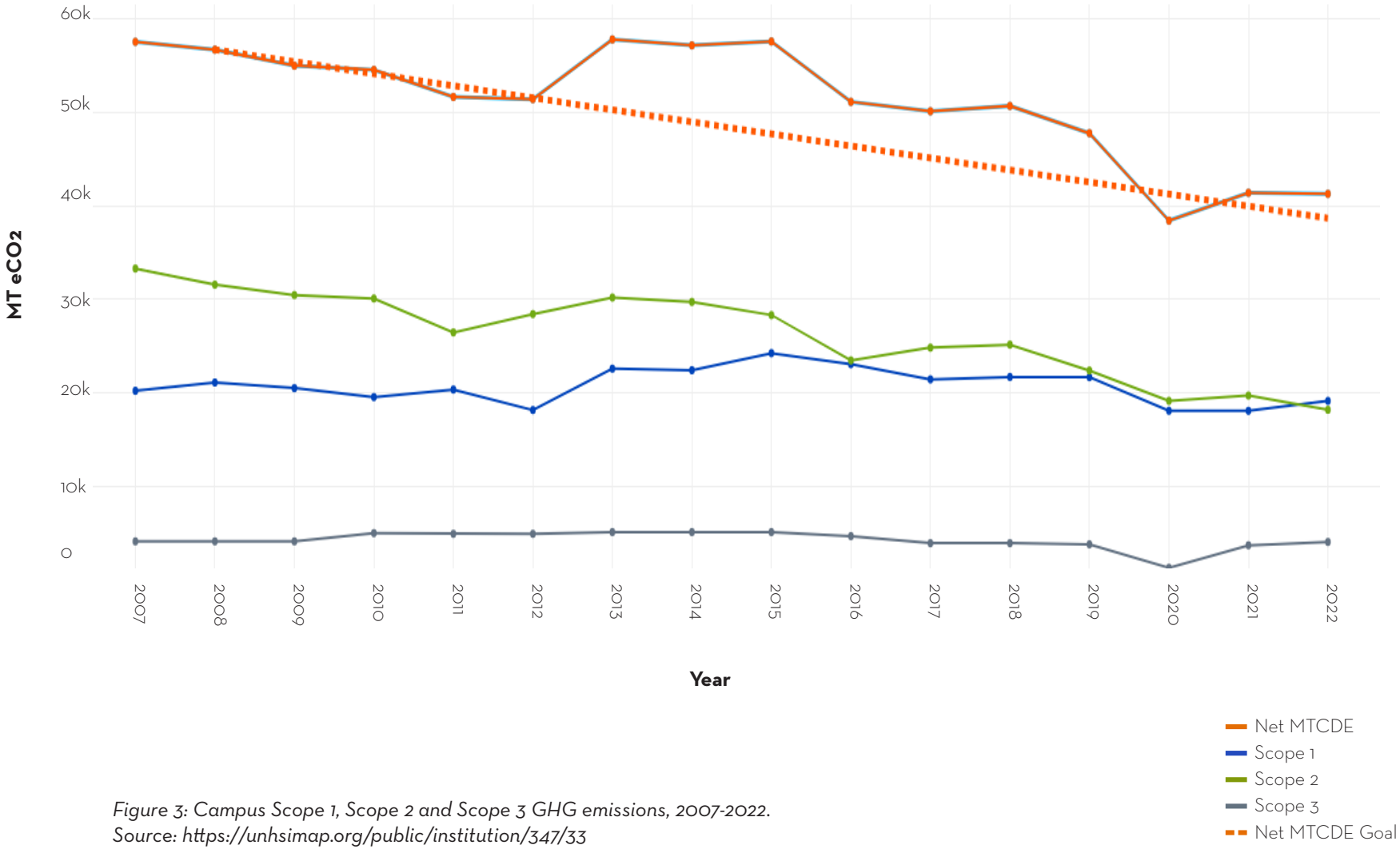


Figure 3: Campus Scope 1, Scope 2 and Scope 3 GHG emissions, 2007-2022.
Source: https://unhsimap.org/public/institution/347/33

Campus And Climate Action Plan Framework

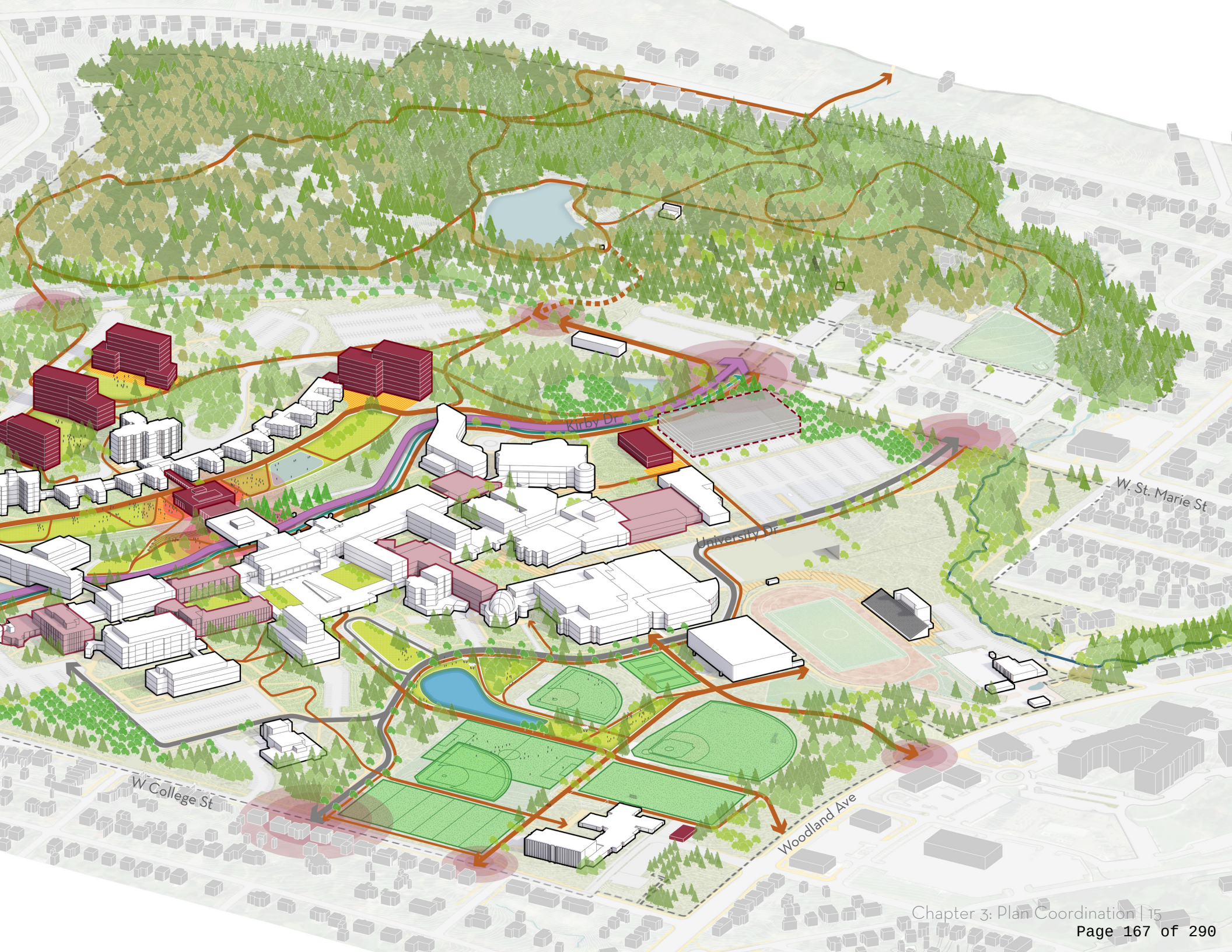
3

Campus and Climate Action Plan Framework

The University of Minnesota Duluth Campus Plan Update (Fall 2023) and the Climate Action Plan (CAP) were developed together as a comprehensive Campus and Action Plans Framework to ensure deep integration of thought through a shared process of broadly engaging the campus community and key stakeholders from the University of Minnesota system in the plans' development and recommendations. The two plans shared a process rich in engagement with Executive and Advisory Committees, as well as targeted involvement with faculty, staff, and students through interviews, open houses and map-based data collection activities. UMD staff also served in a dedicated way, as the CAP Advisory Committee. Both plans benefited from guidance from the University of Minnesota's Planning, Space and Real Estate Office and the Office of Sustainability. Further information about the planning methodology and stakeholder process is provided in the 2023 Campus Plan Update companion document.

The Campus and Climate Action Plans Framework is primarily concerned with the 250 acres of UMD's main campus. Ideas for physical improvements to campus circulation, building renewal and replacement, enhanced sports and athletics facilities and better protected natural areas are detailed in the Campus Plan. Details of how to accommodate these investments while realizing GHG emissions goals are the substance of this plan. The campus context is valued in both plans: considering campus connections to the city's road and open space networks; analyzing opportunities to increase the campus community's use of public transportation; improving the welcoming nature of the campus for members of the larger community to participate in university arts, sports, and cultural events; and in recognizing the need for investment in UMD's buildings that are located elsewhere in the region.

Throughout the process, the CAP Advisory Committee accessed a proprietary, dynamic, web-based planning tool created for this endeavor. Together with the consultant team, the CAP Advisory Committee used the dynamic planning tool as a platform to test the technical, practical, and cost implications of options to reduce campus emissions. With issuance of this plan, the UMD Decarbonization Planning Tool (Planning Tool) is available to UMD for its continued use. In the near-term, it will add value to the campus as it undertakes a more detailed study of its energy and utility plan which will respond to the climate action plan, adding detail to the analysis contained herein.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The Roadmap for UMD Decarbonization

4

The Roadmap for UMD Decarbonization

Nearly 90% of UMD campus' GHG emissions are attributed to heating, cooling and powering of its buildings (Figures 5 & 6). Campus heating and cooling relies on natural gas provided by Comfort Systems (City of Duluth). Electrical power is provided by Minnesota Power and 102.1 kW of on-campus solar capacity (which equates to approximately 1% of total electricity use).

The Climate Action Plan employs, as a foundation, the logic that carbon neutrality is best realized by reducing energy demand through building energy savings measures (ESMs), ensuring efficient energy delivery through district systems and engaging clean

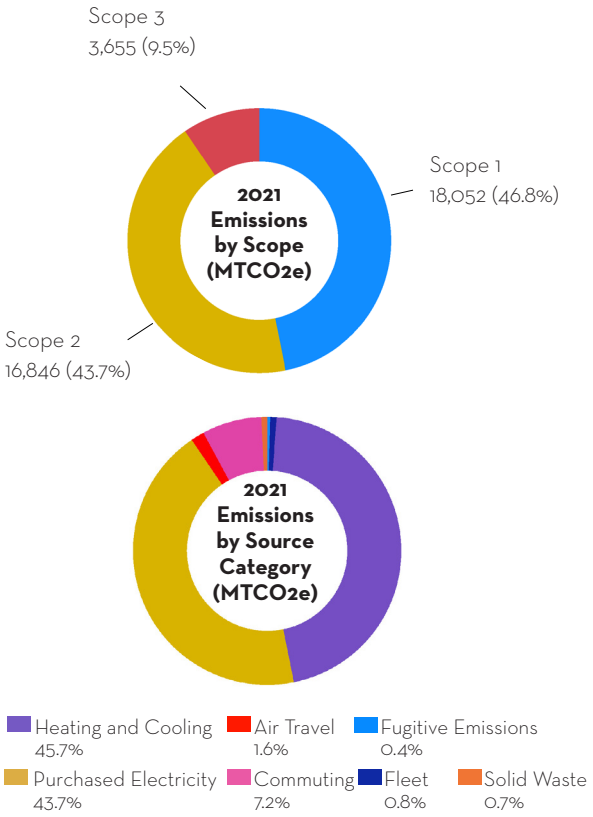


Figure 5: Campus greenhouse gas emissions by scope and source category.

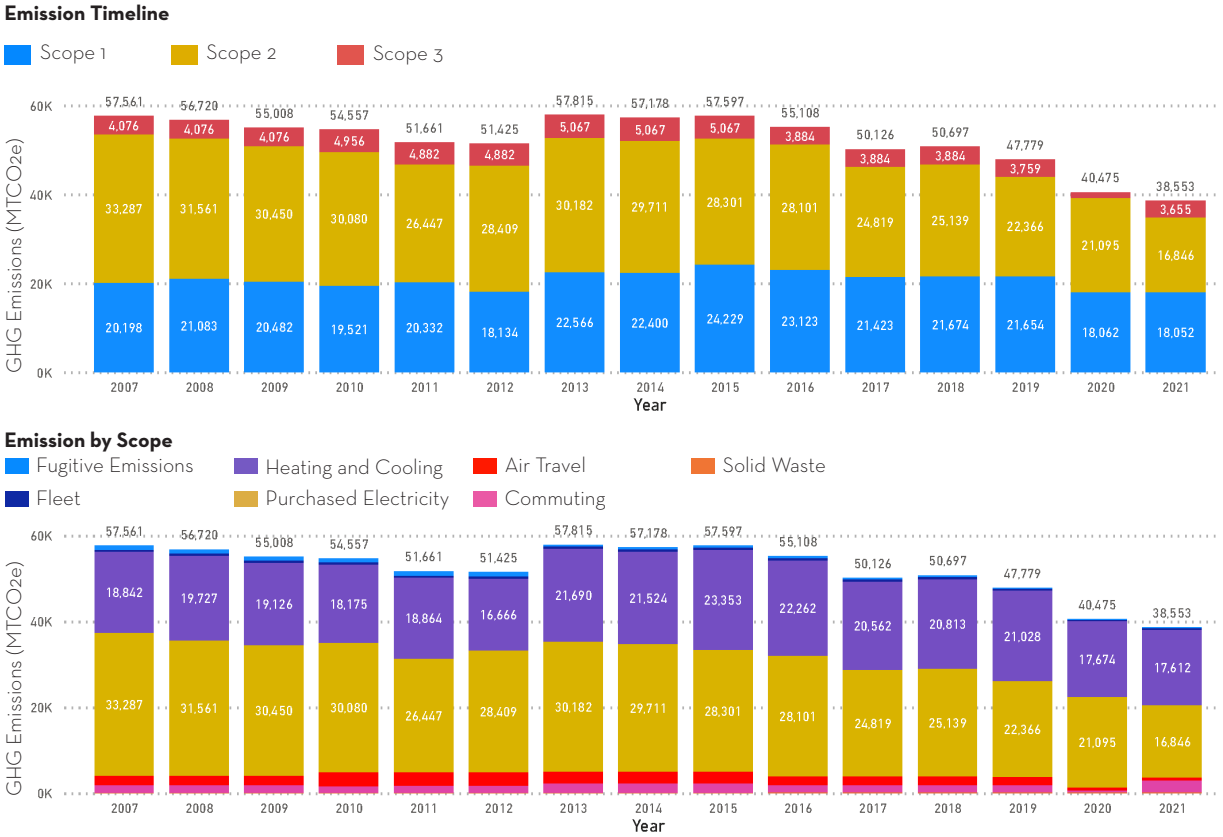


Figure 6: Campus greenhouse gas emissions over time (Data source: University of Minnesota Duluth. Graphic: Affiliated Engineers, Inc.)

energy supplies (Figure 7). As expressed through life cycle analysis, this combination results in the best cost and optimal operational certainty. An important influence on this plan is the expectation that electricity in Minnesota will be generated entirely from renewable sources by 2040 (Figure 8). Passed in 2023, Minnesota law (Senate File 4) accelerates the state utilities' ongoing progress. This makes the 2023 CAP's goal of carbon neutrality by 2050 or sooner much less challenging to accomplish.

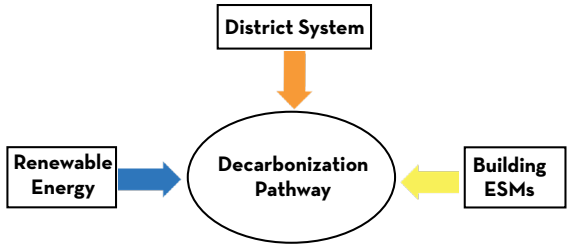


Figure 7: Decarbonization is best realized through a three-pronged approach. (Source: Affiliated Engineers, Inc.)

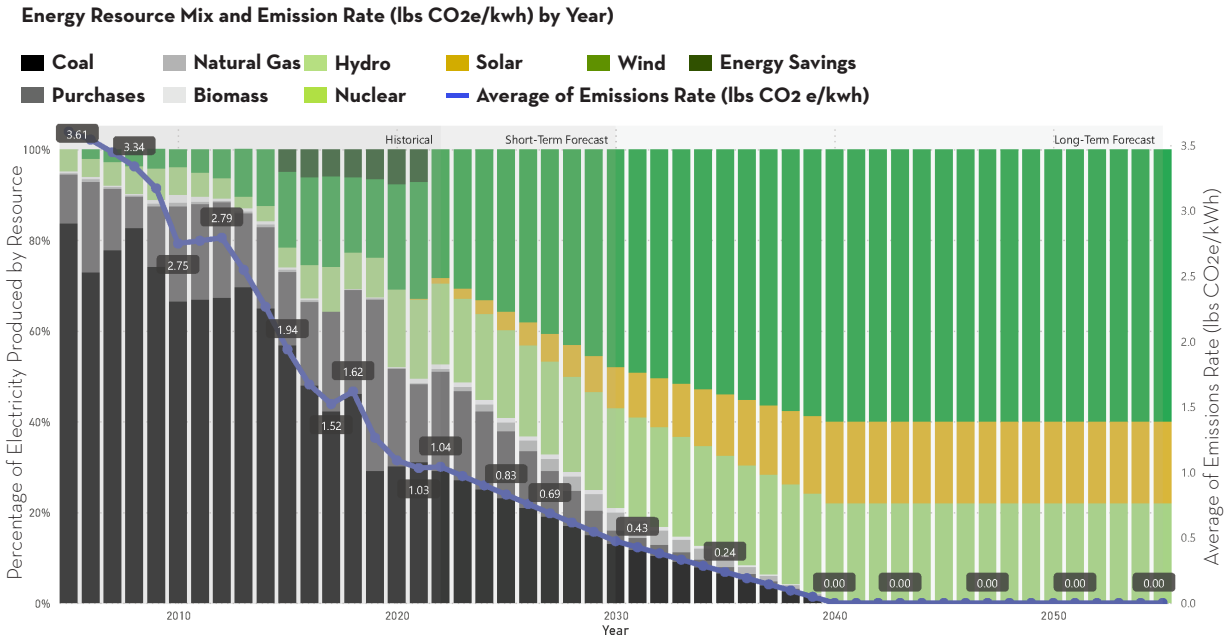


Figure 8. Illustration of likely Northern Minnesota grid transition to clean energy (Source of analysis and illustration: Affiliated Engineers, Inc.)

Building Energy Demand Management

Building energy demand management reduces energy use and improves energy efficiency. In existing buildings, this is recognized as investing in building energy savings measures through systematic upgrades and renovations. At the campus scale, it can also occur through decommissioning buildings and constructing new buildings that are exemplary in energy performance.

The 2023 Campus Plan Update describes the need for major renovation to some campus buildings. While renovations accommodate changed programmatic needs, UMD also has facility condition improvement needs (Figure 8). A 2022 facility condition assessment attests to the need for $445M in capital investment in campus buildings. The Campus Plan calls for addressing these needs in part through strategic building decommissioning as well as targeted, comprehensive investment in renovating existing buildings.

In assessing program needs and building conditions, the Campus Plan calls for decommissioning seven buildings and constructing six new buildings. If implemented in full, changes to campus facilities are

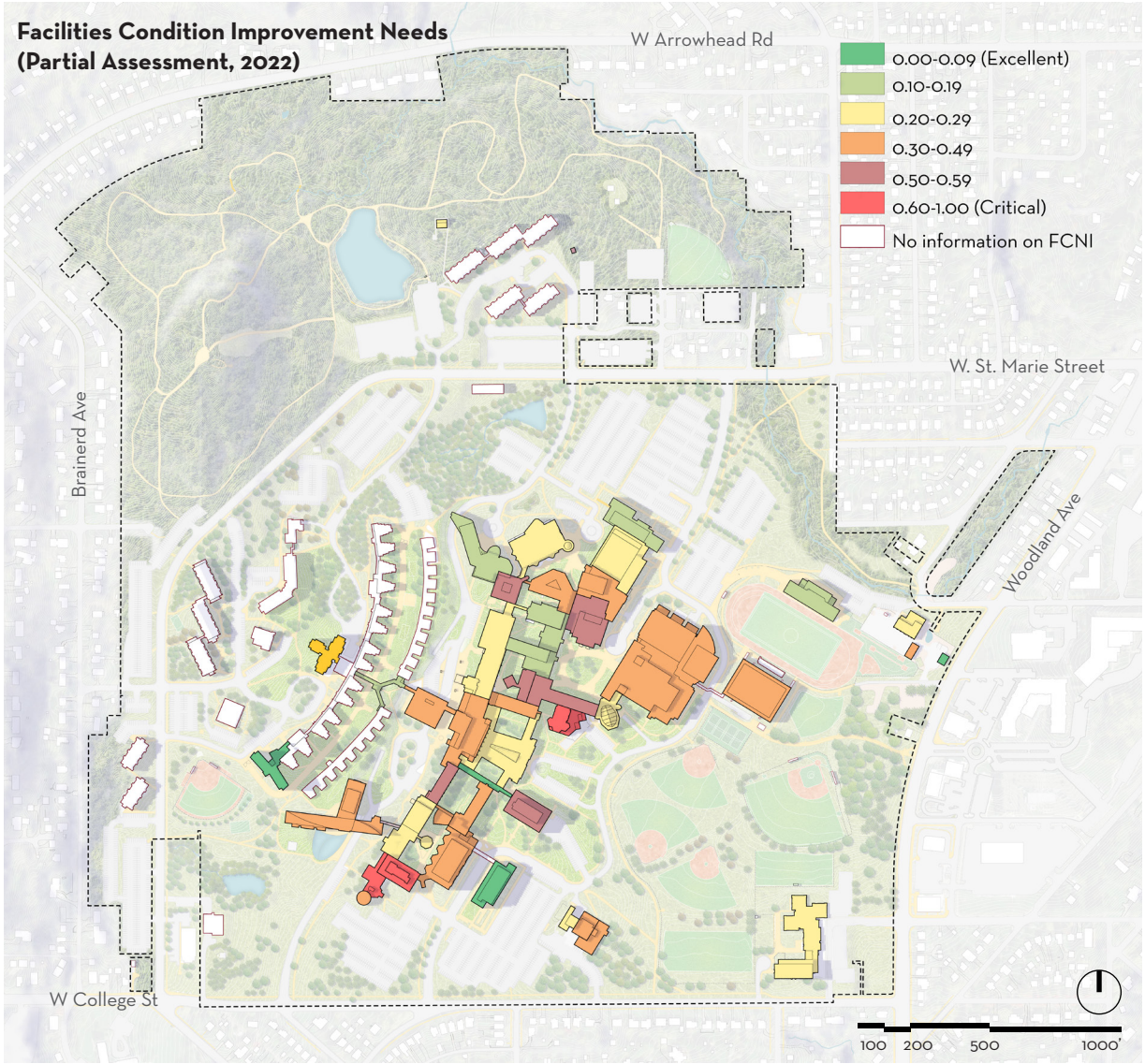
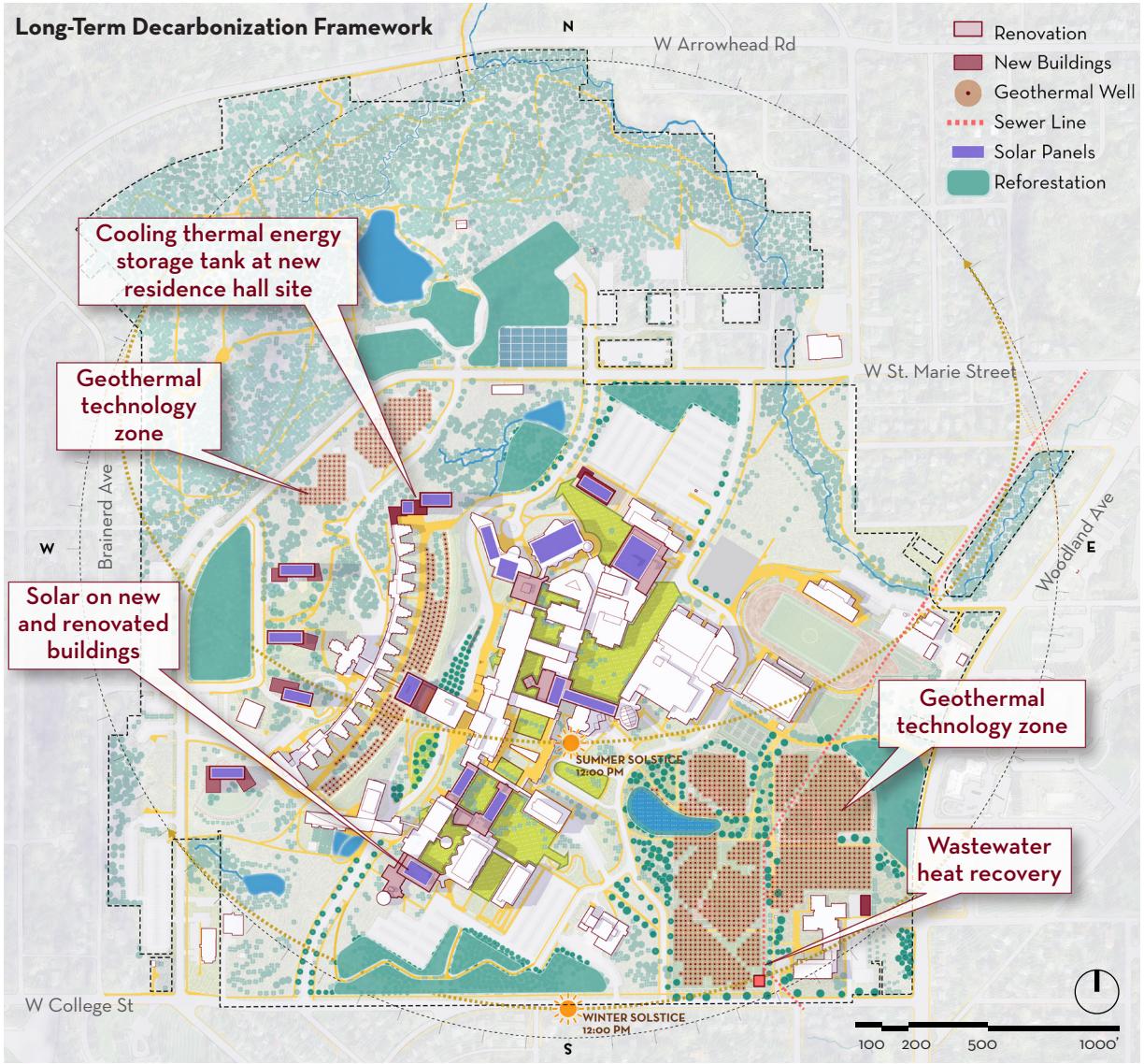


Figure 8. UMD Facility Condition Improvement Needs (Source: ISES Corporation, illustration by Sasaki Associates)



estimated to include:

- A net increase of 78,000 SF of residential life buildings
- A net increase of 60,000 SF of student life facilities
- A net increase of 35,000 SF of health clinic space

The goal of reducing building energy demand on campus is applied to the six new buildings in this plan, assuming that they will be all-electric and highly energy efficient. This will accelerate current the implementation of the 2030 Energy Standard by implementing a zero-carbon standard to all future new construction.[8]

8 The University currently applies the energy and carbon emissions performance targets established by the Minnesota B3 Sustainable Building 2030 Energy Plan Standards (b3mn.org/2030energystandard) for all new construction and major renovations, which was developed by the UMN Center for Sustainable Building Research. The standard is based on Architecture 2030 and sets targets for buildings to become more energy efficient and less carbon intensive in their operations. As an example, buildings constructed in 2023 under the standard must be 80% more energy efficient and less than a comparable building constructed in the baseline year of 2003.

Figure 9. Proposed Long-Term Decarbonization Framework. This strategy integrates investment in zero-carbon heating and cooling systems, as well as solar PV, into renovations and new construction proposed in the Campus Plan Update. Illustration courtesy of Sasaki Associates.

	2021 Emissions (MTCO2e)	Campus Plan Near-Term Emissions (MTCO2e)	Campus Plan Long-Term Emissions (MTCO2e)
Scope 1 Heating, cooling, and fugitive emissions	17,760	148*	0
Scope 1 Fleet	292	119**	0
Scope 2 Purchased electricity	19,689	0	0
Scope 3 Commuting	2,222	991	345***

Figure 10: Campus greenhouse gas accounting focuses on Scope 1 and Scope 2 emissions. Scope 3 emissions outside of commuting are also a concern of the UMD Office of Sustainability, which is committed to communicating, educating, and inspiring action to integrate sustainability into all aspects of campus life.
**Remaining fugitive emissions from refrigerants and fertilizers.*
***Accounting for a 70% reduction in fleet emissions from the 2018-2022 average.*
****Emissions remaining from commuting will need to be addressed through innovation, emerging technology, or carbon offsets to meet the carbon neutrality goal.*

The 2023 CAP factors in the energy advantages to be gained through the Campus Plan's call for comprehensive renovation in some campus buildings. It also assumes that the burden of addressing the heating, cooling and power related upgrades identified in previous facility condition assessments to be part of the base case decarbonization model.

As a companion to the major renovation projects and assumed investment to address deteriorating facility conditions, the Planning Tool analyzes the opportunities to invest in building energy savings and conservation measures. These measures are grouped by low, medium and high costs, which report on estimated first cost and savings (electric and natural gas). Because of Minnesota Law (Senate File 4), the emissions value of reducing natural gas (rather than electricity) through energy savings measures is of prime importance.

Figure 10 illustrates the best case scenario for implementing the Campus and Climate Action Plan Framework using the CAP Advisory Committee's preferred decarbonization approach (see appendix for further detail). The University plans to immediately develop a energy and utility plan upon the completion of the CAP, which will further the analysis of this document in anticipation of capital investments.

Efficient Energy Delivery Through District Systems

Thirty-eight UMD campus buildings are connected to a central steam plant; 26 buildings are on independent systems.[9] The steam system is fed from three natural gas boilers in the central heating plant. The boilers are non-condensing and produce saturated steam at 135psi. The boilers have a total combined heating capacity of 200,000 lbs./hr. Boiler #4 is nearing the end of its serviceable life and will become increasingly difficult and expensive to keep operational. If Boiler #4 becomes non-operational, the campus will not have any heating system redundancy. The steam distribution system is mainly located in tunnels and within the connected buildings. It is well maintained and well insulated.

The chilled water system provides cooling to campus buildings. There are three main chiller plants (Swenson, CUB and Lund) that have a total cooling capacity of 5,200 tons. There are seven main chillers ranging from 11 to 25 years old. Some of the chillers have been rebuilt, which has extended their usable life. The chilled water is distributed to campus buildings through utility tunnels, buildings, and direct buried pipes. Twenty-two buildings are completely or partially air conditioned. Some buildings or spaces with insufficient cooling capacity have supplemental package air conditioning systems. UMD has three primary incentives to shift from its current steam system:

- Emissions reduction goals
- Transitioning to a system that is less expensive to staff and manage
- A timely transition from steam to hot water would avoid the need to continue investing in deteriorating equipment

Campus Energy Model

A thirty-year energy model was generated with companion modeling of thermal energy storage (heating, hot water, and chilled water storage), geothermal, heat balance and dispatch model.[10] This incorporates climate science models for temperature changes in St. Louis County, Minneapolis. Order of magnitude life cycle cost estimates were developed for a base case (business-as-usual) and each of the potential technology mix options. This then generated the seven best combinations of technical solutions (which technologies and what sizes or dimensions) for the campus to select as first and second choice technology mixes.

Utilizing the Planning Tool, the CAP Advisory Committee vetted 12 options to replace campus steam in combination with building energy demand management (low, medium, and high first-cost options). The campus selected a preferred and second option for decarbonization. The two share many attributes—low temperature hot water distribution, building energy demand, heating and cooling thermal energy storage, disabled economizer false cooling, exhaust air heat recovery, low temperature geothermal, and photovoltaic technology installed on rooftops of new and major renovation campus buildings. The preferred option also includes electrode boilers and wastewater heat recovery while the second option is unique in adding heat pumps and natural gas boilers for peaking and/or to be fueled with renewable natural gas.

9 The CAP analysis includes all buildings within UMD's GHG inventory, which does include offsite buildings such as NRRI, Glensheen, and others. In alignment with the campus plan, strategies for offsite properties are not included in this document and will need to be assessed separately.

10 The evaluation of alternatives that meet energy demand and the associated costs

On-Campus Renewable Energy

UMD uses on-campus solar PV to generate energy, as an educational tool for students, and as a visible expression of its commitment to reducing campus GHG emissions. UMD's preferred path and optional path to decarbonization both propose expanded use of solar PV arrays to satisfy approximately 1.5% of total campus energy demand at the close of the plan's 30 year term, or 766 kW, resulting in 855,647 kWh/year of electricity generation. To meet this goal, solar installations have been mapped to new construction, buildings undergoing major renovations, and others that are likely good candidates for solar.

Energy System Phasing

Recommended investments in campus thermal systems are organized geographically as five nodes. With the exception of new housing to be constructed on the eastern edge of campus in the timeframe of 2038-2053, each node of investment fits with the Campus Plan's 15-year vision (Figure 11). When implemented, campus energy strategies will be transformed. New construction of highly energy efficient buildings, renovations that enhance energy efficiency, and an expanded network of efficient energy production and distribution (central and district plants) will approximately yield an 89% reduction of greenhouse gas emissions using 2021 as the baseline.

Low-Temperature Geothermal Technology

Low-temperature geothermal technology involves circulating chilled water or another thermal fluid through closed-loop piping that is buried underground in either horizontal trenches or vertical bores. Stable underground temperatures enable the colder supply entering the loop to gain some heat before returning to the heat recovery chiller evaporators. This system can be used during the summer to reject heat from the conventional cooling system condensers back into the ground rather than using evaporative cooling towers or other heat rejection systems.

This looped piping acts as a heat exchanger where heat is transferred through the surface of the piping that is in contact with the earth. The capacity of the system is dependent on the specific heat and thermal conductivity of the circulating fluid, the thickness and thermal conductivity of the piping, the thermal conductivity of the backfill/grout, and the temperature difference and thermal conductivity of the surrounding earth (noting that the temperature difference to the surrounding earth varies seasonally and is influenced by the piping system effect). The total capacity of the system is a product of the specific capacity and the total surface area of the piping.

The appropriate size and type of a vertical system, such as is proposed for this campus, can be determined with software modeling and unit costs from local contractors. Typically, a one-acre bore field can yield a capacity of 150 to 750 tons by utilizing approximately 50 to 150 bores, depending on type.

Low-temperature geothermal is an excellent option for sourcing low-grade heat because it is scalable, works in all climates and most locations, has an expected life of 60 years or more with very low maintenance, and only requires the energy to drive circulating pumps. The largest barrier to this technology is initial capital cost, which is sometimes overcome with a full life cycle cost analysis with appropriate value assigned to reduced emissions. The space for drilling the bores can be repurposed after the system is completed and backfilled for use as open space, recreational space, parking, and in some cases for building construction.

Campus and Climate Action Framework

Near-term Framework (approx. 15 years)

- (A) New residence hall north of Griggs Hall to replace Burntside and Vermilion, pending enrollment demand
- (B) New health center
- (C) Parking ramp, if needed, north of new health and wellness center
- (D) Dining expansion and mobility hub
- (E) Reconfigured athletic field and recreation area with potential low-temperature geothermal ("geothermal") technology and stormwater pond
- (F) Visitor gateway
- (G) Enhanced pedestrian access to Bagley, Chester Park School
- (H) Reforestation (Multiple locations)
- (I) New linear park with geothermal wells
- (J) Kirby Drive is multimodal with limited vehicular access
- (K) Resolution on Woodland Ave access
- (L) Future campus support

Figure 11: The Campus Plan Near-Term Framework (15 years) (Source: Sasaki Associates)

The Planning Tool details a sequence of nodal investments distributed geographically from west to east. Identification of these nodes for infrastructure investment can be revisited in coordination with future capital improvements opportunities identified in the Campus Plan. The nodal phasing strategy described below illustrates one possible approach to the sequencing of decarbonization investments:

Node 1: Construct an all-electric residential hall and construct thermal energy storage tanks and geothermal field proximate to the residential hall.

Node 2: If sequenced after node 1, these investments will yield 12% carbon-free heating annually (campus cumulative estimate): Install geothermal field as part of Sustainability Corridor project; remove steam piping in the residence halls and expanding hot water system in its place; add temporary steam to hot water converter and pumps in extension/expansion dining facility for hot water system resiliency during the conversion process; and install exhaust/relief air heat recovery.

Node 3: Install steam to hot water converter and hot water distribution pumps in Lund plant; direct bury hot water lines from Lund to the Sports and Health

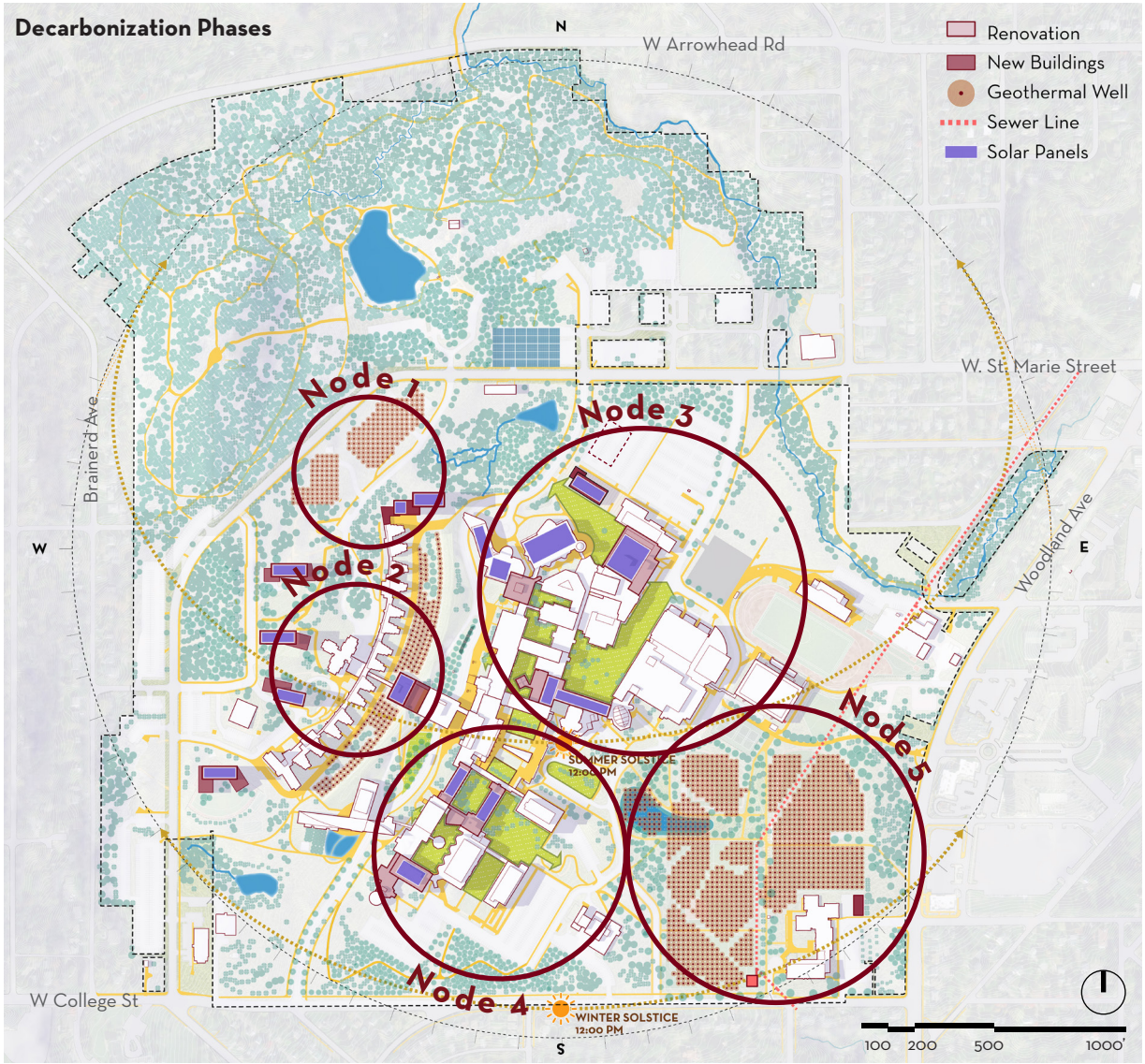


Figure 12: Climate Action Plan Decarbonization Phases (Source: Sasaki Associates)

Center; convert the Sports and Health Center to hot water; demolish steam and condensate lines and expand the hot water system throughout the northern half of campus buildings, connect the two hot water systems at the dining hall extension/expansion and at the new residence hall; and install exhaust/relief air heat recovery.

Node 4: If sequenced after nodes 1 through 3, the following investments will yield 50% carbon-free heating annually (campus cumulative estimate): demolish steam and condensate lines and expand the hot water system throughout the southern half of campus buildings; remove converter and pumps at dining hall extension/expansion; complete the hot water loop back to Lund plant; and install exhaust/relief air heat recovery.

Node 5: If sequenced after nodes 1 through 4, the following investments will yield 90+% carbon-free heating annually (campus cumulative estimate): install sewer heat recovery and geothermal fields; retire steam plant; replace all Lund chillers with heat recovery chillers; and replace cooling towers with pressurized thermal storage tanks.[11]

11 This phase can be executed at any time, but system benefits occur after full campus conversion to hot water heating . Swenson chiller plant can be removed when the Lund heat recovery chillers + geo/pond/sewer are installed. CUB chiller plant to remain online for CHW system firm capacity

Scope 3: Commuting

The UMD campus annual inventory of GHG emissions includes emissions attributed to students, staff and faculty commuting to and from the campus. This calculation is an estimate generated by information about home addresses, individuals' bus pass status, and assumptions about travel modes and distance to campus. Employing the Technical Guidance for Calculating Scope 3 Emissions[12], Toole Design modeled Scope 3 emissions to predict future reduction of commuter emissions associated with the adoption of electric vehicles in combination with a Transportation Demand Management Program, targeted campus mobility enhancements and shifts in commuter travel choices.

Without factoring the possibility that students, faculty and staff might engage in their responsibilities remotely, modeling suggests that appealing options to ride public transit, walk, bike or carpool to campus can generate an important shift from reliance on single occupancy car commuting. Assuming employment remains constant, modeling projects a decrease in faculty and staff commuting by single occupancy vehicle trips from current levels (estimated 1,151 trips/day) to 987 trips/day, a decrease of 14%. Assuming a future student enrollment of 10,800[13] with 3,000 students living on campus, the model projects a decrease in single occupancy vehicle trips among the off-campus student population from current levels (estimated at 1,181 trips/day) to 778 trips/day, a decrease of 34%.
A more appealing pedestrian experience on campus also influences the shift to walking and bicycling. Mobility enhancements, as described in the UMD Campus Plan, include:

- A multimodal mobility hub that provides travel assistance, wayfinding, is connected with pedestrian and bicycling facilities and incorporates campus transportation and parking management
- Improved pedestrian infrastructure (improved layout and enhanced experiential elements)

The Campus Plan calls for a transformed landscape which supports many objectives including those that will reduce commuter associated GHG emissions by prioritizing the needs of pedestrians and cyclists over motorized vehicles. Projecting mode shifts to be achieved in the near-term (15 years), and assuming Minnesota achieves 40% reduction in GHG from transportation sector in this timeline, the UMD campus may reduce estimated annual Scope 3 commuter GHG emissions:

12 Greenhouse Gas Protocol, World Resources Institute (https://ghgprotocol.org/scope-3-calculation-guidance-2)

13 10,800 is the approximate average of UMD enrollment from the last 12 years, based on UMD reporting. This future enrollment is a stand-in figure, and has not been validated by UMD.
https://idr.umn.edu/reports-by-topic-enrollment/enrollments

- Associated with staff and faculty commuting from 1,291 to 1, 102 metric tons of carbon equivalent
- Associated with student commuting from 930 to 550 metric tons of carbon equivalent.[14]
- Recognizing that a certain amount of UMD commuters will always drive, UMD will also prepare to support commuters that transition from an internal combustion engine (ICE) vehicle to an electric vehicle (EV).

UMD Fleet

As of 2022, the UMD fleet included 13 light duty vehicles, 7 medium duty vehicles, 15 passenger vans, 12 sedans, 10 SUVs and 17 transit vans. The University of Minnesota's goal is to reduce UFleet emissions by 70% from the 2018-2022 average annual emissions by 2033, by leveraging the following strategies:

- Transition from internal combustion vehicles to vehicles or modes with zero tailpipe emissions
- Reduction of fuel and energy usage of the UFleet by reducing vehicle miles traveled and improving fuel efficiency

14 This assumes that transit is via electric vehicles.

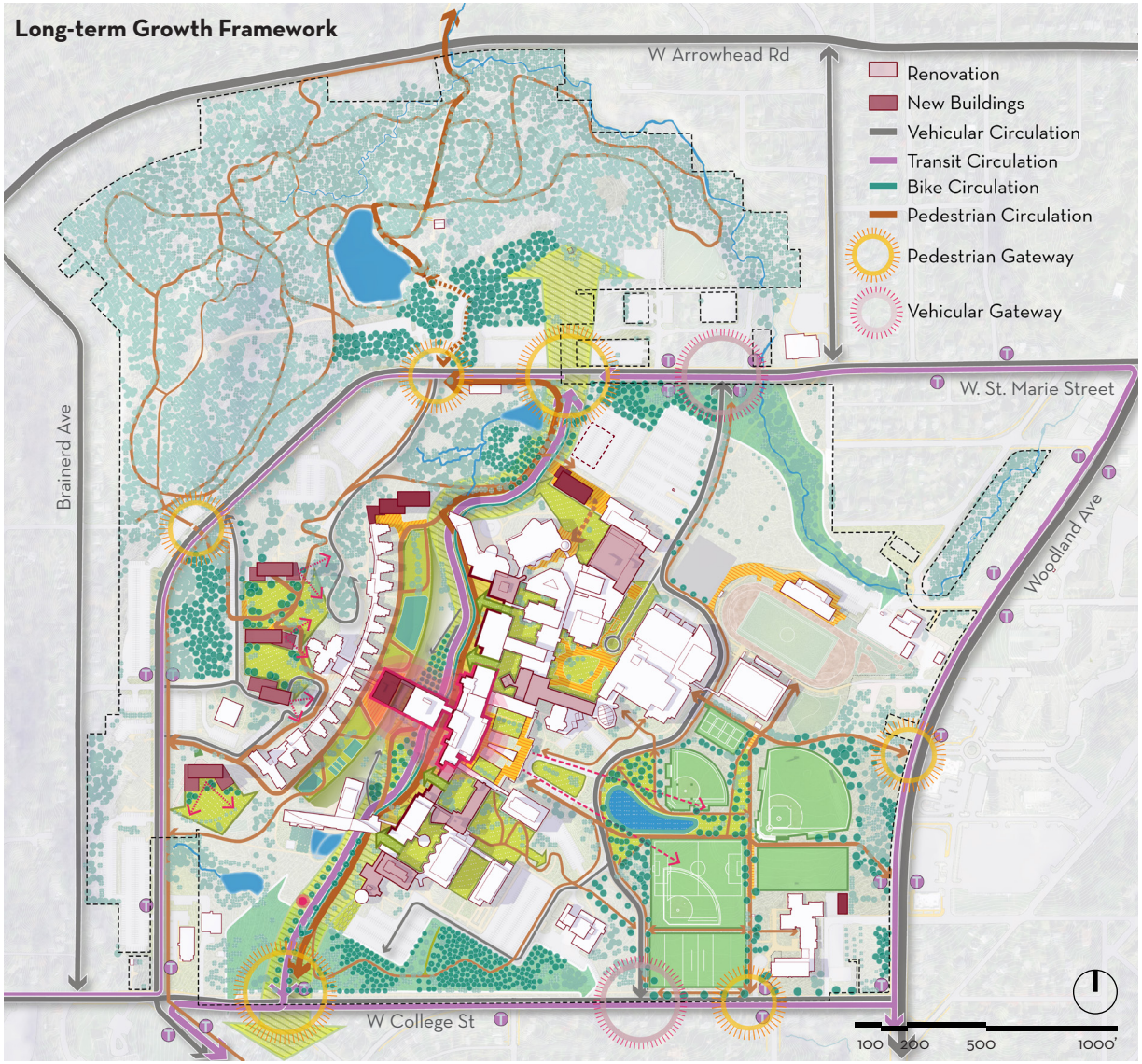


Figure 13: The Long-Term Framework of growth as documented in the Campus Plan(Source: Sasaki Associates)

Fugitive Emissions Reduction Strategies

Fugitive emissions are unintentional emissions from pressurized containment such as appliances, storage tanks and piped systems. These include refrigerants, such as those associated with use of compressors, condensers, and evaporators. Fertilizers, particularly in agricultural settings, produce fugitive emissions above a de minimis level. In the academic setting, fugitive emissions are also associated with equipment used in medical education and scientific research. Proper installation, preventative maintenance and repair are key to reducing campus fugitive emissions. Fugitive emissions can be prevented through deliberate selection of equipment, using risk of fugitive emissions as a value in procurement decisions.

Carbon Offsets and Sequestration

All IPCC models show the need for some carbon dioxide removal from the atmosphere to limit warming. While a goal of this plan is to avoid the use of offsets, many campuses ultimately rely on offsets relating to Scope 3 emissions, those that result from activities and assets not owned or controlled by the university. UMD counts emissions related to air travel, commuting and waste generated in operations as its Scope 3 emissions. In addition, the CAP does not account for many upstream and downstream emissions associated with University activity. The University can play an important leadership role in driving scientific understanding and practice of effective carbon dioxide removal programs.

Strategies to bring about this work will happen at a system level and include:

- Charge a task force to research and make recommendations on the best use and sourcing of carbon insetting, offsetting, and carbon removal credits
- Identify sources of funding to procure carbon credits
- Engage with and learn from academic expertise related to carbon dioxide removal and sequestration or utilization

Climate Adaptation 5

Climate Adaptation

Climate adaptation—taking steps to adapt to the threats of a changing climate—is often associated with resilience. Climate resilience is considered the ability to withstand shocks and stressors, like intense rainfall events or hotter summers, that could disrupt or impact campus infrastructure, natural systems, and community.

The City of Duluth Climate Action Work Plan, 2022-2027[15] calls for actions to improve the resilience of city-wide infrastructure that would increase UMD's ability to adapt and respond to climate change. For example, the plan calls to improve the resiliency of the water plant and distribution system through electricity service upgrades, which would directly benefit the University's resilience. Likewise, UMD's priorities align with the City's goals to reduce carbon emissions and strengthen community resilience.

Improving redundancies in the electric grid to other critical services will also be essential. UMD identified the risk associated with relying solely on a single upstream electrical distribution route to feed the campus. This risk can be addressed through partnerships with utility providers. On campus, UMD can increase the robustness of the building-specific emergency generator network and update campus emergency management/response. Other on campus infrastructure systems are generally resilient today and investments in the next generation of infrastructure utility systems will maintain redundancy and reliability by ensuring that future designs take climate change projections into consideration.

The opportunity to make natural systems on and adjacent to campus more resilient is expressed in the Campus Plan through the illustration of a new stormwater management facility, strategic reforestation, and the reduction of pervious surfaces. With the development of a sustainability corridor and recreation fields, UMD will also have an opportunity to increase native species or plantings with greater adaptability to climate change.

The Campus Plan recognizes the value of social resilience in the UMD community through design that supports both health and well-being as well as community connectedness. Community resilience will be strengthened through increased access to passive and active recreation and by increasing welcoming spaces to build social cohesion and connecting people with the outdoors. The Campus Plan features a new health center with additional square footage; improved walking, biking, and transit experiences; and upgraded critical facilities, like housing and food centers.

15 https://duluthmn.gov/media/12752/duluth-cawp_final_and_financememo.pdf

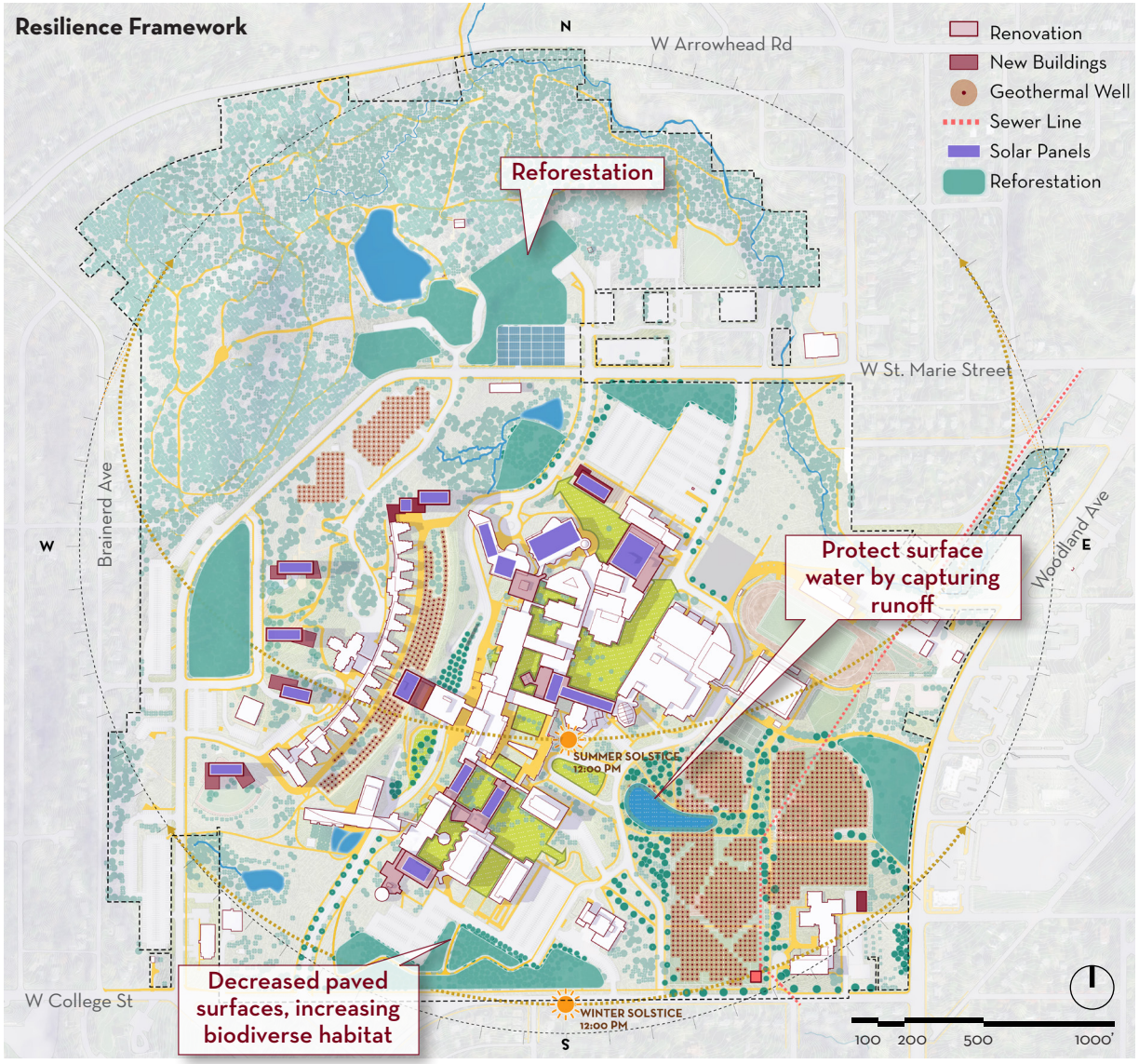


Figure 15: The Resilience Framework demonstrates comprehensive resilience strategies for the Duluth campus: incorporate climate change projections into campus infrastructure design; increase pervious surface; maintain redundancy of infrastructure systems; increase native plantings for habitat and shade; enhance surface water protection and stormwater management; improve physical access to health services; expand passive and active recreation to support improved health; and create welcoming spaces to build community and social resilience (Source: Sasaki Associates)

Acknowledgements 6

UMD Campus Plan Update and Climate Action Plan Acknowledgements

Interim Chancellor McMillan and the Executive Committee; Interim Vice Chancellor for Finance & Operations Bosell, Vice Chancellor for Student Life Erwin, Interim Executive Vice Chancellor for Academic Affairs Hietapelto, and Associate Vice Chancellor for Academic Affairs Mencl, provided direction and made sure recommendations of the Campus Plan and Climate Action Plan align with University of Minnesota Duluth goals.
The Executive Committee selected an advisory committee made up of representatives across UMD to provide guidance and direction to the planning team. The Advisory Committee included the following:

- Chuck Bosell, ITSS
- Kim Dauner, Faculty Senate Rep
- Julie Etterson, Biology, Institute on the Environment
- Forrest Karr, Athletics
- Pat Keenan, Student Life
- Jonna Korpi, Facilities Management/Sustainability
- Katy Morgan, Staff Senate Rep
- Susana Pelayo-Woodward, Diversity & Inclusion
- Shane Peterson, Facilities Management
- John Rashid, Facilities Management
- John Sawyer, Facilities Management
- Ella Stewart, Student Association Representative

The coordinated Campus and Climate Action Plans were informed through the participation of the following UMD campus community members:

- Climate Action Plan Subcommittee
- Facilities Subcommittee
- Multicultural Student Center
- Student Leader Open Forum
- Focus Groups
  - Athletics & Recreation
  - Deans & Research Directors
  - Dining Services & UMD Stores
  - Facilities Management
  - Health Services
  - Housing & Residential Life
  - Kirby Student Center
  - Sustainability
  - Transportation & Parking Services & Student Affairs

Thanks to all the students, faculty, and staff for their time and contributions to develop the UMD Campus Plan Update and Climate Action Plans, September 2023.

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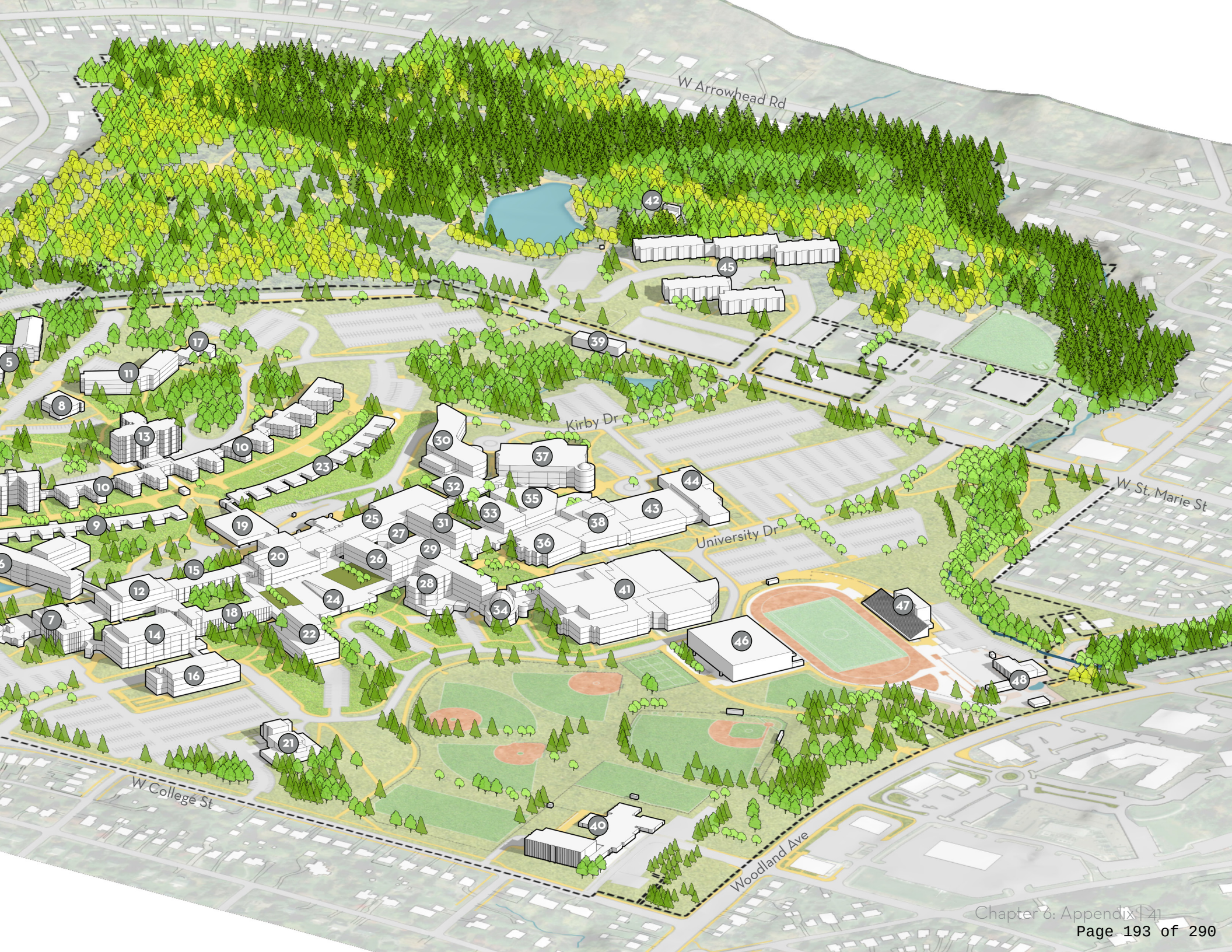
Appendix 7

2023 UMD Campus Buildings

1. Junction Apartments
2. WDSE
3. Ianni Hall
4. M.W. Alworth Planetarium
5. Goldfine Hall
6. James I. Swenson Science Building
7. M.W. Alworth Hall
8. Health Services
9. Vermilion Hall
10. Griggs Hall
11. Heaney Hall
12. Life Science
13. Lake Superior Hall
14. School of Medicine
15. Heller Hall
16. Heikkila Chemistry and Advanced Material Sciences
17. Heaney Hall Service Center
18. Chemistry
19. Residence Dining Center
20. Kirby Student Center
21. Lund
22. Darland Administration Building
23. Burntside Hall
24. Solon Campus Center
25. Kirby Plaza
26. Cina Hall
27. Tweed Museum of Art
28. A.B. Anderson Hall
29. Humanities
30. Labovitz School of Business
31. Bohannon Hall
32. Library Annex
33. Montague Hall
34. Weber Music Hall
35. Education Endazhi-ginkinoo'amaading
36. Marshall Performing Arts Center
37. Kathryn A. Martin Library
38. Engineering
39. CUB
40. Chester Park
41. Sports and Health Center
42. Bagley Classroom
43. Voss-Kovach Hall
44. Swenson Civil Engineering
45. Oakland Apartments
46. Ward Wells Field House
47. Malosky Stadium
48. Robert W. Bridges Fleet Ground Maintenance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University Dr
W. St. Marie St
W College St
Woodland Ave
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Glossary of Terms

This glossary of terms was provided to CAP Advisory Committee as a point of reference for decarbonization methods and terminology used during the plan's development.

Concepts

1. **Building energy savings measures** – means of eliminating energy waste as compared to energy conservation which are means to not use energy. In this plan, AEI does not differentiate between the two, but uses the term "building energy savings measures".
2. **Carbon neutral** – having a balance between emitting and absorbing carbon (reference to "carbon" is shorthand use for carbon dioxide) from the atmosphere. Carbon dioxide is the most common greenhouse gas and is sometimes used to represent all greenhouse gases. Other greenhouse gases are methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride.
3. **Low temperature hot water system** – a system that releases heat from the generator at temperatures that do not exceed 130°F. This system is more energy efficient than a steam system and has less stringent operating staff requirements.
4. **Re/retro-commission** – a systematic process to investigate, analyze and optimize an existing building's systems' performance. Recommissioning is used for the process when it is done for a building that has already been commissioned (typically done during the design-construction-occupancy period) while retro-commissioning is the term used to describe the same process when being done for a building which has not been commissioned .

Renewable Energy

1. **Biomass processing** – direct combustion, thermochemical conversion, chemical conversion or biological conversion of solid organic matter (such as wood, wood waste, agricultural crops, agricultural waste, biogenic materials in municipal solid waste, animal manure and/or human waste) to generate energy. Biomass represents 5% of the total primary energy use in the US.
2. **Biogas processing** – anerobic digestion of organic materials (such as animal manure, sludge, food waste) to create a gaseous compound to generate energy.
3. **Grid electricity** – an interconnected network for electricity delivery. Each state compels the electric utilities operating in its state to submit plans for growth and development, including commitments to decarbonizing.
4. **Grid renewable fuels**
   a. **Renewable natural gas (RNG)** – highly processed biogas used as a substitute for fossil fuel-based natural gas.
   b. **Green hydrogen** – hydrogen produced from renewable or low-carbon power.
5. **High temperature geothermal energy**– high temperature underground heat sources that can be used as a source for heat and/or power.
6. **High temperature solar thermal energy** – also known as concentrating solar thermal, it is used for heat and/or power generation.
7. **Hydropower** – also referred to as hydroelectric power, this technology uses the flow of moving water to generate electricity.
8. **Ocean energy** – this suite of technologies are in early stages of commercialization. They capture wave, tidal and ocean thermal energy as renewable energy sources.
9. **Small modular nuclear reactors (SMRs)** – generally sized at 300 Mwe or less and is a non-fossil fuel energy production technology. In February 2023 the NRC issued its first final rule to certify a modular nuclear scale technology (NuScale Power).
10. **Solar photovoltaics (PV)** – technology that converts sunlight to electricity.
11. **Wind energy** – technology that converts kinetic energy from wind to electricity.

Energy Savings Measures

1. **Controls**
   a. **Chilled water reset** – a controls strategy to improve the efficiency of the cooling system by raising the set point when the building cooling load is low. This can be done in reference to outdoor air temperature or independently.
   b. **Condenser water reset** – a controls strategy

that uses its measurement of outside air temperature to assign supply water temperature information to building systems.

c. **Demand controlled ventilation CO2 sensing** – sensors measure CO2 in a room and use that measurement to set the control for room ventilation.

d. **Hot water building loop reset** – a controls strategy that resets the building heating hot water loop temperature to a lower value when the outdoor air temperature is higher, usually in the summer when the heating demand is low.

e. **Increase IT/electrical rooms cold setpoints** – strategy to avoid overcooling IT/electrical rooms (without compromise to system performance).

f. **Pneumatic to direct digital control system** – the conversion of building pneumatic (air) controls to electronic direct digital controls (DDC). This allows for more precise control, more sophisticated control strategies and doesn't rely on compressors and potentially leaky pneumatic lines.

g. **Supply air temperature reset** – a control strategy to moderate an air handling unit supply air temperature based on outside air temperature and room demand.

2. **Envelope**

a. **Air sealing** – strategies to close cracks and openings in building envelope to limit exfiltration and infiltration, which lead to increases in heating/cooling energy usage .

b. **Insulation** – covering that reduces thermal heat loss/gain through the building envelope.

c. **Weatherization** – strategies, equipment and products that protect a building from the impact of sunlight, precipitation and wind and modifying the building to optimize energy efficiency.

3. **HVAC General Building System Upgrades**

a. **Connect to district system** – Connect the building to a campus district system (heating, cooling), which is more efficient than stand-alone equipment due to the size, scale and connection to other buildings.

b. **VFD pumps** – variable frequency drives allow pumps to slow down and speed up based on the system demand, which saves energy compared to traditional constant speed equipment.

c. **VAV air system** – variable air volume air systems supply a variable amount of airflow based upon the demand in the spaces/building. They are superior in performance compared to constant air volume systems because of the ability to ramp down energy usage when there is low demand.

d. **Run around loop**[1] – also known as coil energy recovery loops, this technology pumps heat from the exhaust air stream to preheat the incoming ventilation air without sacrifice to comfort or safety.

e. **Energy recovery wheel**[2] – a technology that supplements traditional heating systems by more efficiently humidifying incoming air, reducing the energy used by the heating system.

4. **Lighting systems**

a. **Lighting Controls** – means of reducing electricity demand associated with use and associated cooling burden.

i. **Daylight** – technologies that reduce the need for overhead lighting through effective use of natural and artificial (ambient) lighting.

ii. **Occupancy/vacancy** – technologies that adjust lighting in response to sensing occupancy of a space.

iii. **Scheduling** – technologies that schedule use of lighting (daily or weekly) for the purpose of providing lighting in accordance with anticipated use of space.

b. **LED upgrades** – replacing incandescent/fluorescent lighting with the superior performing light emitting diode (LED) lighting.

5. **Re/retro-commission**

a. **Airside economizer**[3] – the process of verifying the performance of building duct and damper arrangements (airside economizer) to establish that they operate as designed.

b. **Room T-stat and setbacks** – the process of verifying the performance of building temperature and humidity control systems to

1 Specific to district system

2 idib.

3 idib.

establish that they operate as designed.

c. **System scheduling** – the process of verifying the performance of building scheduling systems to establish that they operate as designed.
d. **System setpoints** – the process of verifying the performance of building system setpoints to establish that they operate as designed.

Space-Specific Energy Savings Measures

1. Indoor Sports and Recreation
   a. **Demand controlled ventilation** – technologies that control the rate at which outdoor air is delivered to a zone based on the number of the zone's current occupants.
   b. **Displacement ventilation** – air distribution technologies that introduce cool air into a zone at low velocity which creates buoyancy and shifts air to create desired ventilation.
   c. **Ice rink chiller heat recovery** – technologies that capture waste heat from the chillers used to maintain ice rinks.
   d. **Liquid pool cover** – products that slow evaporation when the air temperature is lower than the pool water temperature.
   e. **Shower/pool water heat recovery** – technologies that capture heat from waste water and use it to preheat incoming domestic cold water or meet other heat loads.
2. Laboratories
   a. **Air change per hour reduction** – a strategy to reduce the number of air changes per hour without compromise to comfort, safety or integrity of research.
   b. **Air change per hour setback** – a schedule (daily or weekly) that reduces the number of air changes per hour without compromise to comfort, safety or integrity of research.
   c. **Consolidated variable flow exhaust system**
      i. **Contaminate sensing** - allow the system to ramp down and save energy when contaminates are not detected
      ii. **Variable frequency drive** - allow the fan system to change speeds to meet the load demand at the time. This is advantageous compared to a traditional constant speed fan.
      iii. **Wind responsive** – system can ramp down when wind is detected because the pollutants will be removed naturally from the area
   d. **Fume hood zone presence sensing setbacks** – technologies that triggers the fume hood setback mode when the fume hood does not have users within an established distance from it.
   e. **High-efficiency fume hoods** – equipment with optimal energy efficient design
   f. **High-efficiency, ultra-low temperature freezers** – equipment with optimal energy efficient design.
   g. **Reduce fume hoods across buildings/campus** – a practice of installing the number and location of fume hoods within established limits (proximity of researchers to fume hoods and number of users per fume hood)
   h. **Variable air volume fume hoods** – technologies used with exhaust control systems that monitor and control the amount of air being exhausted from fume hoods.
3. Residence halls
   a. **EnergyStar appliances** – highly energy efficient equipment as certified and verified by the USEPA.
   b. **Low flow domestic hot water fixtures** – fixtures that restrict hot water flow (saving energy and water use) as compared to traditional fixtures.
   c. **Occupancy based receptacle control** – devices that turn equipment off when the device senses a space is vacant.
   d. **Occupancy control HVAC setback** – technologies that control HVAC according to the sensing of space occupancy.
   e. **Smart thermostats** – Wi-Fi enabled devises to automatically adjust heating and cooling.

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University of Minnesota Duluth Decarbonization Planning Tool

The University of Minnesota Duluth Climate Action Plan Dynamic Planning Tool is web-based and interactive. It has been provided to the CAP Advisory Committee for their use during the planning process and following its conclusion.

The Planning Tool houses :

- Background information used in developing the climate action plan. Topically, this addresses climate, climate change, weather, building information, historical emissions, 2021 emissions, grid decarbonization, steam, chilled water, combined heating and cooling, central steam plant Sankey diagram and electricity.
- Model inputs: macroeconomic factors, electricity rate model, trim heating fuel rate model, carbon rate model, building additions and removals, electricity grid decarbonization path.
- The baseline case: GHG emissions, carbon wedge, district system capital expenditures, building capital expenditures, cash flow and life cycle cost analysis.
- The ideation process: decarbonization framework, campus values, renewable energy and district energy.
- Screening: renewable and district energy.
- Building demand reduction opportunities: impact, by building and by energy savings measure.
- Option Models: key assumptions, options, phasing, year 30- monthly energy model, year 30- hourly energy model, year 30- monthly heat balance, year 30- hourly heat balance, option district costs and option building costs.
- Evaluation: GHG emissions comparison, options scatter, lifecycle cost analysis, cash flow comparison.
- Recommendations.
- Appendix: full options list, heating hot water thermal energy storage, chilled water thermal energy storage, geothermal and solar PV.

This study modeled life cycle costs (capital expenditures, building energy savings measures, electricity and natural gas utility costs, carbon costs, and photovoltaics costs) to compare the baseline practice to decarbonization options. Based on a 30 year analysis, the cost of maintaining the existing system is $330+ million. Alternatives range from $360 million to $413 million. The campus expects its upcoming energy and utility plan to focus on the preferred and second choice options, as described in the body of this report, including undertaking technology viability testing (geoexchange and capture-and-reuse of waste heat from campus sewer pipes) and refining the order of magnitude cost estimates included in this plan.

The objectives of structuring the study around use of this tool are:

- Sharing information and analysis with key stakeholders to the process.
- Providing information in language that is accessible to all stakeholders, whether technically trained/educated or not.
- Engaging stakeholder with full transparency to see and test inputs and assumptions to the energy modeling.
- Creating a complete documentation of the work so that the campus has easy access to it in the future, including for the University of Minnesota Duluth as its expectation is to follow this climate action plan with a detailed energy and utility study that will build off of this plan.

This plan considered the following investments that could be replacements for campus steam. Each comes with the obligation to ensure that campus buildings can operate with hot water rather than steam. These technologies were identified by the campus advisors as candidates for the mix of investments to replace the steam boiler central plant because of their cost, reliability, performance potential and ease of management:

- Cooling thermal energy storage,
- Disabled economizer false cooling,
- Electrode boiler,
- Exhaust air heat recovery,
- Heating thermal energy storage,
- Heat pumps,
- Low temperature geothermal,
- Low temperature solar thermal,
- Natural gas boilers (for peaking and/or operated

by renewable natural gas or hydrogen),
- Photovoltaic technology,
- Surface water heat recovery (from an on-campus pond), and
- Wastewater heat recovery.

GHG Emissions Calculation Model and Parking Analysis

Introduction

The UMN-Duluth Campus and Climate Action Plan (CCAP) includes an analysis of greenhouse gas (GHG) emissions from faculty and students commuting to campus. Emissions from commuting are classified under Scope 3 Emissions by the Environmental Protection Agency (EPA). The methodology the EPA uses to calculate Scope 3 emissions was originally developed by GHG Protocol, the international organization that standardized measurements of GHG emissions from public and private sector operations. This project included a scenario modeling exercise to evaluate shifts in mode shares and identify how more efficient use of transportation choices could benefit the campus sustainability and GHG goals. Two future scenarios were modeled, a more aggressive scenario and a more moderate scenario. Additionally, a parking analysis was done to estimate the number of future parking spaces that may be needed.

The same assumptions were used in both analyses. This appendix documents the methodology that was used and explains the variables in the calculation and primary data sources.

GHG Emissions Analysis

The analysis for calculating greenhouse gas emissions is based on the Average-Data Method found in GHG Protocol's Technical Guidance for Calculating Scope 3 Emissions. The full methodology is described in chapter 7 of this document.[1]

The expression used to calculate emissions from commuting is given below:

$$\binom{Number\ of\ commuters}{per\ travel\ mode} \times \binom{One-way}{commuting\ distance} \times (2) \times \binom{Commuting\ days}{per\ year} \times \binom{Emission\ Factor}{kg/mile}$$

Where:

- Number of Commuters = (Percent of trips taken for each mode) * (Number of commuters)
- One-Way Commuting Distance = [data provided in the SIMAP dashboard]
- Commuting Days per Year = [data provided in the SIMAP dashboard]
- Emission Factor = [data provided by EPA]

Assumptions

Table 1 lists variables and assumptions provided by UMD to the project team and used in the analysis.

Data Sources

SIMAP

Sustainability Indicators Management and Analysis Platform (SIMAP) is a carbon and nitrogen accounting platform that offers campuses an online tool to track and report campus-wide sustainability. Data entered into the dashboard by staff for 2021 were provided to the project team. There were some nuances identified in the data provided, which are described below.

The percent of trips taken by automobile, bus, or walking that were entered into the online dashboard do not add up to 100%. Rather, they sum to 99.9% for faculty/staff; and to 99.6% for students. This caused a slight discrepancy when comparing the sum of the number of commuters for each mode with the total number provided in SIMAP.

1 Greenhouse Gas Protocol. (2013). Technical Guidance for Calculating Scope 3 Emissions. https://ghgprotocol.org/sites/default/files/2023-03/Scope3_Calculation_Guidance_0%5B1%5D.pdf

The number of faculty/staff commuters is calculated by multiplying the number of commuters entered into SIMAP (1,592), by the percent of trips taken by each mode. Since the percentages in the given data do not sum to 100%, the number of commuters for each mode do not sum to 1,592, the number given in the data. Rather, they sum to 1,590.

The number of student commuters in the given data (9,880) includes both on-campus and off-campus. Since the model calculates GHG emissions from commuting to campus, the number of off-campus students was used in the calculation. The percentage breakdown of on- and off-campus students was given by UMD at 28% and 72%, respectively. This breakdown was applied to the calculation based on data provided to the project team. Thus, the number of off-campus students is 72% of 9,880, or 7,114. This number was used to multiply by the percentages of trips taken by each mode to identify the number of commuters per travel mode. Again, because of the discrepancy in percentages of trips taken by each mode, the sum of number of commuters for each mode is 7,085, which does not match the number of off-campus students at 7,114.

Table 1: Variables and Assumptions [provided by UMN]

Variable	Faculty/Staff	Students
Number of commuters	1,592	9,880
Number of students in the future	N/A	10,800
Percent of students on-campus	N/A	72
Percent of students off-campus	N/A	28
Number of one-way trips per week	10	8
Number of commuting weeks per year	50	32
Percent of trips taken by automobile	72.3	16.6
Percent of trips taken by bus	4.8	26.0
Percent of trips taken by walking	22.8	57.0
Average distance of automobile trip in miles	6.68	8.25
Average distance of bus trip in miles	2.8	3.6
Average distance of walking trip in miles	0.5	0.5

Most of these figures were taken from a screenshot of the SIMAP dashboard pasted in a Word file named "FY21_Commuting_Data_Simap_fromUMN.docx".

**Note that the percentages of trips taken do not add to 100% for either Faculty/Staff or Students.*

Environmental Protection Agency

Table 2 represents carbon emissions factors that were sourced from the EPA in a report titled "Emission Factors for Greenhouse Gas Inventories".

The original data is located on pages six and seven of the report, in Tables 10 and 11. This report is updated annually; the version used in this analysis is from 2022. The data is represented in the tables 2 and 3.[2]

The CO2e Emission Factor is the sum product of each gas emission factors with its global warming potential. The EPA employs this method since greenhouse gas emissions are typically reported in units of carbon dioxide equivalent (CO2e). Carbon dioxide equivalent is a metric used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP). The global warming potential is an index that represents the combined effect that a given gas has in the atmosphere; the index is developed by the Intergovernmental Panel on Climate Change (IPCC). Gases are converted to CO2e by multiplying by their global warming potential (GWP).[3]

Vehicle type for passenger cars also encompasses minivans, SUVs, and small pickup trucks, or otherwise vehicles with a wheelbase less than 121 inches. An emissions factor of zero was used for electric vehicles because the model is meant to calculate emissions specifically from commuting. According to the U.S. Department of Energy Alternative Fuels Data Center, all-electric vehicles have zero tailpipe emissions.[4]

2 Environmental Protection Agency (EPA). (2021). Emissions Factors for Greenhouse Inventories. https://www.epa.gov/system/files/documents/2022-04/ghg_emission_factors_hub.pdf

3 Intergovernmental Panel on Climate Change. (2007). Climate Change 2007 Synthesis Report. https://www.ipcc.ch/report/ar4/syr/

4 US Department of Energy. Alternative Fuels Data Center. https://afdc.energy.gov/vehicles/electric_emissions.html

Table 2: Carbon Emissions Factors [EPA, 2022]

Vehicle Type	CO2 Factor (kg/mi)	CH4 Factor (g/mi)	N2O Factor (g/mi)	CO2e Emission Factor (kg/mile)
Passenger Car	0.332	0.007	0.004	0.334
Bus	0.056	0.021	0.0009	0.057
Electric Vehicle/ Bus	0.000	0.000	0.000	0.000

Table 3: Global Warming Potential [EPA, 2022]

Gas	100-Year GWP
CO2 (carbon)	1
CH4 (methane)	25
N20 (nitrous oxide)	298

Methodology

Using the expression described above, and the 2021 SIMAP data provided by the University, the total amount of emissions from commuting to UMN-Duluth by faculty/staff and students is calculated at 2,222 metric tons of CO2e.

An analysis of future scenarios was also done using the GHG Scope 3 Emissions model. The GHG emissions from commuting were measured for two future scenarios with hypothetical changes in mode split. The future scenarios were initially labeled Scenario A, which tested an aggressive mode shift, and Scenario B, which tested a moderate mode shift. The scenarios were later relabeled to "near-term" (moderate mode shift) and "long-term" (aggressive mode shift) to align with language applied to the UMD Campus and Climate Action Plan. In each scenario, the percentages of trips made by automobile, bus, and walking were modified. The mode split percentages for each scenario are given in Table 4. Additional key points include:

- The long-term scenario is one in which an "aggressive" mode shift was tested, and envisioned a future where commuters switched from automobiles to bus or walking by a large margin. Modeling a more aggressive scenario with a significant mode shift was done to see how much closer it could move the University toward GHG targets, and to identify whether it could serve as a reasonable future target. This scenario, however, is less realistic due to the extent which commuter behaviors would need to change, and underscores the need to incorporate carbon off-set strategies to achieve decarbonizing the Scope 3 commuter trips.
- The near-term scenario is one in which the shift away from automobiles is more moderate. It was modeled to identify a target that would be more achievable in moving the University toward their sustainability and GHG objectives.
- A variation of the near-term scenario was modeled in which all bus commuting was done by electric buses. In this model, the emissions factor from bus commuting was set at zero.
- Future analysis accounts for growth in the student population at UMD. The number of students in the future is given in the data at 10,800, and is held constant in both the near-term and long-term scenarios. It is assumed that future enrollment at 10,800 is stable throughout the planning period.
- A mode shift can be achieved with the support of a robust transportation demand management (TDM) program that includes policies, programs and services to reduce single occupant vehicle commuting. A first, and priority action step, is to develop a TDM Plan.

Table 4: Commute Mode Split in Current and Future Scenarios

Group	Travel Mode	Current Scenario	Moderate (Near-Term)	Aggressive (Long-Term)
Faculty/Staff	Passenger Car	73.3%	62.0%	41.0%
	Bus	4.8%	10.0%	26.0%
	Walking	22.8%	28.0%	33.0%
Students	Passenger Car	16.6%	10.0%	3.0%
	Bus	26.0%	30.0%	33.0%
	Walking	57.0%	60.0%	64.0%

The analysis was furthered by running the GHG Scope 3 model on the long-term and near-term scenarios with a larger Minnesota state-wide electric vehicle fleet. Minnesota's Climate Action Framework includes an aspirational target to reach 20% of electric vehicles on the roads by 2030. Additionally, bipartisan legislation passed in 2007 called the Next Generation Energy Act requires 80% reduction in GHG emissions by 2050. The GHG model was run to include 80% EV usage in the long-term/aggressive scenario, and 40% EV usage in the near-term/moderate scenario. Table 5 identifies the current Scope 3 Commuter GHG emissions, and future GHG emissions if the moderate/near-term mode shift is achieved.

To incorporate EVs in the model, the line for automobile commuters was split into EV commuters and gas car commuters. To identify the number of EV commuters, the number of automobile commuters was multiplied by 80% in the long-term scenario, and 40% in the short-term scenario. An emissions factor of zero was entered into the GHG model for EV commuters.

Parking Analysis

An analysis of future parking was also completed to estimate the number of parking spaces that may be needed if the campus achieved a mode share with fewer automobile commutes. If the campus achieves the moderate shift in commuter behavior show in Table 4, approximately 3,437 parking permits would be needed, instead of the current 4,426 parking permits. This value is a proxy for space needed for parking and creates an opportunity to visualize alternative land uses on campus.

Table 5: Scope 3 Commuter GHG Emissions [Metric Tons of Carbon Equivalent]

Group	Current Scenario (Based on 2021 SIMAP)	Moderate (Near Term)	Moderate (Near Term) with Electric Vehicle Transit
Faculty/Staff	1,291	1,115	1,102
Students	930	671	549

Assumptions

Table 6 lists the variables provided by UMD to the project team and used in the analysis. This data also informed the GHG emissions calculations. Table 7 presents the modeling assumptions created using the parking analysis data.

Methodology

The number of parking permits currently issued was provided by the University. The number of future parking permits issued was calculated using the same mode split that was used to model GHG in the near-term and long-term scenarios.

Commuter Parking

The number of future parking permits issued is identified by the expression:

$$\left(\begin{matrix}Number\ of\ Future\\ Car\ Commuters\end{matrix}\right) \times \left(\frac{\begin{matrix}Number\ of\ Current\\ Parking\ permits\ issued\end{matrix}}{\begin{matrix}Number\ of\ Current\\ Automobile\ Commuters\end{matrix}}\right)$$

A ratio of number-of-parking-permits-issued to number-of-automobile-commuters was calculated. This percentage was multiplied by the number of automobile commutes in the long-term and short-term scenarios. The output identified how the amount of parking permits and needed parking spaces could change with different mode splits in the two future scenarios tested. The figures are a loose approximation because the data supplied is for varying years. Therefore, the future number of parking permits is based on a ratio of parking in year 2023 to commuters in year 2021.

For off-campus students, the calculation method is the same as faculty/staff. Where the ratio of number-of-parking-permits-issued to number-of-automobile-commuters is multiplied by the number of automobile commuters in the future scenarios.

On-Campus Student Parking

According to University records, approximately 42% of on-campus students currently hold a parking permit. To test options for reducing surface parking, beyond reductions that could be realized through commuter mode shifts, the project team tested reducing the share of on-campus students with a parking permit. On-campus students currently represent 28% of the student enrollment. Modeling included testing both a moderate and an aggressive reduction in on-campus students with parking permits. In each scenario, the share of on-campus students is held constant at 28% of a total student body of 10,800 (accounting for modest enrollment growth and stabilization). Scenarios tested reducing the share of on-campus students with parking passes to 35% and 25%, demonstrating potential opportunities for further gains in reducing impervious surface dedicated to campus parking. These findings are represented in Figure 1.

Table 6: Variables Provided by UMN for Parking Analysis

Variable	Total
Number of faculty/staff commuters	1,592
Number of student commuters	9,880
Number of students in the future	10,800
Percent of students on-campus	72
Percent of students off-campus	28
Percent of faculty/staff trips taken by automobile	72.3
Percent of student trips taken by automobile	16.6
Number of total parking permits issued for faculty/staff in 2023	1,058
Number of off-campus parking permits issued for off-campus students in 2023	2,288
Number of on-campus parking permits issued for on-campus students in 2023	1,080
Number of parking spaces	3,445

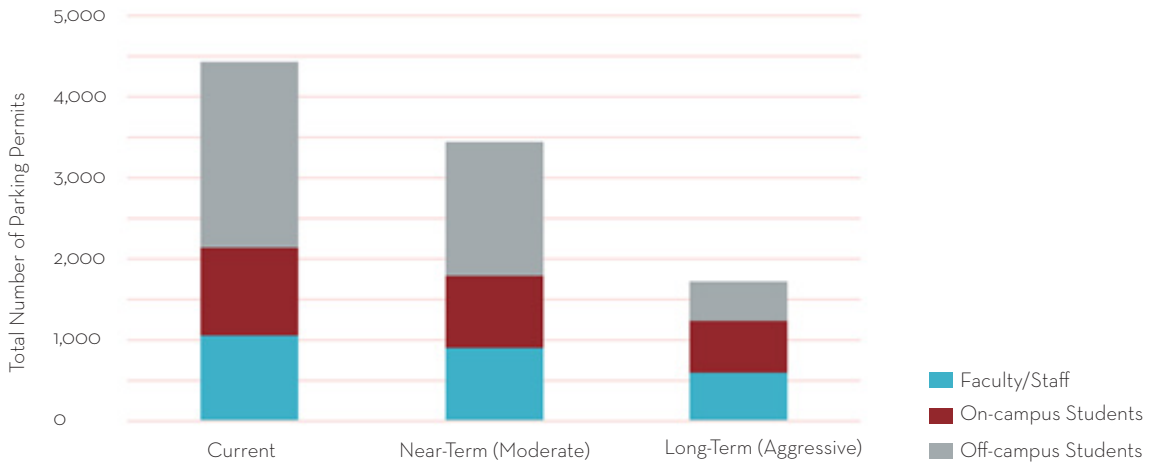
Table 7: Scenario Modeling Assumptions

Variable	Moderate (Near-Term) Scenario	Aggressive (Long-Term) Scenario
Percent of automobile trips by faculty/staff	62	41
Percent of automobile trips by students	10	3
Percent of on-campus students who are issued a parking permit	35	25

Commuting and Parking Conclusions

Converting commuter trips from single occupancy vehicle to carpooling, transit, walking or bicycling, as shown in the near-term (moderate) scenario in Table 4, contributes to more sustainable commuting, and reduces the amount of on campus parking needed. If the moderate mode shift is achieved, the number of parking permits would decline and space currently dedicated to permit parking could be reduced approximately 22%, allowing parking spaces to be repurposed for reforestation and open space.

Figure 1: Number of Parking Permits Issued in Current, Near-Term, and Long-Term Scenarios (Toole Design Group)



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SASAKI AEI Affiliated Engineers TOOLE DESIGN

Duluth Campus Plan

David McMillan, Interim Chancellor
Monique MacKenzie, Director of Campus Planning

Finance & Operations Committee

October 12, 2023

SENIOR VICE PRESIDENT FOR FINANCE AND OPERATIONS

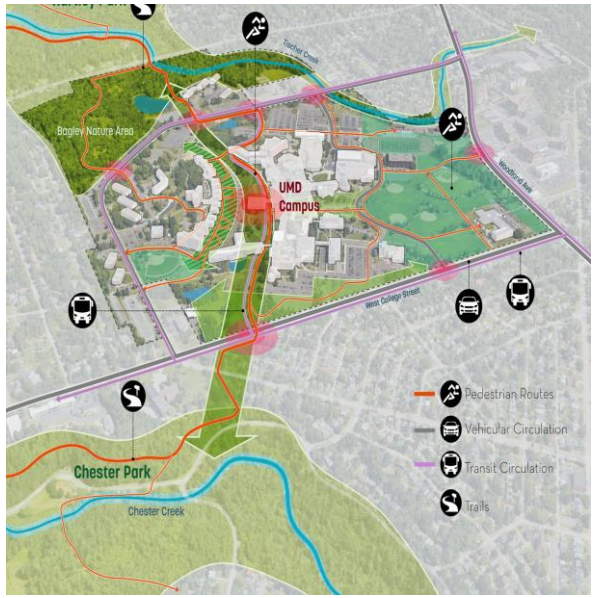
World Class Services for a World Class University

University Services

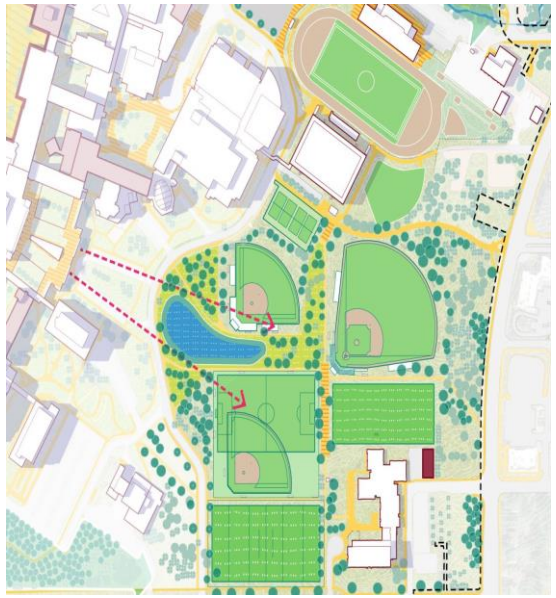
We Make the University Work

Big Ideas

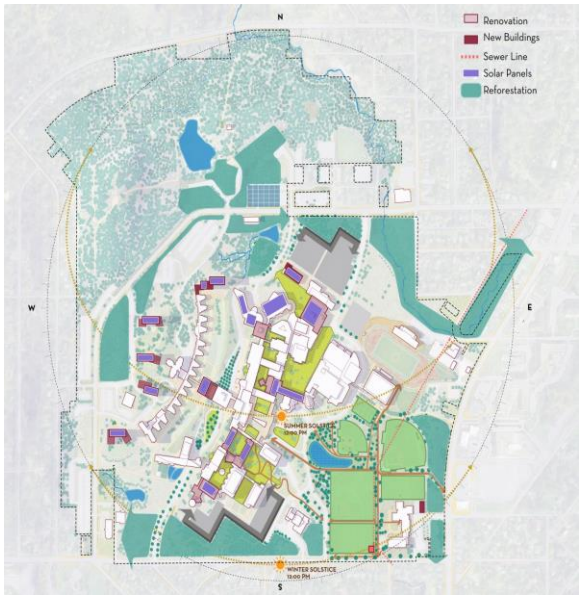
#1 Sustainability Corridor



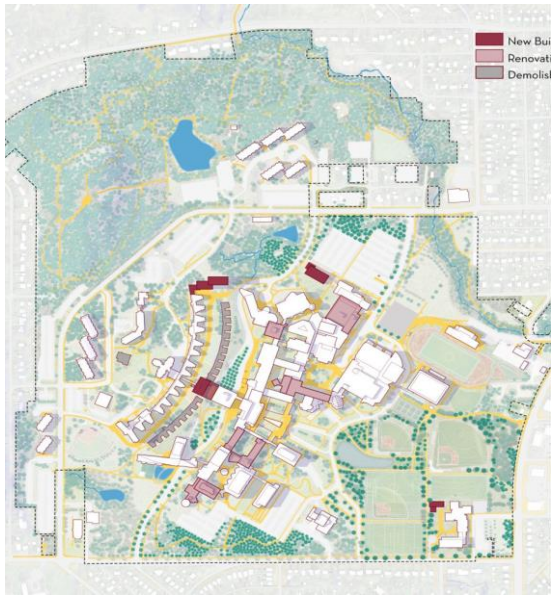
#2 Recreation Park



#3 Greening the Campus Edge

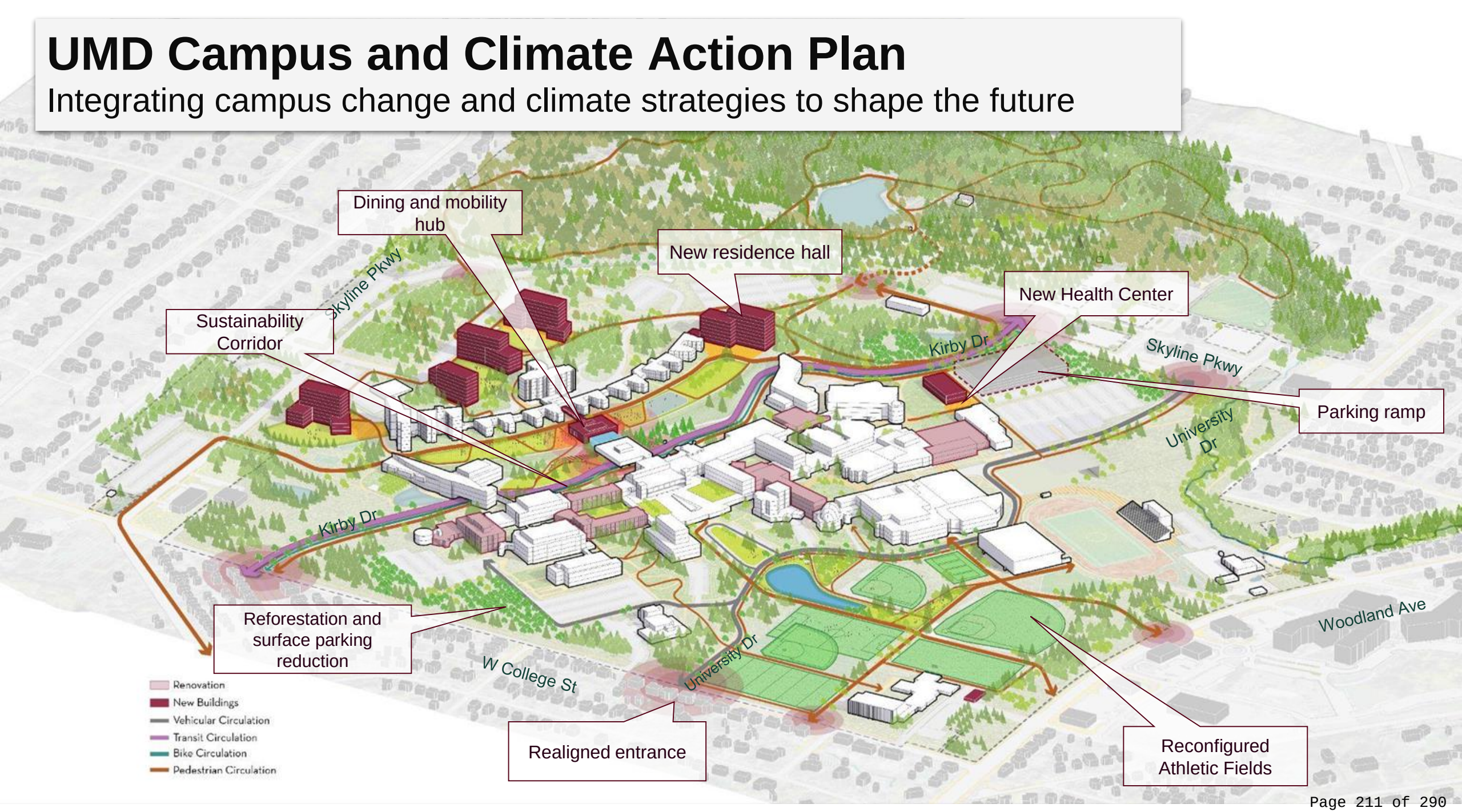


#4 Reinvest in the Campus Core



UMD Campus and Climate Action Plan

Integrating campus change and climate strategies to shape the future



UNIVERSITY OF MINNESOTA

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BOARD OF REGENTS
DOCKET ITEM SUMMARY

Finance & Operations **October 12, 2023**

AGENDA ITEM: University Job Structures: Past, Present & Future

☐ **Review**	☐ **Review + Action**	☐ **Action**	☒ **Discussion**

☐ *This is a report required by Board policy.*

PRESENTERS: Kenneth E. Horstman, Vice President for Human Resources
Mary Rohman Kuhl, Senior Director of Total Rewards

PURPOSE & KEY POINTS

The purpose of this item is to provide an overview of the University's job structures for its Labor Represented; Civil Service; Academic Professional and Administrative (P&A); Faculty, and Senior Leaders. Job structures are formal hierarchies that depict the roles and pay structure for an organization's employees and are an essential tool of human resource practice.

The University has significantly improved job structures in the past 10 years, with plans for future improvements. These revised job structures allow the University to:

- Establish market-based ranges for pay in much finer detail and determine how we are paying relative to that market.
- Ensure equitable titles for work being performed across the University.
- Provide a clear and accurate picture of the workforce.
- More clearly define career paths for employees.

The presentation will discuss the definition of job structures and why they are important. Additionally, it will outline the specific job structures in place for different employee groups:

- Labor-Represented
- Civil Service and P&A
- Faculty
- Senior Leaders

BACKGROUND INFORMATION

The committee received additional context on the University's job families as part of the *Compensation Data and Metrics* discussion item at the December 2022 meeting. The Board has also discussed topics related to job family market refinements and market-based pay during the Annual Workforce & Human Resources Strategy Report each May.

University Job Structures:
Past, Present & Future

Kenneth E. Horstman, Vice President for Human Resources
Mary Rohman Kuhl, Senior Director of Total Rewards

Finance & Operations Committee

October 12, 2023

About Job Structures

- Job structures are formal hierarchies that organize the roles and pay structure for an organization’s employees.
- They are important because they:

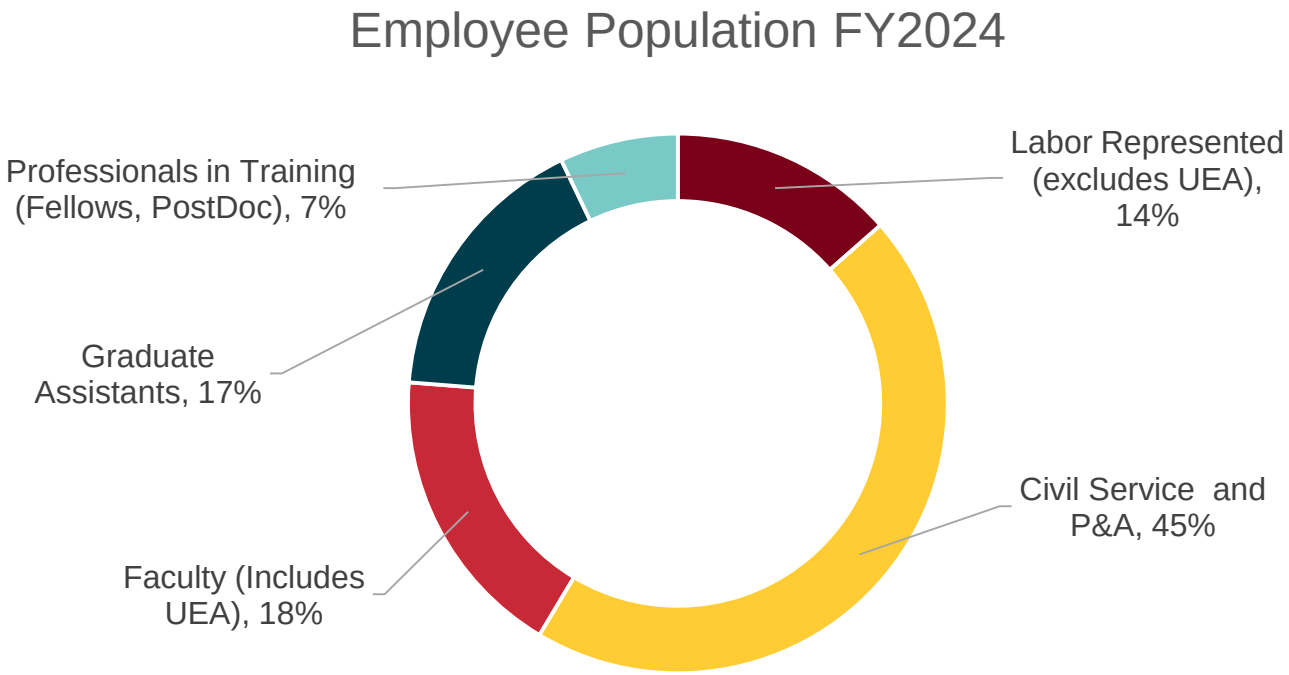
- ☑ Ensure accurate and equitable titles for work being performed
- ☑ Provide a clear and accurate picture of the workforce
- ☑ Indicate the required skills and education for positions, as well as career paths
- ☑ Allow you to establish market-based ranges for pay and know how you are paying relative to market

About Job Structures, continued

- The University has different job structures for:
  - Labor-Represented
  - Civil Service and P&A
  - Faculty
  - Senior Leader

- The University has significantly improved job structures in the past 10 years, with plans for future improvements.

Breakdown of University Employees



Labor Union Job Structures

Number of Labor Unions: 10

- AFSCME (Health Care, Clerical & Office, Technical)
- Teamsters
- University Education Association (UEA)
- Law Enforcement Labor Services (LELS)
- Broadcast Technicians
- Printers
- Crafts & Trades
- Graduate Labor Union-United Electrical (GLU-UE)

AFSCME Clerical & Technical

- 77 core job titles
- Some individual job titles but more common to have a job hierarchy
- Because of the hierarchies, jobs are evaluated using the Job Evaluation Questionnaire (JEQ)
  - Point-Factor evaluation tool
  - 52 questions about job duties
  - Points awarded based on answers. Certain point thresholds are associated with different job levels

AFSCME Health Care* & Teamsters

- AFSCME Health Care: 18 core job titles, mostly individual roles without job hierarchy
- Teamsters: 77 core job titles, mostly two-level job hierarchy of regular and senior
- Because of limited job hierarchy, jobs are evaluated using the Job Review Questionnaire (JRQ)
  - Whole Job evaluation tool
  - Job content is read to determine if the person is performing the more advanced functions that align with the senior level role

*Also includes 3 AFSCME Technical Roles

Remaining Contracts

- UEA: ranks of Instructor, Assistant Professor, Associate Professor, and Professor
- LELS, Crafts & Trades, Broadcast Technicians & Printers: individual job titles
- GLU-UE: contract not yet negotiated

Labor-Represented Job Structure

- ☑ Accurate and equitable titles
- ☑ Clear and accurate picture of workforce
- ☑ Skills, education, and career paths defined
- ☑ Market-based salary ranges

Civil Service and Professional, Academic and Administrative (P&A) Job Structures

Job Families Organize a Range of Work

From 2013-2015, all Civil Service and P&A jobs were mapped into what are now 20 job families:

Administration	**Advancement**	**Animal Health**	**Athletics**	**Audit**
Business Development	**Campus Operations**	**Marketing & Comm.**	**Education**	**Finance**
Grants & Contracts	**Health Care**	**Human Resources**	**Information Technology**	**Legal**
Museums	**Recreation**	**Research**	**Student Services**	**Libraries**

Job Families Capture the Career Ladder

- In each job family, positions were assigned to roughly eight levels based on the degree of:
  - Complexity and problem-solving
  - Independence and decision-making
  - Scope

HR Titles
HR Director 2
HR Director 1
HR Consultant 3 / Manager 3
HR Consultant 2 / Manager 2
HR Consultant 1 / Manager 1
HR Professional 3 / Supervisor 3
HR Professional 2 / Supervisor 2
HR Professional 1

Assessment of Initial Job Family Effort

Improvements

- Minimum qualifications for each position
- Equitable and consistent leveling of jobs
- Clear career paths

HR Titles	Range Midpoint
HR Dir 2	$155,202
HR Dir 1	$134,933
HR Consultant 3 / Mgr 3	$117,263
HR Consultant 2 / Mgr 2	$101,929
HR Consultant 1 / Mgr 1	$88,717
HR Pro 3 / Supv 3	$67,080
HR Pro 2 / Supv 2	$58,375
HR Pro 1	$50,783

Limitations

- Titles were broad and did not include specialties.
- Salary ranges midpoints were broad averages and didn't reflect the market for each specialty
- Hard to analyze and answer questions about our workforce and salary expenses

Refinements to Job Families by Market

Add specialties that describe the primary job function

Add clear titles with annually updated salary ranges

Job Family Level										
Mgmt	Individual Contributors	Other - General	Benefits	HR Call Center	Comp	HR Generalist	LTD	Payroll	Talent Acq	Training
HR Dir 2										
HR Dir 1										
HR Mgr 3	HR Consult 3									
HR Mgr 2	HR Consult 2									
HR Mgr 1	HR Consult 1									
HR Supv 3	HR Pro 3									
HR Supv2	HR Pro 2	HR Pro 2 - General $58,373	HR Pro 2 - Benefits $59,000	HR Pro 2 - Call Center $46,000	HR Pro 2 - Comp 66,000	HR Pro 2 - HR Gen $66,000	HR Pro 2 - LTD 68,000	HR Pro 2 - Payroll $66,000	HR Pro 2 - Talent Acq $71,000	HR Pro 2 - Training 59,000
	HR Pro 1									

Civil Service and P&A Job Family Comparisons

Benefit	Initial Job Families	Refined Job Families
Accurate and equitable titles	☐	☑
Clear and accurate picture of workforce	☐	☑
Skills, education, and career paths defined	☑	☑
Market-based salary ranges	☐	☑

Faculty Job Structures

Faculty Job Structure

- Faculty jobs are broken out by rank (union and non-union)

- Faculty members' primary discipline is not reflected in their job codes, titles, or employee records making it difficult to:
  - Analyze our faculty workforce and know how many we employ in each field
  - Provide market-based salary ranges, and compa-ratios, based on rank and specialty

Rank
Professor
Associate Professor
Assistant Professor
Instructor

Duluth Faculty Market Refinement

- Each faculty member is assigned to a primary discipline.
- Market data provided for each discipline and updated annually.
- Outcome:
  - More clear picture of our faculty workforce
  - Market-based compa-ratios for each faculty member

Rank	Mathematics	Rhetoric & Composition/ Writing Studies	Chemistry	Civil Engineering	Mechanical Engineering
Professor					
Associate Professor					
Assistant Professor					
Instructor					

Faculty Job Family Comparisons

Benefit	Initial Job Families	Refined Job Families
Accurate and equitable titles	☐	☑
Clear and accurate picture of workforce	☐	☑
Skills, education, and career paths defined	☑	☑
Market-based salary ranges	☐	☑

Senior Leader Job Structures

Senior Leader Job Structure

- The top 46 senior leader positions across the University are individually titled and market-priced annually per Board of Regents policy.
- Positions include:
  - Executive vice presidents
  - Senior vice presidents
  - Vice presidents
  - Chancellors
  - Deans

Senior Leader Job Structure

- ☑ Accurate and equitable titles
- ☑ Clear and accurate picture of workforce
- ☑ Skills, education, and career paths defined
- ☑ Market-based salary ranges

Work for the Future

- Complete market refinements for Libraries, Education and Administration job families.
- Partner with faculty at Crookston, Morris, Rochester, and Twin Cities to complete faculty market refinements.
- Decide if there is a benefit to designing a more formal job structure for individual titles with salary floors.

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BOARD OF REGENTS
DOCKET ITEM SUMMARY

Finance & Operations **October 12, 2023**

AGENDA ITEM: Consent Report

☐ **Review** ☒ **Review + Action** ☐ **Action** ☐ **Discussion**

☐ *This is a report required by Board policy.*

PRESENTERS: Myron Frans, Senior Vice President

PURPOSE & KEY POINTS

Purchase of Goods and Services $1,000,000 and Over

The purpose of this item is to seek approval for purchases of goods and services of $1,000,000 and over.

- To edX Boot Camps LLC for $10,100,000 for an agreement to provide intensive hands-on project-based training to students enrolled through the College of Continuing and Professional Studies (CCAPS) on the Twin Cities campus, for the period of July 31, 2024 through July 31, 2025. The revenue that is generated from students enrolled through this agreement covers the cost of this service contract. See enclosed documentation for the basis of supplier selection.

Capital Budget Amendments

The purpose of this item is to seek approval of capital budget amendments for the following projects, all for the Twin Cities campus. These are important projects that did not meet the Board's criteria for inclusion in the Annual Capital Improvement Budget that was approved in June 2022, but do so now.

- Carlson School of Management Building Revitalization
- Future of Advanced Agricultural Research in Minnesota (FAARM) Predesign
- Middlebrook Hall: HVAC Replacement Phase 3
- Molecular and Cellular Biology Tunnel Washer Replacement
- Moos Tower: Installation of MRI for Dentistry
- Phillips-Wangensteen Building: 8-310 Temporal Bone Lab Relocation

Project overviews, which provide the basis for the request, project scope, cost estimate, funding, and schedule, are included in the docket. Site maps locating the projects on the Twin Cities campus are also included.

Real Estate Transactions

The purpose of this item is to review and act on the following lease agreement for the Twin Cities campus:

- Lease Agreement for office, laboratory, and storage space for the Minnesota Genomics Center

Schematic Designs

The purpose of this item is to review and act on the schematic designs for the following projects, all for the Twin Cities campus:

- Carlson School of Management Building Revitalization
- Moos Tower: Installation of MRI for Dentistry
- Phillips-Wangensteen Building: 8-310 Temporal Bone Lab Relocation

Project overviews, which provide the basis for the request, project scope, cost estimate, funding, and schedule, are included in the docket. Site maps locating the projects on the Twin Cities campus are also included.

BACKGROUND INFORMATION

Approvals are sought in compliance with Board of Regents Policy as follows:

- Purchase of Goods and Services $1,000,000 and Over: *Reservation and Delegation of Authority*, Article I, Section VII, Subd. 6.
- Capital Budget Amendments: *Reservation and Delegation of Authority,* Article I, Section VIII, Subd. 8.
- Lease Transactions: *Reservation and Delegation of Authority*, Article I, Section VIII, Subd. 2
- Schematic Designs: *Reservation and Delegation of Authority,* Article I, Section VIII, Subd. 9.

RECOMMENDATIONS

The Interim President recommends approval of the Consent Report with the exception of items related to the Future of Advanced Agricultural Research in Minnesota (FAARM).

The Senior Vice President recommends approval of the items related to the Future of Advanced Agricultural Research in Minnesota (FAARM).

Purchase of Goods and Services $1,000,000 and over

To edX Boot Camps LLC for $10,100,000 for an agreement to provide intensive hands-on project-based training to students enrolled through the College of Continuing and Professional Studies (CCAPS) on the Twin Cities campus for the period of July 31, 2024 through July 31, 2025.

CCAPS entered into a collaboration with edX Boot Camps LLC (f/k/a Trilogy Education Services, LLC) to provide intensive "boot camp" style technology programming courses to learners to bridge the growing digital skills divide.

In April of 2020, CCAPS issued an RFP for boot camp technology programming. After careful and diligent reviews of options, Trilogy Education Services, LLC was awarded a three-year contract for the period of July 13, 2021 through July 30, 2024. The Board of Regents approved that contract in July 2020.

This request is to extend the current contract for one additional year through July 31, 2025. The revenue that is generated from students enrolled through this agreement covers the cost of this service contract.

Submitted by: Ryan Torma, Executive Director
Professional Development and Lifelong Learning
College of Continuing and Professional Studies
360 Coffey Hall
Phone: 612-301-8626

Approval of this item is requested by:

Robert A. Stine July 28, 2023
Dean, College of Continuing and Professional Services
(Signature on file in Purchasing Services)

Rationale for Exception to Competitive Bidding

This purchase has not been competitively bid because the U.S. Department of Education is developing new regulations pertaining to third-party arrangements for programs such as those currently offered by edX Boot Camps, LLC. The University determined it would be in the institution's best interests to wait for the issuance of the new regulations. At the same time, CCAPS did not want to stop offering these valuable programs to continuing education students when the current contract expires in 2024. After extensive discussions with the Provost's Office and the Office of General Counsel, the decision was made to postpone issuing the RFP and enter into a 1-year extension of the current contractual relationship with edX Boot Camps, LLC, thereby affording additional time for the issuance and evaluation of new federal regulations.

The extension utilizes comparable terms and pricing to the current contract with edX Boot Camps, LLC. Based on these facts and circumstances, the Director of Purchasing and the University Controller concluded that the process used resulted in a fair and reasonable price for the University.

Capital Budget Amendment: Carlson School of Management (CSOM)
Building Revitalization
Twin Cities Campus
Project No. 01-249-23-2198

1. Basis for Project:

The CSOM Building Revitalization Project seeks to address the many challenges businesses and business leaders are facing in a rapidly changing, increasingly diverse world. This project proposes to align the functionality of teaching and scholarship user space with new pedagogical and technological trends. The project seeks to right-size spaces to support Carlson School programs and enable the creation and sharing of knowledge through spaces that are adaptable over time. Utilization of existing space will be improved through more flexible and diverse learning environments, facilitating student, staff, and faculty collaboration. The project will also address building infrastructure systems, accessibility, and other deficiencies.

2. Scope of Project:

Renovation of the existing Carlson School of Management Building (CSOM) located on the Twin Cities Campus (West Bank). The renovation work will include architectural, structural, mechanical, and electrical systems.

3. Campus Plan:

The project complies with the Twin Cities Campus Plan dated December 2021.

4. Environmental Issues:

The building was originally constructed in 1997; hazardous materials are not anticipated.

5. Cost Estimate:

Construction Cost	$28,422,300
Non-Construction Cost	$11,577,700
Total Project Cost	$40,000,000

6. Capital Funding:

Collegiate Resources (Cash and Gifts):	$14,000,000
University Debt:	$26,000,000
Total:	$40,000,000

7. Capital Budget Approvals:

Funding of $4,000,000 for design services was approved as a Capital Budget Amendment in October 2022.

This project was identified as a potential project in the FY 2024 Annual Capital Budget.

8. Annual Operating and Maintenance Cost:

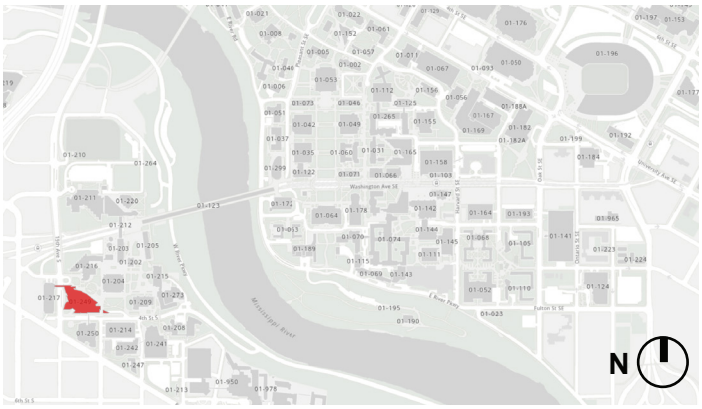
The proposed project will increase existing CSOM space by 3,565 sq. ft. within the Atrium; CSOM does not anticipate this increase in space will cause additional operational costs. Energy costs are anticipated to decrease due to efficiency upgrades planned as part of the project.

9. Time Schedule:

Proposed Design Completion:	August 2024
Proposed Substantial Completion:	January 2026

10. Project Team:

Architect:	BWBR
Construction Manager at Risk:	JE Dunn

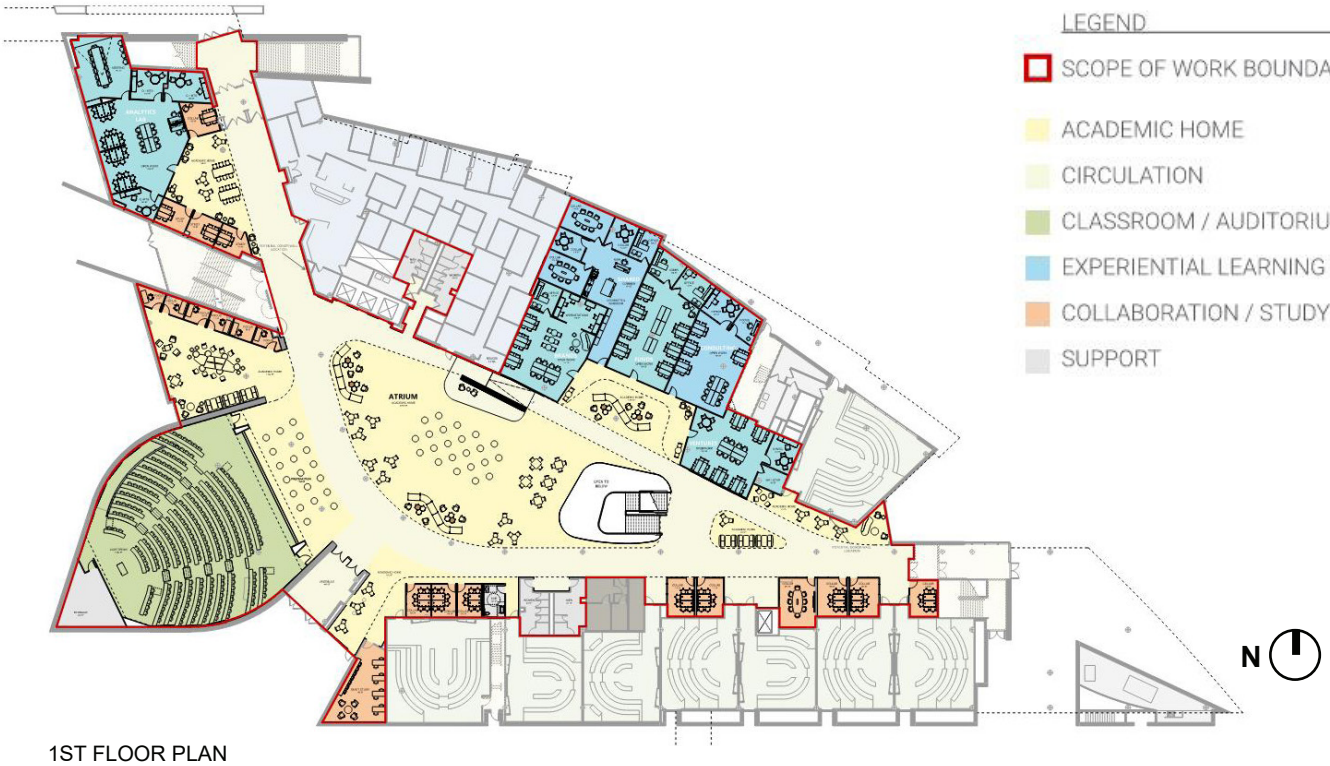


LOCATION MAP

INTERIOR RENDERING

INTERIOR RENDERING

INTERIOR RENDERING



1ST FLOOR PLAN

PROPOSED DESIGN MODIFICATIONS

Capital Budget Amendment: Future of Advanced Agricultural Research in Minnesota (FAARM)
Project No. 53-899-23-2430

1. Basis for Project:

The University of Minnesota's College of Food, Agricultural, and Natural Resource Sciences (CFANS) vision is "to advance Minnesota as a global leader in food, agriculture, and natural resources through extraordinary education, science-based solutions, and dynamic public engagement that nourishes people and enhances the environment in which we live."

The Future of Advanced Agricultural Research in Minnesota (FAARM) project will design and construct an integrated agricultural research complex to collectively improve the health of plants and animals, soil, climate, economy, and people. FAARM will be located in the ag-bioscience-rich area of Mower County, Minnesota. A targeted "one health" approach will study every aspect of cattle, swine, and poultry—from the crops used to feed them, to the intersection of human and animal health, to the interactions of animals on soil health, water quality, and climate. FAARM is a University-inspired project that will partner with Riverland Community College for the State of Minnesota, inclusive of industry, educational institutions, farmers, and more.

This project requests approval to proceed with Predesign (only); subsequent funding will be requested through the State to support the additional Design and Construction. The project is anticipated for submittal as part of the 2025 State Capital Request.

2. Scope of Project:

The 1,600-acre FAARM research complex will include approximately 660,000 sq ft of agriculture, animal, research/lab, teaching, and office/administration space, as well as housing, visitor center, outreach, and support. The primary objectives of the FAARM project are to:

- Proactively address opportunities to shape the future of animal agriculture through the world's most integrated site for agricultural research, education, and outreach.
- Create a Living Agricultural Laboratory to provide an immersive educational experience, basic and applied research opportunities for faculty, a convening space for cross-pollination of sectors and idea generation, and an unparalleled resource for industry in the development of advanced agriculture practices.

- RESEARCH – Pioneering research for animal and human welfare in a holistic center where research looks at the entirety of the agricultural system.
- TECHNOLOGY – Integration of digital systems, sensing, and data analytics into FAARM infrastructure and programming.
- EDUCATION – Center for developing skilled talent required for agriculture's future; an economic and public resource for Mower County.
- OUTREACH – central to each of these goals.

3. Campus Plan:

This project aligns with the University of Minnesota and CFANS strategic long-term growth and asset consolidation plan.

4. Environmental Issues:

Development of the Predesign will further address the current environmental conditions and project responsibilities to address any known hazards (may include site remediation and building demolition).

5. Cost Estimate:
Note: This CBA request is for Predesign Services only: $ 2,500,000

6. Capital Funding:

CFANS Operations	$ 10,000
UMore Park Legacy Funds	$ 2,490,000
Total Capital Funding	$ 2,500,000

7. Capital Budget Approvals:

This project requests Capital Budget Amendment (CBA) approval at the October 2023 Board of Regents meeting to proceed with Predesign.

8. Annual Operating and Maintenance Cost:

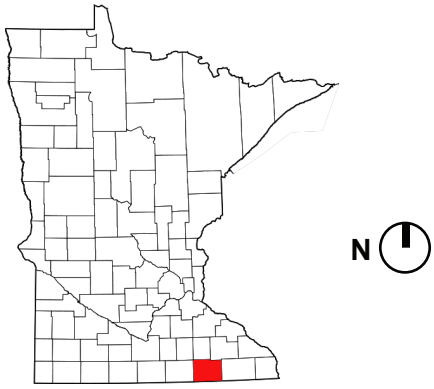
Estimated Facility Operating Cost will be verified during the Predesign phase.

9. Time Schedule:

Proposed Predesign Start	December 2023
Predesign Schematic Design Start	July 2024
Proposed Construction Start	January 2027
Proposed Substantial Completion:	September 2029

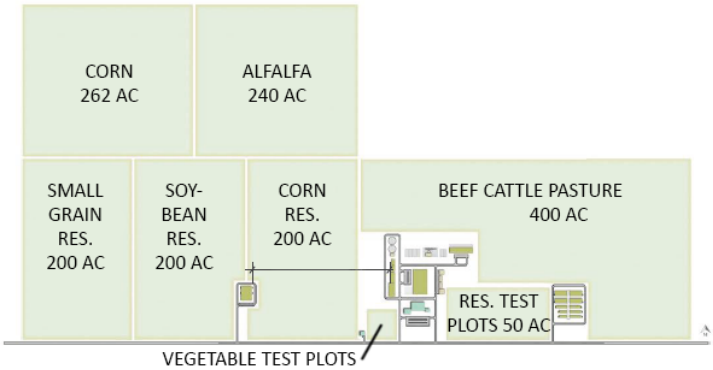
10. Project Team:

Architect:	TBD
Contractor (CMaR):	TBD

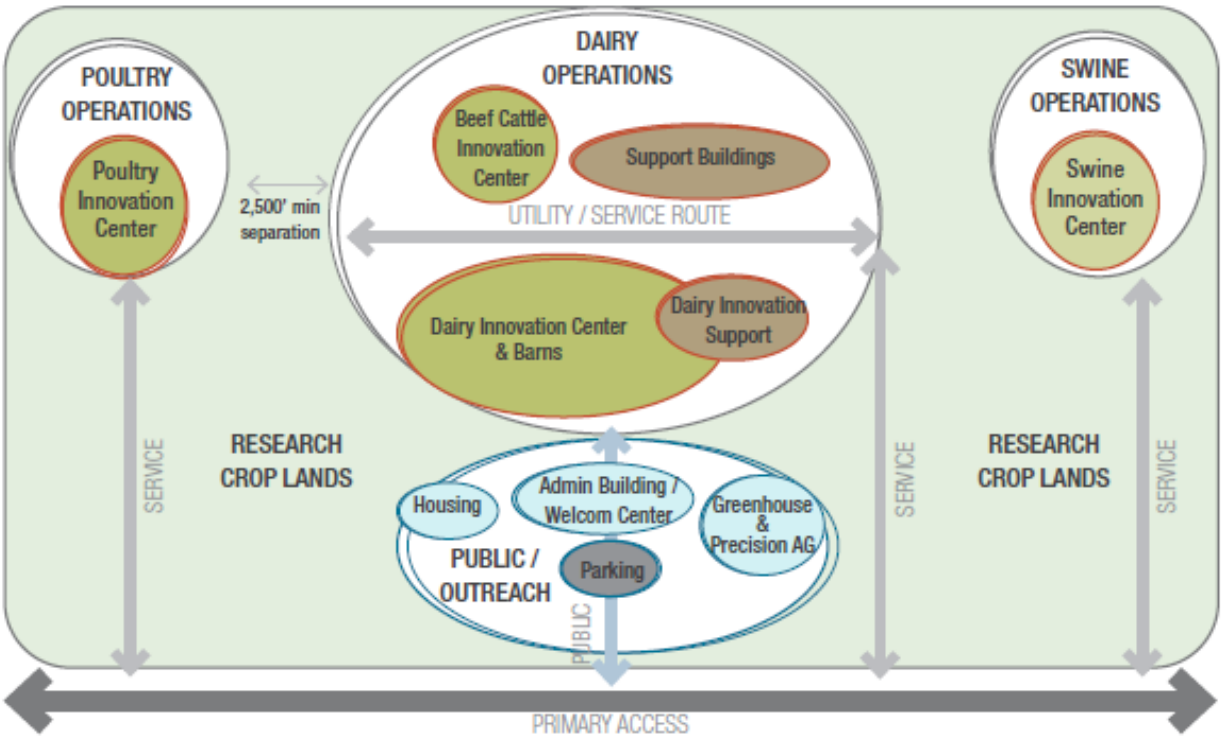


LOCATION MAP - MOWER COUNTY

"LINE OF SITE" RESEARCH FOCUS



CONCEPTUAL LAND USE DIAGRAM FOR 1600 ACRES



PROGRAM ADJACENCY DIAGRAM

PROPOSED DESIGN MODIFICATIONS

Capital Budget Amendment: Middlebrook Hall HVAC Piping, Phase Three
Twin Cities Campus
Project No. 01-208-20-1921

1. Basis for Project:

Middlebrook HVAC Piping Phase Three is the final phase of a project to replace failing HVAC distribution piping, add outdoor air distribution, and replace heating and cooling delivery equipment that has reached the end of its useful life.

2. Scope of Project:

Middlebrook Hall is a residential building housing approximately 900 students on the east bank of the Minneapolis campus. This third and final phase will replace fan coil units and controls in resident rooms and lounge spaces. This work impacts 383 residential rooms and 88 lounge spaces served by fan coil units.

3. Campus Plan:

The project complies with the Twin Cities Campus Plan, dated December 2021.

4. Environmental Issues:

Testing and abatement of hazardous materials were performed in previous project phases; additional hazardous materials are not expected as part of phase three. The project budget includes testing of any unforeseen hazardous materials and contingency for the removal.

5. Cost Estimate:

Construction Cost	$5,708,000
Non-Construction Cost	$1,292,000
Total Project Cost	$7,000,000

6. Capital Funding:

Housing and Residential Life	$7,000,000
Total Capital Funding	$7,000,000

7. Capital Budget Approvals:

This project was identified as a potential project in the FY 2024 Annual Capital Budget. A capital budget amendment is requested so that construction can begin.

8. Annual Operating and Maintenance Cost:

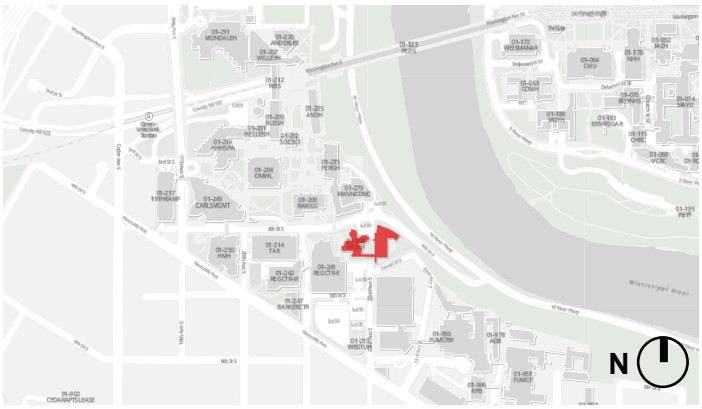
A decrease in operating costs is anticipated from new and more efficient equipment.

9. Time Schedule:

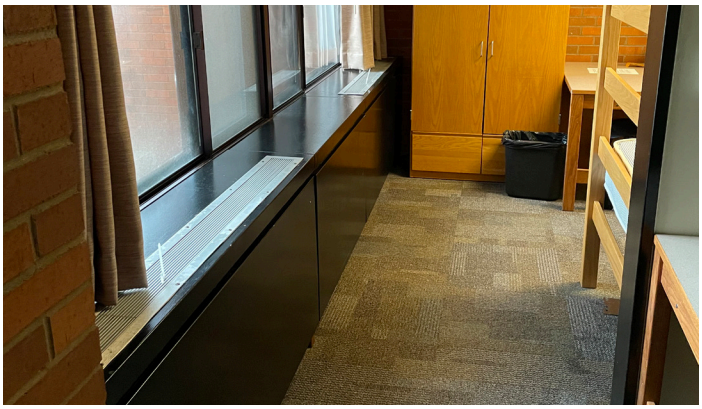
Proposed Design Completion:	December 2023
Proposed Substantial Completion:	August 2024

10. Project Team:

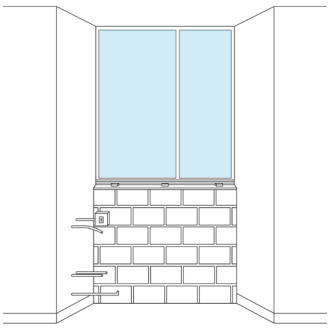
Architect:	Stanley Consultants, Inc
Construction Manager at Risk:	Gardener Builders



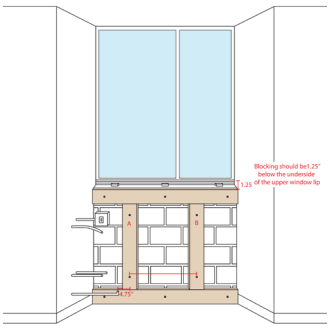
LOCATION MAP



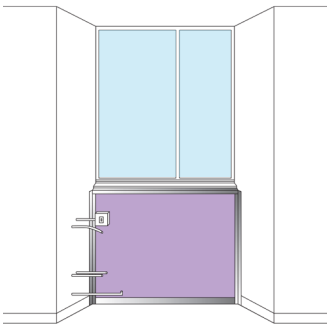
TYPICAL EXISTING MECHANICAL CABINET



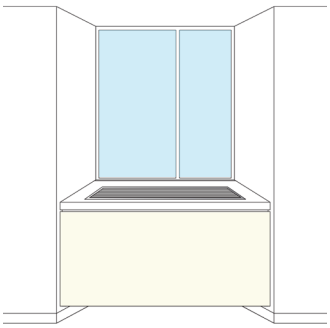
DEMO EXISTING



WOOD BLOCKING

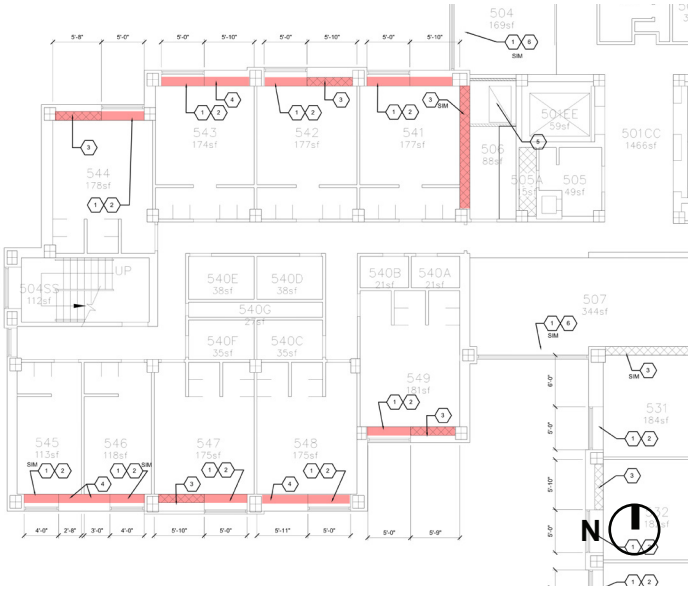


SHEATHING & INSTALL FCU

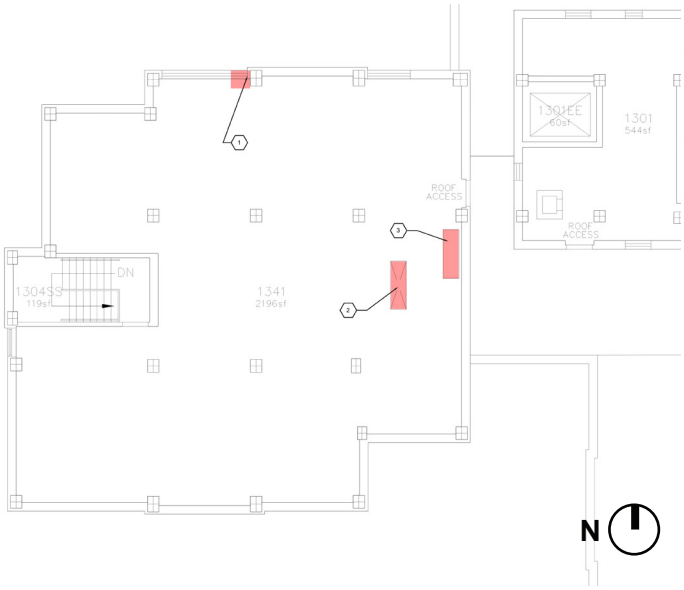


CONSTRUCTED CABINET

MECHANICAL CABINET MOCKUP



PARTIAL FLOOR PLAN - TYP RESIDENTIAL WING



PARTIAL FLOOR PLAN - MECH PENTHOUSE

PROPOSED DESIGN MODIFICATIONS

Capital Budget Amendment: Molecular and Cellular Biology
Tunnel and Cart Washer Replacement
Twin Cities Campus
Project No. 01-168-23-2086

1. Basis for Project:

This project is primarily an equipment replacement project that replaces an existing cart and tunnel washer with like equipment to support research operations within the Molecular and Cellular Biology (MCB) Building.

2. Scope of Project:

Rooms 1-139S and 1-139C are located in the basement of the MCB building. The existing cart and tunnel washer will be demolished and replaced in their existing locations. The rooms will receive a new floor finish, ceiling, and lighting to renew the space and support cleaning and sanitation. Existing utility connections, plumbing, and HVAC will be updated to support the new equipment.

3. Campus Plan:

The project complies with the Twin Cities Campus Plan, dated December 2021

4. Environmental Issues:

Hazardous materials are not expected on the project. The budget includes funds for testing for any unforeseen hazards and contingency for their remediation.

5. Cost Estimate:

Construction Cost	$483,900
Non-Construction Cost	$909,500
Total Project Cost	$1,393,400

6. Capital Funding:

NIH Grant	$335,170
RAR Plant Fund	$270,000
RAR Reserves	$788,230
Total Capital Funding	$1,393,400

7. Capital Budget Approvals:

This project was identified as a potential project in the FY 2024 Annual Capital Budget.

8. Annual Operating and Maintenance Cost:

A decrease in operating costs is anticipated due to new, more efficient equipment and reduced maintenance.

9. Time Schedule:

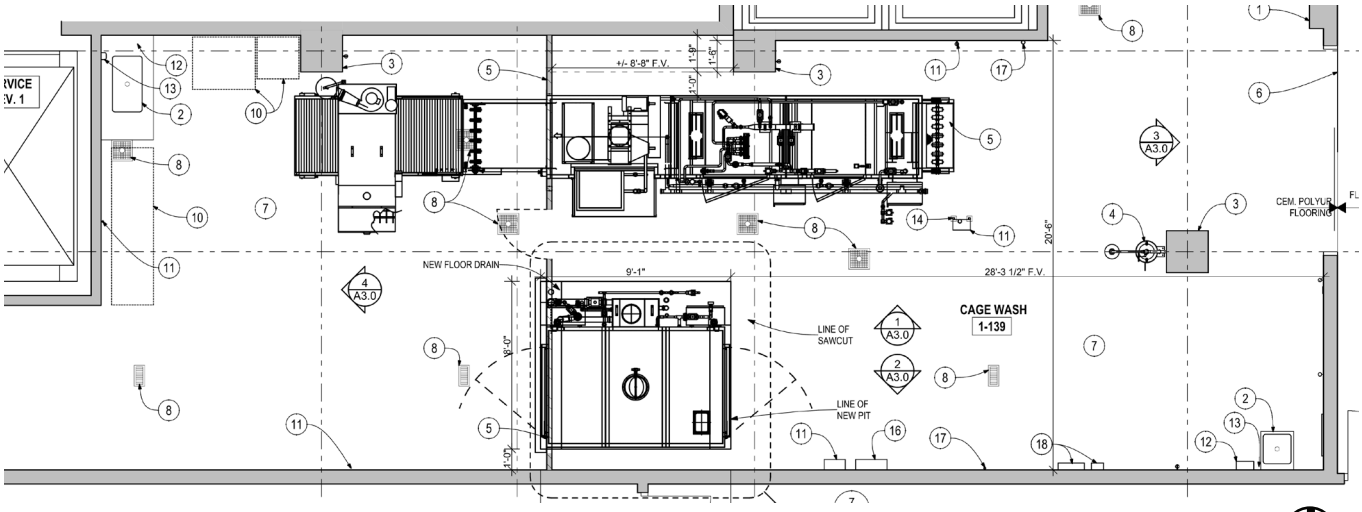
Proposed Design Completion:	October 2023
Proposed Substantial Completion:	May 2024

10. Project Team:

Architect:	Busch Architects
General Contractor:	TBD

LOCATION MAP

EXISTING TUNNEL WASHER



PARTIAL FLOOR PLAN

PROPOSED DESIGN MODIFICATIONS

Capital Budget Amendment: Moos Tower Install MRI for Dentistry
Twin Cities Campus
Project No. 01-142-22-1818

1. Basis for Project:

Dentistry relies heavily on imaging using ionizing radiation and lacks imaging solutions for soft tissues and early detection of disease. Magnetic resonance imaging (MRI) offers these imaging capabilities and many others without using ionizing radiation. Dentistry has yet to adopt MRI for routine imaging because the physical equipment (e.g., magnet proper, RF coil) is not designed for dental applications, pulse sequences have not been developed and optimized for Dental applications, and the workflow able to support point-of-care diagnostics for a productive dental practice has not been worked out.

To work towards realizing the advantages of MRI for dentistry, two companies that are leaders in MRI technology (Siemens Healthineers) and (Dentsply Sirona) have teamed up with two academic institutions (Aarhus University, University of Minnesota) to work together to address unmet clinical needs. We are now moving to the clinical trials phase to assess the utility of MRI for clinical indications. The siting of the MRI scanner within Moos Tower is required to conduct this clinical research.

2. Scope of Project:

This project will renovate a 1,200 SF underutilized space in Moos Tower, room 1-712, to accommodate a new MRI for dental imaging. The scope includes asbestos abatement, minor demolition, and build-out of a suite of rooms to support a Magneton Free Max .55T MRI unit.

3. Campus Plan:

The project complies with the Twin Cities Campus Plan, dated December 2021.

4. Environmental Issues:

Identified abatement issues include hazardous materials within the project area; the project budget includes these associated abatement costs.

5. Cost Estimate:

Construction Cost	$1,399,300
Non-Construction Cost	$277,700
Total Project Cost	$1,677,000

6. Capital Funding:

Central Resources	$750,000
School of Dentistry	$927,000
Total Capital Funding	$1,677,000

7. Capital Budget Approvals:

This project was identified as a potential project in the FY 2024 Annual Capital Budget.

8. Annual Operating and Maintenance Cost:

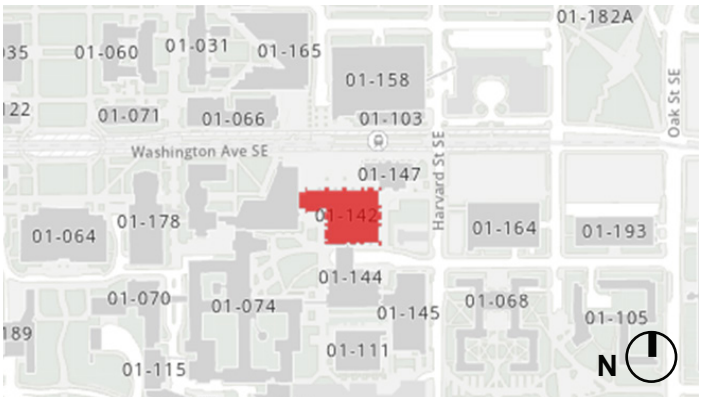
This project is not expected to have any significant impact on the existing operating cost.

9. Time Schedule:

Proposed Design Completion:	November 2023
Proposed Substantial Completion:	July 2024

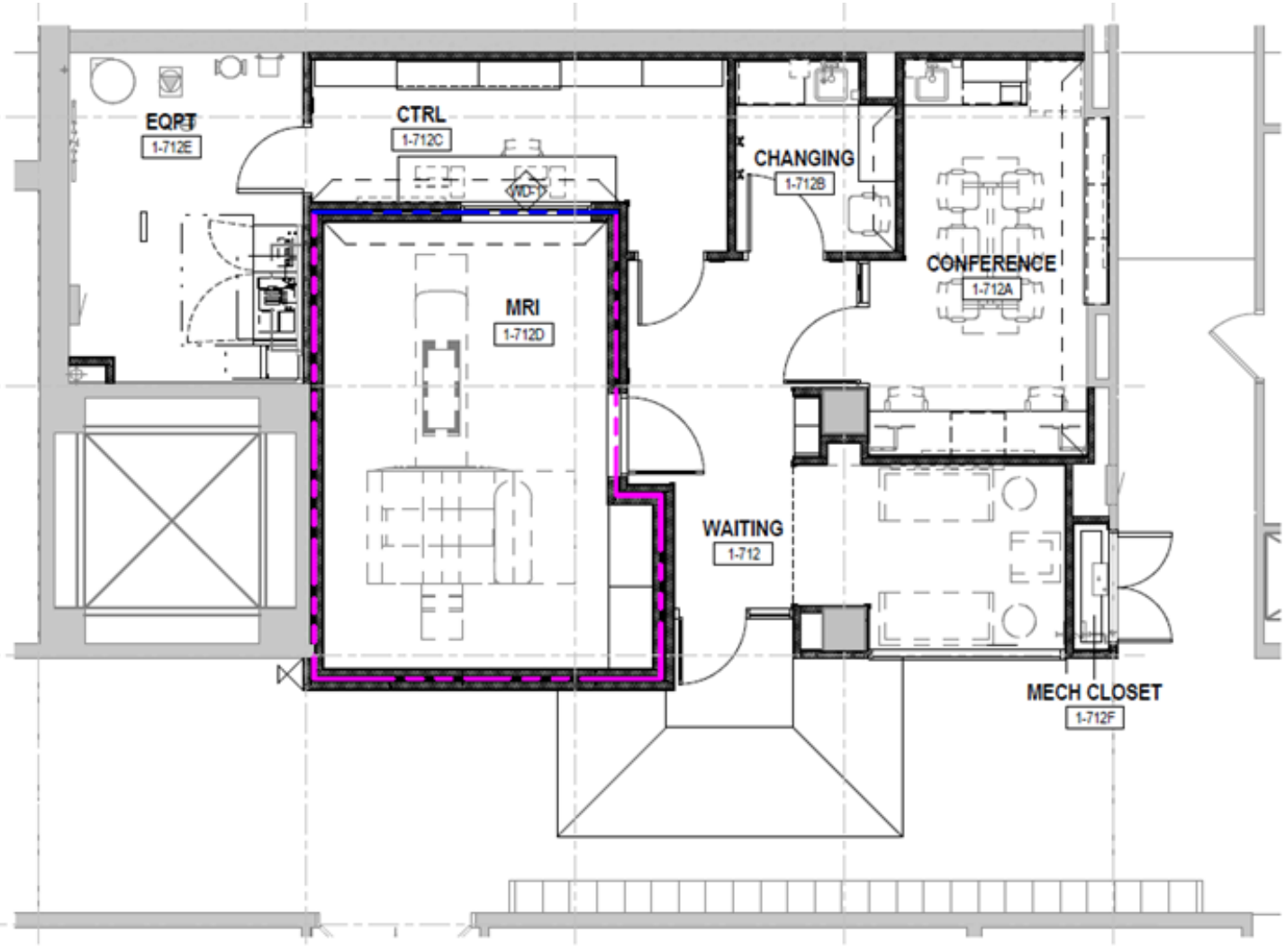
10. Project Team:

Architect:	Leo A. Daly
Construction Contractor:	TBD



LOCATION MAP

MRI MACHINE



Partial Floor Plan

PROPOSED DESIGN MODIFICATIONS

Capital Budget Amendment:
Phillips-Wangensteen Building (PWB): 8-310 Temporal Bone Lab Relocation
Twin Cities Campus
Project No. 01-144-23-2135

1. Basis for Project:

The Temporal Bone Lab, long a crown jewel of the University of Minnesota Medical School's Department of Otolaryngology, Head and Neck Surgery, needs revitalization to ensure that the next generation of otolaryngologists is prepared to meet the needs of those with hearing loss throughout Minnesota and beyond. In the Temporal Bone Lab, residents, fellows, audiologists, and other medical professionals practice surgical procedures, hearing aid fittings, and other necessary skills that prepare them for practice.

2. Scope of Project:

The current Temporal Bone Lab is in PWB 8-340. This relocation project includes the renovation of PWB 8-310 (730 SF) to accommodate 16-20 temporal bone lab stations, involving the demolition of existing casework, new fume hoods, and interior walls. Each lab-type station will have power, data, sink/water, vacuum, microscope connected to video output, microscopic drill (requires above average filtration), eyewash/shower, and audio-visual connection.

3. Campus Plan:

The project complies with the Twin Cities Campus Plan, dated December 2021.

4. Environmental Issues:

Identified abatement issues include hazardous materials within the project area; the project budget includes these associated abatement costs.

5. Cost Estimate:

Construction Cost	$823,000
Non-Construction Cost	$383,840
Total Project Cost	$1,206,840

6. Capital Funding:

Medical School	$1,206,840
Total Capital Funding	$1,206,840

7. Capital Budget Approvals:

This project was identified as a potential project in the FY 2024 Annual Capital Budget.

8. Annual Operating and Maintenance Cost:

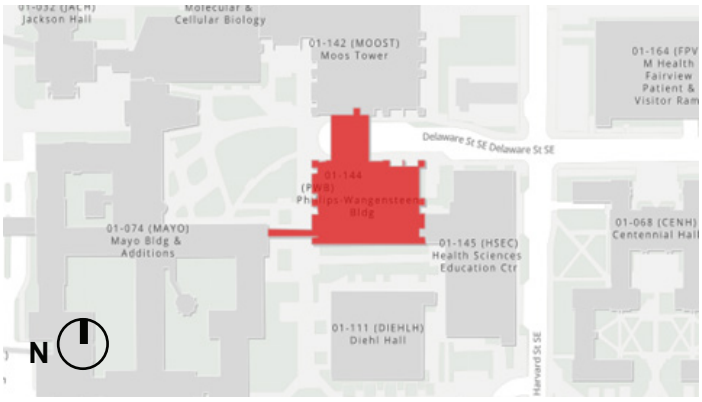
This project replaces an obsolete temporal bone lab. This project is not expected to have a significant impact on the existing operating cost.

9. Time Schedule:

Proposed Design Completion:	December 2023
Proposed Substantial Completion:	July 2024

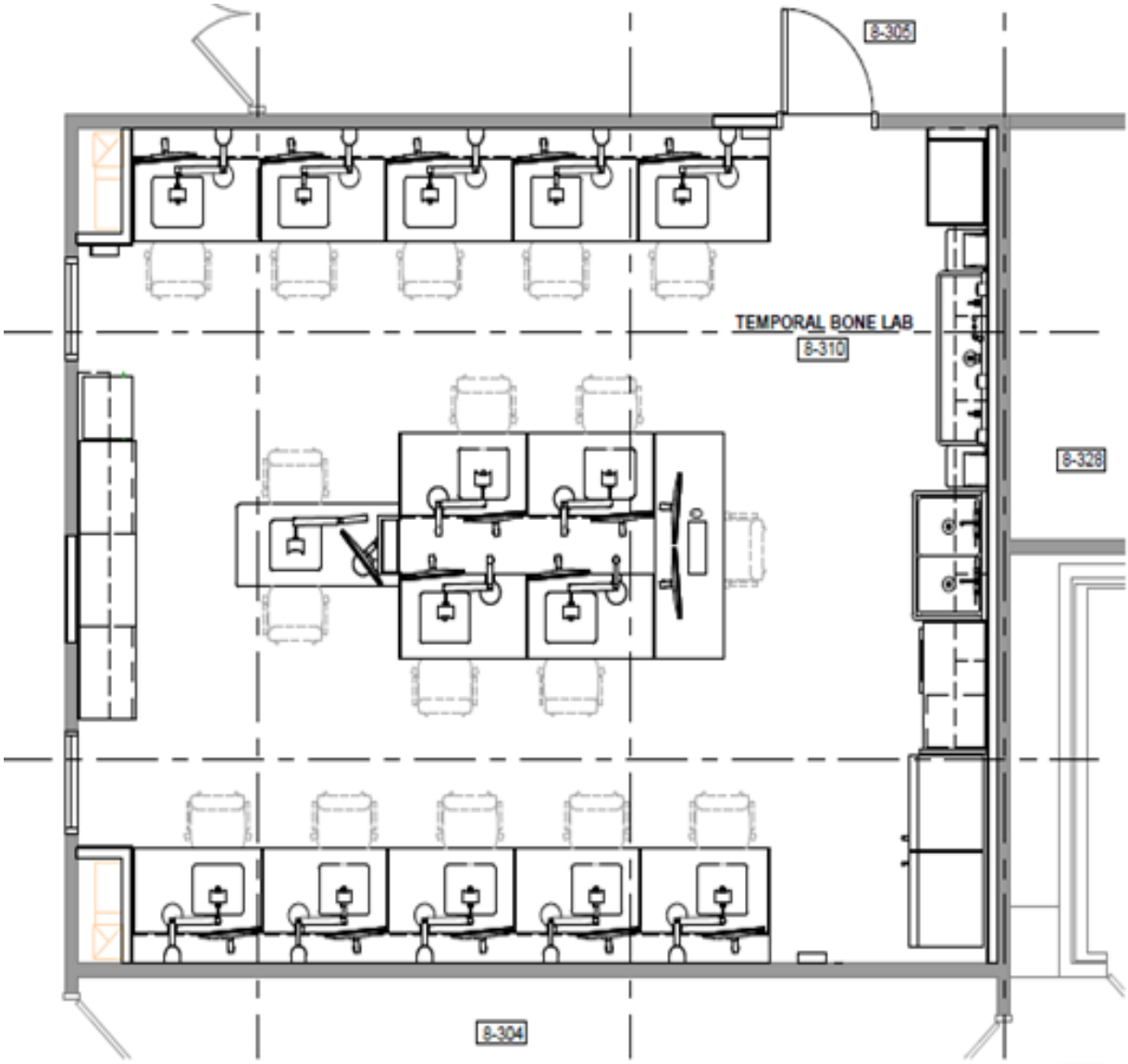
10. Project Team:

Architect:	U+B Architects
Construction Contractor:	TBD



LOCATION MAP

TYPICAL LAB STATION



Partial Floor Plan

PROPOSED DESIGN MODIFICATIONS

LEASE AGREEMENT FOR THE
MINNESOTA GENOMICS CENTER
3510 HOPKINS PLACE NORTH, OAKDALE, MINNESOTA (TWIN CITIES)

1. Recommended Action

The Interim President recommends that the appropriate administrative officers receive authorization to execute a lease agreement for the University of Minnesota Genomics Center (UMGC) to lease office, laboratory, and storage space for a 3-year term from November 1, 2023 through October 31, 2026.

2. Description of Leased Premises

The leased premises consist of 5,288 rentable square feet of office space, 7,628 rentable square feet of laboratory space, and 2,828 rentable square feet of storage for a total of 15,744 rentable square feet of leased premises on the fourth floor at the 4Front Technology and Office Campus located at 3510 Hopkins Place North, Oakdale, Minnesota. (See attached map.)

3. Basis for Request

The UMGC entered into a lease at this location in August 2020 and has executed extensions to bring the expiration date of the existing lease through October 31, 2023. The UMGC is a lab services ISO/ESO unit that has grown by roughly 100% since 2010 and the leased premises at the 4Front Technology and Office Campus offer a consolidated and centralized lab which is critical to the efficiency and speed of the UMGC's operations. The lease agreement will relocate UMGC within the same building and floor to improve the quality and condition of the space. The leased premises will decrease the office space and increase laboratory space for the use of a genomics-focused lab to better support UMGC's operations, growth in staff, and activity of the lab services.

4. Details of Transaction

The lease agreement is for a 3-year term from November 1, 2023 through October 31, 2026. The lease agreement contains two, one (1) year renewal options, which if exercised, would extend the term of the lease until October 31, 2028. The Landlord will provide leasehold improvements to the new leased premises including new carpeting, painting, and installing five doors to enhance the use of the already improved quality of the office space and genomics-focused lab.

5. Lease Costs

The base rent for office space for year one will be $20.00 per square foot or $105,760. Base rent for office space will increase annually by three percent (3.0%). The total base rent for office space over the 3-year term is $326,904.16.

The base rent for laboratory space for year one will be $33.00 per square foot or $251,724. Base rent for laboratory space will increase annually by three percent (3.0%). The total base rent for laboratory space over the 3-year term is $778,056.

The University will also pay as additional rent its pro-rata share of operating expenses, common area maintenance costs, utilities, and property taxes for the building. The current estimate for this additional rent is $13.34 per rentable square foot. The additional rent for year one on the leased premises is approximately $210,024.96.

UMGC will also pay a monthly biohazard waste fee estimated at $4,750 per month, based on volume of waste produced. The total fee for year one for the leased premises is approximately $57,000. The total fee over the 3-year term is approximately $171,000.

The estimated total lease cost over the course of the 3-year term is approximately $1,806.585.71.

6. Source of Funds

The ongoing lease costs for the 15,744 rentable square feet of space will be funded by the UMGC operating budget through revenues from service charges from external clients (60-80%) and internal UMN clients (20-40%).

Lease Location:
4Front Technology
and Office Campus -Building 4

CITY OF OAKDALE

CITY OF LAKE ELMO

694

13

Ideal Ave N

Jamaca Ave N

High Point Dr N

Hopkins Pl N

34th St N

14

6

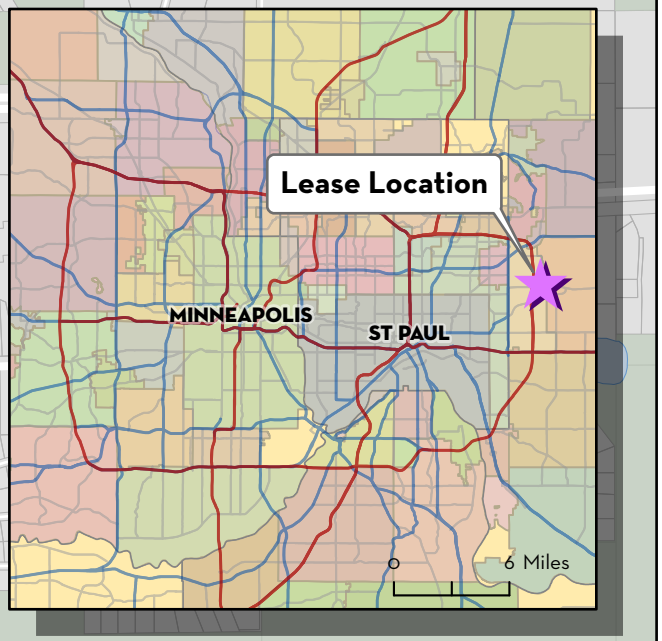
Stillwater Blvd N

Helmo Ave N

Inwood Ave N

N

0 0.5 Miles



PLANNING, SPACE, AND REAL ESTATE

UNIVERSITY OF MINNESOTA
Driven to Discover®

University of Minnesota Genomics Center Office and Lab Lease
3510 Hopkins Pl N, Oakdale, MN

This map is intended to be used for planning purposes only and should not be relied upon where a survey is required.

Base Data: Real Estate Office, MnDOT, MnDNR, Metro GIS, MnGeo

9/19/2023

Schematic Design: Carlson School of Management (CSOM)
Building Revitalization
Twin Cities Campus
Project No. 01-249-23-2198

1. Basis for Project:

The CSOM Building Revitalization Project seeks to address the many challenges businesses and business leaders are facing in a rapidly changing, increasingly diverse world. This project proposes to align the functionality of teaching and scholarship user space with new pedagogical and technological trends. The project seeks to right-size spaces to support Carlson School programs and enable the creation and sharing of knowledge through spaces that are adaptable over time. Utilization of existing space will be improved through more flexible and diverse learning environments, facilitating student, staff, and faculty collaboration. The project will also address building infrastructure systems, accessibility, and other deficiencies.

2. Scope of Project:

Renovation of the existing CSOM Building located on the West Bank of the Twin Cities campus. The renovation work will include architectural, structural, mechanical, and electrical systems.

3. Campus Plan:

The project complies with the Twin Cities Campus Plan, dated December 2021.

4. Environmental Issues:

The building was originally constructed in 1997; hazardous materials are not anticipated.

5. Cost Estimate:

Construction Cost	$28,422,300
Non-Construction Cost	$11,577,700
Total Project Cost	$40,000,000

6. Capital Funding:

Collegiate Resources (Cash and Gifts):	$14,000,000
University Debt:	$26,000,000
Total:	$40,000,000

7. Capital Budget Approvals:

Funding of $4,000,000 for design services was approved as a Capital Budget Amendment in October 2022.

This project was identified as a potential project in the FY 2024 Annual Capital Budget.

8. Annual Operating and Maintenance Cost:

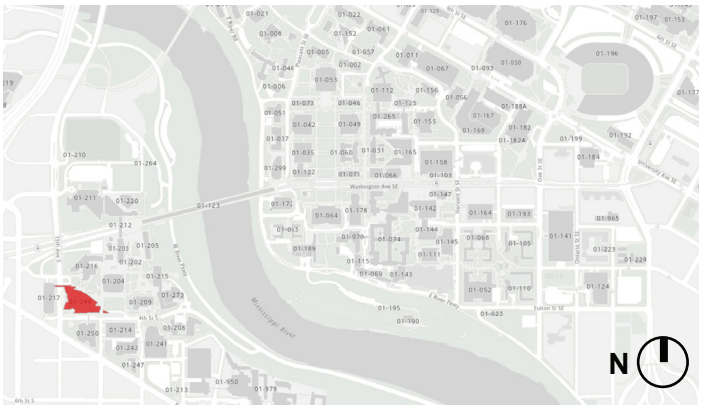
The proposed project will increase existing CSOM space by 3,565 sq. ft. within the Atrium; CSOM does not anticipate this increase in space will cause additional operational costs. Energy costs are anticipated to decrease due to efficiency upgrades planned as part of the project.

9. Time Schedule:

Proposed Design Completion:	August 2024
Proposed Substantial Completion:	January 2026

10. Project Team:

Architect:	BWBR
Construction Manager at Risk:	JE Dunn

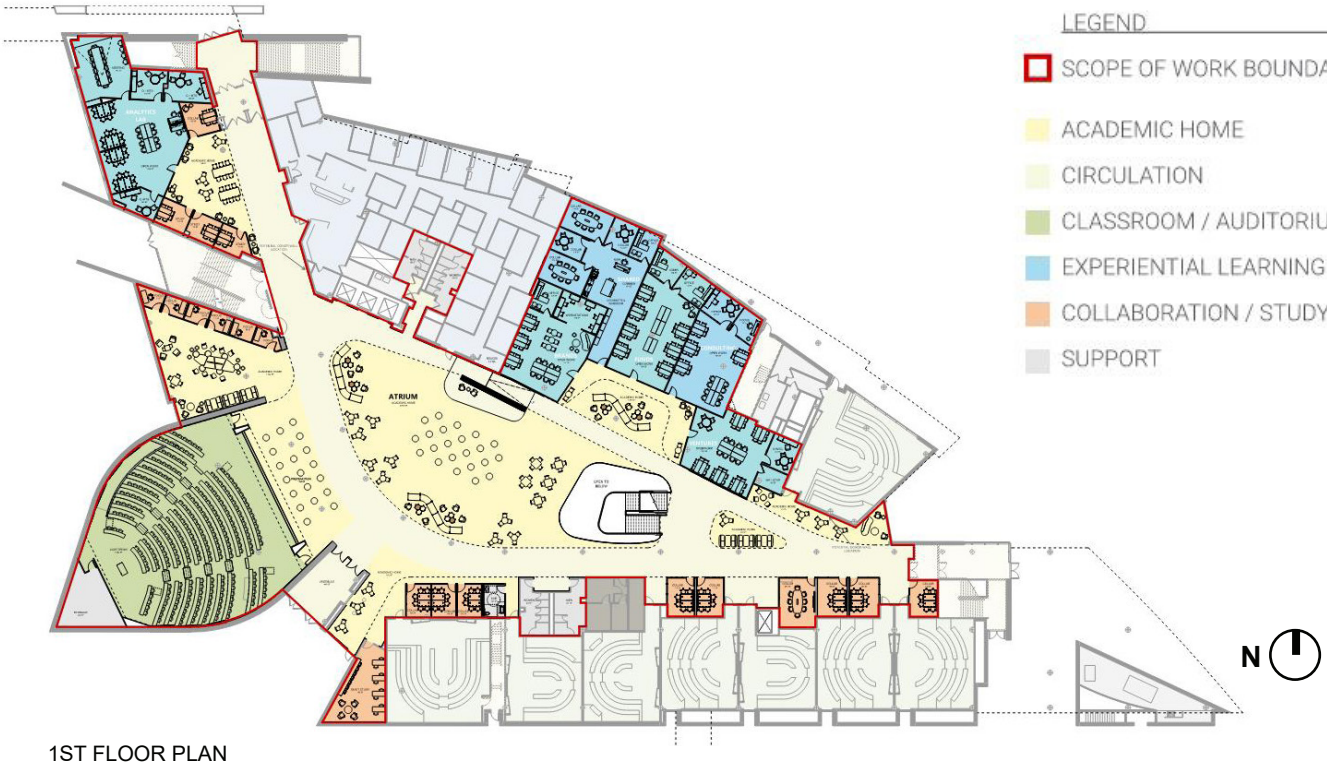


LOCATION MAP

INTERIOR RENDERING

INTERIOR RENDERING

INTERIOR RENDERING



1ST FLOOR PLAN

PROPOSED DESIGN MODIFICATIONS

Schematic Design: Moos Tower Install MRI for Dentistry
Twin Cities Campus
Project No. 01-142-22-1818

1. Basis for Project:

Dentistry relies heavily on imaging using ionizing radiation and lacks imaging solutions for soft tissues and early detection of disease. Magnetic resonance imaging (MRI) offers these imaging capabilities and many others without using ionizing radiation. Dentistry has yet to adopt MRI for routine imaging because the physical equipment (e.g., magnet proper, RF coil) is not designed for dental applications, pulse sequences have not been developed and optimized for Dental applications, and the workflow able to support point-of-care diagnostics for a productive dental practice has not been worked out.

To work towards realizing the advantages of MRI for dentistry, two companies that are leaders in MRI technology (Siemens Healthineers) and (Dentsply Sirona) have teamed up with two academic institutions (Aarhus University, University of Minnesota) to work together to address unmet clinical needs. We are now moving to the clinical trials phase to assess the utility of MRI for clinical indications. The siting of the MRI scanner within Moos Tower is required to conduct this clinical research.

2. Scope of Project:

This project will renovate a 1,200 SF underutilized space in Moos Tower room 1-712 to accommodate a new MRI for dental imaging. The scope includes asbestos abatement, minor demolition, and build-out of a suite of rooms to support a Magnetom Free Max .55T MRI unit.

3. Campus Plan:

The project complies with the Twin Cities Campus Plan, dated December 2021.

4. Environmental Issues:

Identified abatement issues include hazardous materials within the project area; the project budget includes these associated abatement costs.

5. Cost Estimate:

Construction Cost	$1,399,300
Non-Construction Cost	$277,700
Total Project Cost	$1,677,000

6. Capital Funding:

Central Resources	$750,000
School of Dentistry	$927,000
Total Capital Funding	$1,677,000

7. Capital Budget Approvals:

This project was identified as a potential project in the FY 2024 Annual Capital Budget.

8. Annual Operating and Maintenance Cost:

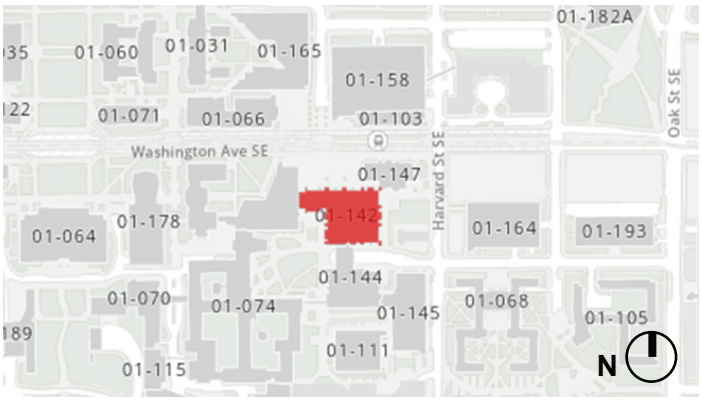
This project is not expected to have any significant impact on the existing operating cost.

9. Time Schedule:

Proposed Design Completion:	November 2023
Proposed Substantial Completion:	July 2024

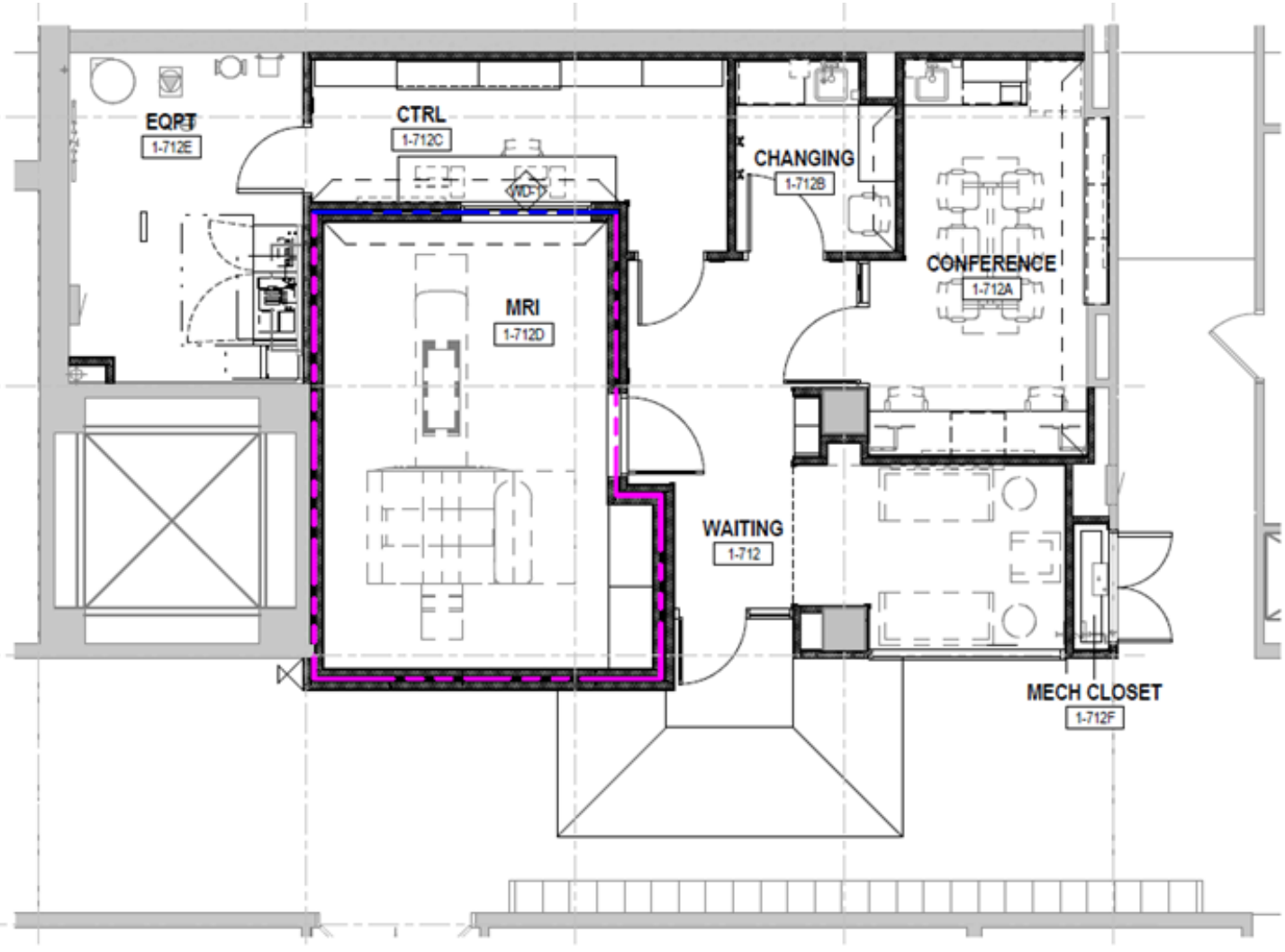
10. Project Team:

Architect:	Leo A. Daly
Construction Contractor:	TBD



LOCATION MAP

MRI MACHINE



Partial Floor Plan

PROPOSED DESIGN MODIFICATIONS

Schematic Design:
Phillips-Wangensteen Building (PWB): 8-310 Temporal Bone Lab Relocation
Twin Cities Campus
Project No. 01-144-23-2135

1. Basis for Project:

The Temporal Bone Lab, long a crown jewel of the University of Minnesota Medical School's Department of Otolaryngology, Head and Neck Surgery, needs revitalization to ensure that the next generation of otolaryngologists is prepared to meet the needs of those with hearing loss throughout Minnesota and beyond. In the Temporal Bone Lab, residents, fellows, audiologists, and other medical professionals practice surgical procedures, hearing aid fittings, and other necessary skills that prepare them for practice.

2. Scope of Project:

The current Temporal Bone Lab is in PWB 8-340. This relocation project includes the renovation of PWB 8-310 (730 SF) to accommodate 16-20 temporal bone lab stations, involving the demolition of existing casework, new fume hoods, and interior walls. Each lab-type station will have power, data, sink/water, vacuum, microscope connected to video output, microscopic drill (requires above average filtration), eyewash/shower, and audio-visual connection.

3. Campus Plan:

The project complies with the Twin Cities Campus Plan, dated December 2021.

4. Environmental Issues:

Identified abatement issues include hazardous materials within the project area; the project budget includes these associated abatement costs.

5. Cost Estimate:

Construction Cost	$823,000
Non-Construction Cost	$383,840
Total Project Cost	$1,206,840

6. Capital Funding:

Medical School	$1,206,840
Total Capital Funding	$1,206,840

7. Capital Budget Approvals:

This project was identified as a potential project in the FY 2024 Annual Capital Budget.

8. Annual Operating and Maintenance Cost:

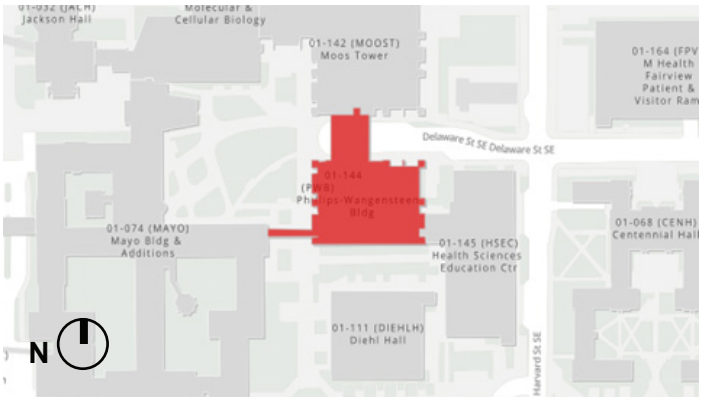
This project replaces an obsolete temporal bone lab. This project is not expected to have a significant impact on the existing operating cost.

9. Time Schedule:

Proposed Design Completion:	December 2023
Proposed Substantial Completion:	July 2024

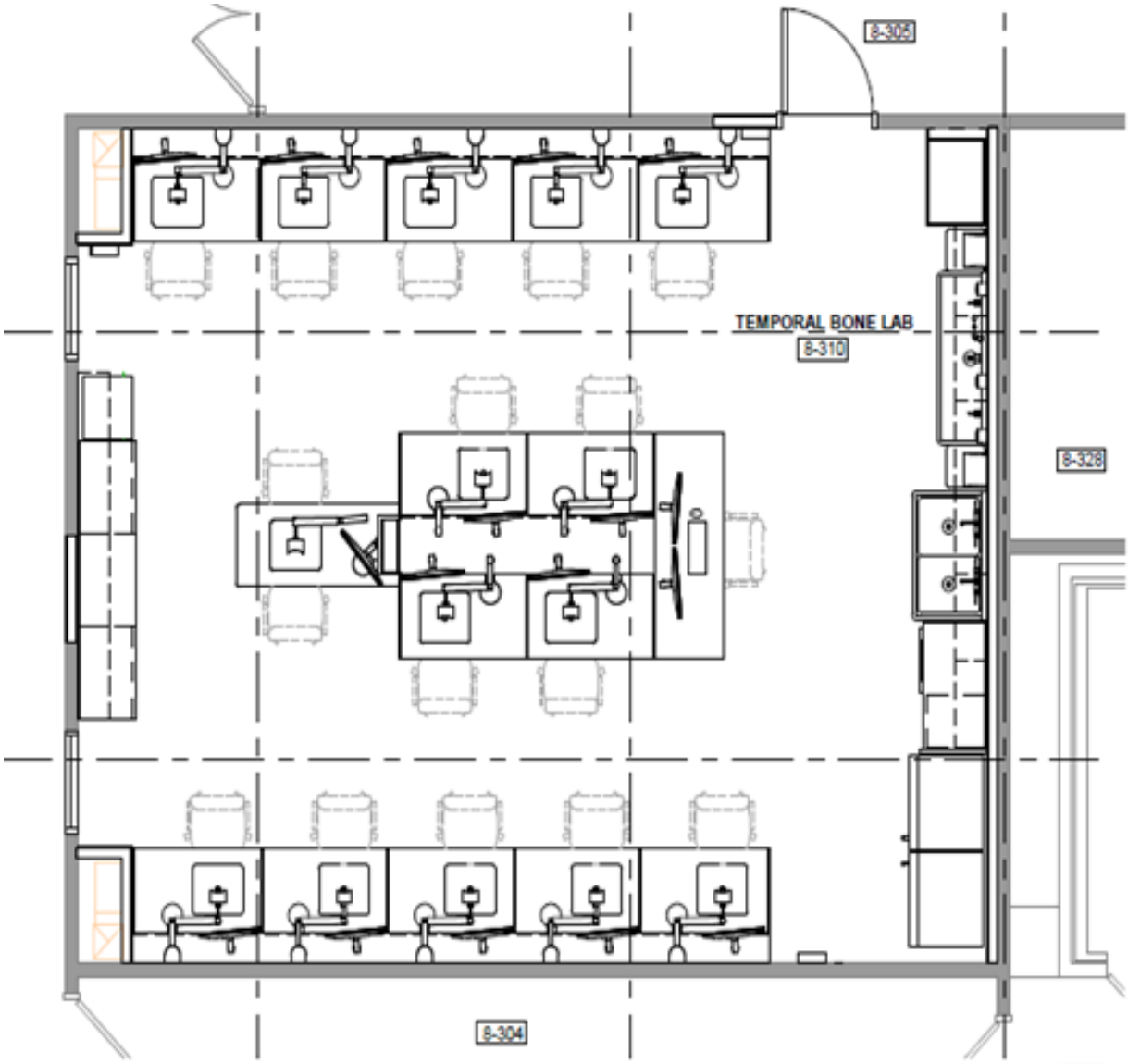
10. Project Team:

Architect:	U+B Architects
Construction Contractor:	TBD



LOCATION MAP

TYPICAL LAB STATION



Partial Floor Plan

PROPOSED DESIGN MODIFICATIONS

BOARD OF REGENTS
DOCKET ITEM SUMMARY

Finance & Operations **October 12, 2023**

AGENDA ITEM: Information Items

☐ **Review** ☐ **Review + Action** ☐ **Action** ☒ **Discussion**

☒ *This is a report required by Board policy.*

PRESENTERS: Myron Frans, Senior Vice President

PURPOSE & KEY POINTS

A. Central Reserves General Contingency Allocations
B. Annual Asset Management Report
C. Investment Advisory Committee Update

Central Reserves General Contingency Allocations

Allocations from the Central Reserves General Contingency greater than $250,000 require Board approval. There are no items requiring approval during this period. A current summary of General Contingency allocations for this fiscal year is included in the docket.

Annual Asset Management Report

The purpose of this item is to report on the annual performance results for assets managed by the Office of Investments & Banking (OIB) for the quarter and the fiscal year ending June 30, 2023. The OIB prepares this report, as required by Board policy, for review by the Board.

Investment Advisory Committee Update

The purpose of this item is to provide a report on the quarterly meeting of the Investment Advisory Committee held on August 23, 2023. The agenda for the meeting included:

- CEF Portfolio and Performance Overview
- Manager Recommendation: Ares Capital Europe VI: Approved
- Annual Benchmark Review: Approved
- Portfolio Strategy Discussion – Geographic Allocation

Central Reserves General Contingency Allocations
Finance & Operations Committee
October 2023

	Recipient	Amount	Running Balance	Purpose
14	**Fiscal Year 2024** (7/1/2023-6/30/2024)			
15	**Carryforward from FY23 to FY24**		**$1,687,854**	
17	FY24 General Contingency Allocation	$1,000,000	$2,687,854	
16	**New FY24 items this reporting period:**			
17	n/a		$2,687,854	
18	**Current Balance**		**$2,687,854**	

* Items $250,000 or more subject to Board approval.

Annual Asset Management Report

For the period ending June 30, 2023

Stuart Mason, Associate Vice President, Chief Investment Officer
Andrew Parks, Deputy Chief Investment Officer

SENIOR VICE PRESIDENT FOR FINANCE AND OPERATIONS

World Class Services for a World Class University

Office of Investments & Banking
University of Minnesota

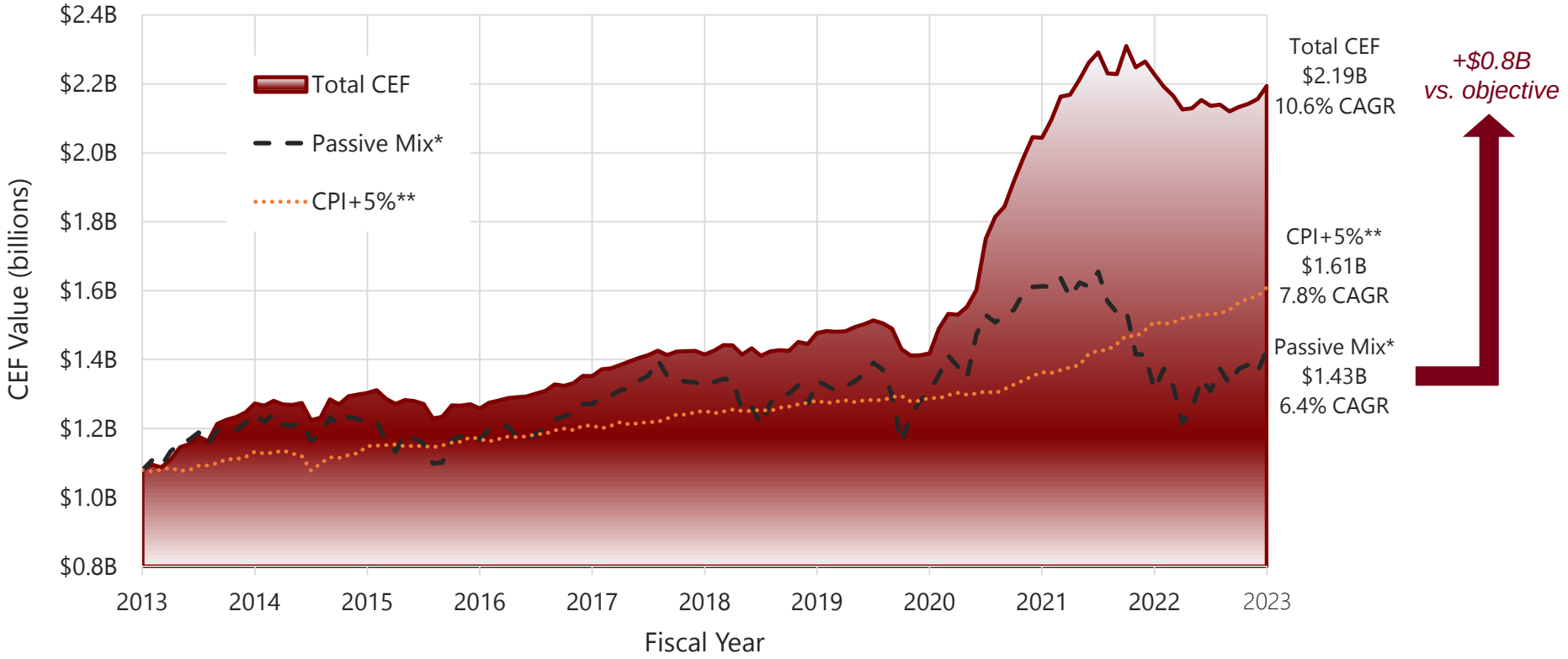
University Investment Funds

Total assets under management remains relatively unchanged at $4.5 billion.

OIB Managed Funds ($M)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Consolidated Endowment Fund (CEF)	$ 1,415	$ 1,477	$ 1,418	$ 2,043	$ 2,228	$ 2,194
Short-Term Reserves (TIP)	1,068	1,183	1,086	1,468	1,599	1,585
Long-Term Reserves (GIP)	71	81	85	104	101	89
RUMINCO Ltd.	48	52	51	69	62	71
Invested Assets Related to Indebtedness	25	63	15	24	28	28
30-Year Bullet Bond Proceeds	-	-	-	-	489	511
SSBCI Venture Capital Program	-	-	-	-	-	10
Total Managed Assets	**2,628**	**2,855**	**2,656**	**3,708**	**4,508**	**4,489**

Our long-term goal is to **preserve** the inflation adjusted value of the endowment (CPI+5%)

Outperformance vs. Long-Term Objective



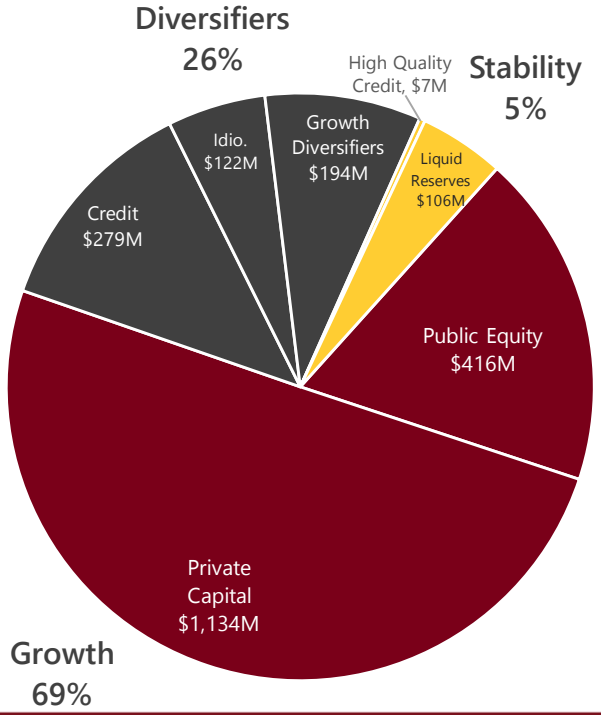
* Measures efficacy of long-term strategy vs. passive mix of stocks and bonds. 7/2015-current: 70% MSCI ACWI, 30% Barclays Global Aggregate; 1/1990-6/2015: 70% MSCI ACWI, 30% Barclays US Aggregate. *Source: State Street*

** Measures ability to preserve inflation-adjusted corpus of endowment. Index Return: US CPI Urban Consumers MoM SA. *Source: Bloomberg*

CEF Asset Allocation

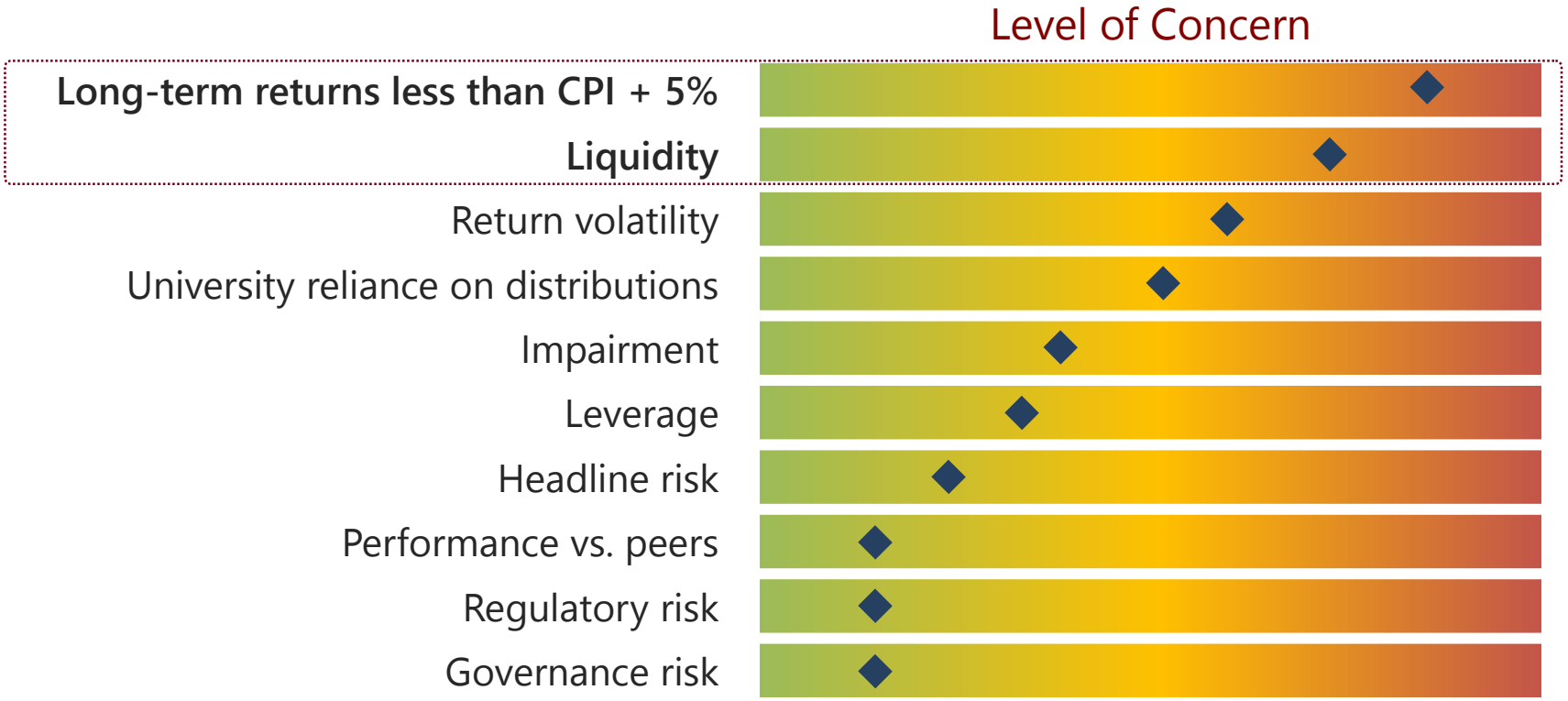
Value as of 6/30/23: $2.19B

The fund's asset allocation positioning is within approved ranges, with a slight overweight to equity-oriented Growth assets attributable to the outperformance of illiquid private equity and venture capital strategies over the past 5 years.



	Target (Range)	Over/Under vs. Target
Growth	65% (55% - 75%)	+4%
Diversifiers	30% (20% - 40%)	-4%
Stability	5% (2% - 12%)	+0%

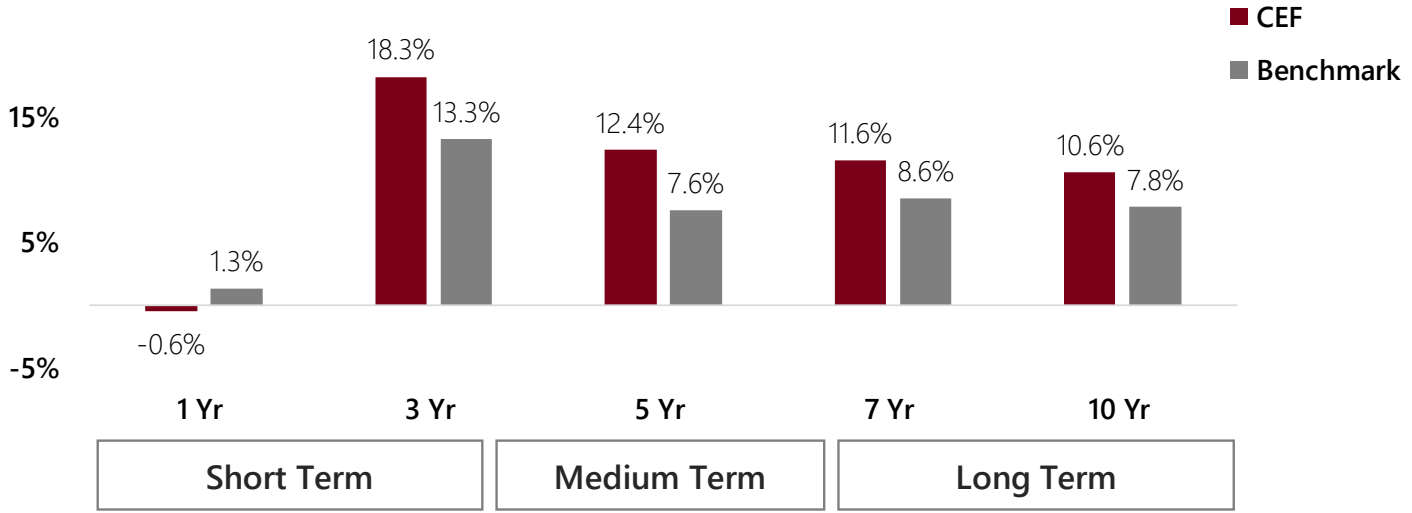
CEF Key Risk Factors



CEF Performance Summary

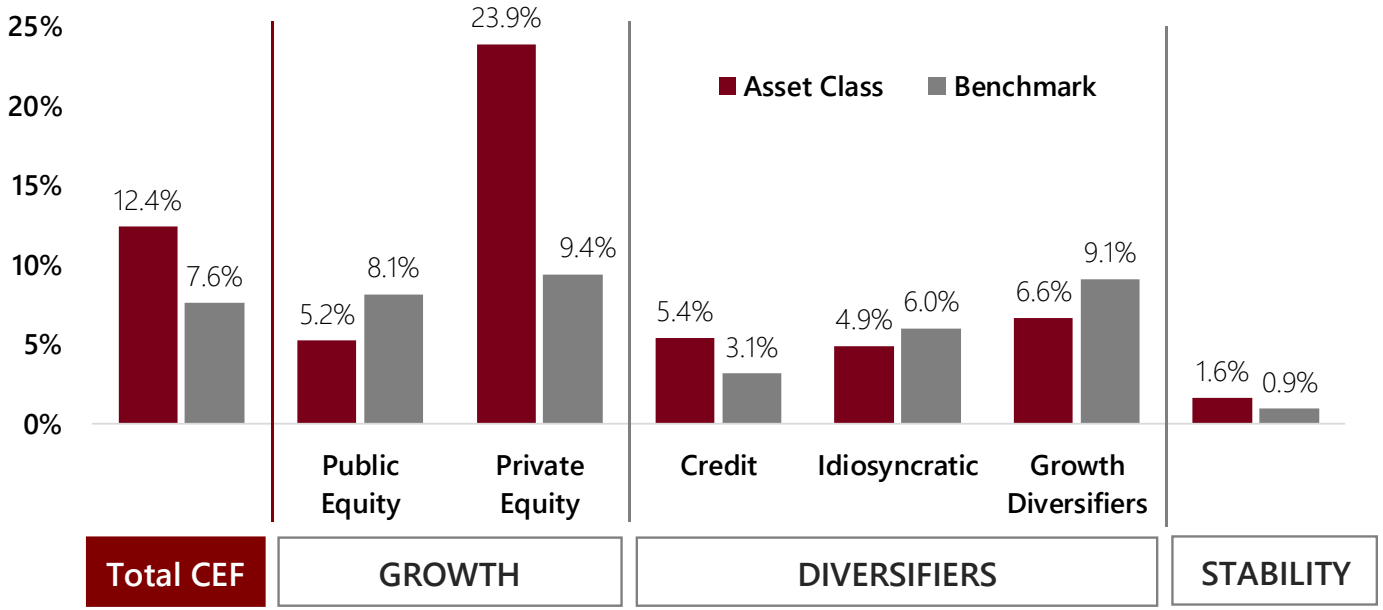
Value as of 6/30/23: $2.19B

The Endowment declined by 0.6% over the past fiscal year (vs. +1.3% for the benchmark), primarily due to the 17.0% decline in the VC portfolio - which continues to be hard hit by the re-pricing of unprofitable growth companies – partially offset by the 17.1% gain in public equity and 8.4% gain in private equity. The Diversifiers portfolio returned a modest +5.0%, driven by the natural resources (+10.4%) and idiosyncratic (+7.9%) portfolios. Medium- and long-term absolute and relative returns remain strong primarily due to the overweight to, and strong outperformance of, the venture capital and private equity portfolios. The combined private capital portfolio has generated 23.9% returns over the past 5 years, outpacing the Burgiss Global PE/VC index by 6.5% and ACWI by 16.2%.



5-Year CEF Asset Class Returns

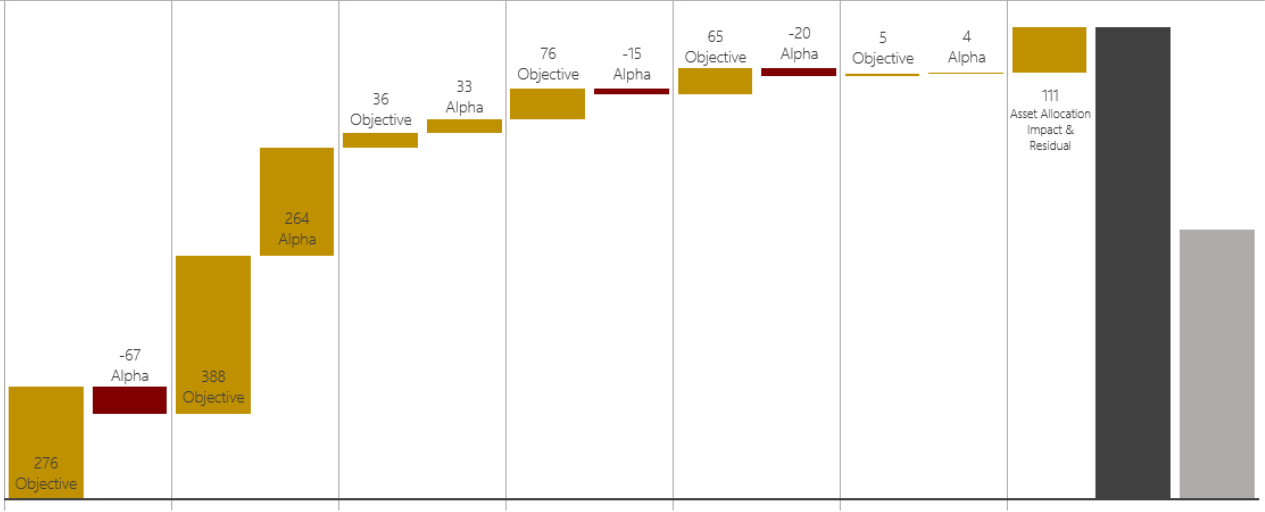
CEF's +12.4% 5-year annualized return meaningfully exceeds the benchmark return of +7.6% largely due to an overweight to illiquid private equity and venture capital strategies, which collectively outperformed their respective benchmark by 14.5%. The public equity portfolio has lagged its benchmark due largely to defensive positioning. While credit-oriented strategies have performed well vs. benchmarks, the Diversifiers sleeve has struggled to meet its CPI+5% return target as real assets, natural resources and idiosyncratic hedge funds have delivered underwhelming results.



7-Year Contribution to Return

Outperformance vs. the 70/30 passive blend of ACWI and the Barclays Aggregate continues to be driven mainly by strategy selection, as illiquid growth sleeves (VC +22.8%, PE +19.3%) outperformed ACWI (+9.7%) and the Diversifiers return of +5.5% - albeit disappointing on an absolute basis – outperformed the duration sensitive Barclays Aggregate (+0.4%).

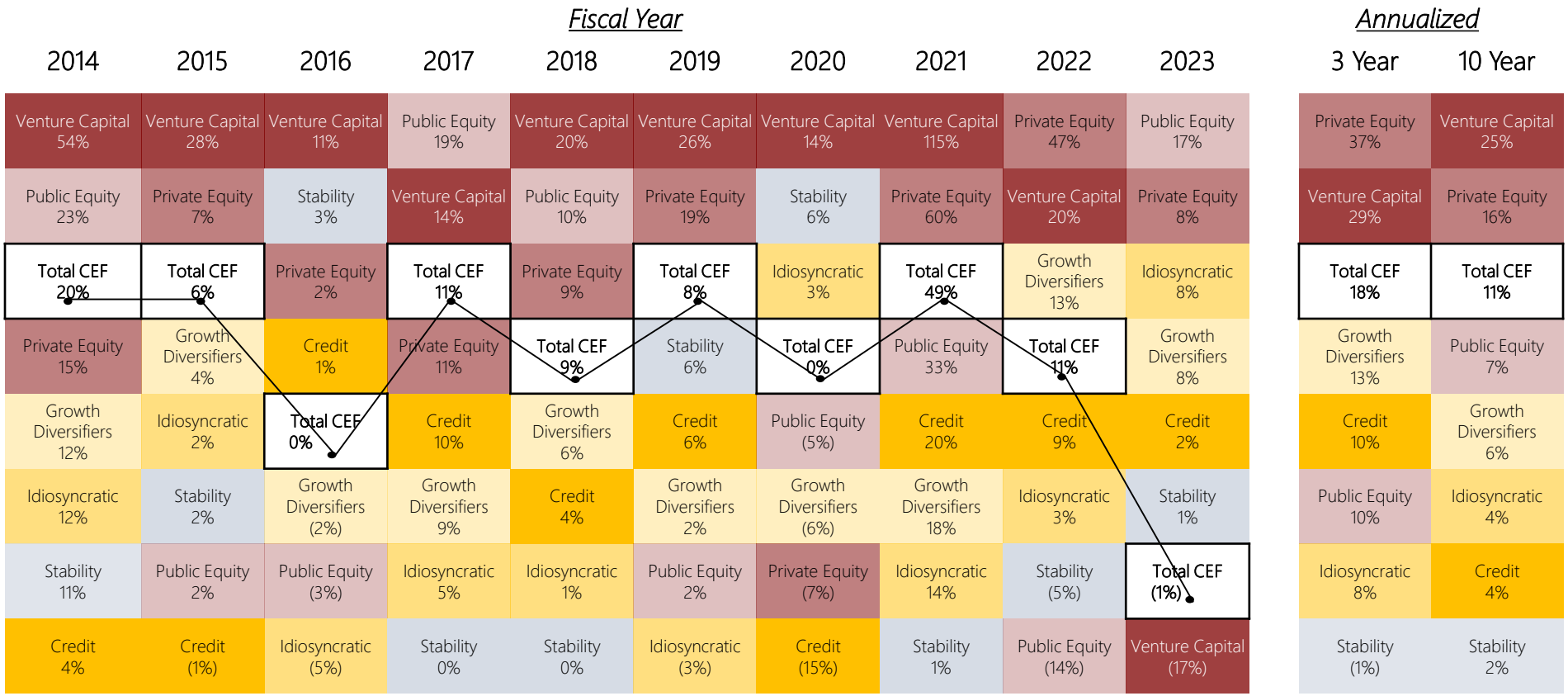
	Public Equity	Private Capital	Credit	Growth Diversifiers	Idiosyncratic	Stability	Total CEF	L-T BM
Asset Class Return	7.6%	20.5%	5.8%	6.9%	4.3%	1.2%		
CTR (bps)	+210	+653	+70	+61	+45	+9	11.6%	6.6%



Objective: Weighted Average Contribution to Return based on respective asset class Long-Term Benchmark return.

Alpha: Variance of Actual Contribution to Return vs. Objective

ANNUAL ASSET CLASS RETURN QUILT CHART



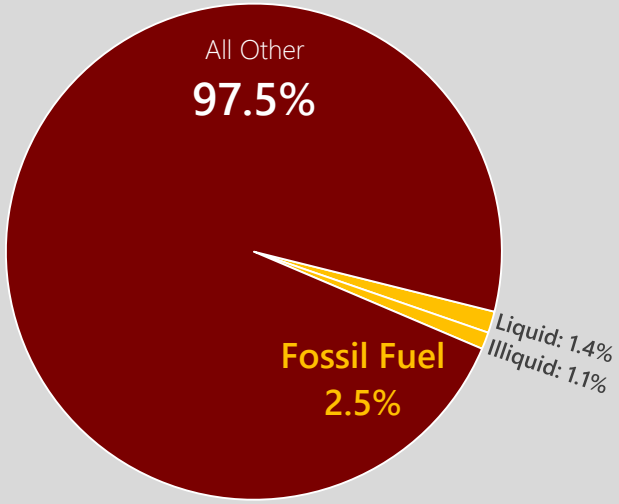
Endowment Fund Policy Compliance Summary

Category	Metric	Status as of FYE'23
Illiquidity	50-75%	✓ 68%
Leverage	<110%	✓ 103%
Single Fund Concentration	<10%	✓ 5.0%
Manager Concentration	<20%	✓ 12%
Co-Investments	<6%	✓ 3.2% *(cost basis)*
Emerging-, minority- and woman-owned firms	N/A	OIB committed $25.5M (13% of FY23 commitments) to 6 qualifying firms. Investments in woman-, diversity-owned/managed, or emerging managers constitute 15% of all CEF managers.
New managers in FY23	N/A	Citadel, VY Capital
Terminated managers in FY23	N/A	CQS, Good Hill, Fir Tree

ENDOWMENT FUND FY23 ESG DASHBOARD

*The Office of Investments & Banking (OIB) is charged with **integrating Environmental, Social and Governance (ESG) principles** in its investment decisions, consistent with the University's mission and values.*

FOSSIL FUEL EXPOSURE



Only ~2.5% of the endowment is invested in fossil fuel-related exposures. Most of the illiquid funds with exposure are in liquidation mode while the majority of public exposure is obtained via index funds.

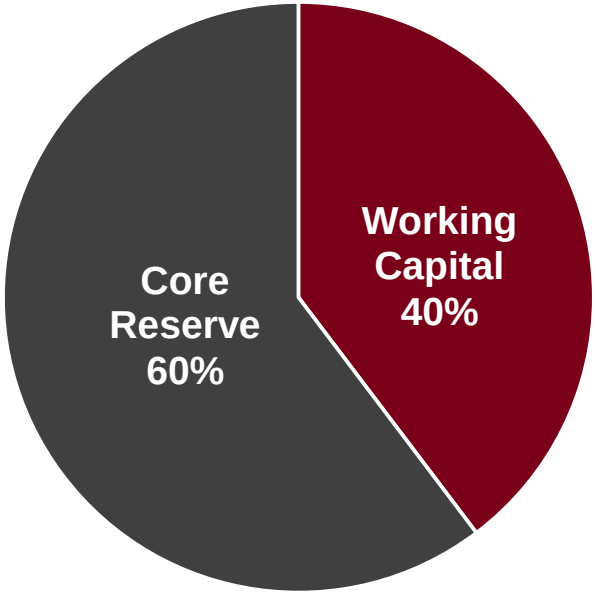
HIGHLIGHTS – BY THE NUMBERS

154M	• $ exposure to ESG Aware and low carbon funds, representing ~44% of public equity
40	• % of managers that are UNPRI signatories • UMN became a signatory in April 2022
6	• # of "emerging, minority- or woman-owned" managers committed to in FY2023
12	• LP Advisory Committee seats OIB staff occupy in effort to promote strong governance principles
600,000	• Metric tonnes of held carbon credits, removing the equivalent of roughly 2 years of UMN Twin Cities campus emissions
45M	• $ committed to funds financing two of the largest renewable power producers in the U.S. (development and operation of 57 GW of wind, solar, and battery storage assets)

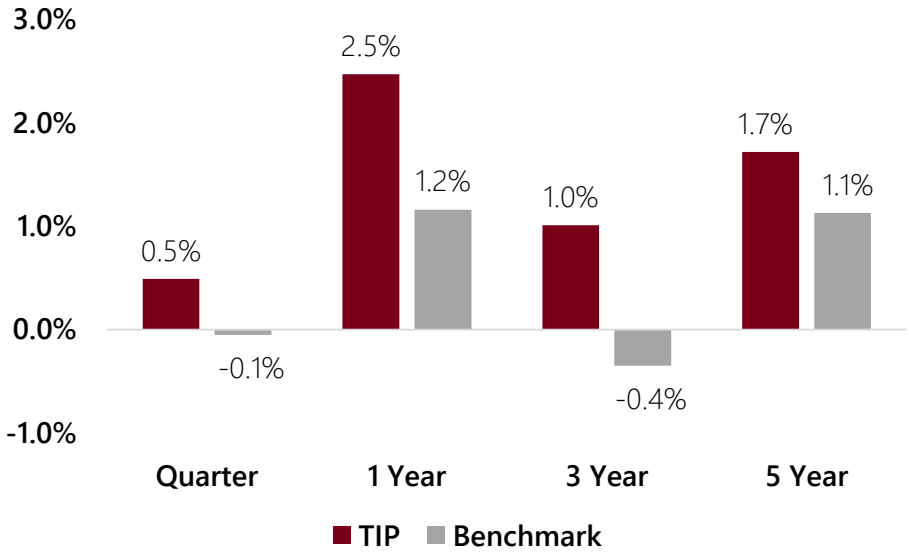
Short-Term Reserves (TIP)

Value as of 6/30/23: $1.59B

Asset Allocation



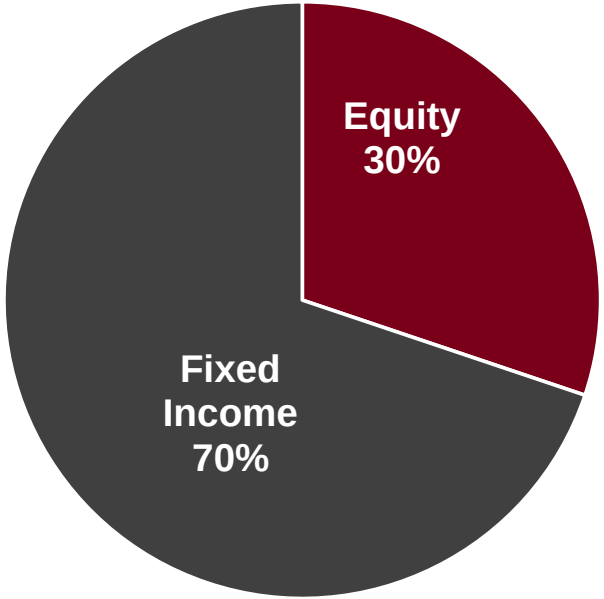
Performance Summary



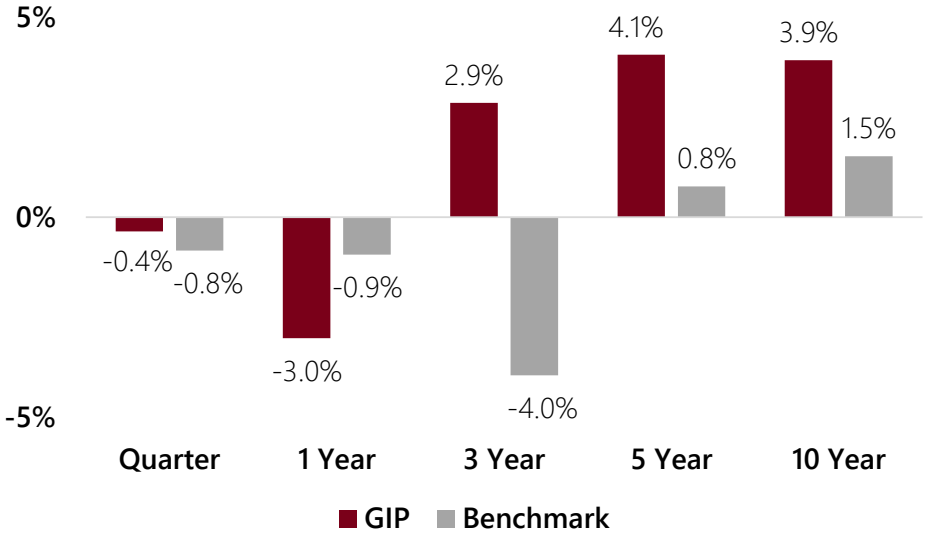
Long-Term Reserves (GIP)

Value as of 6/30/23: $89M

Asset Allocation



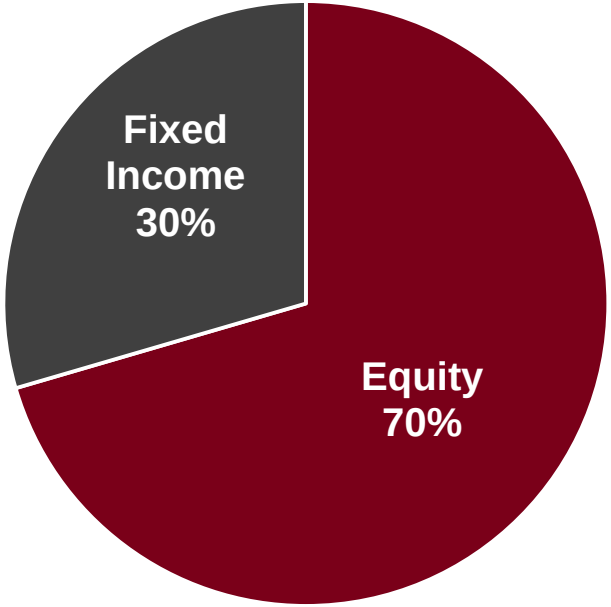
Performance Summary



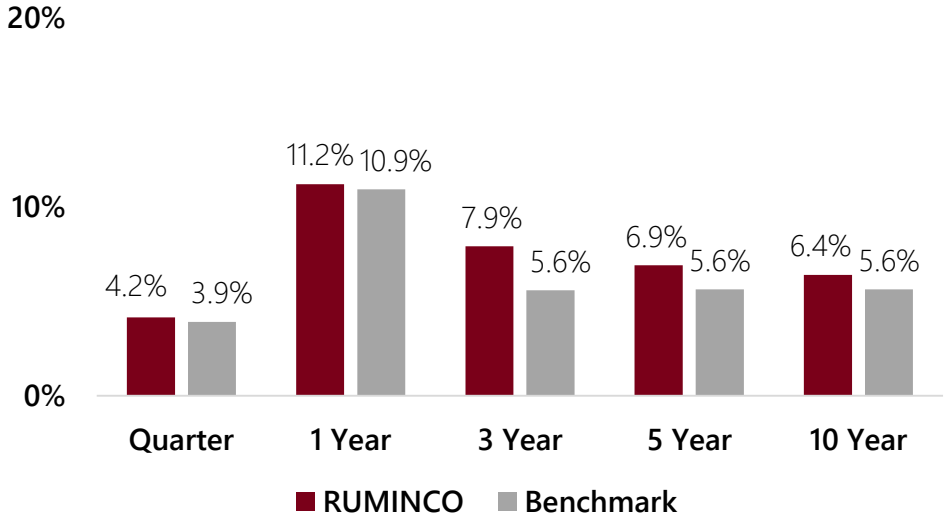
RUMINCO LTD.

Value as of 6/30/23: $71M

Asset Allocation



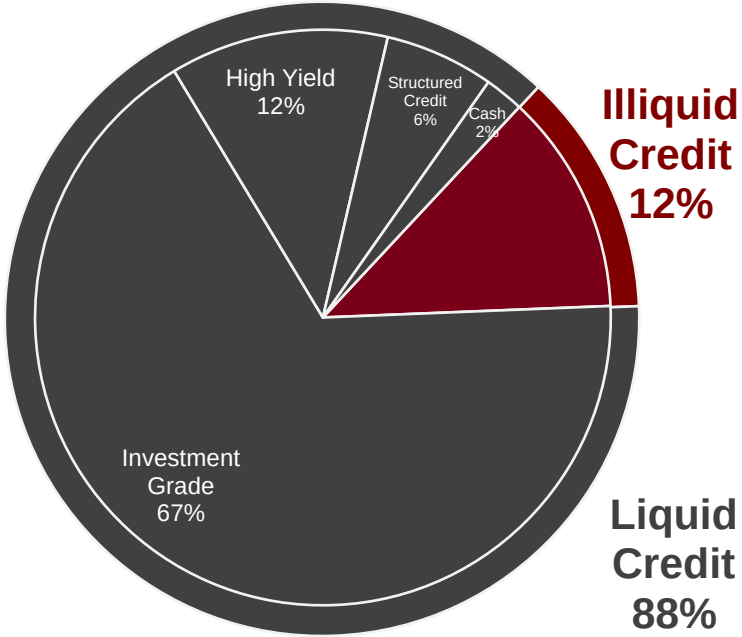
Performance Summary



30-Year Bullet Bond Proceeds

Value as of 6/30/23*: $511M

Asset Allocation



Performance & Statistics

Inception Date	5/19/22
Realized Yield *(since inception)*	+4.94%
Performance (*since inception)*	+2.34%
Weighted Average Credit Quality**	A-
Weighted Average Duration**	1.24 years
Weighted Average Yield to Maturity[1]	6.12%
Excess Yield vs. UMN's 2022 30-Year 4.048% Bullet Bonds	+2.07%

* The Board of Regents has thus far approved allocating $328.1M of bond proceeds to capital projects. Subsequent to 6/30/23, $91.0M of both principal and interest earnings was withdrawn to fund a portion of these approved projects, as well as to offset interest expense and other incurred costs.
** Excludes illiquid strategies

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