

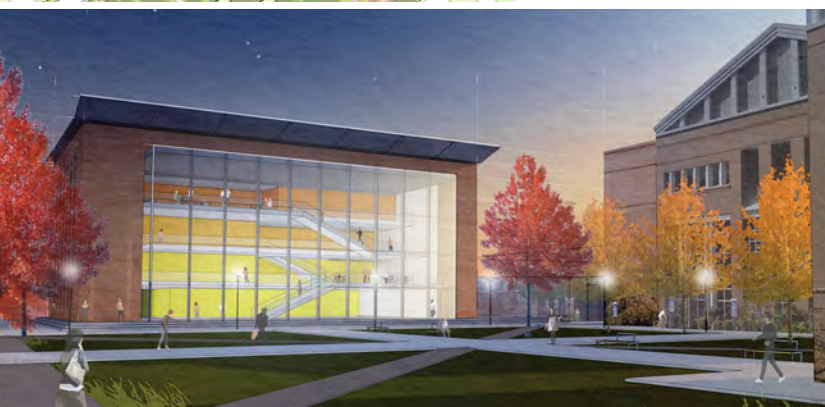


EASTERN CONNECTICUT STATE UNIVERSITY

CONNECTICUT STATE COLLEGE & UNIVERSITY SYSTEM

EASTERN CONNECTICUT STATE UNIVERSITY MASTER PLAN UPDATE

APRIL 2016



PERKINS+WILL



EASTERN CONNECTICUT STATE UNIVERSITY

CONNECTICUT STATE COLLEGE & UNIVERSITY SYSTEM
**EASTERN CONNECTICUT STATE UNIVERSITY
MASTER PLAN UPDATE**

APRIL 2016

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ACKNOWLEDGEMENTS

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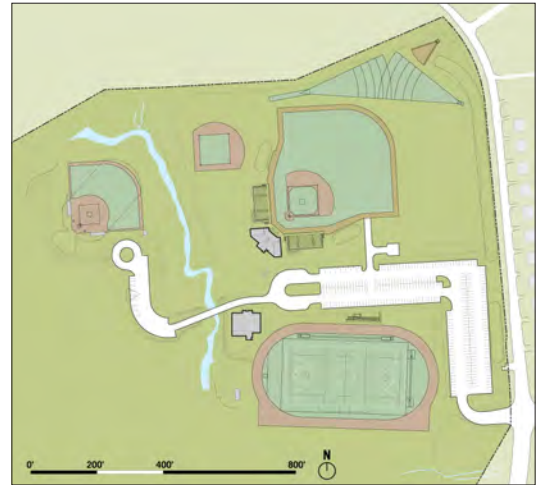
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EXECUTIVE SUMMARY



FIGURE 01.1 The Main Campus Today



Mansfield Athletic Complex (north of Main Campus)

EXECUTIVE SUMMARY

The Master Plan Update for Eastern Connecticut State University reflects a collaborative, interdisciplinary effort that engaged leadership and stakeholders across the University for nine months. A core goal for the Plan is to improve the setting and facilities to support Eastern's unique mission as CSCU's Liberal Arts public university. Other important goals were optimizing the use of existing facilities and identifying the most important projects needed for new and renewed buildings. Advancing sustainability in land use, buildings, operations, energy and resource use was also fundamental.

EXISTING CONDITIONS

Key Facts

- Campus: 184 acres, in Willimantic and Mansfield
- Development: 53 Buildings / 1,944,497 GSF
- Student Housing: 2,654 beds (Fall 2015)
- Parking: 2,939 spaces in 2 garages, multiple lots
- Transit: Campus shuttle, regional bus (no local bus service)

The Master Plan Team comprehensively assessed Eastern's existing campus – its context, access, land use, buildings, circulation, landscape, infrastructure and energy use. The team also assessed the existing and projected 10-year enrollment figures and the range of academic and other programs. This work served as a foundation for understanding current constraints and for framing capital projects in the Master Plan Update to meet the Universities high priority needs in the next 10-year period.

Eastern's campus has grown over time without an original master plan vision. As a result, the location of buildings and roads in some areas is ad hoc. The scale of development in the last 15 years has been dramatic – doubling the University's floor area. These development projects have served to frame

quadrangles and improve the campus setting. More remains to be done, however, to clarify the campus layout while renewing facilities and accommodating additional growth. As Eastern's development continues, it must be careful to maintain a scale that is compatible with its identity as a liberal arts college.

Key Findings: Existing Conditions

- Eastern's main campus is bordered by primarily single family houses
- Windham Technical High School at the west edge of campus may be available for acquisition
- Eastern's space per student is near the median for CSCU and lower than most similar peer institutions in the northeast
- The majority of classrooms are fully utilized at near full capacity
- The campus has few remaining clear development sites
- Some land is occupied by low-density, obsolete buildings
- Parking is adequate but imbalanced, with more in the north than the south
- Campus quadrangles are not well connected
- There is a partial loop road with other roads bisecting the heart of the campus
- Eastern is a leader in sustainability with the Center for Sustainable Energy Studies and Institute for Sustainable Energy

ENROLLMENT

In preparation for the Master Plan, the University prepared a 10-year projection for undergraduate and graduate students by school and department. The Board of Regents reviewed and approved these projections, summarized below, which became the basis for the space needs assessment.

Students (Headcount)	Existing Fall 2014	Projected Fall 2025
Undergraduate	5,784	5,782
Graduate	160	230
Total	5,944	6,012

SPACE NEEDS

The projection of 10-year space needs for academic, research, support and administrative spaces reflect a comprehensive process that factored academic and strategic goals, current and projected approved enrollments by department, analysis of existing space utilization and benchmarking, and over 40 interviews with administrators, deans, faculty, students, and staff. The work was led by an experienced academic space programming consultant. For the current enrollment, the space needs assessment revealed a deficit of 122,614 Assignable Square Feet (ASF) compared to 600,075 ASF existing. For the approved 10-year enrollment projections, the deficit is 138,665 ASF, or 239,077 Gross Square Feet.

The quality of space was considered as much as the quantity of space. The planning team assessed the suitability of existing buildings to meet their functional needs and identify areas that needed upgrades to meet current standards for teaching and other functions. Later expansion projects would be used to enable and drive needed phased renovations to modernize and adapt the considerable existing building inventory.

Space Needs (non-residential)	Fall 2015 (ASF)	Growth
Classroom	55,555	10%
School of Arts & Sciences	104,242	24%
School of Ed. & Prof. Studies	24,887	64%
Support	391,909	25%

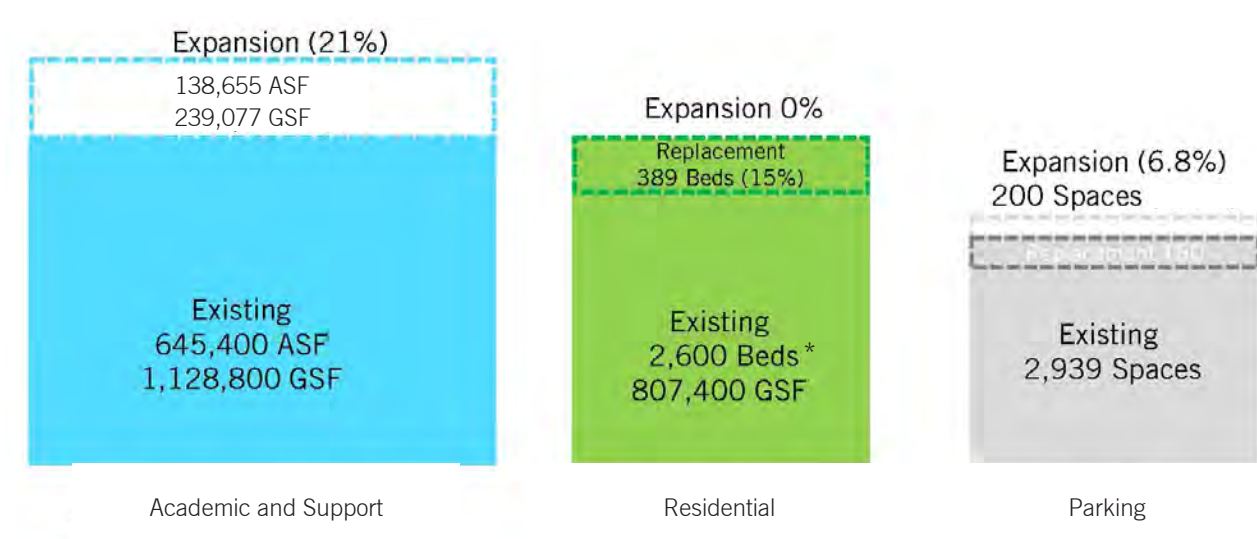


FIGURE 01.2 Space Needs Summary

*Includes detripled rooms and Shafer renovation

STUDENT HOUSING

Providing affordable, functional and attractive student housing is important for maintaining Eastern's competitive advantage. The goal to house 60% of full time undergraduates on campus is central to Eastern's mission as a liberal arts college. With the pending conversion of Shafer Hall to housing, Eastern will be able to "de-triple" bedrooms and have a sufficient number of beds for the next 10-year period at 2,600 total. Quality is more the issue for housing in the Master Plan. The Low Rise Apartment complex and Winthrop Hall are each obsolete and make poor use of valuable campus land. The phased replacement of these 389 beds in facilities totaling 119,000 GSF is the key driver for student housing in the Plan.



Hurley Hall and Mead Hall

PARKING

With the construction of two major garages in the last 12 years, Eastern has a total of 2,939 parking spaces distributed across the main campus, the south areas in the town of Willimantic and the Mansfield campus. Total campus parking is projected to remain sufficient for future needs, provided spaces lost to development are replaced. The overall parking distribution is inadequate for current demands. The greatest supply of parking is at the north, and the greater demand in the south. To address this imbalance, the Plan recommends an increase of 200 spaces in the south, plus replacement spaces for those lost to development.



Cervantes Garage



South Residential Village



Library Parking Lot

SCENARIOS

During this phase of the Master Plan, the team explored a wide range of alternatives for meeting the needs for buildings, circulation, parking, landscape and infrastructure. Each scenario was framed to meet the same development requirements, exploring alternative locations and configurations to understand pros and cons of each. A few projects because of their scale, served to differentiate the scenarios. These are summarized below.

Small scale development projects could be accommodated flexibly and could be done “a la carte” in any scenario. Other projects – like renovations – that were needed in any final plan, did not serve as differentiators while studying the scenarios.

The potential availability of the **Windham Tech High School** site made the planning process for Eastern unique. A Master Plan for Eastern from the 1970's recommended acquiring the WTHS site if possible. In this update, the team studied the advantages of acquiring this state-owned land for Eastern's use in one of the three scenarios.

The team explored three scenarios which were differentiated by alternative locations for the following projects:

Sports Center

Finding a suitable location for this 132,000 GSF building was key in the scenarios. Expanding on the current Sports Center site was studied and rejected given the phasing logistics, site constraints, and resulting bulk and blockage of campus connections. Locating the Sports Center on the WTHS site would be ideal in the event this site could be acquired. The preferred scenario on land owned by Eastern locates the Sports Center north of the Arts Center on a clear site, recessed into the slope to minimize its profile and set back from High Street. In each scenario, the north wing of the existing Sports Center would be repurposed and renovated as the new Recreation Center, with the obsolete south wing demolished to clear this area for effective use.

New Academic Building

The team studied a variety of scenarios for locating this 80,000 GSF building, including the site of the Sports Center demolished south wing and the north end of the main quadrangle near the cell tower. The preferred location is near the library, to form an ensemble with the Foster Clock Tower near the main campus entrance.

Replacement Student Housing

Alternative sites were studied in the south campus for these buildings, to replace Winthrop Hall and the Low Rise Apartments which would be demolished. To maintain proper scale and setback from the Library, the preferred approach was a distributed solution– with the freshmen housing to the north, and the replacement beds for Low Rise in a two-phase project in the south campus.

Dining Facility

The team studies two scenarios – expanding / renovating Hurley Hall and replacing it with a new, better located facility. The selected approach was a near-term enhancement/ expansion of Hurley and longer term a replacement with a new Dining Hall in the center of the campus.

Field House

After study in the scenarios, the team agreed that this facility would best be located at the Mansfield Campus. Given the scale and utilitarian nature of this structure, locating it on the main campus is not a good use of land unless the WTHS could be acquired.

Loop Road Configuration

In order to green the heart of the campus and eliminate the roads that divide the core, it is necessary to complete the perimeter loop road and create a clear, functional vehicle circulation system. A range of approaches were studied in the scenarios for realigning the perimeter road to eliminate bottlenecks, smooth curves and to relocate Windham Street Extension to expand the campus core area.

Parking

The most cost effective approach to expanding parking in the south campus the acquisition of the WTHS property if this proves feasible. Scenarios for a parking deck were explored on the site of the Low Rise Apartments, which proved feasible. Care must be taken to scale the parking at this location due to proximity of the residential neighborhood.

FIGURE 01.3 SCENARIO 1

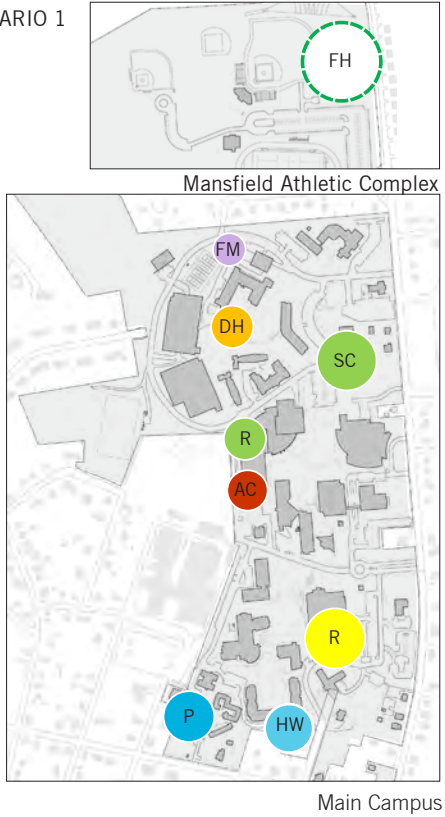


FIGURE 01.4 SCENARIO 2

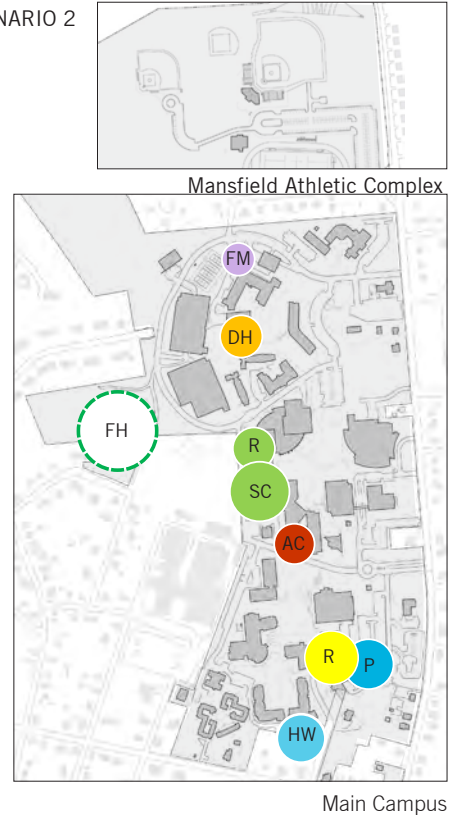
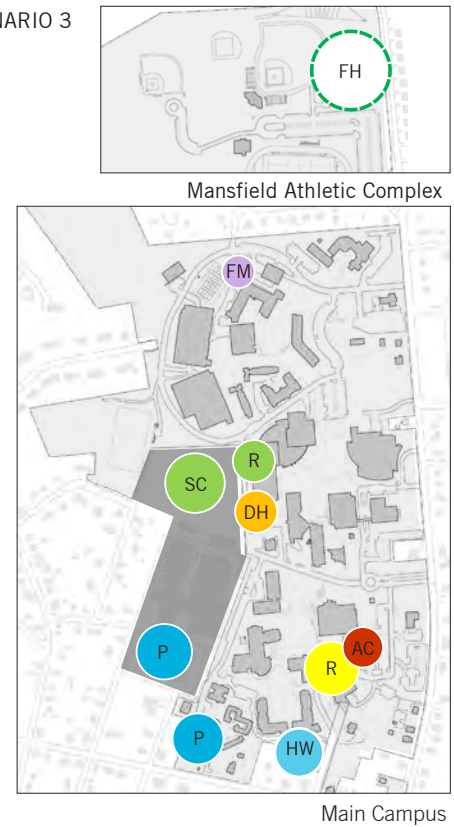


FIGURE 01.5 SCENARIO 3



KEY

Facilities/Maintenance	FM
Dining Hall	DH
Sports Center	SC
Recreation	R
Academic Building	AC
Residential	R
Health & Wellness	HW
Parking	P
Field House	FH

MASTER PLAN RECOMMENDATIONS

The preferred approach selected by the Advisory Committee was a blend of the Scenarios. Together, the recommended projects encompass open space, streetscape, new and renovated buildings and infrastructure upgrades. A sustainable approach is embedded throughout, in land use, renewal of existing buildings whenever feasible, transportation recommendations, stormwater management and guidelines for building construction and energy use. A summary of the select projects follows:

Sports Center

The recommended location for the Sports Center is the site north of the Arts Center. This has ample capacity for the building and allows for a generous setback distance from High Street. By recessing the building into the slope, the Sports Center would be significantly lower than the Arts Center and not detract from it. It is recommended that the massing of the building be designed to lessen the impact on the Fine Arts building. The entrance can face the campus, and provide a focal point at the end of a new campus pedestrian mall.

If WTHS can be acquired, this would be a preferred location for the new 132,000 GSF Sports Center. The large-scale structure could fit well on the site and frame a new vision for this part of the campus. The proximity to the Recreation Center is a strong positive as well, since these buildings could work in concert.

Professional Studies Building

This new 80,000 GSF academic building will be located near the Library to showcase Eastern's commitment to the School of Education and Professional Studies and to create a new, signature quadrangle together with the Library and the Foster Clock Tower, next to the main campus entrance. The building fits well in this location and benefits from the topography to provide daylight to a lower level at the north and west. The project includes a significant amount of classroom space to allow Eastern to renew its inventory of instructional space. It will also enable the remaining departments in Webb Hall to expand into vacated, renovated space.

Recreation Center

The north wing of the original Sports Center will be renovated and updated to serve for student recreation and physical education use. The main gym space is in good condition. The lower level would be fully renovated and may include infill of 2-story racquetball courts to meet student recreation needs. The south wing, with the outdated swimming pool is obsolete, and will be demolished to make way long term for a new Dining Hall.

Campus Road, Parking and Landscape Improvements

The recommendation for the campus open space improvements in many ways are as important as those for new and renewed buildings. Eastern's competitive position as a Liberal Arts College relies in large part on the character of its setting. A harmonious blend of landscape and architecture is a hallmark of a liberal arts college campus, complete with vibrant quadrangles to foster student social life and learning. The Master Plan recommends continued improvements to Eastern's campus, to remove roads that bisect the campus core, to create more quadrangles and to complete a perimeter loop road with parking to support easy access and servicing.

Windham Technical High School (WTHS) site:

A clear consensus emerged in the planning process. Acquiring this land would provide Eastern with much-needed additional development capacity and flexibility to support its mission in the long term. The site is especially useful for support functions that are best located at the campus periphery like large scale athletic facilities and parking. As a long, narrow campus, adding breadth in this place has strong logic and unlocks future potential development to keep Eastern vibrant for decades to come.

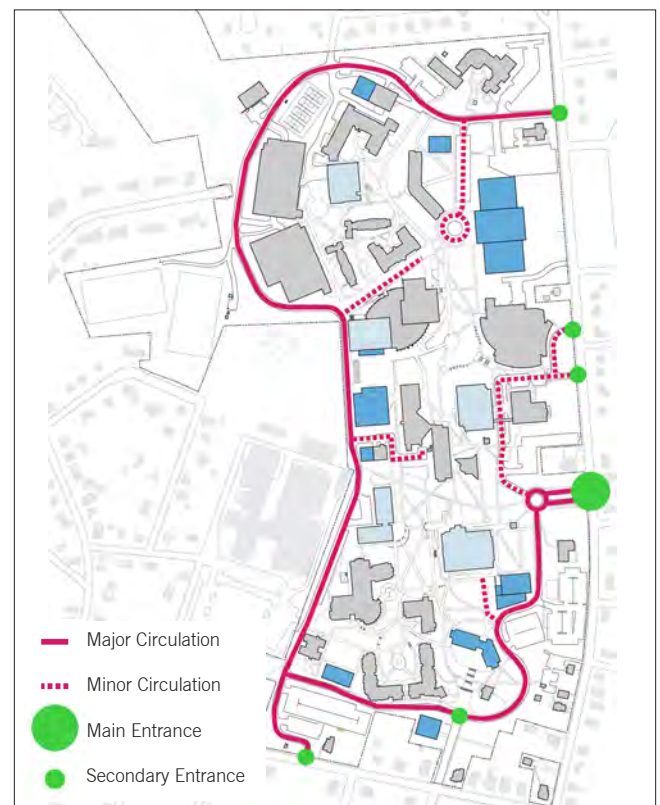
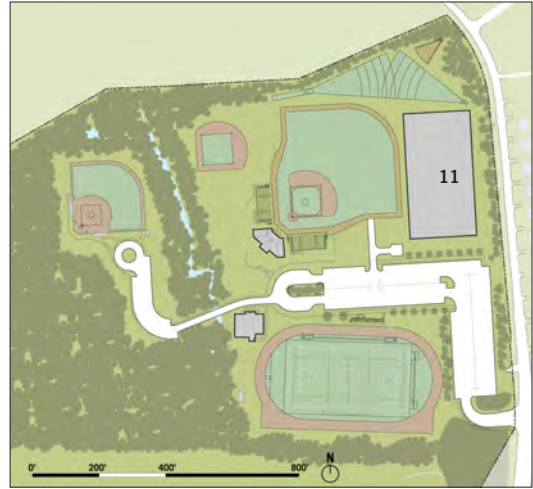


FIGURE 01.6 Master Plan Circulation



Mansfield Athletic Complex

New Construction Projects

- 1 Sports Center
- 2 Residence Hall, 75 beds
- 3 Facilities / Maintenance
- 4 Adaptive Reuse: Event /Study
- 5 New Dining Hall
- 6 Recreation Center
- 7 Academic Building and new Quad
- 8 Health and Wellness Center
- 9 New Apartment Building, 215 beds
- 10 New Apartment Building, 109 beds
- 11 Field House

Landscape, Road, Parking, Infrastructure Projects

- A Eastern Road North to Pedestrian Mall
- B Loop Road Improvements, Extension to Prospect
- C Expand North Central Plant
- D Remove Eastern Road South
- E Relocated Entry Circle
- F Library South Quadrangle
- G Upgrade Transformers, North Loop
- H Expand Lots at High Street
- I Parking Deck, Low Rise site
- J Relocate Windham extension to east

Labels are not in sequential or priority order

FIGURE 01.7 Campus Master Plan

Dining

In the near term, Hurley Hall should be expanded and renovated to address a significant need and keep Eastern competitive with its peers. Longer term, once the Recreation Center project is implemented, the Master Plan recommends a new dining hall be built south of the Rec Center to provide expansion and to relocate this key element of student life more to the center of the campus where it belongs.

Renovation Projects

Optimizing use of existing facilities is a key part of the Master Plan. Renovations to the Library, Webb, Wood, Noble, Burnap, Crandall and Burr are recommended to address deficiencies in building condition and to respond to evolving programmatic requirements for teaching, study, support functions and student life.

Health and Wellness Center

The Plan locates a 14,000 GSF building at the south end of campus to house a new Health and Wellness Center to replace the current facilities sited in converted former single family residences. The new consolidated facility will be accessible and meet contemporary requirements for these uses in a way that the constraints of the current buildings do not permit.

Residence Hall

The Plan recommends a new, 75-bed residence hall near Occum Hall to replace the semi-suite accommodations in outdated Winthrop Hall. This will free up that important site for redevelopment. The new building will include amenities to support student life and form a new quad with Occum to create a place for student gathering and recreation.

Student Apartments

The obsolete Low Rise Apartments will be replaced with two new, energy efficient student apartment buildings with amenities. The first building will be on the redeveloped Winthrop Hall site. The second will be at the near the High Rise Apartments and Nutmeg Hall, to form a quadrangle for student use.

The team carefully considered implementation and feasibility in framing the Master Plan. Some projects require swing space or enabling projects to occur first. These requirements were identified and taken into account. The potential to acquire the Windham Tech High School property was also a factored in assessing a future path. The team prepared order-of-magnitude construction cost estimates and resulting project costs to serve for capital budgeting purposes, and worked with the University Master Plan Advisory Committee to assign projects to two Priority Categories.

SELECT CAPITAL PROJECTS

Projects (not in sequential or priority order)	Order-of-Magnitude Project Cost (\$2015)	
	General Fund	CHEFA
Main Quad Enhancements, Complete Loop Road	\$16,189,250	
Sports Center	\$105,652,800	
Sports Center (Alternative WTHS Site)	\$94,934,400	
Professional Studies Building and Clock Tower Quad	\$62,060,000	
Health and Counseling Center	\$8,079,400	
Recreation Center Renovation		\$10,620,090
Hurley Hall Wellness Center		\$17,771,200
Residence Hall, 75 beds		\$15,180,050
Student Apartments, 314 beds and Site Redevelopment		\$76,333,800
Field House and replacement Practice Field	\$18,520,560	
Reconfigure Windham Street Extension	\$5,638,325	
Expand Parking Lots near Admissions	\$2,137,955	
Parking Deck South Campus (270 spaces)	\$14,246,250	

A separate Technical Appendix supplements this volume. It will include a section on the system-wide Energy Master Plan being conducted for all CSCU campuses. It also includes technical background for reference by facilities personnel during implementation.

The Master Plan Update for Eastern aims to blend vision and pragmatism, flexibility and guidance. The strategy, principles approach, projects and guidelines together will serve as a roadmap for capital investment for the next 10-year period and beyond to meet the University's most pressing needs and thereby support its strategic and academic mission.



FIGURE 01.8 Concept: Professional Studies Building and New Quadrangle



View today for above



View today for below



FIGURE 01.9 Concept: Enhanced Main Quadrangle with Eastern Road closed



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EASTERN SYSTEM CONTEXT

The Master Plan for Eastern Connecticut State University responds to the system-wide BOR mission as well as Eastern's Mission Statement. As CSCU's liberal arts institution, Eastern has a distinctive role. Located in Willimantic, the University is 28 miles from Hartford, 9 miles from Storrs and mid-way between Boston and New York City.

OUR VISION FOR CSCU

The Connecticut State Colleges & Universities will continually increase the number of students completing personally and professionally rewarding academic programs.

CSCU'S MISSION STATEMENT

The Connecticut State Colleges & Universities (CSCU) contribute to the creation of knowledge and the economic growth of the state of Connecticut by providing affordable, innovative, and rigorous programs. Our learning environments transform students and facilitate an ever increasing number of individuals to achieve their personal and career goals.

EASTERN'S MISSION STATEMENT

The mission of Eastern Connecticut State University, the state's designated public liberal arts university, is to provide high quality undergraduate and select graduate programs to a diverse population of talented students. Eastern's inclusive residential campus, outstanding faculty, emphasis on teaching excellence and exceptional facilities raise students' aspirations and cultivate engagement, inquiry, integrity and social responsibility. In the traditional arts and sciences, as well as in pre-professional programs that are grounded in the liberal arts, Eastern students apply theory in practical settings. Faculty research, scholarship, creative work, and community engagement inform teaching and learning, advance knowledge and enrich the liberal arts curriculum. The University is committed to serving the state of Connecticut and the nation by preparing its students for their future personal, professional and public roles, as leaders in both their communities and professional fields.

EASTERN'S VISION STATEMENT

Aspiring to be a public liberal arts college of first choice, Eastern Connecticut State University will create an unparalleled college experience for its students and achieve national distinction for its academic programs. Eastern's faculty, students and staff will enhance the University's position as an intellectual community, acknowledged for its engaged teaching, learning, research and creative work. Advancing its position as a model for social responsibility, environmental stewardship, and educational access, the University will be recognized as a resource that is responsive to the needs of the region and the state.



FIGURE 01.10 CSCU Universities



GOALS AND OBJECTIVES

INTENT

The Master Plan Updates for the Connecticut State University System will derive capital needs based from space utilization, academic and student life program projections and facility conditions projected over the next 10-year period. The Master Plan Updates for each university will reflect system-wide goals and projected demographics.

GOALS

Through a collaborative effort, between university stakeholders, the Board of Regents and the consultant team, the Master Plan Update will integrate system-wide Strategic Plan and university mission into a comprehensive vision that promotes the advancement of higher education through state-of-the-art planning projections over a 10-year projection. Concepts will reinforce current and institute new long-term strategies that guide university decision making for capital investment.



OBJECTIVES

The following objectives will guide the Board of Regents Master Plan Updates at each BOR institution of higher education.

- The Master Plan will respond to the institution's mission, demographics and projected future enrollment.
- Program space needs will reflect best practice standards and address emerging higher education goals.
- Land planning will balance guidance and flexibility, long-term development capacity and stewardship.
- The Master Plan will optimize the use of existing facilities in the utilization of space, the location of functions, and the renewal of buildings to meet future needs.
- Proposed new buildings will reflect realistic program need and will be used to the greatest extent feasible to enable needed renovations to maximize investment benefit.
- Site access and circulation will be addressed in a comprehensive manner to support a safe, efficient and welcoming campus.
- Future development will strengthen the architectural and landscape character of the campus to foster a cohesive, attractive setting.
- The Master Plan will integrate sustainability throughout and identify strategies for energy conservation.
- Major campus infrastructure needs will be addressed to support university operations.
- The resulting Master Plan Update will be a comprehensive vision comprised a series of capital projects, with associated institutional priorities and phasing strategies.

EASTERN'S STRATEGIC PLAN

Eastern Connecticut State University's 2013–18 Strategic Plan is designed to provide students with rigorous and affordable academic programs and pre-professional experiences that prepare them for careers and graduate school. The plan promotes a diverse campus culture through which students are inspired by outstanding faculty and motivated classmates, develop a lifelong network, take on leadership roles, and become responsible and engaged citizens. Eastern continues to advance its position as a university of first choice, attracting students, faculty and staff who value its mission as a public liberal arts college.

Objective 1

Maximize the Value of an Eastern Degree

Objective 2

Ensure that Programs are Relevant, Effective and Challenging

Objective 3

Enhance Learning through Campus and Community Engagement in Integrative Learning Experiences

Objective 4

Assist Students, Staff and Faculty in Achieving Their Full Potential

Objective 5

Increase Public Awareness of Eastern's Unique Mission and Community

The 2015 Master Plan Update responded to the objectives in the physical planning through a range of recommended projects that support learning, research, student life, sustainability, the campus setting and efficient use of campus resources.



Fine Arts Building

PLANNING PROCESS

PROJECT TIMELINE

The Master Plan Update was organized in four main Tasks.

Task 1. Initiation	March to April 2015
Task 2. Assessment	April to June 2015
Task 3. Scenarios	June to September 2015
Task 4. Recommendations	September 2015 to January 2016

PROJECT SCOPE SUMMARY

Task 1. Initiation

- Establish the Advisory Committee, confirm project objectives and communications protocol.
- Collect data on the university today and on the system.
- Establish the project schedule and milestones.

Task 2. Assessment

- Understand the history, mission and academic objectives of the university.
- Analyze buildings and grounds to understand space use, physical conditions, constraints and opportunities for campus development.
- Undertake a needs analysis and project 10-year space needs based on BOR approved enrollment projections, benchmarking, and academic goals.

Task 3. Scenarios

- Develop guiding design principles and strategy.
- Prepare 3 conceptual master plan scenarios to test concepts for renovations and expansion to meet documented needs
- Assess pros and cons of scenarios and assist the Advisory Committee in selecting the preferred scenario for development as the Recommended Master Plan Update

Task 4. Recommendations

- Refine the master plan elements for buildings, landscape and infrastructure.
- Prepare current year estimated cost and phasing information.
- Document and present final recommendations to the University.

CAMPUS ENGAGEMENT

The Master Plan Update included significant engagement with the university community and senior leadership. The input was valuable and contributed directly to the character and nature of the recommendations. The outreach included regularly scheduled meetings, work sessions, a town hall meeting and student polling using social media.

UNIVERSITY MASTER PLAN ADVISORY COMMITTEE

The UMPAC included 24 members and met regularly over the course of the project, a total of 7 times. Vice President for Administration and Finance James Howarth served as chair. President Nunez and Provost and Vice President for Academic Affairs Rona Free and Interim Provost Dr. Dimitrios Pachis and Deans of each School were committee members, along with faculty, staff from facilities, operations, public safety, and student representatives. (Refer to the Acknowledgements for a full list of members.)

PROJECT STEERING COMMITTEE

This group provided regular direction, management, planning and guidance during the preparation of the Plan. Members included President Elsa Núñez, Vice President Howarth, Interim Director of Facilities Management and Planning Renee Theroux-Keech and James Fielding, Coordinator of University Construction, and Vice President for Facilities, Real Estate and Infrastructure for CSCU BOR Keith Epstein.

WORK SESSIONS

The team led multiple work sessions in smaller, informal group sessions to address specific topics in a more technical manner with representatives from each area. Topics included engineering/operations/energy management, building condition, circulation and parking, open space, groundskeeping and maintenance, athletics, academics, recreation, sustainability, student housing and dining.

PROGRAM INTERVIEWS

The Consultant Team conducted 26 program interviews with a range of stakeholders at Eastern to inform the space needs assessment. In order to refine the space program projections and verify assumptions, the consultant team also conducted a total of 21 follow up meetings.

MIND MIXER

To provide robust input for the planning, the consultant team conducted a web-based survey of the student body from April 1 to May 15, 2015, using the application Mind Mixer. The initiative was Announced on electronic boards on campus, Twitter and Facebook. The survey had 27 topics including instant polls, survey questions, map pins and photo shares. Altogether, 327 participants engaged with the site, providing a total of 14,200 interactions. The feedback was especially useful in that it confirmed many issues that administration and staff believed to be priorities to address in the planning.

TOWN HALL MEETING

Perkins+Will conducted a Town Hall presentation in November 2015 that was open to the campus community to provide a summary of the draft recommendations and solicit input.

OTHER ENGAGEMENT

Representatives from the University also presented a summary of the draft Master Plan Recommendations to the Faculty Senate and to the Student Government Association in November to build understanding for the Plan and get input.



Town Hall, November 2015



FIGURE 01.11 Mind Mixer Input: Where do you typically eat?

Welcome to ECSU Campus Space Experience.
Share your ideas. Be heard. Build a better community.

Topics [Join the discussion and add to current topics. View All Topics](#)

Participation: Tell us a little bit about yourself! Posted Mar 1 0 Interactions 34 Days Remaining

Mini-Poll

Are you:
Student

Mind Mixer Web Portal



EASTERN CONNECTICUT STATE UNIVERSITY



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THE INSTITUTION

HISTORY OF THE PHYSICAL CAMPUS

Eastern was founded in 1889 as the Willimantic State Normal School, an institution whose sole purpose was to train teachers. Thirteen female students attended classes on the third floor of the Willimantic Savings Institute during its first year. The first male student was not enrolled until four years later in 1893.

In 1890, the Town of Windham deeded 6 acres of land to the State of Connecticut, on the current site of Shafer Hall. The State decided to use it as the new home for the Willimantic State Normal School, which was quickly outgrowing its space. Construction of a new, larger facility was completed in 1895. In September 1921, the school opened its first dormitory, Burr Hall, which is still in use today. In 1937, the Willimantic State Normal School, which had begun offering a four-year curriculum and granting Bachelor of Arts degrees, became Willimantic State Teachers College.

Shafer Hall, dedicated in November 1946, was built to replace the original Normal School building, which had been lost to fire in 1943. The college established its first graduate program (in education) in 1958. By 1967, the school had widened its focus and was renamed Eastern Connecticut State College to reflect its expanded curricula. In 1983, the school officially became Eastern Connecticut State University in recognition of its greater mission, as it offered an ever-expanding variety of undergraduate and graduate programs.¹

Today, the school continues to expand its campus with the addition of a Fine Arts building, which opened in December of 2015.

EASTERN ACADEMIC STRUCTURE

Eastern is comprised of two academic schools and is accredited by the Connecticut Board of Governors for Higher Education and the New England Association of Schools and Colleges (NEASC). The university has recently completed its 10-year comprehensive NEASC self-study and evaluation.

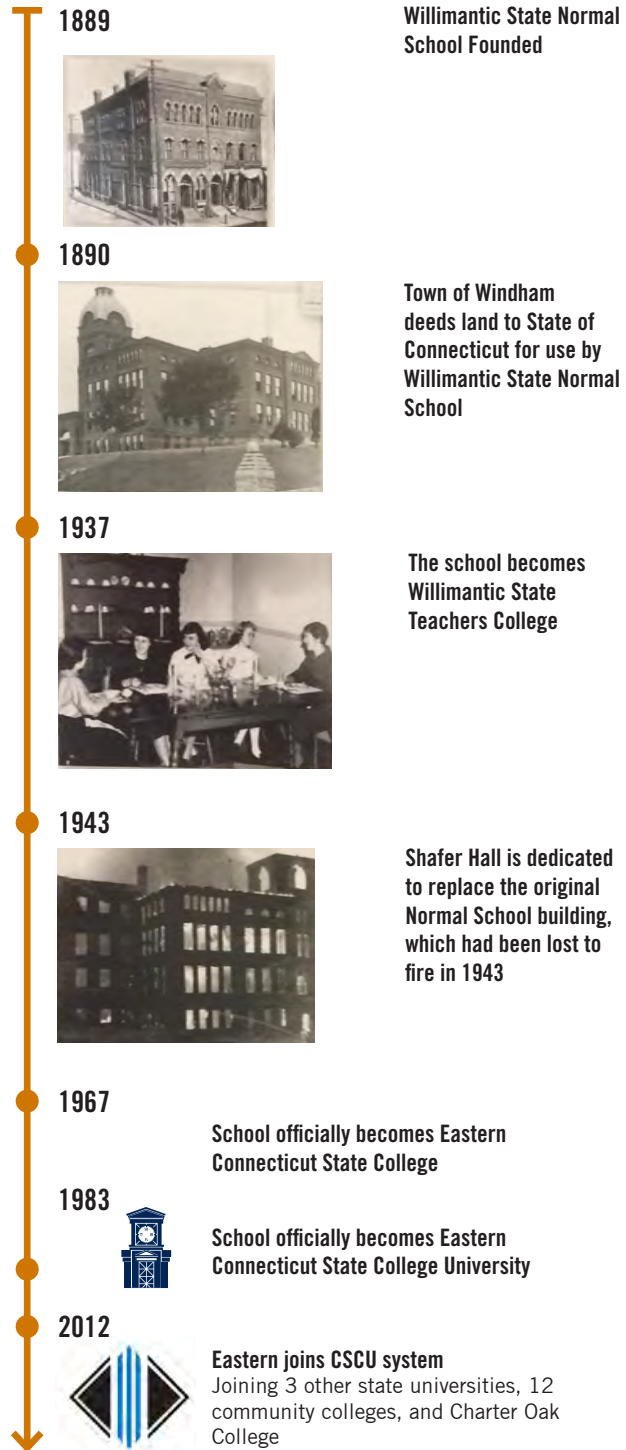


FIGURE 02.1 FIGURE 02.1 Historic Timeline

THE CAMPUS

REGIONAL CONTEXT

The University's property is largely located in the Town of Willimantic, CT, roughly a 30-minute drive from both Hartford and Norwich, CT. Eastern's Mansfield Sports and Recreation facilities are located just north of Willimantic in the Town of Mansfield.

Nathan Hale State Forest, Dunhamtown Forest and Pomercy State Park provide access to large natural areas within a short drive of campus. The Willimantic and Natchaug River's also converge in Downtown Willimantic, providing another open space amenity and water access to the area.



FIGURE 02.2 Regional context

NEIGHBORHOOD CONTEXT

Eastern's Main Campus is a few short blocks to the north and west of Downtown Willimantic. At 182 acres, Eastern's campus is comparable in acreage to both Southern and Central Connecticut State Universities.



FIGURE 02.3 Neighborhood context

Adjacent to Eastern's Main Campus is a mix of residential neighborhoods, natural areas, and two high schools. The eastern edge of Main Campus is formed by Windham High School to the north, and residential frontage to the south. The northern frontage is formed by a small collection of single family homes, while Windham Technical High School (WTHS) for the western edge. WTHS's frontage is a mix of parking, academic buildings and outdoor recreation facilities and has an internal road networks which parallels Eastern's perimeter road.

CAMPUS STRUCTURE AND SCALE

Eastern's campus is significant in overall size, but separated into four distinct areas. The Main Campus is approximately 83 acres and encompasses the most development. The Arboretum, extending from the northwest corner of the Main Campus is a 20-acre natural area. The two Town Blocks, including Eastern's original buildings, total 7.6 acres. The Mansfield Campus to the north includes over 73 acres of sports facilities and wooded natural areas. High Street connects these areas over a length of 1.5 miles. The Main Campus is approximately 3,100 feet from north to south and 950 feet from east to west at its midpoint. The drawing at right shows a $\frac{1}{4}$ mile, 5-minute walking radius emanating from the center of campus.

Development patterns vary slightly throughout Main Campus, but is generally medium-high density. Three to four story buildings and two large parking garages dominate the northern district. Large special-purpose buildings, such as the Student Union and new Fine Arts Building transition to five to seven story academic buildings in the academic core. The southern district is a mixture of high-density South Residential Villages and High-Rise dorm, with lower-density Low-Rise dorm, Winthrop Hall and Eastern Halls.



FIGURE 02.4 Campus Scale

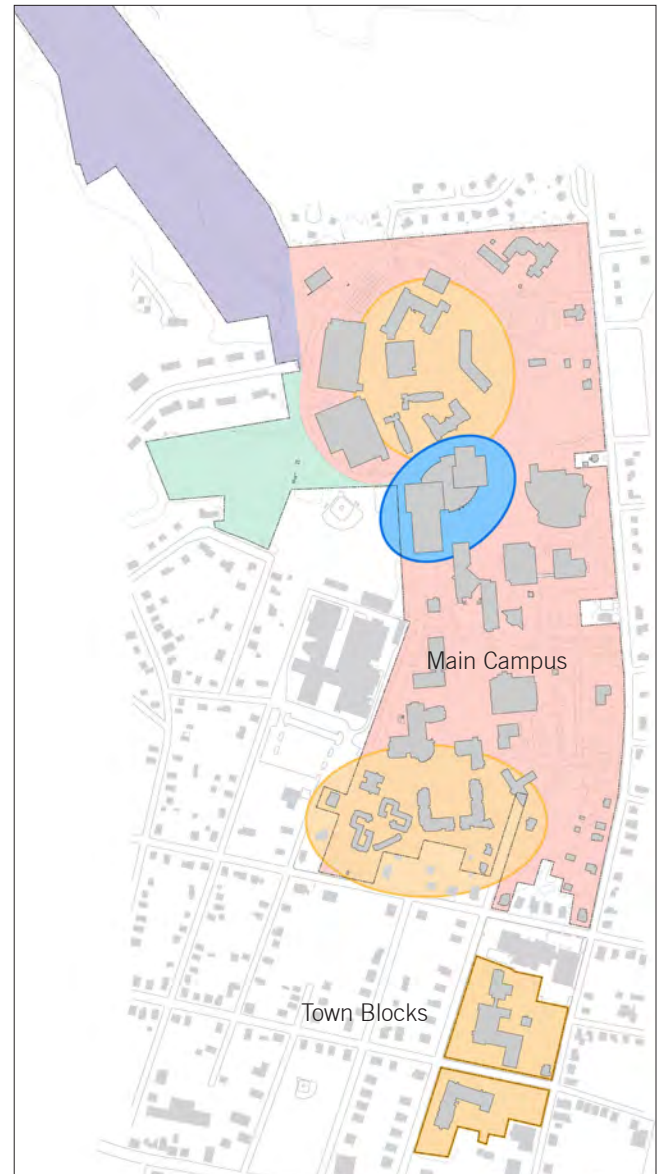
LAND USE

Eastern's four campus "precincts" have distinctly different land use compositions. The Mansfield Athletic Complex is predominately focused on athletics uses. The Main Campus is a balanced mix of student life and academic use. Town Blocks area predominately residential. The Arboretum, extending to the northwest of the Main Campus, is a natural area with loop trail.

The diagram below illustrates the range of detailed land uses. Academic uses define the campus core, while residential uses are located to the North and south, and band of special purpose facilities are located between the northern residential uses and central academic uses.



Mansfield Athletic Complex



- Arboretum / Natural Areas
- Academic / Admin / Support
- Athletic / Recreation
- Student Residential / Dining
- Special Use Facilities

FIGURE 02.5 Existing Land Use

ACCESS

Eastern's campus has clear and relatively uncongested access. The majority of people access campus by car, following Main Street or US 6 from the East or West to High Street. High Street is a major neighborhood road, with ample visibility and capacity to continue serving as Eastern's "front door".

The main entrance to the campus is located off of High Street at Eastern Drive. There is also a 'secondary' entrance at Charter Oak Road into this campus north of the Eastern Drive entrance. This entrance serves as a primary access to both the Shakespeare and Cervantes Parking garages. Access to the southern portions of campus are via Windham Street Extension off of Prospect Street.

Based on the 2005 traffic study prepared in support of the construction of the Shakespeare garage, traffic level of service along High Street at the Eastern Road and Charter Oak Road intersections is acceptable. As part of this study – as well as the approval issued by the Connecticut State Traffic Commission for the construction of the garage – the widening of Charter Oak Road was required to accommodate both left and right turns from Charter Oak Road onto High Street. This improvement was constructed and Charter Oak Road now includes a dedicated left and right turn lane onto High Street. At the time of the study, signals were not required or anticipated at either one of these intersections.

Discussions with Eastern staff indicate that traffic volume are increasing along High Street and that there are some delays associated with leaving the campus at both the Eastern Drive and Charter Oak Road entrances to the campus.



Main Campus entry from High Street

CIRCULATION AND CONNECTIVITY

There are a series of roads and driveways that allow for the movement of passenger and delivery vehicles through campus. While the road access provides sufficient access to campus and campus buildings, it's alignment often creates barriers to pedestrian flow and open space continuity.

Charter Oak Road serves as a loop road along the northern and northwestern edges of campus and winds around the Shakespeare and Cervantes garages before turning eastward back into the center of campus, forming the boundary between the northern residential district of Main Campus and its central mixed-use. Charter Oak Road generally terminates at the parking lot located to the east of Occum Hall. Access through the Occum lot allows vehicles to reconnect to Charter Oak Road. Eastern Road travels to the west through the center of campus, forming the northern edge of the Library quadrangle. Eastern Road terminates at the North Heating Plant and connects to Charter Oak Road just west of the Sports Center. Clock Tower Road winds to the south through the southeastern portion of campus from Eastern Road between Winthrop Hall and Laurel and Constitution Halls. West Road travels north



South portion of Eastern Drive bisecting the campus

- Major Circulation
- - - Minor Circulation
- Main Entrance
- Secondary Entrance
- Main Roads



Mansfield Athletic Complex

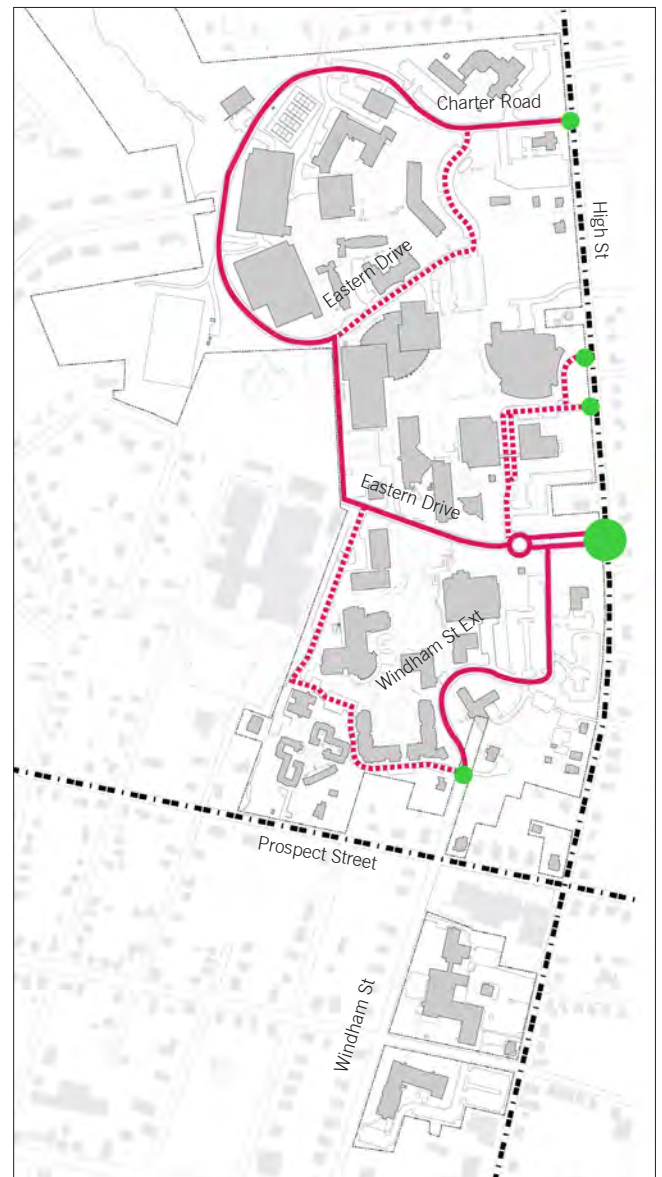
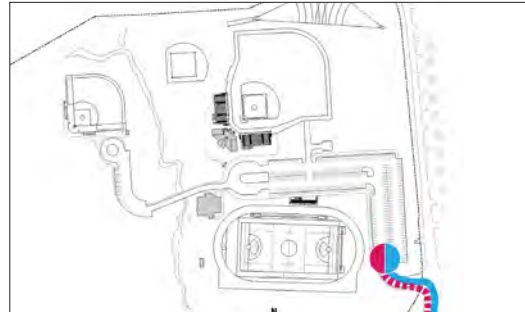


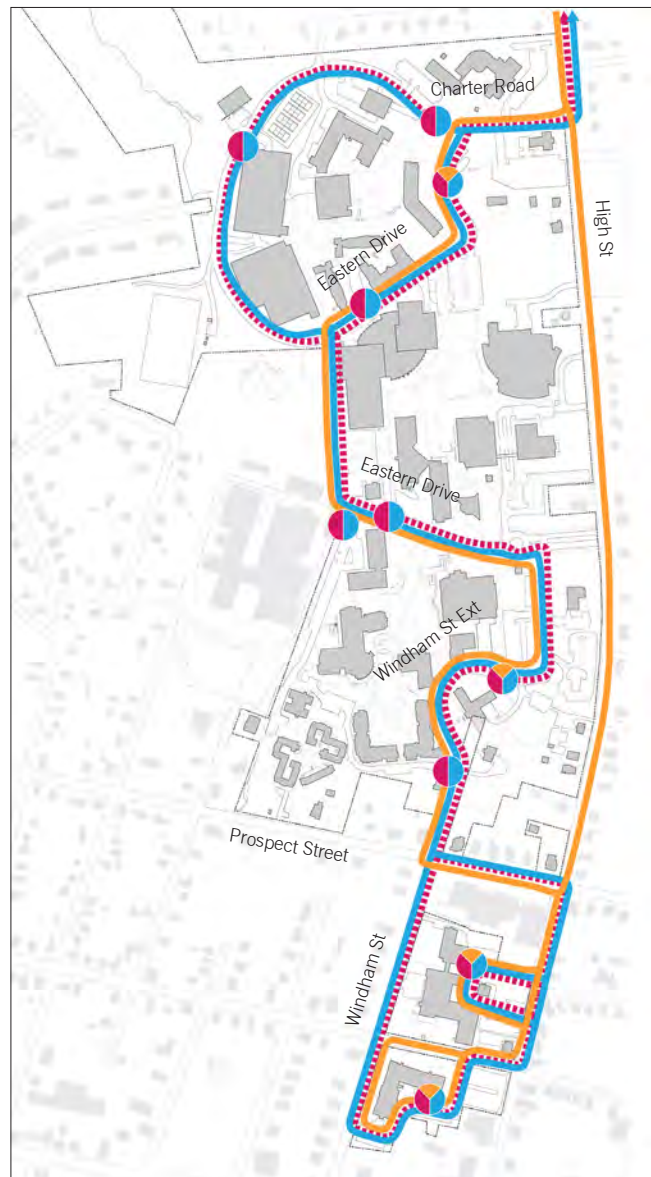
FIGURE 02.6 Existing Circulation

to south along the western perimeter of campus. It connects to Eastern Road at the North Heating Plant and terminates just north of the High Rise apartments. This series of roads, along with pedestrian paths and parking lots, allows for the movement of people and goods through campus. It is not, the most efficient or consistent road network. Many of the road widths are of varying widths and some have either parallel or perpendicular parking along the shoulders.

Northeast Regional Transit District provides limited local service to Eastern's campus. Eastern runs shuttles between the Main Campus and the Mansfield campus. Discussions with University officials indicate that this shuttle service is not heavily used.



Mansfield Athletic Complex



- - - Main (continues to Mansfield)
- Main / Best Western (continues to Best Western on Storrs Road)
- SGA (continues to East Brook Mall and Best Western on Storrs Roads and Wal-Mart via Route 6)
- ● Shuttle Stops

FIGURE 02.7 Existing Bus and Shuttle

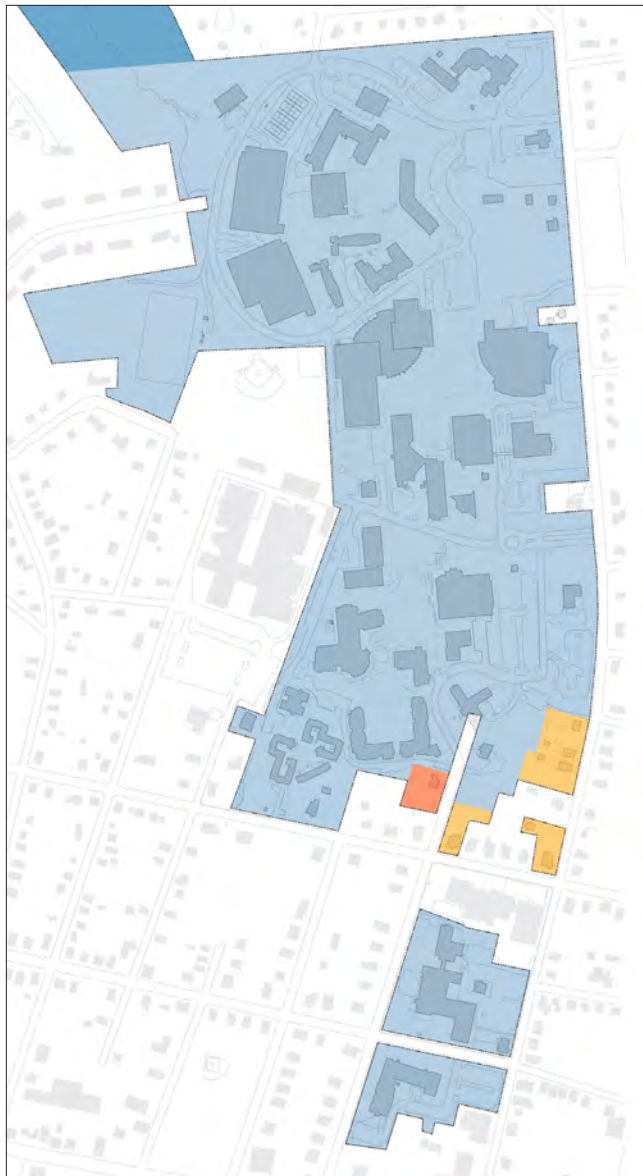


Mansfield Athletic Complex

ZONING

While Eastern is not subject to zoning as a State property. The Main Campus largely falls under R6 zoning, and is zoned as illustrated below. A few smaller parcels along Prospect Street and High Street are part of the Neighborhood Preservation Districts and Institutional Zones.

The Mansfield Athletic Complex is zoned for Institutional uses under Mansfield's zoning.



- R4 Residential
- R6 Residential / Professional Office
- NPR1 Neighborhood Preservation District
- NPR2 Neighborhood Preservation District
- Institutional Zone (I)

FIGURE 02.8 Existing Zoning

WETLANDS AND FLOODPLAINS

There are limited wetlands and 100-year floodplain areas located on the Eastern campus. The topography of the Main Campus is high ground and includes significant elevation changes which are not conducive to ponding of water or conditions where wetlands resources typically occur. There is a small stream that is located in the extreme southwest corner of campus near the Low Rise Apartments that collects stormwater that is generated by the campus. A short segment of this stream is daylighted on campus before it crosses underneath Prospect Street via a culvert. There are wetlands and floodplain areas located in the Arboretum northwest of the developed portion of Main Campus. A 60" Reinforced Concrete Pipe discharges water towards the stream. It appears that much of the water that is discharged by this culvert is stormwater that is generated by the majority of the Main Campus. Water discharged by this culvert flows to the northwest through the Arboretum. There is a culvert to the northwest of campus that conveys water under an existing gravel path. The culvert creates a restriction in flow during larger storms that has contributed to the creation of wetlands and floodplain within the Arboretum. This culvert discharges to a larger wetlands system that appears to flow to the north of campus. This wetlands system includes area near Route 6 and is also connected to the wetlands system that is located on the Mansfield campus.

There are significant wetlands and 100-year floodplain located on the Mansfield campus. The entire western and southern portions of the Mansfield campus appear to be either wetlands or not easily accessible for future development due to the incidence of wetlands on the property. The recently constructed softball field is surrounded by wetlands resources and access to the new field and parking lot required the construction of a stream crossing to allow vehicles access to the parking lot and field.



Mansfield Athletic Complex



FIGURE 02.9 Wetlands and Floodplains

ELEVATION AND TOPOGRAPHY

Eastern's campus occupies a high point above the Town of Willimantic. From Windham Street, there is a view to Eastern's Foster Clock Tower crowning the campus above. While this vantage point provides character, the steep slopes in some areas present challenges. The main entrance on High Street is the high point of the campus. From here, High Street slopes down steeply to the south into the town and more gradually to the north towards Mansfield.

The campus topography falls at a consistent slope to the west and north towards the Arboretum and Nevers Field, making them natural locations for recreation and natural amenities. Similarly, the Mansfield Athletic Complex occupies lower elevations and as a result has more wetland and floodplain issues at its edges.

The most significant slopes occur between Prospect Street and the area around Winthrop Hall, as evidenced by the switch-back alignment of the Windham Street Extension. While challenging to traverse directly, these slopes could provide opportunities for terraced open spaces, and partially underground building program / parking facilities.



Mansfield Athletic Complex



FIGURE 02.10 Existing Topography

CAMPUS IDENTITY AND WAYFINDING

Campus frontage along Main Street has consistent and generous landscape setbacks mixed with contemporary yet clearly collegiate academic buildings. University ownership along Prospect Street is less uniform and as a result, the campus identity of that edge is more subtle and the buildings more set back.

The main entry to campus is clearly identified by pedestrian gates, the Foster Clock Tower and landscape plantings. The Police Station entry at the north and the entrance to the south are less defined. An improved entry to the north would provide a more identifiable access point for the garage traffic from the north, included could be signage and landscape features. The same improvements could be implemented to the South as that areas is developed with additional student housing and parking resources.

Once on campus, a network of campus maps, building and road signs direct traffic to parking garages and other major buildings sites. On-campus signage could be improved by adding vehicular signage for visitors in search of parking, admissions and other guest/community resources.



Main Entry off High Street



Existing Pedestrian Wayfinding

OPEN SPACE FRAMEWORK

Eastern's Main Campus has four distinctly different open space types. Each open space type has a different character and plays a different role in defining the campus experience. An informal landscape setback along Main Street, and portions of the Prospects Street, frontage provides a complementary streetscape to Willimantic's surround residential neighborhoods, the exception being The Fine Arts Building drop-off which relates to the larger grass area and drop-off of the Windham High School. The Arboretum to the north of Main Campus provides access to natural areas and wetlands for student recreation and academic use, while the Nevers field practice area provides outdoor athletic resources directly on Main Campus.

The balance of the Main Campus open space occurs largely in car-free environments around and in-between the main campus buildings. These landscape areas range from formal college quadrangles to more suburban landscape zones. Roads, parking areas and building barriers disconnect large portions of those open space network and create three distinct precincts on Main Campus: North, Central and South. The pedestrian network is fractured as a result of these barriers, setting the stage for incremental re-stitching of the campus fabric to favor pedestrian traffic over vehicular dominance.



Main Campus is composed of four landscape types: Quadrangles, Athletics / Recreation, Front “Lawn” and the Arboretum. Each type has its own character and plays a different role in the campus experience. At the heart of the campus, and the student experience, are the quadrangles. Defined by buildings, roadways and parking areas, the quadrangles are clustered into three main areas: north, central, and south.

The campus pedestrian paths network efficiently connects buildings entry, open spaces, and parking areas. Significant breaks in the network occur when crossing Eastern Drive and Charter Oak Road at the northern and southern portions of campus.



FIGURE 02.11 Campus landscape types

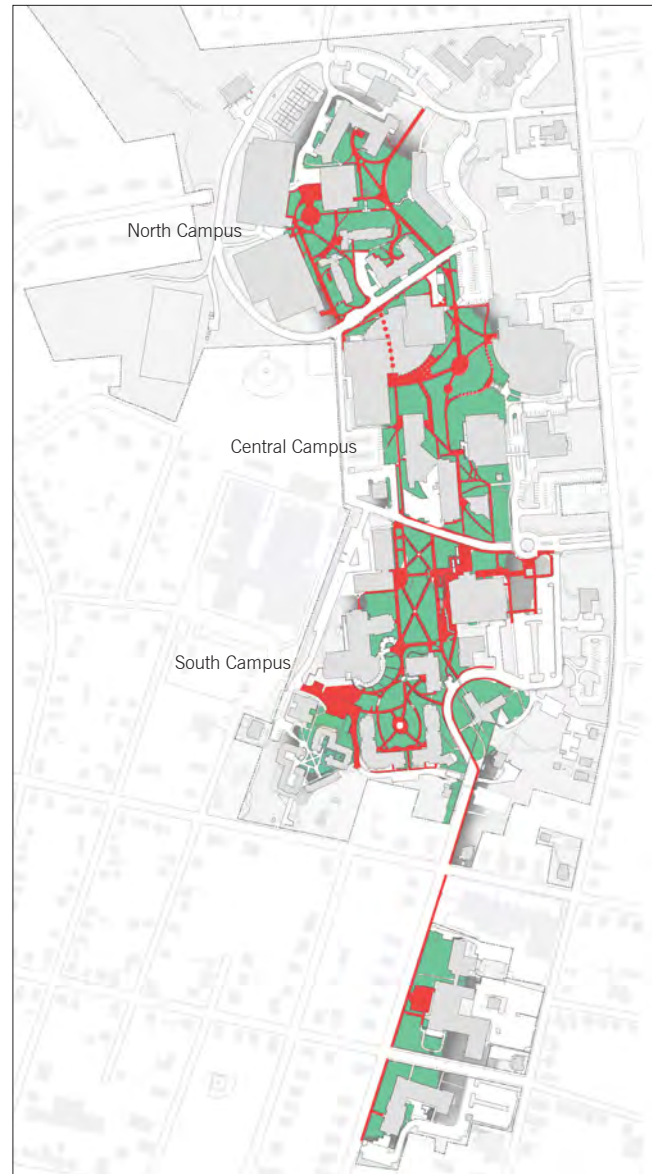


FIGURE 02.12 Pedestrian paths and plazas

North-south flow in the pedestrian network is also impeded by a number of buildings on campus. As the figure ground below illustrates, the Student Center blocks direct access from central campus to the northern quadrangle, while the attachment of Communications to Goddard creates a pedestrian barrier at the heart of campus from the north



FIGURE 02.13 Campus buildings and pedestrian blockages



The building connection between Communications and Goddard blocks pedestrian flow north-south



Traveling through the Student Center is most direct route from northern quad to central campus

A composite of the road, parking area and building barriers supports the notion that Main Campus is organized around three precincts.

Future building locations, landscape interventions and improvements to the road and parking network should strengthen the definition and identity of the Main Campus' three precincts.



FIGURE 02.14 Pedestrian barriers

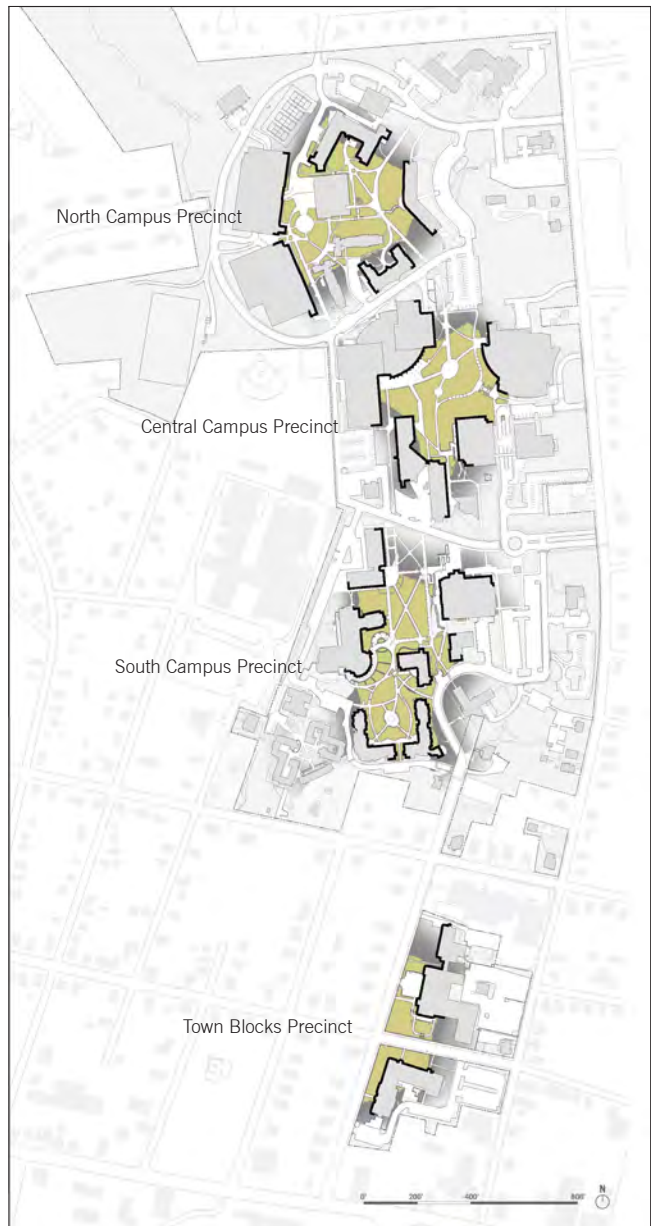


FIGURE 02.15 Campus precincts

LANDSCAPE CHARACTER

Large, broad swaths of campus are currently mown lawn, under-vegetated with woody perennials or shrubs. Generally, the campus has an uneven mix of mature shade trees and recent small caliper installations. This gives an inconsistent impression of recent, sweeping changes contrasting with older, more mature landscape.

While some percentage of lawn is fine, particularly in those areas where the topography allows for event spaces and programming, other areas could be re-vegetated to be less resource intensive. Steep slopes, particularly those with western exposure (dry slopes due to insufficient infiltration) or under dense shade, are difficult to keep as mown lawn, and may therefore best be transitioned to meadow. Campus



SRV residential quadrangle as a positive example of a well-vegetated pedestrian space, despite challenging topography.



Primary pedestrian axis from Hurley Hall to the Science Building, at the North Heating Plant, illustrating the undersized pedestrian pavement between to vehicular drives.

staff have identified numerous areas for conversion to native meadows, particularly steep (dry) slopes and slopes under dense vegetation that grass does not prosper under.

The open space surrounding the Hurley Hall suffers from a variety of issues, among them too much undifferentiated pavement, and an absence of a mature landscape. Even though the building itself has been in place for decades, the surrounding landscape is sparsely planted.

Across the campus, there does seem to be a general absence of seating opportunities, whether fixed benches or movable furniture.

Desire lines have been systematically replaced with concrete pavement, leading toward a certain blurriness of hierarchy for circulation, and resulting in an overall over-paving of the landscape. Targeted editing of pedestrian pavements may result in widening of some and elimination of others, with mass planting and topographic grading helping to reinforce the path of least resistance.

Several occasions of solitary shrubs trimmed to unfortunately appear as gumdrops or meatballs detract from the campus. This practice should be discontinued, with an emphasis shifted to more mass planting and fewer solitary shrubs.



Opportunistic desire line diagonals have resulted in incremental expansion of pavements, and attendant compaction and snow management damage.

ARCHITECTURAL CHARACTER

The architecture of Eastern's campus does not hew to a particular style, but rather reflects a mix of expressions, unified by the use of brick as a common material. While the Library and accompanying Foster Clock Tower use traditional building language, such as triangular pediments and columns, the new Fine Arts Buildings combines brick with large expanses of glass to create a more contemporary and transparent building envelope. These design expressions and attitudes align with the standards set forth in Eastern's Planning Guidelines, a consistent but flexible framework for evaluating future architectural and site design on campus.

Eastern Hall, the most significant temporary building on campus, was never intended to remain indefinitely, and does not contribute positively to the character of the campus architecture, and as such should be replaced. Others, such as Low-Rise Apartments, Sports Center, and Winthrop Hall, appear dated and unwelcoming today and not of the same level of quality as rest of the campus. Replacing them would be a priority as the University evolves and grows to meet interior space needs.



Fine Arts Center



Low-Rise Apartments



Eastern Hall



Library

PARKING

The University has a total of 2,939 parking spaces, located in two large parking garages and sixteen surface parking lots according to 2013 data supplied by the Eastern police. Approximately half of all parking spaces are located within two large parking garages located on the northwest side of the Main Campus.

2,015 parking spaces are located on the Main Campus north of Eastern Road, meaning approximately two-thirds of all parking is located on the northern side of campus. 301 parking spaces are located at the Mansfield campus which contains the University's athletic fields including the track, soccer field, baseball and softball fields. These spaces are necessary to accommodate athletes as well as spectators during events, and provides overflow parking for commuters and residents. The remaining spaces are located on the Main Campus south of Eastern Road.

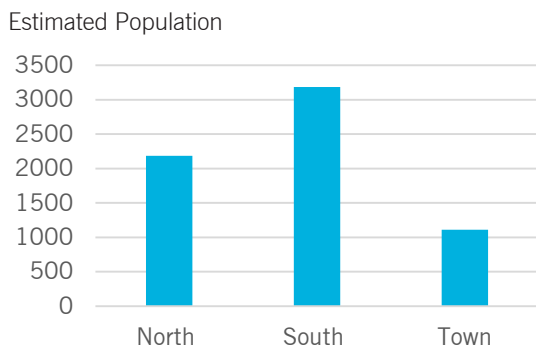
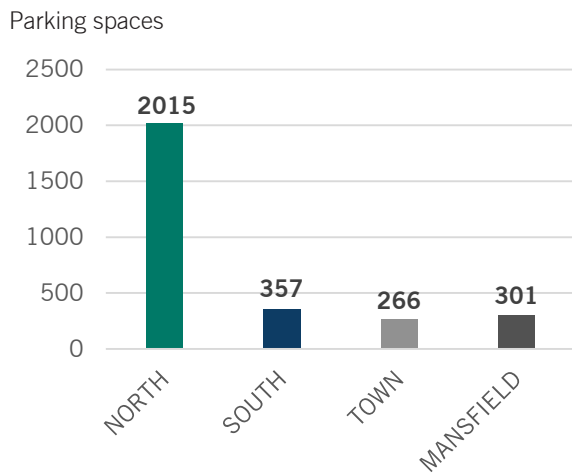


FIGURE 02.16 Existing parking “supply and demand”

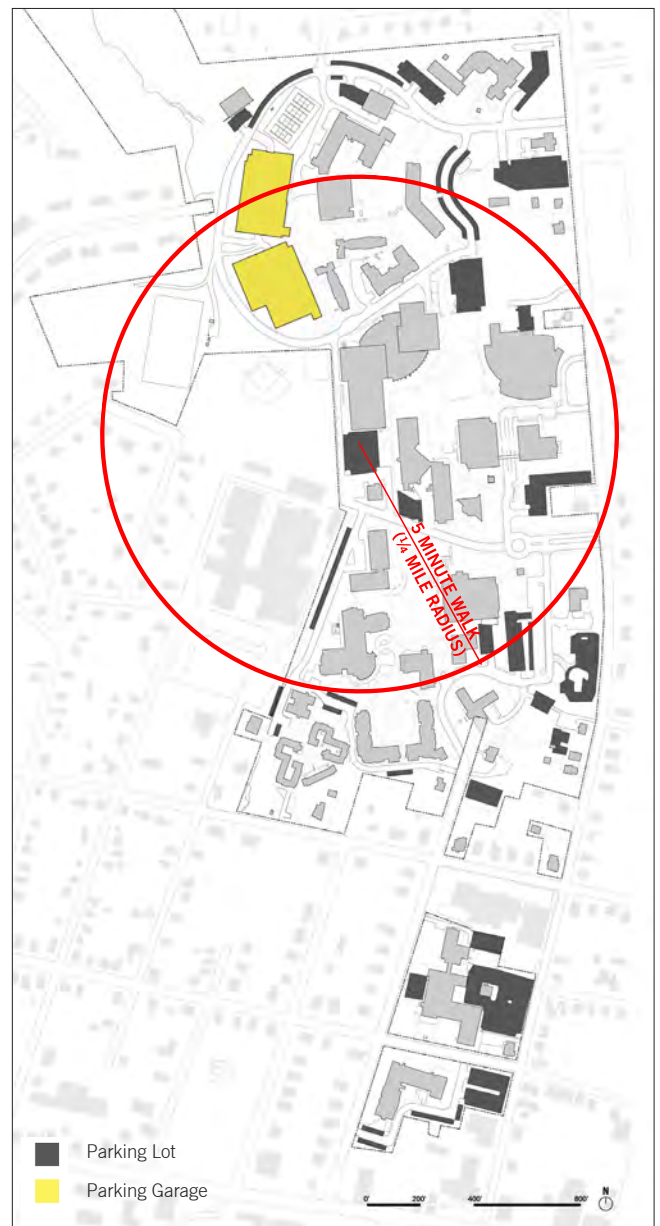
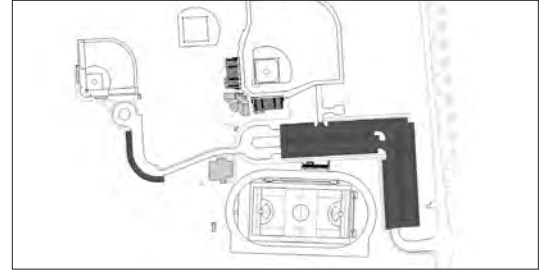


FIGURE 02.17 Existing campus parking locations

Parking on campus is generally divided into a number of different types of categories including the following: spaces for anyone with a permit, resident spaces, commuter spaces, faculty/staff spaces, visitor spaces, handicapped, and reserved. The majority of parking spaces (1,860) are designated as for anyone with a permit. 431 spaces are designated as faculty and staff spaces.

Parking is an important issue at Eastern since most of the faculty, staff, and students travel to campus via automobile. The amount of available parking spaces is not an issue. Finding convenient parking can be an issue however. As described above, the majority of parking is located on the northern side of campus with approximately half of the total spaces being located in the two large garages. Due to their location, faculty, staff or students may have a significant walk from these garages to their destination on campus.

Very little of the available parking on campus is located near the majority of the residential buildings, roughly a third of a mile from the garages in the southern portion of campus. Freshman are not allowed to have cars on campus, although a little less than 100 freshman do keep vehicles on campus. Eastern does have a number of commuters that will drive to school to attend class and then leave class to go to work or other commitments. Typically these commuters will look for the most convenient parking spaces to their destination, even if it means parking at and paying a meter. There are no specific fees associated with parking spaces. Parking fees are included as part of the overall student fee structure, therefore, all students, except freshman, are allowed the opportunity to bring a car to campus.

SECURITY

Campus safety takes many forms – on campus roadways and cross walks, in preparing for natural and man-made emergencies, in preventing crime and in fostering a secure campus community overall. The University Police, located in the Public Safety Building off High Street on the northern end of Main Campus, are responsible for enforcement of campus security, parking and emergency preparedness. In the design of future buildings and landscape, proactively promoting a secure environment including, good visibility and exterior lighting will be important goals.



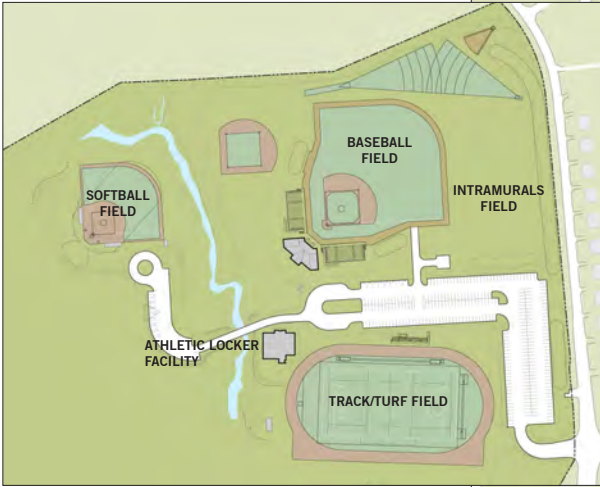
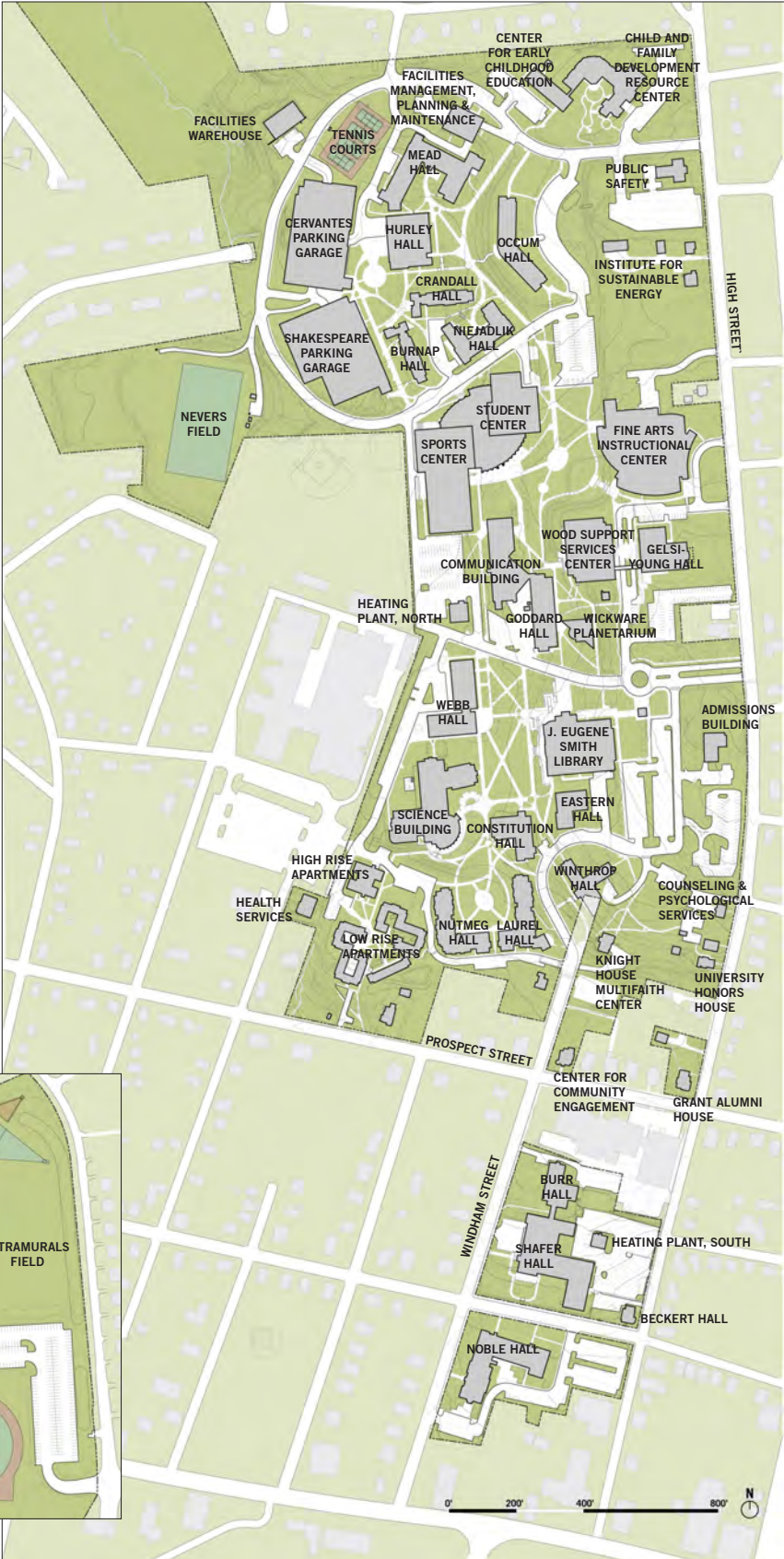
University Police



Cervantes Parking Garage

BUILDINGS

As optimizing the use of existing facilities is a core goal, a comprehensive understanding of building use and condition is an important foundation for the Master Plan Update. At right is a map identifying the location of existing buildings at Eastern. On the opposite page is a building inventory, itemizing the assignable square feet and overall gross square feet for each building.



Mansfield Athletic Complex

FIGURE 02.18 Existing Eastern Buildings

EXISTING BUILDING INVENTORY

Building	Originally Constructed	Assignable Square Feet	Gross Square Feet
Grant House w/Garage (291 Prospect St.)	1892	4,244	7,017
333 Prospect Street	1900	2,199	6,100
Honor's Program w/Garage (176 High St.)	1915	2,034	4,278
Counseling Center (182 High St.)	1916	1,536	3,600
Beckert Hall (90 High St.)	1925	1,389	4,107
Heat Plant 2 - North (110 High St.)	1928	1,841	5,482
Sustainable Energy (372 High St.)	1929	1,601	3,466
392 High Street	1932	1,037	2,622
Heat Plant 1 - South	1940	0	3,037
Counseling Center (192 High St.)	1942	1,792	2,790
Shafer Hall	1947	43,122	70,151
Knight House	1947	2,063	4,107
Winthrop Hall	1958	6,426	23,556
Health Services (185 Birch St.)	1958	3,349	4,480
Goddard Hall	1967	21,239	39,212
Wood Hall	1970	26,280	45,645
Hurley Hall	1970	20,689	34,516
Planetarium	1972	2,828	4,970
Sports Center	1973	56,460	86,057
Communication Bldg	1974	22,082	37,654
Student Center - Reno/Addition	2005/1975	52,776	78,210
Facilities	1986	16,281	24,568
Webb Hall	1992	39,543	74,502
J. E. Smith Library	1998	90,347	130,449
Baseball Complex	1998	1,222	3,972
Clock Tower	1998	0	2,010
Admissions Building	1999	3,327	5,485
Gelsi & Young Hall	2002	28,090	45,431
Cell Tower	2003	414	491
CFRDC	2005	22,721	39,407
Science Building	2008	85,797	180,605
Police Station	2008	5,781	8,636
Softball Field	2012	939	1,113
Facilities Warehouse	2013	5,917	6,777
Athletic Locker Facility	2013	4,265	6,204
Fine Arts Inst. Center	2015	65,804	128,118
Subtotal		645,435	1,128,825
Temporary / Transitional Building(s)			
Eastern Hall	2001	5,424	8,305
Subtotal		5,424	8,305
Student Housing			
Burr Hall	1919	17,091	36,711
Noble Hall - Reno	1990/1928	43,718	73,016
Winthrop Hall	1958	7,529	12,498
Crandall Hall	1970	13,824	21,434
Burnap Hall	1970	12,780	21,550
HI Rise Apts - Reno	2000/1972	44,020	60,597
Low Rise A	1972	13,291	16,681
Low Rise B	1972	9,092	12,733
Low Rise C	1972	9,436	12,669
Low Rise D	1972	9,283	12,443
Low Rise E	1972	8,532	10,153
Occum Hall	1984	43,702	67,900
Neijadilik Hall	1998	41,776	82,793
Mead Hall	1999	77,052	117,024
Constitution Hall	2004	40,292	68,568
Nutmeg Hall	2005	59,591	93,733
Laurel Hall	2005	61,917	99,362
Subtotal		512,927	819,865
Grand Total		1,163,786	1,956,995
Shakespeare Garage			
Shakespeare Garage	2010	236,355	247,850
Cervantes Garage			
Cervantes Garage	2003	211,572	224,027
Subtotal		447,927	471,877

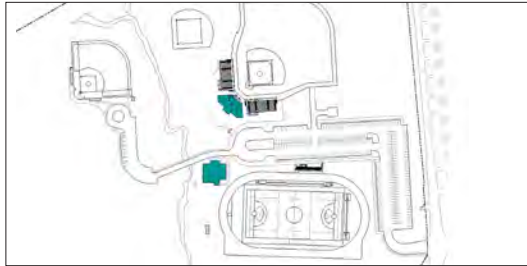
01
INTRODUCTION

02
EXISTING CONDITIONS

03
SPACE NEEDS

04
SCENARIOS

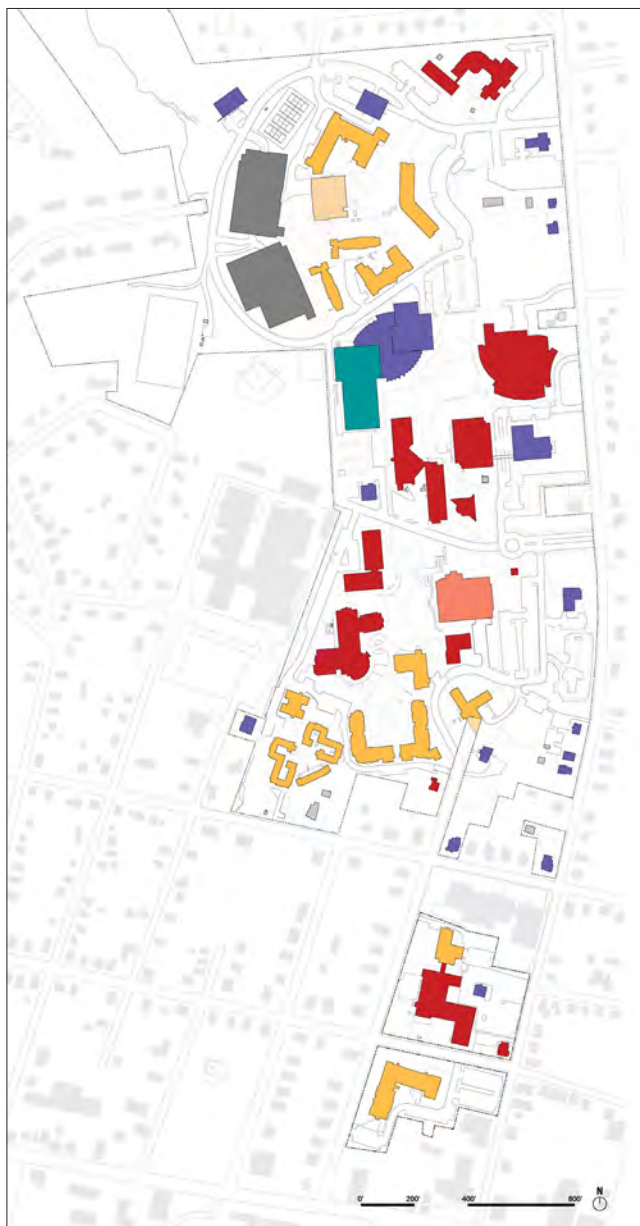
05
RECOMMENDATIONS



Mansfield Athletic Complex

BUILDING USE

The Plan below identifies the primary use or uses in each existing building by category of space use. A more detailed assessment of existing space use follows in Chapter 3 Space Needs.



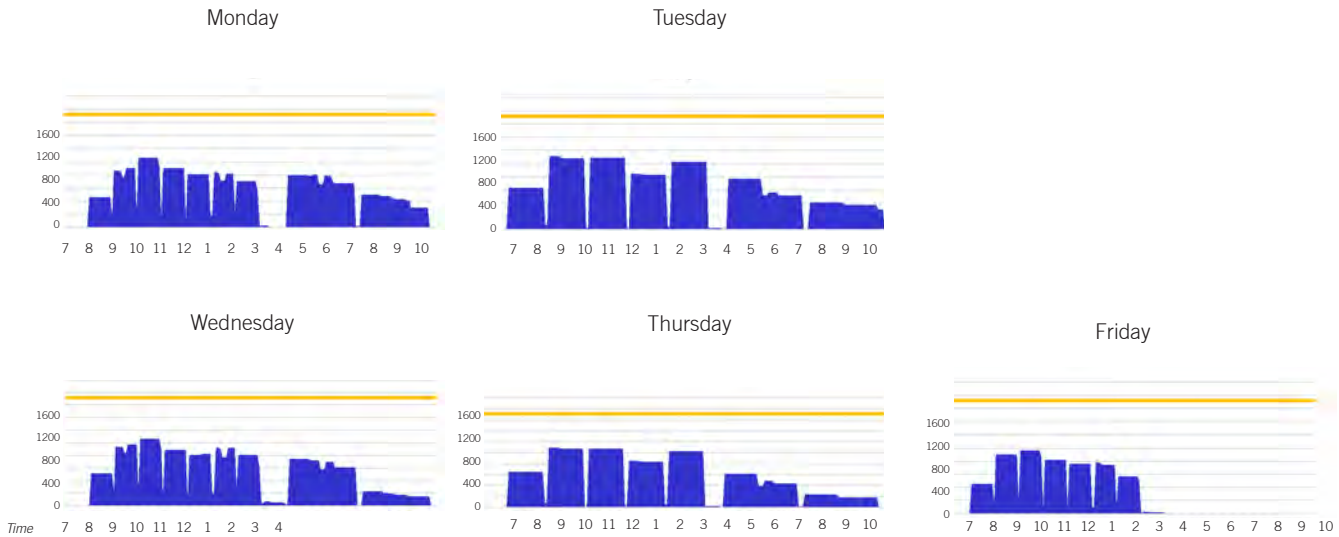
- ATHLETIC / RECREATION
- RESIDENTIAL
- SUPPORT
- PARKING
- FOOD SERVICES
- LIBRARY
- ACADEMIC

FIGURE 02.19 Existing Building Use

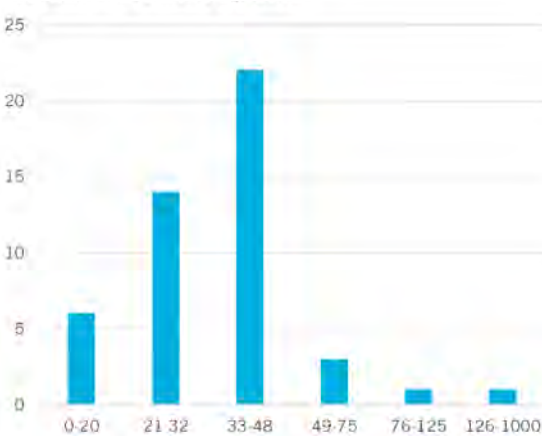
CLASSROOM UTILIZATION

The planning team analyzed the utilization of Eastern's classroom inventory using the Fall 2015 course schedule (which accounts for Shafer as academic space, prior to conversion to residential). The findings are summarized in the charts on the following pages. Eastern has a relatively high classroom utilization rate as illustrated below, with the majority of rooms more than 60% on average and used more than 30 hours per week.

EXISTING CLASSROOM UTILIZATION: SEATS IN USE BY DAY AND TIME



GENERAL PURPOSE CLASSROOMS BY SIZE



NUMBER OF GENERAL PURPOSE CLASSROOMS BY BUILDING

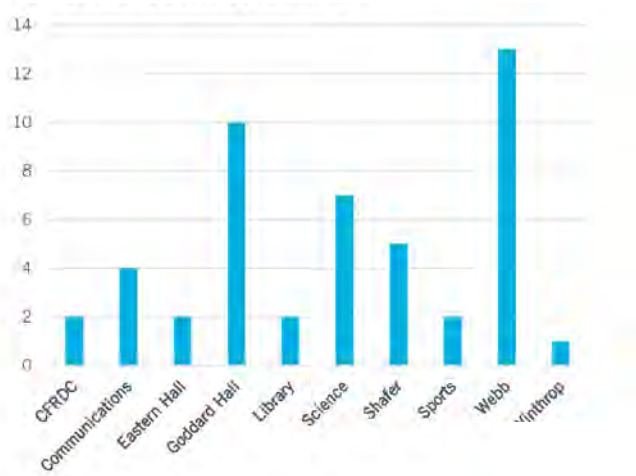


FIGURE 02.20 Classroom Utilization Analysis

UTILIZATION SUMMARY BY BUILDING

Building	Number of Rooms	Average Room Seat Capacity	Average of Room ASF	Total Seat Capacity	Average ASF Per Station	Average Total Weekly Hours (Fall)	Weekly Student Contact Hours (Fall)	Average Fill Rate (Fall)
CFDRC	2	32	967	64	30	28	1,200	59%
Communication	4	41	822	164	20	32	4,391	67%
Eastern Hall	1	40	995	40	25	41	1,437	64%
Goddard Hall	10	49	978	488	22	33	10,679	68%
JE Smith Library	2	16	358	32	22	15	430	78%
Science Building	7	33	879	233	27	38	9,059	72%
Shafer Hall	5	49	912	244	18	25	3,753	54%
Sports Center	2	38	719	75	19	31	1,733	68%
Webb Hall	13	28	544	361	21	37	14,921	86%
Winthrop Hall	1	15	440	15	29	3	30	67%
Grand Total	47	37	774	1,716	22	32	47,633	72%

UTILIZATION SUMMARY BY SIZE TIER

Capacity	Number of Rooms	Average Room Seat Capacity	Average of Room ASF	Total Seat Capacity	Average ASF Per Station	Average Total Weekly Hours (Fall)	Weekly Student Contact Hours (Fall)	Average Fill Rate (Fall)
0-20	6	17	463	101	27	22	2,640	85%
21-32	14	26	592	367	23	36	14,411	80%
33-48	22	38	784	846	20	34	26,438	71%
49-75	3	52	1,164	156	22	30	2,998	50%
75-125	1	76	1,876	76	25	21	543	32%
126-1000	1	170	2,687	170	16	20	603	16%
Grand Total	47	37	774	1,716	22	32	47,633	72%

UTILIZATION BENCHMARKING

State	Classroom Hours	Classroom Fill	Class Lab Hours	Class Lab Fill
Alaska	30	60%	20	80%
Arizona	35	65%	25	85%
California	42	71%	25	80%
Colorado	30	67%	20	80%
Florida	40	60%	20	80%
Kansas	30	60%	20	80%
Kentucky	38	67%	23	80%
Louisiana	30	60%	20	80%
Maryland	30	70%	21	79%
Nebraska	30	65%	20	65%
New Hampshire	30	60%	18	70%
New York	30	60%	22	75%
North Carolina	35	65%	20	75%
Ohio	31.5	67%	22.5	80%
Oklahoma	30	40%	24	80%
Oregon	33	60%	16	75%
South Carolina	35	60%	18	75%
South Dakota	30	60%	20	85%
Tennessee	30	67%	18	80%
Texas	38	67%	25	80%
Utah	34	67%	22.5	80%
Wisconsin	30	67%	24	80%
Wyoming	33	60%	20	75%
Average	33	63%	21	78%

FIGURE 02.21 Classroom Utilization Analysis

UTILIZATION HOURS IN USE VS RATE BY ROOM

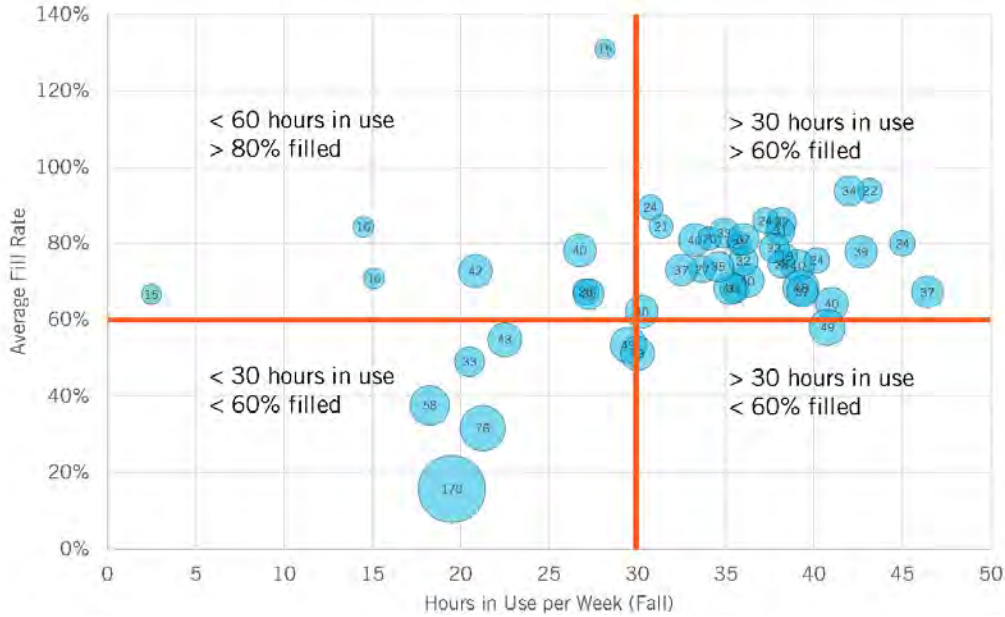


FIGURE 02.22 Classroom Utilization Analysis

ACADEMIC AND SUPPORT SPACE

A breakdown of overall existing space for academic, research, administrative and support space are illustrated in the chart and table below, as of Fall 2015:

Departmental Profile	Existing Fall 2015 (ASF)
Classroom Space	55,555 sf
School of Arts & Sciences	104,242 sf
School of Education & Professional Studies	24,887 sf
Centers & Institutes	4,564 sf
Grant Funded Programs	866 sf
Academic Support	6,593 sf
Library	75,084 sf
Technology	21,175 sf
Assembly & Exhibition	17,641 sf
Athletics & Recreation	55,563 sf
Student Activities	78,923 sf
Child Care / Early Childhood Education Center	14,172 sf
Student Services	30,451 sf
Administrative Services	31,924 sf
Campus Services	54,954 sf
Total (ASF)	576,593 sf

EXISTING SPACE USE (FALL 2015)

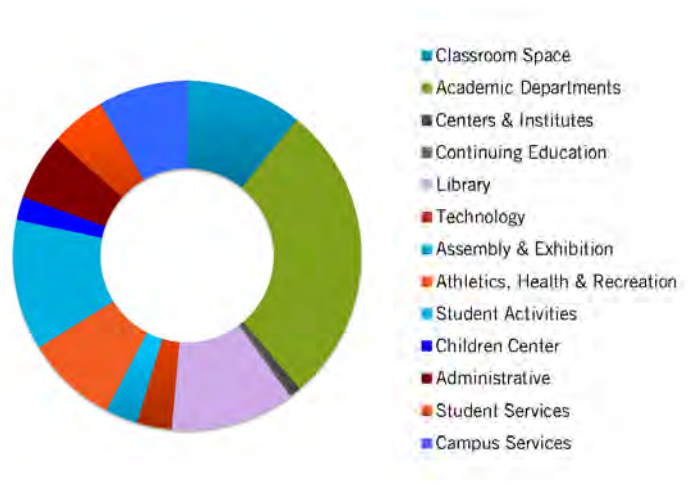


FIGURE 02.23 Space Usage

RESIDENTIAL LIFE FACILITIES

The University has 14 residence halls, which house 2,654 students, 910 of which are first-year students.

Eastern's Residence Halls offer a broad range of housing options and room configurations, from the traditional double-loaded halls of Crandall and Burnap to apartment-style units of the new South Residence Village.

There are six freshman residence halls on campus, all located in the northern precinct of campus, with the exception of Constitution Hall. The South Residence Village (Nutmeg, Laurel, and Constitution) Low-Rise Apartment, High Rise Apartments, and Winthrop create a cluster of dormitory halls at the south end of campus. Burnap and Noble Halls provide another cluster of housing within the Town Blocks. Shafer Hall is currently being renovated into "loft style" student apartments, with kitchens and common spaces to encourage residents to gather.

Existing Theme Housing or Special Interest Housing offerings are comparable to Eastern's peer institutions. Transitioning to a Living-Learning model, likely after the Theme Housing is solidified is a future option. However, the Current Resident Halls do not offer faculty accommodations for Living-Learning.

The range of amenities offered is also comparable to peer institutions. The addition of small convenience stores with residence halls is an emerging trend that could be incorporate in future improvements.

Consistent with peer institutions, common and shared space are in more demand, as are kitchen and cooking facilities.

While affordability remains a priority across housing types, students desire to have less triple occupancy rooms and ultimately prefer single rooms.

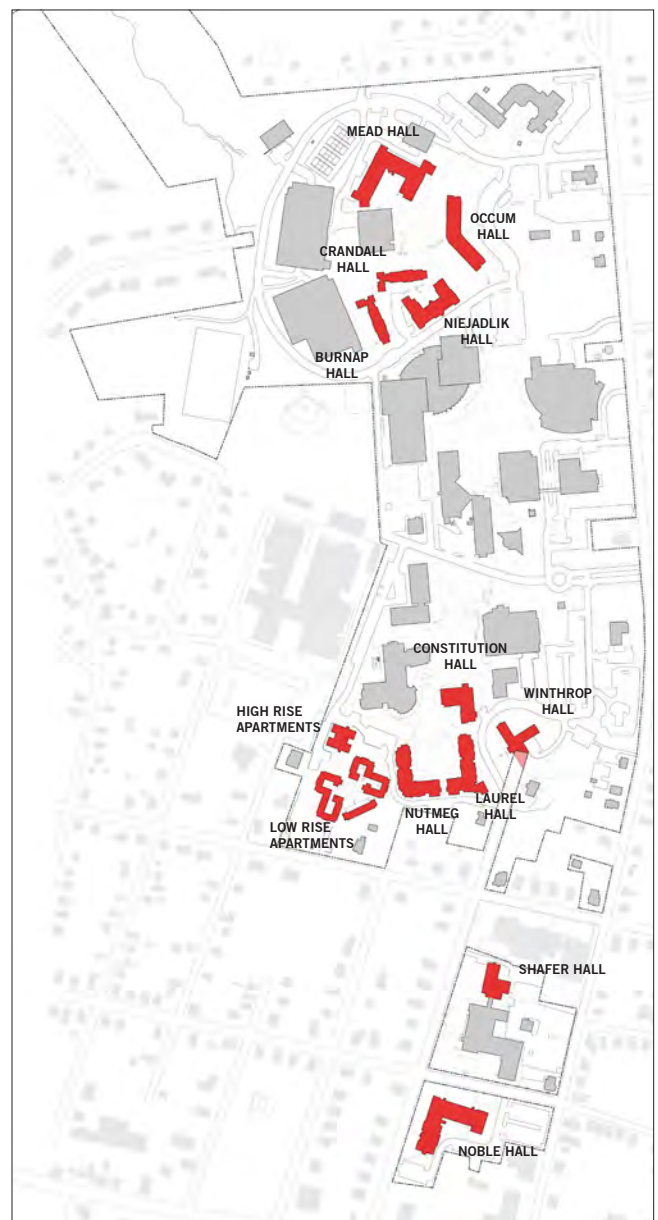


FIGURE 02.24 Existing Residence Hall Buildings

BUILD.#	RESIDENTIAL BUILDINGS	YEAR OF CONSTRUCTION/RENOVATION	819130	2635	311	UNIT
			GSF	BEDS	GSF/BEDS	
#9	Burnap Hall	1970	21550	90	239	traditional
#38	Burr Hall	1919	36711	115	319	traditional
#7	Crandal Hall	1970	21434	90	238	apartment
#31	Winthrop Hall	1958	12498	75	166	apartment
#46	Constitution Hall	2004	68568	250	274	semi-suite
#4	Mead Hall	1999	117024	381	307	suite
#25	High Rise	1972/2000	60597	220	275	suite
#10	Niejalik Hall	1998	82793	140	393	suite
#48	Laurel Hall	2005	99362	255	389	apartment
#26	Low Rise A	1972	16681	82	203	apartment
#27	Low Rise B	1972	12733	63	202	apartment
#28	Low Rise C	1972	12669	68	186	apartment
#29	Low Rise D	1972	12443	55	226	apartment
#30	Low Rise E	1972	10153	62	163	apartment
#42	Noble Hall	1928/1990	73016	216	338	apartment
#47	Nutmeg Hall	2005	93733	246	381	apartment
#6	Occum Hall	1984	67900	243	279	apartment & suite

FIGURE 02.25 Residential Building Inventory

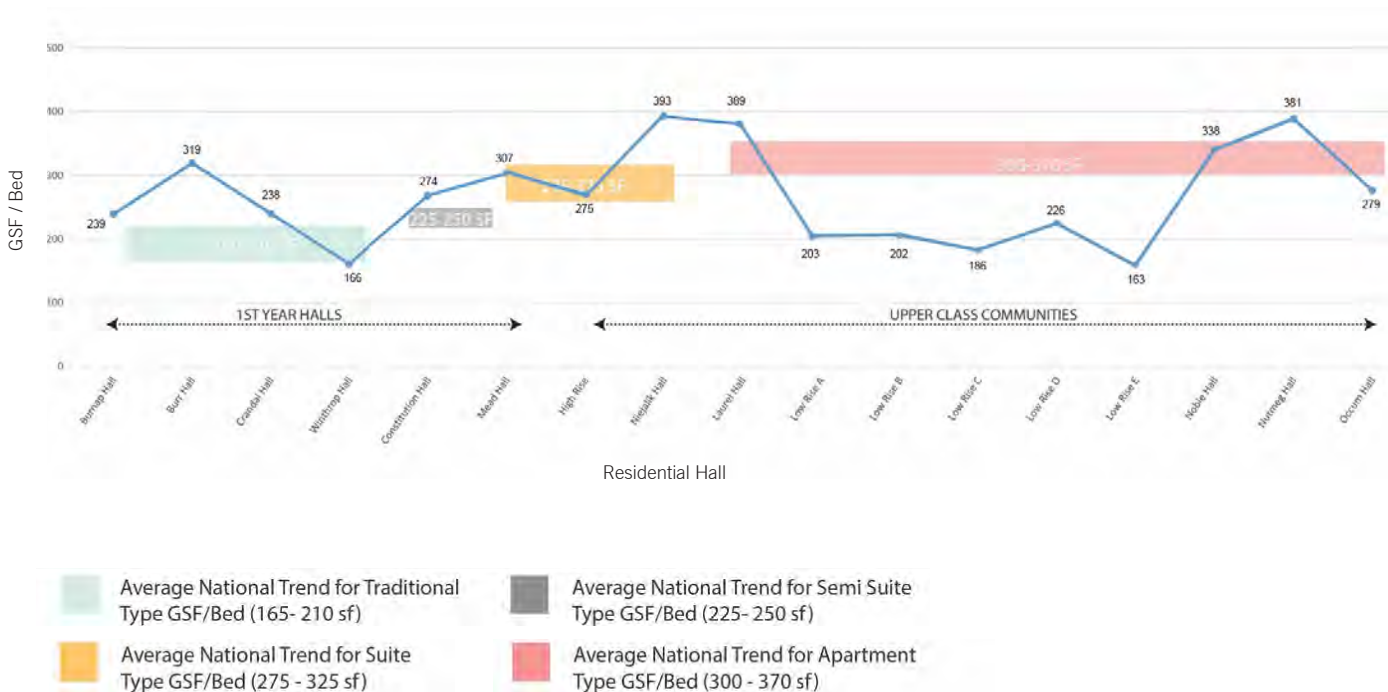


FIGURE 02.26 Residential Building Analysis

SPORTS AND RECREATION

Existing facilities were built at a time when the University had a student population of 2,000 and 7 varsity sports teams. As the University has grown, student population increasing to 5,000 – 6,000 students, athletic programs increasing to accommodate 17 teams, and increased increase in recreation, intramural and club sports the facilities have become undersized, overcrowded, and over utilized to meet the needs of all user groups.

Outdoor Facilities

The Mansfield Athletic Complex provides the University with several high quality and competitive venues for practice and performance for intercollegiate athletics. All facilities are in good condition and relatively new.

Indoor Facilities

Existing indoor facilities no longer meet most needs of Warriors Sports and a large and active intramural and recreation sports programs. Most notably, current operations in the Sports Center suffer from overcrowding. Outdoor athletics teams needing indoor space limits the use of the gymnasium for intramurals, recreation, club and varsity teams.

Like many University's with older facilities areas dedicated to racquetball and storage have been renovated to accommodate fitness, dance, multi-purpose programs, sports medicine, and training areas. These areas that meet some program needs but are less than ideal in size, quality of space, and location.

Additional space is needed for parking, building service, team bus drop-off and pick-up, broadcast trucks, etc at the Sports Center. Current parking lot adjacent to the existing building is not adequate to meet the needs of the Athletic Department. Bus access and service vehicle access is also a challenge.

The current pool and support facilities accommodates the swimming team, students, faculty and staff. Providing a larger aquatics center is currently not a high priority program.



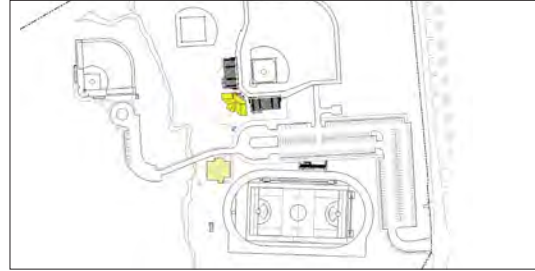
BUILDING CONDITION

The Site Plan below summarizes the physical condition of existing buildings. Buildings in Excellent condition are new and require little to no capital improvements. Buildings in Good Condition area relatively new or recently renovated and require minor refurbishment. Buildings in Fair Condition require moderate upgrades to replace aging building systems and finishes. Buildings in Poor Condition require major reinvestment to replace obsolete systems and building envelope elements. Buildings indicated for replacement are either temporary structures or buildings where cost to renovate exceeds the cost to construct new.

Eastern’s campus has just one temporary building, Eastern Hall. As is often the case on campuses, temporary buildings have a way of becoming quasi-permanent. It’s recommended that these temporary, low-cost buildings are replaced to make better use of land, and provide suitable accommodations in more energy efficient buildings.

The Building Condition analysis also identifies several buildings where ongoing maintenance or costs improve space up exceeds return on investment in new construction. Included in this category are Low-Rise Apartments and Winthrop Hall.

- Excellent Condition
- Good Condition
- Fair Condition
- Poor Condition
- Replace



Mansfield Athletic Complex



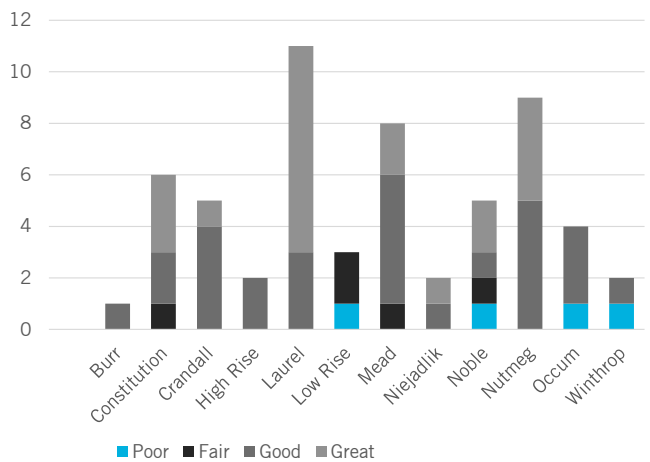
FIGURE 02.27 Building Condition Summary

STUDENT OUTREACH

Students played an active role in forming the Master Plan Update. Student representatives served on the University Master Plan Advisory Committee that guided the development of the Plan.

To supplement student input from regular meetings, the planning team also utilized a web-based application called MindMixer to engage the student body and learn more about goals for improving the campus to enrich the student experience. The site was open from April 1st to May 15th, 2015, and announced on electronic boards on campus, Twitter and Facebook. The site had included instant polls, survey questions, map pins and photo shares. The site had over 327 participants and 14,200 interactions. A sampling of the input follows:

How would you rate the comfort of your bedroom space?



What recreation facilities do you think are needed that do not exist now?

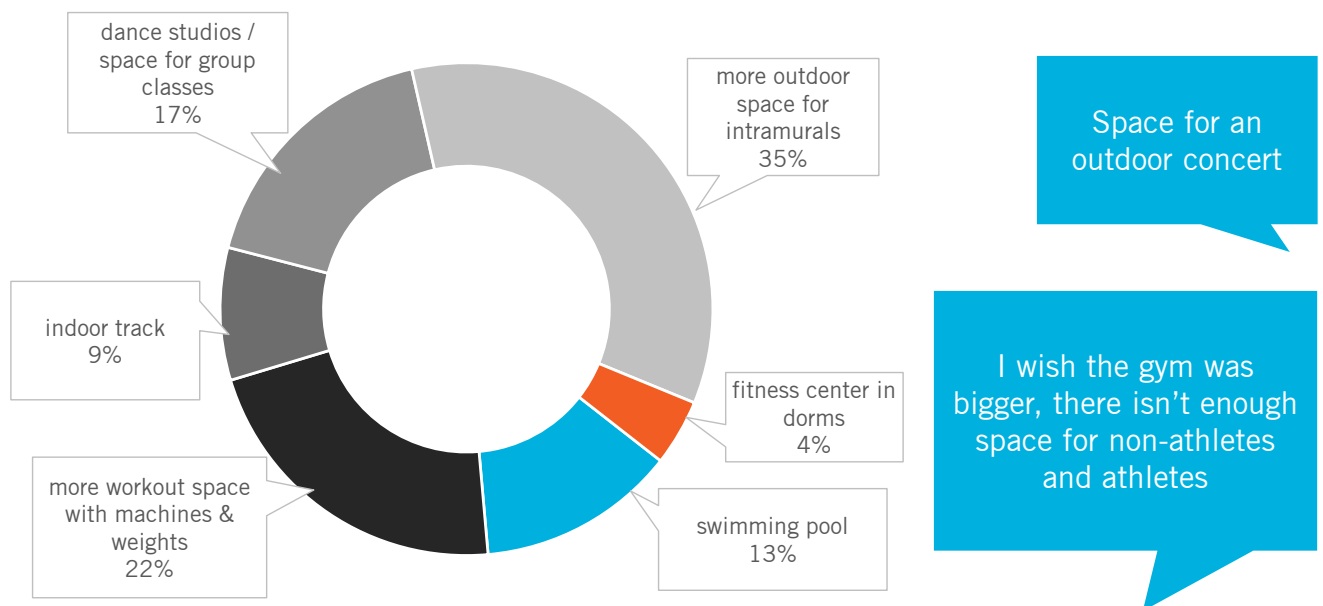
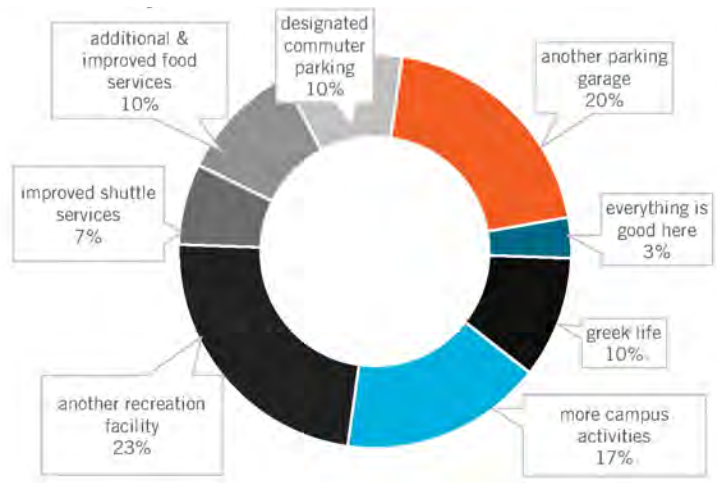


FIGURE 02.28 Online student outreach

Where is the heart of campus according to you?

Student Center	★63
Webb Lawn/ West of Library	★47
Clock Tower	★31
Science Building	★17
Burr Hall	★17
Constitution Courtyard	★16
Comm. Building	★7



Where is spaces or facilities would enhance student life at Eastern?

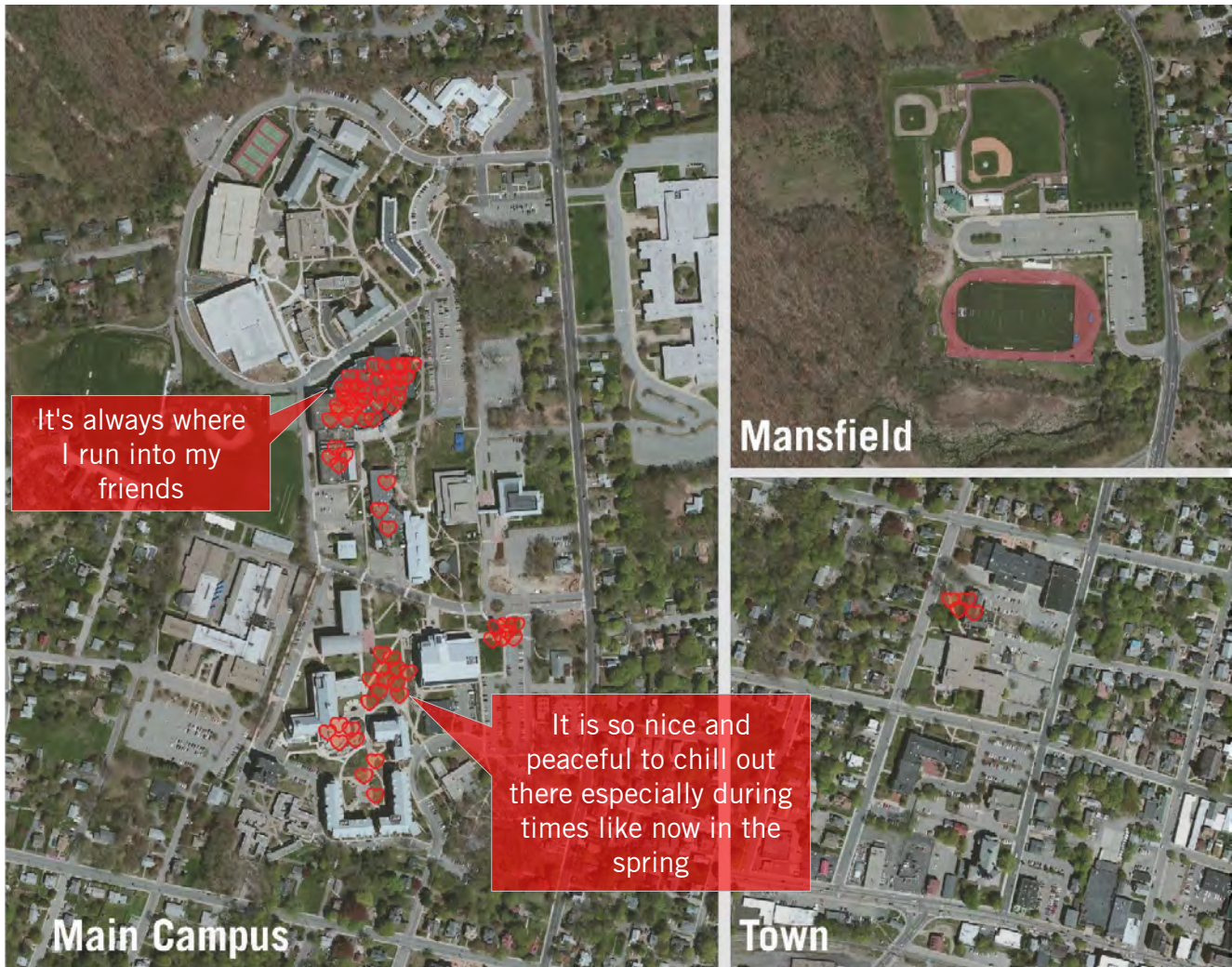


FIGURE 02.29 Online student outreach

SUSTAINABILITY

Eastern's leadership in sustainability has been recognized by The Princeton Review's Guide to Green Campuses in 2015 and each year since 2010. This recognition reflects our commitment to become a carbon neutral and resilient campus, integration of sustainability into academic programs, and many actions on campus to reduce our carbon footprint.

The Institute for Sustainable Energy at Eastern is a major contributor to sustainability initiatives on campus and services as an objective energy and sustainability resource statewide. The Center for Energy Studies is a Connecticut Center of Excellence providing academic programs at Eastern.

Some of Eastern's significant climate and sustainability achievements include:

- Inaugural signatory (2007) to the American College and University Presidents' Climate Commitment (ACUPCC), pledging to become a carbon neutral campus by 2050
- Campus-wide Climate Action Plan (2009)
- Routine tracking and submission of campus greenhouse gas emission reports through ACUPCC
- 2015 Climate Commitment that integrates carbon neutrality and resilience
- 2015 signatory to the White House's "American Campuses Act on Climate Pledge"
- 2012 and 2016 silver rating recognition through the Sustainability Tracking, Assessment & Rating System (STARS), a transparent, self-reporting framework for college

and universities to measure their sustainability performance

- Five buildings on campus built to LEED (Leadership in Energy and Environmental Design) standards: Constitution, Laurel, and Nutmeg Residence Halls, the Science Building, and the new Fine Arts Instructional Center
- An electric vehicle charging station installed in the winter of 2014, supported by a grant from the Connecticut Department of Energy and Environmental Protection (DEEP)
- Campus-wide Building Management Controls System (BMS) that interfaces with web-based dashboard
- Numerous energy efficiency improvements and retrocommissioning resulting in energy and cost savings
- Recent improvements in recycling collection, infrastructure, and outreach on campus
- Participation in CT Campus Sustainability Week, with multiple events hosted on campus
- Co-chair (with Yale University) of the CT Alliance for Campus Sustainability

In terms of academic programming, Eastern offers the following:

- Endowed Chair in the Center for Sustainable Energy Studies
- Major in Environmental Earth Science with Sustainable Energy Track
- Minor in Environmental Earth Science with a focus on Sustainable Energy



SustainU2015, Statewide Campus Sustainability Conference

ENERGY AND INFRASTRUCTURE

This section provides an overview of Eastern's central plant and utilities, the campus distribution system, recent energy use, and system types used for heating and cooling buildings.

CAMPUS UTILITIES

HTHW and Steam

Eastern has two (2) heating plants. The south campus heating plant has two (2) boilers which produce low pressure steam for distribution at 15psi to Shafer and Burr Halls. The total output from the boilers is 3,348 kBtu/h from 4,185 kBtu/h input.

The primary heating plant is the north campus heating plant which produces high temperature hot water (HTHW) for heating and domestic hot water to twenty two (22) buildings representing 72% of the campus gross square footage. The north heating plant has four (4) boilers with a total input capacity of 70,000 kBtu/h which equates to approximately 56,000 kBtu/h available for distribution to buildings. The boilers were all installed in 1995 and have the following ratings:

- Boiler 1, 25,000kBtu/h input, 20,000 kBtu/h output
- Boiler 2, 18,750kBtu/h input, 15,000 kBtu/h output
- Boiler 3, 18,750kBtu/h input, 15,000 kBtu/h output
- Boiler 4, 7, 500kBtu/h input, 6,000 kBtu/h output

The smallest boiler is used infrequently due to the demand profile of the campus, but does provide some minimal redundancy during maintenance of the other larger boilers. The total redundancy of the system is 69% in the event of failure at the largest boiler.

During the winter season the HTHW system is supplied with approximately 325°F water at a pressure of 180-200 psi and 100°F delta T. In the summer months, the temperature and pressure is reduced to 240°F due to reduced demand. This also removes the requirement for 24 hour supervision of the system.

There are four (4) primary pumps, each at 330 gpm and 43 feet w.c. (water column). None of these pumps have VFDs. One (1) additional air cooled pump was recently added. There are also three (3) secondary pumps, each at 330 gpm and 155 feet w.c. (water column), with VFDs. All but one of the pumps are "once through" city water cooled.

The combined design flow of the three (3) largest boilers exceeds the primary pump gpm without the additional 4th pump which means there is no redundancy in the system.

The north heating plant is currently at its capacity with no clear path or space for expansion within the existing building footprint.

A number of buildings on campus have their own heating system independent of the Steam or HTHW systems.

Burnap Hall has two (2) condensing boilers installed in 2014 with input capacity of 1000kBtu/h. The new Fine Arts building has also been provided with three (3) condensing boilers due to the lack of expansion capacity in the HTHW system. Each boiler has a capacity of 2400kBtu/h input and 2,160 kBtu/h output.

The High-Rise buildings have a geothermal system providing heating and cooling. There are also a small number of buildings provided with electric heating only. A chart summarizing the existing building method of heating, cooling and providing electricity is provided to the right.

There is a 400kW fuel cell connected to the Science Building generating electricity, low and high grade heat to the building. At peak capacity approximately 400kW of electricity and 60 gpm of low grade heating hot water (100-175°F) is generated for use in the Science Building. Cogeneration studies for the wider campus have been undertaken investigating technologies other than fuel cells for combined heat and power (CHP) generation.

Chilled Water

No central chilled water system exists, except for the systems that serve Hurley, Meade and Niejadlik (1 system), Science and Webb (1 system) and Gelsi and Wood (1 system). All cooling provided to buildings is handled on a per-building basis and ranges from chilled water to DX to heat pump systems.

UTILITY DISTRIBUTION AND CAPACITY

HTHW and Steam

The main supply and return lines from the north campus heating plant are 6" diameter pipes, two (2) supply and two (2) return lines. The campus system is monitored by a building management system, trending data is available to be used to monitor building demand. Based upon the boiler capacity available this initial pipe size is slightly undersized if wishing to maintain a pressure drop in the pipe of no more than 5ft/100ft of pipe length of friction loss and 8ft/sec velocity. The distribution pipes split close to the heating plant but remain at 6"Ø alleviating the issue. Therefore additional capacity could be provided by increasing the pipe sizes within the heating plant up to this first branch if future expansion of the north campus heating plant building was considered.

Domestic Hot Water

The majority of the campus is fed from a campus boosted water supply. A 12" incoming main from Main Street enters the site in Eastern Road and feeds duplex booster pumps in the Heat Plant building. After pumping, the main distributes to feed a campus main serving most of the campus North of Eastern Road. Buildings South of Eastern road are fed directly from a separate 12" tap from Main Street approximately at the Summit Street intersection. The low rise apartments are fed from a tap off the Prospect Street main. Noble, Beckert, Schafer Halls, the heating plant South and Burr Hall are all fed directly from the city mains in the local streets, in this Southern area.

The incoming pressure from the City main is ~ 50 psi. The booster pump only boosts the pressure to 56 psi that is enough for the majority of buildings to be served from the system without the need for individual pumping within the properties. The booster pumps are each rated at 1,000 gpm and are alternated weekly. Pumps are controlled by VFD's. When one pump reaches 70% of full speed, the second pump will assist. When the second pump drops to 30% of full speed it shuts off.

Each building has its own separate domestic water meter.

Domestic hot water generation for the campus is achieved is via the following different methods;

- 1 High Temperature Hot Water (HTHW) from the north campus loop direct exchange to domestic temperature (6 buildings).
- 2 180 °F heating hot water heat exchanger to domestic temperatures (majority of buildings). Propane in Constitution, Laurel and Nutmeg as back-up to DHW heaters.
- 3 Propane as backup for HTHW in summer (3 buildings).
- 4 Standalone natural gas fired heaters (6 buildings).
- 5 Standalone propane or oil fired heaters (5 houses).
- 6 Standalone oil fired heaters (Police Building).
- 7 Standalone Electric storage heaters (Low Rise apartments).

Three buildings (Crandell, Occum, and the Sports Center) are fed directly using campus HTHW as a direct heating source for heat exchangers and domestic water heaters. This approach makes good use of the campus loop distribution and central boilers.

ECSU - Existing Building Systems

Bldg #	Title	Type	SQFT	HEATING					Cooling					Heat Pump	Electrical			
				North Heating Plant HTHW	South Heating Plant Steam	Local Heating System	Electric Heat	None	CHW System	DX System	Window AC Units	None	Primary Distribution - North		Primary Distribution - South	Direct From Utility	Generator	
1	Noble Hall	R	73,016															
2	Beckert hall	S	4,107															
3	Shafer Hall	SHP	70,151															
4	Heating Plant South	SHP	5,482															
5	Burr Hall	SHP	36,711															
7	Center for Community Engagement	S	6,100															
8	Grant Alumni House	S	7,017															
9	176 High St - University Honors House	S	4,278															
10	182 High St - Counseling Services	S	3,600															
11	192 High St - Faculty Offices	S	2,790															
12	Knight	S	4,107															
13	Winthrop Hall	R	23,556															
14	Constitution Hall	C	68,568															
15	Laurel Hall	C	99,362															
16	Nutmeg Hall	C	93,733															
17	Low Rise Apartments	R	64,679															
18	185 Birch St - Health Services	S	4,480															
19	High Rise Apartments	R	60,597															
20	Science Building	C	180,605															
21	Webb Hall	C	74,502															
22	Eastern Hall (Temporary)	C	8,305															
23	J. Eugene Smith Library	C	130,449															
24	Admissions Building	S	5,485															
25	Wickware Planetarium	C	4,970															
26	Goddard Hall	C	39,212															
27	Heating Plant North	C	3,037															
28	Communication Building (Media Center)	C	37,654															
29	Wood Support Services Building	C	45,645															
30	Gelsi-Young Hall (Administration)	C	45,431															
31	Student Center	C	78,210															
32	Sports Center	C	86,057															
33	Nevers Soccer / Lacrosse Field	C																
34	Shakespeare Parking Garage	C																
35	Burnap Hall	C	21,550															
36	Nejadilk Hall	C	82,793															
37	Occum Hall	C	67,900															
38	Crandall Hall	C	21,434															
39	Hurley Hall / Dining Services	C	34,516															
40	Cervantes Parking Garage	C																
41	Facilities Warehouse	C	6,777															
42	Tennis Courts	C																
43	Mead Hall	C	117,024															
44	Facilities Management, Planning & Maintenance	C	24,568															
45	Wilson Child & Family Development Complex	C	39,407															
46	University Police	S	8,636															
47	372 High St - Institute for Sustainable Energy	S	3,466															
48	Baseball Field	A																
49	Field Hockey Field	A																
50	Track & Field Complex	A																
51	Softball Field	A																
52	Athletic Locker Facility	A	6,204															
53	Fine Arts Building	C	128,118															

FIGURE 02.30 Existing Building Systems

The majority of the buildings are fed directly using 180 °F hot water as the source to the heat exchanger to generate 140 or 120 °F domestic hot water. The 180 °F hot water has been generated from the campus HTHW as the original source through a separate heat exchanger. This approach also makes good use of the campus loop infrastructure.

Propane is used as a backup in the summer to the DHW system in Constitution, Laurel and Nutmeg Halls.

Smaller and more remote buildings such as the buildings South of Prospect St. and the houses on the Southern part of Main St, are fed by a combination of standalone oil or gas.

Burnap Hall is fed by standalone gas boilers and the facilities warehouse is fed from standalone propane. University Police is fed by standalone oil.

The Low-Rise apartments are the only buildings using electricity as their domestic hot water source.

ELECTRICAL INFRASTRUCTURE

Two primary metered, high voltage (HV) circuits are provided by Eversource (Utility) to the primary switching yard. Utility HV is stepped down to 13.8 kV via three pad-mounted Eversource transformers. Three (3) transformers are used to provide primary power to the entire campus with provisions for a fourth future transformer. Primary power is distributed in a loop topology via Eversource pad-mounted S&C PMH switchgear with provisions for a future loop. Currently the (2) 2500 kVA transformers are utilized to serve the entirety of the campus loop. The additional 3500 kVA transformer meanwhile addresses redundancy and serviceability requirements; two pseudo-loops are utilized, one for the North campus and another for the South campus from the respective 2500 kVA transformers. The third 3500 kVA transformer connects at the junction of these two loops, and thus may serve either the North loop, the South loop, or both during a service event. In conjunction with selection switches at the incoming utility feeds upstream of the transformers, the topology permits the operation of the full campus during both a service event and an outage on one of the two incoming utility feeds. During normal operation the 3500 kVA transformer is unused while load is distributed by breaking the main loop (composed of the two pseudo loops) between the two 2500 kVA transformers in a configuration similar to a Main-Tie-Main topology. Both campus loops utilize a network of duct banks and manholes to

distribute power to all buildings on campus, whereas buildings #12 and #13 are fed directly from Eversource (not via the campus loop).

Secondary distribution consists of a combination of secondary unit substations with primary switchgear, dry-type transformers and low voltage distribution. Few pad-mounted oil-filled transformers were noted with some pad-mounted transformers are installed indoors in a vault. Secondary distribution mainly consist of 480/277 volt with few buildings fed at 208/120 volt. CL&P owns and maintains the primary HV switchgear and utility yard installed transformers, whereas all of the primary 15 kV distribution including the underground infrastructure is owned and maintained by Eastern.

The primary distribution equipment was recently upgraded in 2009 and is in good condition, additionally all of the equipment is owned and maintained by Eversource. The two primary loops are owned and maintained by Eastern and they consist of 500 kmil of 15kV cables. The age and condition of the cables was not verified, but typically under-loaded MV cable does not fail and therefore should be in good condition. Secondary distribution including the substations and pad-mounted gear, motor control centers, distribution panelboards and load centers vary greatly in age and condition. The new equipment is in very good condition and code compliant, whereas the older equipment, although functional, has reached its useful life.

Electrical service for several Eastern buildings comes directly from the street, not from the two primary loops. These are High-Rise, Low-Rise, Noble, Shafer, Burr and the High Street Houses.

Based on the Eversource primary service arrangement and the provision of a future third loop it seems that the existing service is adequately sized to feed the entire campus. Furthermore, provisions for a forth transformer is provided which could increase the capacity of the distribution capacity by approximately by one third of the current capacity. This additional service capacity is considerable and can meet the demands of future growth.

Emergency power is provided with standalone diesel-fired generators to the larger buildings. Smaller buildings are provided with battery units which serve the buildings emergency lighting needs. The generators are typically mounted outdoors with weatherproof enclosures. Typically one

generator provides emergency power to multiple buildings, i.e., one generator is provided for Constitution Hall, Laurel Hall and Nutmeg Hall and another for Science and Webb Hall. Additionally buildings #37 and #21 are equipped with diesel fire pumps. The boiler building is equipped with a 300kW diesel generator used mostly for the plant. The campus is also equipped with one fuel-cell and some buildings have photovoltaic panels installed on the roof used mainly for exterior lighting loads.

ENERGY USAGE

Eastern utilizes three (3) sources of energy at the campus, electricity, oil and natural gas. Total energy use for FY13 and FY14 are identified in the table below.

Totals in energy use for the last two fiscal years (as available) is as shown below;

There is one fuel cell on campus currently serving the Science building.

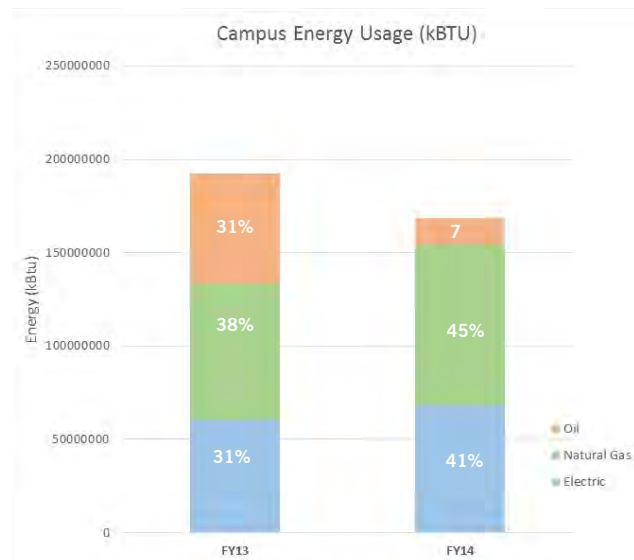


FIGURE 02.31 Campus Energy Use

	FY13	FY14
Electric (MWh)	17,699	20,033
Natural Gas (Therm)	729,842	861,430
Oil (Gal)	424,019	102,371

FIGURE 02.32 Campus Energy Use

NATURAL GAS

Natural gas is now the primary energy source used at Eastern and is provided by Eversource. There are currently 19 natural gas accounts.

In FY13 it comprised 38% of energy use and in FY14, 45% of energy use. The North Heating Plant consumes the most natural gas, over 70% of all consumption, as it produces high temperature hot water (HTHW) that services campus buildings with HTHW for both heating and domestic hot water (DHW) demand. The South Heating Plant generates steam at the building for heating and is dual fuel, natural gas and fuel oil no. 2.

ELECTRICITY

Eversource provides electricity to Eastern. There are currently 35 electricity accounts. As previously described there is essentially a single loop at Eastern. The main loop may be divided into two pseudo-loops by a suitable sequence of operations during a service or outage event. These pseudo loops may each be served by the additional 3500 kVA transformer, however use of this transformer to serve either of the loops comes at the expense of resiliency. The load seen by the main loop then during normal operation may then be divided essentially evenly via the breakpoint of the normal main loop. The remainder of the campus buildings are fed directly by Eversource. 83% of the campus electricity usage is provided from the campus loops, and is served by the (2) main transformers during normal operation. The other 17% of the campus is served directly from the utility.

OPPORTUNITY SITES

Eastern's campus has considerable additional development capacity for growth and enhancing the campus setting. Opportunity sites for new building and open space projects are generally of three types:

- Open Sites
- Parking Lots
- High-value Sites with Low-density / Obsolete Buildings

Considerable campus area is not viable for new building development given wetland designations and land use restrictions. Wetland areas and areas in conversation were excluded from consideration for buildings.

MAIN CAMPUS SITES

Hurley Dining Hall

Hurley Dining Hall could be expanded to meet future needs or repurposed for other University uses, such as event or Student Life space.

Sports Center - Existing Location

This site has great potential, but is occupied by a legacy building that is undersized relative to current University needs. Expansion of the existing building to meet projected athletic needs is technically possible, but would create a significant barrier to pedestrian flow north-south through campus, and create a problem for programs due to lack of swing space.

Sports Center - High Street

An area currently occupied by small single-family structures could serve as new location for the Sports Center, just north of the Fine Arts Building. A natural depression in the campus, and generous landscape setback give this site the advantage of helping negotiate the scale the building, preventing it from competing with, or overwhelming the Fine Arts Building and existing High Street landscape frontage.

Communications Parking Lot

This site forms the northern end of Eastern's main central quad. Considering Communication and Goddard loading areas, the site can only support a small-scale building. Alternatively, the site could be enhanced through landscape and hardscape improvements to be more of a social gathering space and appropriate terminus to the northern end of the quad.

Low-Rise Apartment Site

The Low-Rise apartment complex is key redevelopment site in south campus. The existing buildings are relatively low-density and their architectural features are not in keeping with other more recent campus architecture, both the traditional South Residence Village and the more contemporary Fine Arts building. This area of campus is of sufficient size to accommodate a new residential community. It also has direct access to Prospect Street, making it an ideal location for a new parking area on South Campus.

Windham Street

This site anchors a prominent corner and entry at the south of campus. Future building uses should relate to the south campus resident community, while the building scale should respond to the adjacent neighborhood context.

Eastern and Windham Hall Area

While challenged by sloping topography, this area holds great potential for transforming the southern entrance to campus and providing new academic, residential, and open space. Eastern Hall and Windham Hall are candidates for near-term replacement, while the existing Library parking lot could be transformed into a new open space to complement the other existing entry elements off of High Street, provided that displaced parking is relocated nearby.

Nevers Field Practice Field

An area to the west of Nevers field may provide opportunity for location of a future practice field. Targeted regrading and landscape retaining walls would be required to create a suitable level playing surface.

Residence Hall

An area to the east of Occum Hall serve as location for future residence hall development. Locating new Freshman beds in this location could build on existing freshman community and dining facilities.

Windham Technical High School

The largest of the opportunity sites, Windham Tech High School (WTHS) would provide the University with significant expansion and long-term development flexibility. In the near-term, Eastern could make immediate use of the over 170 parking spaces. Due to its age and layout, the WTHS main building is unlikely to meet Eastern's needs, but the existing site infrastructure, level grading, and multiple points of access make it an ideal candidate for University development/

expansion. The use of this site is a Master Plan recommendation since it is currently under custody and control of another State agency.

MANSFIELD ATHLETIC COMPLEX SITES

Mansfield Practice Field

Further development at Mansfield is constrained by location of existing wetlands and sports facilities. This site is the last remaining location at Mansfield for construction of an indoor sports facilities, of any significant size. Development of the site should take into consideration building scale and landscape setback along the main entry road, as well as replacement location for existing practice field.

- A** Windham Technical High School (Under custody and control of another State agency)
- B** Hurley Dining Hall
- C** Sports Center - Existing Location
- D** Sports Center - High Street
- E** Communications Parking Lot
- F** Low-Rise Apartment Site
- G** Windham Street
- H** Eastern and Windham Hall Area
- I** Nevers Field Practice Field
- J** Residence Hall
- K** Mansfield Practice Field

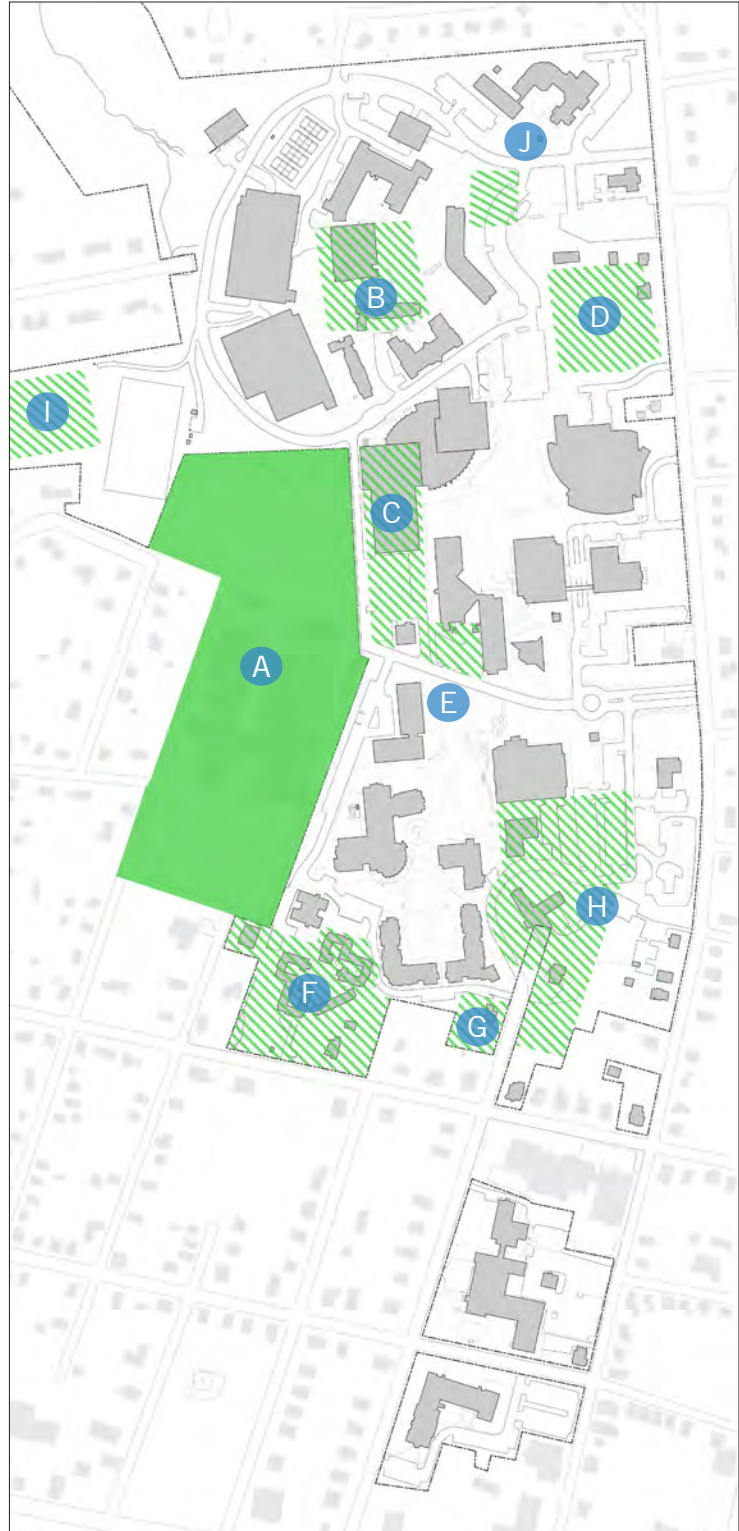


FIGURE 02.33 Opportunity Sites



EASTERN CONNECTICUT STATE UNIVERSITY



01
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EXISTING CONDITIONS

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SPACE NEEDS

04
SCENARIOS

05
RECOMMENDATIONS

SPACE NEEDS

INTRODUCTION

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- ENROLLMENT PROJECTIONS**
- ASSESSMENT METHODOLOGY**
- SPACE NEEDS (NON-RESIDENTIAL)**
- BREAK DOWN BY SCHOOL**
- STUDENT RESIDENCE SPACE NEEDS**
- RECREATION AND ATHLETICS**
- PARKING**
- SUMMARY SPACE NEEDS**

The foundation for the Master Plan Update for Eastern was a comprehensive analysis of facility requirements for the next 10-year period for academics, research, student life, administration, and support functions. These needs were based on the 10-year enrollment projections approved by BOR as detailed in the methodology below. The planning team also prepared 10-year space needs for student housing.

The space projections reflect needs, not wants. They are based on benchmarking against peer institutions and a realistic assessment of facility needs to support Eastern’s mission. Concepts for how to address the space needs follow in the Master Plan Scenarios and Recommendations chapters.

The goal of this Space Assessment Report is to explain the methodology for the space analysis for Eastern Connecticut State University, the result of that analysis, and how that analysis compares to CSCU. The assessment, developed at the departmental level, includes estimated faculty and staff lines. The assessment is far closer to a design program than a typical FTE based assessment. The effort is intended to allow the University and the System to be better positioned to implement the projects identified and developed coming out the options study.

With total campus enrollment in student full-time equivalent (FTE) projected to grow by 3 percent from 5,262 in the Fall 2014 to 5,337 by 2025, the analysis identifies the need for 138,665 Assignable Square Feet (ASF). While substantive, requiring 239,077 Gross Square Feet (GSF), excluding any



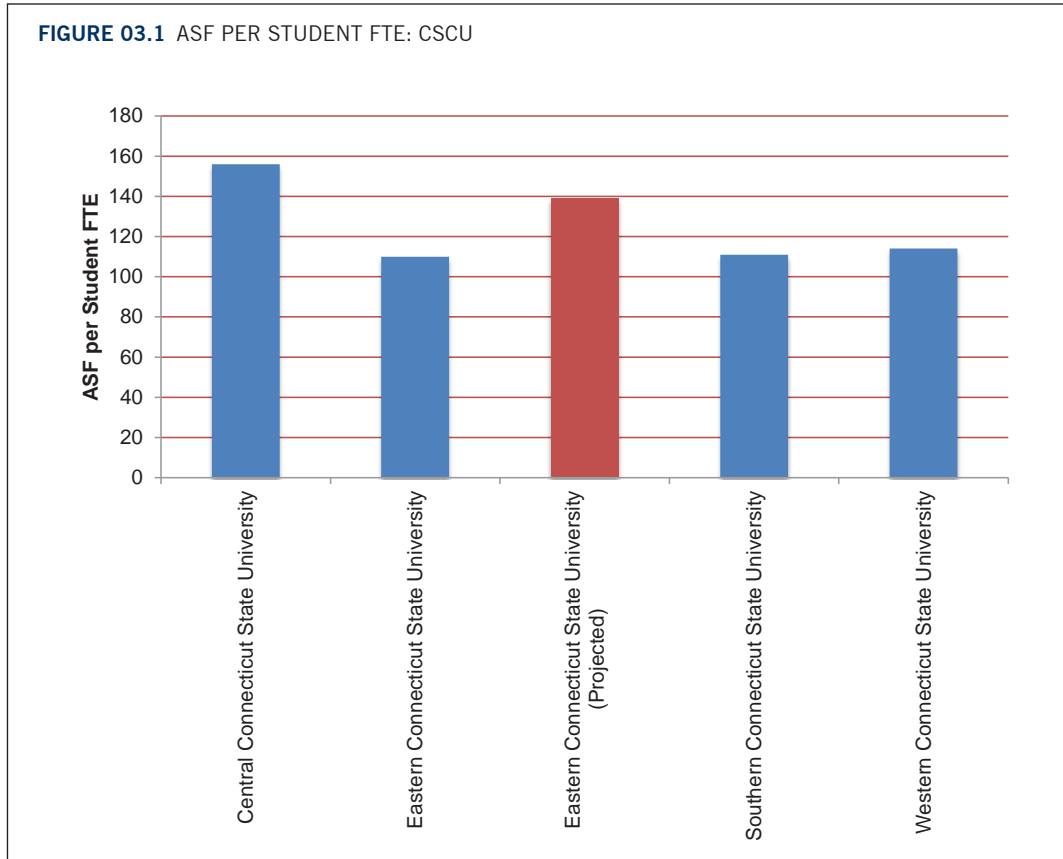
additional student housing, the assessment projects a total need of 139 ASF per student FTE, a number 15 square feet above the current Connecticut State University median of 124 ASF per student FTE.

A COPLAC Comparison was made previously in the Master Plan. While the ASF per FTE ranges greatly—from 118 ASF to 210 ASF—the median for the COPLAC institutions analyzed is 146. The assessment for Eastern in 2025 is 138 ASF per student FTE. This will most likely be the highest assessment of the four State Universities. The reason is the difference in mission. Eastern is almost entirely a residential campus, where in contrast, the other three are a mixture of residential and commuter. Also, especially with Central and Southern, those universities because they have a large part and graduate enrollment, extend the day, gaining significant evening capacity within the same facilities.

PROJECTED ASSESSMENT (ASF PER FTE) AND THE CONNECTICUT COMPREHENSIVE UNIVERSITIES

The chart below illustrates the projected need by student FTE and how that compares to the other Connecticut State University System. The assessment for Eastern exceeds the current assignable square feet per FTE at Western Connecticut State University, though possibly less than WCSU's master plan is likely to project.

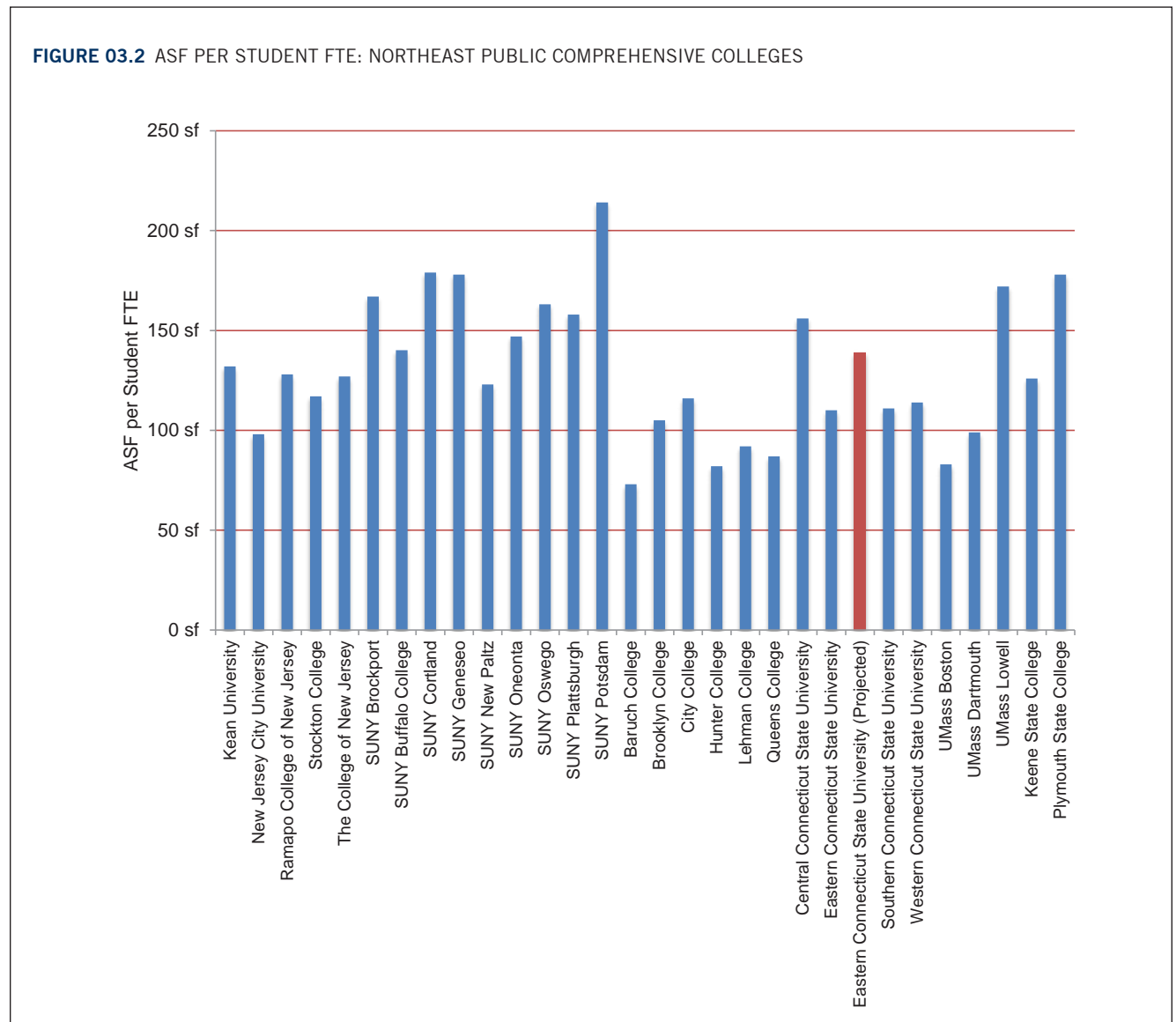
The goal of these comparisons is to illustrate that capital allocation is a decision based on relative need. While Eastern Connecticut State University requires a substantive amount of new construction to meet the demands of current and projected enrollment, the total space required still remains below the level of other colleges.



OTHER STATE-OPERATED INSTITUTIONS

The following chart depicts the current ASF per Student FTE by many of the Comprehensive Colleges in the Northeast. The current level at Eastern is 110 ASF per student FTE, lower than almost all except those institutions that are located in dense urban location with either the constrained real estate, a higher

capital requirement or both. At the assessed need of 139 ASF per student FTE, the University will remain substantially in the same relative location, slightly ahead of Southern and Western, and substantially behind Central.

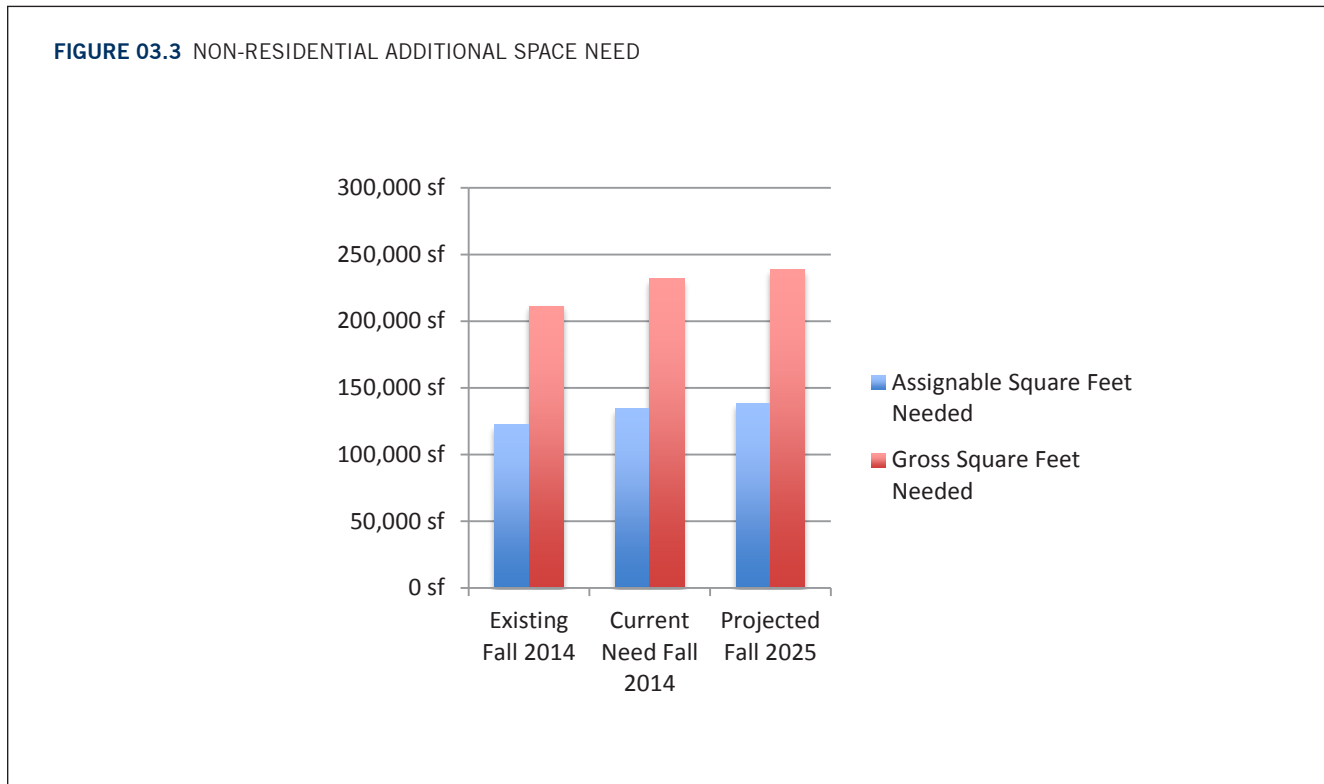


TOTAL ASSIGNABLE SQUARE FEET TODAY

Currently the University has an adjusted total assignable square feet of 600,075. This number excludes the student housing on campus along with structured parking facilities. The current assessment based on Fall 2014 enrollment is 722,688 for a current deficit of 122,614 ASF. This results in a current need of 211,403 GSF of additional facilities.

LONGER TERM NEED

While the majority of the total space required at the University is driven by the current deficit, the need does grow modestly based on the anticipated enrollment growth. The next chart represents the aggregate space assessment through 2025. By 2025, total gross square feet required will grow from 212,000 to almost 240,000 square feet. Once again these numbers exclude student housing.

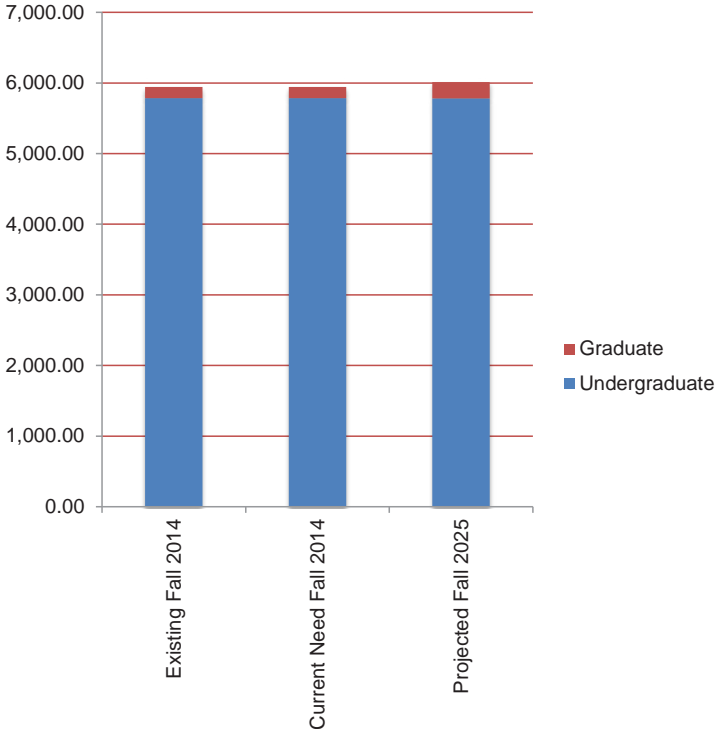


ENROLLMENT PROJECTIONS

In preparation to initiate the Master Plan, the University in conjunction with the System developed a student head count projection by department and level—undergraduate and graduate. In 2014, the University had 5,944 students with 5,784 undergraduates and 160 graduate students. The projection for 2025 is 6,012, with the distribution 5,782 at the undergraduate level and 230 graduates. The relative growth rate for the undergraduate population is flat, and 43% for the graduate population.

	Existing 2014	Projected 2025	% Change
Total Headcount			
Undergraduate	5,784	5,782	0%
Graduate	160	230	4%
Total	5,944	6,012	4%

FIGURE 03.4 STUDENT HEADCOUNT PROJECTIONS

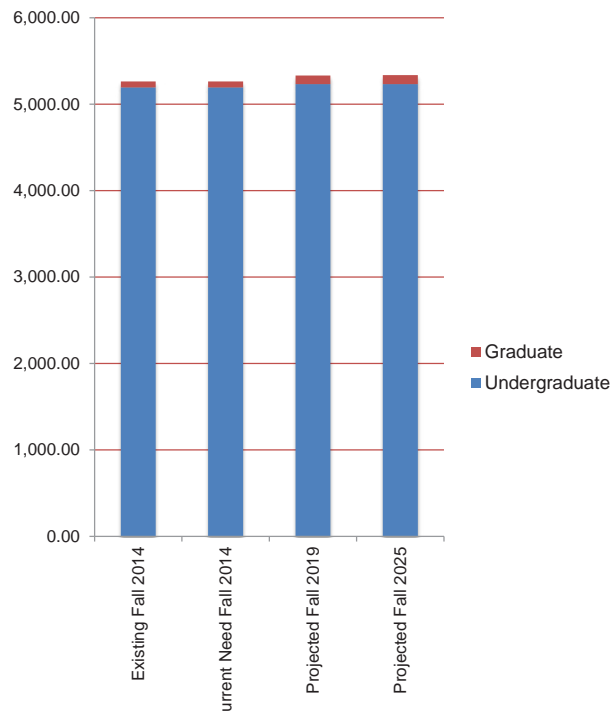


STUDENT FTE PROJECTIONS

As part of the analysis, the Master Plan Team converted the head count projections from head count to Full Time Equivalents (FTEs). Based on 15 credits per undergraduate student and 12 credits per graduate student, the result is a Fall 2025 projection of 5,231.90 undergraduate FTEs and 105.55 graduate FTEs. These numbers represent a 4.3% expansion over current undergraduate enrollment, and a 50% expansion over current graduate enrollment.

The reason that the FTE growth at the graduate level is more modest than the head count is that the anticipated growth is biased towards professional programs that service place-bound students seeking professional development from within the immediate region. These students tend to be more evening and part-time. They also tend to utilize the campus quite differently than a full time undergraduate student. This aspect of the projected growth, and its importance in meeting the enrollment target, will play a critical role in the physical planning of the future Eastern campus, placing emphasis on organizing facilities and parking, along with pushing services to the local in which these students reside while on campus. In general, these professional program students tend to utilize individual buildings, rather than the entire campus.

FIGURE 03.5 STUDENT FTE PROJECTIONS



UNDERGRADUATE & GRADUATE PROJECTIONS

As discussed earlier, ESCU is and remains a principally undergraduate institution. While there is a modest component of graduate studies, it limited to the School of Education and Professional Studies. The following table illustrates the distribution between undergraduate and graduate.

	Existing 2014	Current Need Fall 2014	Projected Fall 2019	Projected Fall 2025
Total Student FTEs				
Undergraduate	5,194	5,194	5,231	5,231
Graduate	67	67	99	105
Total	5,262	5,262	5,331	5,337



THE TWO SCHOOLS

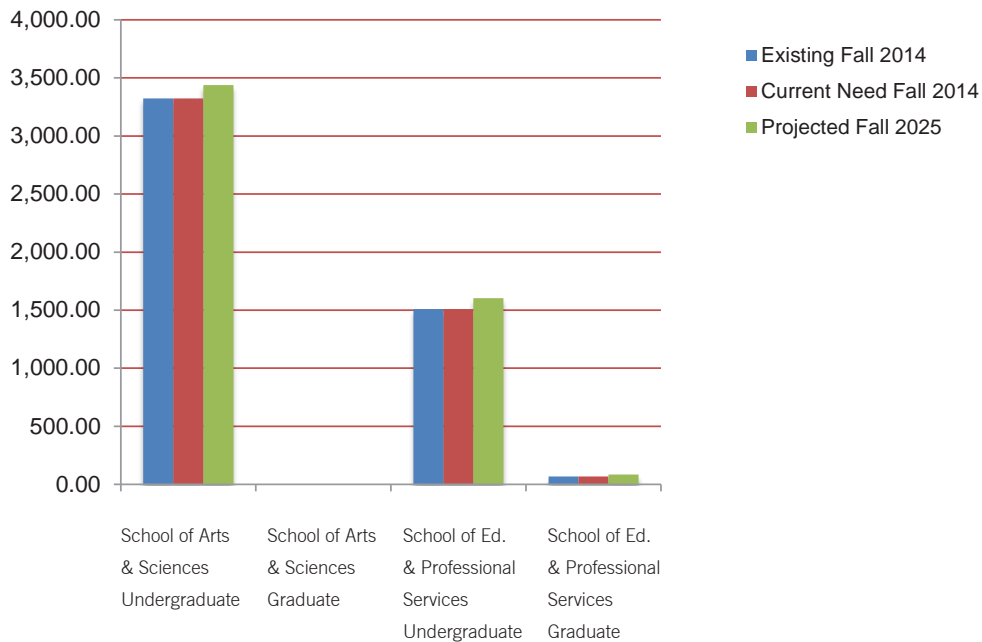
The University is comprised of two schools: the School of Arts & Sciences and the School of Education & Professional Studies. The larger of the two schools by far, based on either student head count or student FTEs, is the School of Arts & Sciences. Currently totaling 3,323 FTEs, Arts & Sciences, providing the essential general education requirements along with services courses supporting non-Arts & Sciences majors while supporting the School's own majors, consists of almost 67% of the FTE enrollment at Eastern. The next chart illustrates the current student FTE distribution by School.

PROJECTIONS BY INDIVIDUAL SCHOOL

The following chart represents the student FTE projections for 2019 and 2025 by the two schools. The projections include both graduate and undergraduate enrollments. The School of Arts & Sciences is expected to growth 3%, while the School of Education & Professional Studies is anticipated to grow 7%.

The projections are relatively constrained over the planning period for the Master Plan. This reflects the underlying demographics are weak, given a high graduate peak and a traditional first time full time student peak entering college in the latter part of the last decade or early in this decade. The assumption is that the institution will remain competitive within the local region both for undergraduates and graduates, along with the ability attract and recruit international students, and as the end of the decade approaches, attract students from other regions of the United States, as the demographics for college bound populous for the majority of the U.S. rebound more quickly than the Northeast.

FIGURE 03.6 STUDENT FTE PROJECTIONS



ASSESSMENT METHODOLOGY

Most space analysis function much as a square footage cost estimate, the intent of the assessment for Eastern Connecticut State University is to provide a greater level of analysis closer to a quantitative takeoff estimate that a cost estimator might provide for either the design development or construction documentation phases of a building project. Square footage estimates are useful in the early stages for setting gross area, but are inadequate for the detail management of scope in the later stages of a project's development. The goal of this assessment is to establish sufficient specificity to enable the assemblage and execution of projects going forward.

The strategy is to focus on the time utilization and design standards rather than individual instructional space factors. By developing the assessment at the departmental level including faculty and staff lines, the assessment is closer to a design program. The desire is also to make the assessment will be more accessible.

To that purpose, the assessment utilizes extensively weekly student contact hours (WSCH). The consultant utilized 24 WSCH for all lecture hall and classroom and 19.2 WSCH for all teaching lab and studio analysis. Space factors play a much more diminished role in providing corroborating evidence rather than being the primary driver of space. While much of the detailed analysis in the assessment will not be utilized, the Master Plan Team doesn't know which elements will be pivotal in their development of options.

STANDARDS

While there are various standards including CEFPI, many work with FTE space factors. This is something the Master Plan Team is trying to avoid. Both the standards and research studies of the Post Secondary Education Commission of California and the Texas Coordinating Board, both oversight agencies for the allocation of capital in their respective states, inform the consultant's approach to the assessment.

CLASSROOM ANALYSIS

As a model for this study, in 2004 the California Post-Secondary Education Commission (CPEC) commissioned a study addressing CPEC's concern about the "tight" scheduling imposed by their state legislature. The tables in that study make references to classroom hours and occupancy rates related to a 40 hour per week utilization target. But there are no references as to how that was derived. The Master Plan Team considers this appropriate because the original 40 hours is both irrelevant and difficult to utilize.

So when one looks for a consistent "frame" such as 40 hours, it doesn't really exist. The CPEC study just disregards it in favor of just setting an hour per classroom, avoiding the "frame" altogether. Now there are systems such as Maryland that calculate on the basis of daytime and nighttime FTEs. The assumption is that you build for the day and the nighttime enrollment is "free", at least from a space standpoint.

Now Eastern Connecticut State University has a disadvantage over Southern and Central because of its largely full-time student population and limited night enrollment. A day and night assessment, similar to Maryland, would take away this disadvantage. And the BOR would have to recognize this fundamental difference between the different institutions.

The Master Plan Team sees a daytime and evening Western target per seat and it is up to the institution to utilize that resource effectively. Noted for its small sections, Eastern has few sections that exceed 45 students. The assessment assumes that the classroom inventory should be designed both for a daytime traditional student population and an evening professional program enrollment. To that purpose, the average station size has been set at 22 ASF.



SPACE NEEDS (NON-RESIDENTIAL)

The analysis is broken into two major components: Academic Space and Support Space. The Academic Space includes the four schools along with the shared classroom space. The Support Space includes two broad categories of space. The first are those spaces such as the Library and Student Activity Space such as the Student Center that give character to the campus, affording students space for study and socialization.



ACADEMIC SPACE

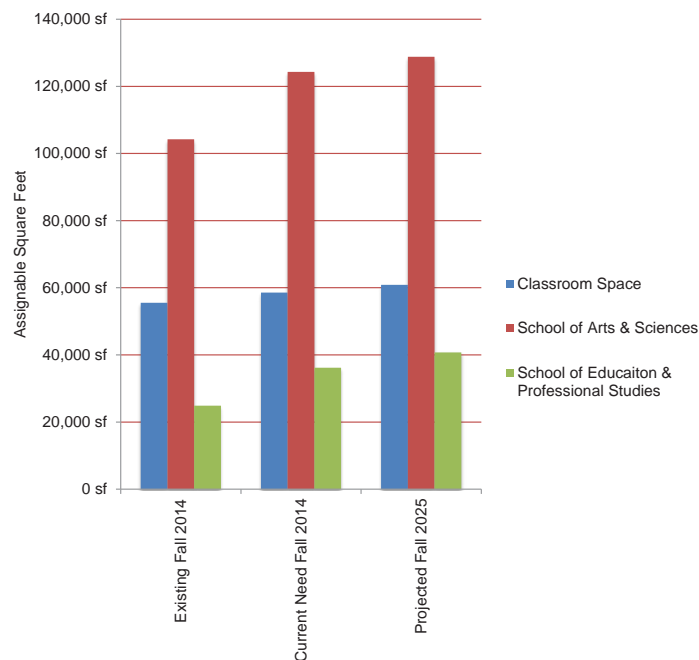
The space assessment indicates the largest need for additional space is in the Academic Category. This appears consistent with recent capital investments in the Student Center, Athletics and Library—several of the key support categories. While the University is completing the New Arts Instructional Center, which is included as existing space for the purpose of this analysis, the space allocated for classrooms, faculty offices, teaching laboratories and studios, and research space is modest relative to other Comprehensive Colleges. The chart below represents the current and projected need by Classroom Space and the two Schools.

The classroom deficit was determined based on the course schedule, an average of 22 ASF per station and a 35-hour per week utilization goal.

One barometer for evaluating academic space is the analysis of assignable square feet per student FTE. While a generalization, the metric is very effective at identifying outliers. The chart below represents the existing, current and projected ASF for academic space per FTE. Currently the University devotes 35 ASF per FTE to the academic components of the institution.

The assessment projects this number to exceed 43 ASF per FTE in the mid-point of the master plan, but as a result of additional enrollment will regress back to 42 ASF by 2025. This number will place Eastern Connecticut State University in the bottom range of Comprehensive Colleges, suggesting that while the total need is substantive, it is not excessive.

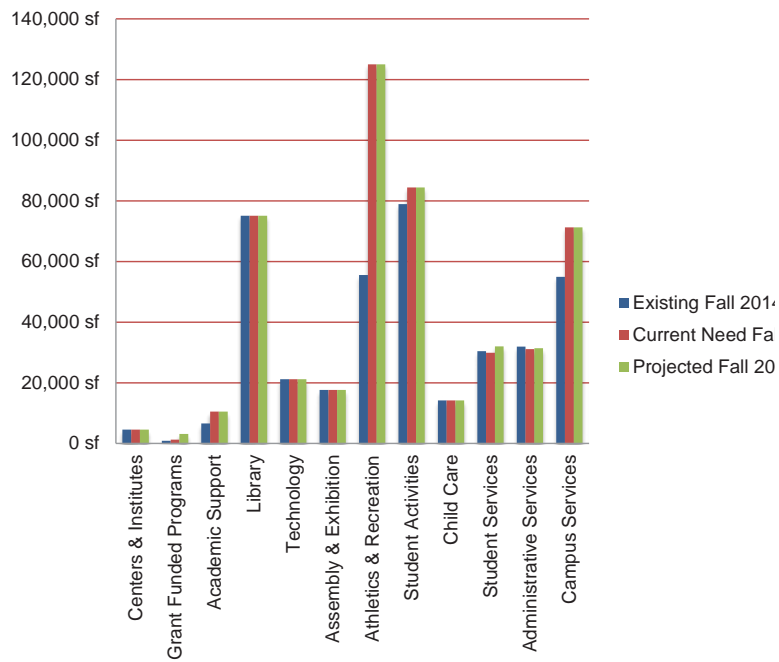
FIGURE 03.7 ACADEMIC SPACE ASSESSMENT



SUPPORT CATEGORIES

The Support Categories at Eastern Connecticut State University comprise three out of every six square feet. This is typically the norm for a comprehensive college. The broad category includes Centers & Institutes, Grant Funded Programs, Academic Support, Library, Technology, Assembly & Exhibition Space, Athletics & Recreation, Student Activities, Child Care, Student Services, Administrative Space and Campus Services.

FIGURE 03.8 SUPPORT CATEGORIES



Centers & Institutes

While there are several current centers or institutes, this category is utilized as an affordance for the potential new entities in the future. Current the University devotes 4,564 ASF to Centers & Institutes with that number expected to remain constant through 2025.

Grant Funded Programs

The externally funded grant programs are currently quite modest. This number does not include those dollars that are funneled through the individual academic departments. This category is expected to increase as additional grants become available.

Academic Support

The Academic Support Category includes those programs that support students academically outside of the classroom or teaching laboratory. Many of these functions are at the first level of the University's Library Building, including the Writing Center. A substantive increase is required focused on student success.

Library

The J. Eugene Smith Library was relocated from Wood Hall to a brand new facility in 1998. Currently totaling 75,084 ASF, the Library is not expected to be expanded during the next decade. As measured against the current student FTE enrollment, Eastern has approximately 14.25 ASF per FTE, or roughly 20% more space per student FTE than the recently expanded and renovated Southern Buley Library. The completed Buley has 12 ASF per student FTE, that is projected as sufficient by Southern..

Currently the Library devotes a substantive amount of space to reference, bound serials and micro film/fiche. While these components of the collection may abstractly remain valuable, from a practical vantage they will continue to be diminished as electronic versions become available, and/or Eastern's students are simply inundated by searchable data sources. With a modest only a modest increase in enrollment, Eastern's enrollment is not a source for driving future expansion. No expansion of faculties is planned based on the modest enrollment projections.

Technology

The campus information technology infrastructure including staff and data center is expected to remain constant over the next decade.

Assembly & Exhibition Space

The Assembly & Exhibition Space is limited to the Fine Arts Instructional Center. The space assessment assumes the

development of an additional large assembly space on campus. Currently totaling 17,641 ASF, the category expands by approximately 5,000 ASF, totaling 23,641 ASF. This category represents many spaces on campus, not just those that relate to the arts. Schafer Auditorium is included as well as new facilities within the New Fine Arts Center. The assessment assumes the creation of a new flat floor multipurpose space.

Athletics & Recreation

The University is currently quite modest with respect to recreation, physical education and athletic space. With a dated facility, the Sport Center, and space totaling only 55,563 ASF, the plan is to expand the total facilities to 125,000 ASF for roughly a 150 percent expansion.

Student Activities

The University has recently made substantive progress in expanding student spaces with the New Student Center, but more needs to be accomplished. A key element is additional student meeting space. But also any new project, specially any academic building, needs to have space for students, both informal and programmable.

Child Care

Recently the University constructed the Child and Family Development Resource Center at the north end of the campus. No expansion is proposed to those facilities.

Student Services

Student Services, which includes both intake services such as Financial Aid and ongoing services such as counseling, currently occupies 30,451 ASF. The University is expected to reduce this category slightly by 2025. While the quantity of space is quite adequate, the facilities, especially those in Wood Hall, have many issues from poor layout, to lack of privacy for staff and students. These should be address with a renovation strategy focused on Wood.

Administrative Space

Administrative Space includes all the remaining administrative functions at the University, ranging from Human Services to the President's Office. Currently totaling 31,924 ASF, this category will be slightly reduced.

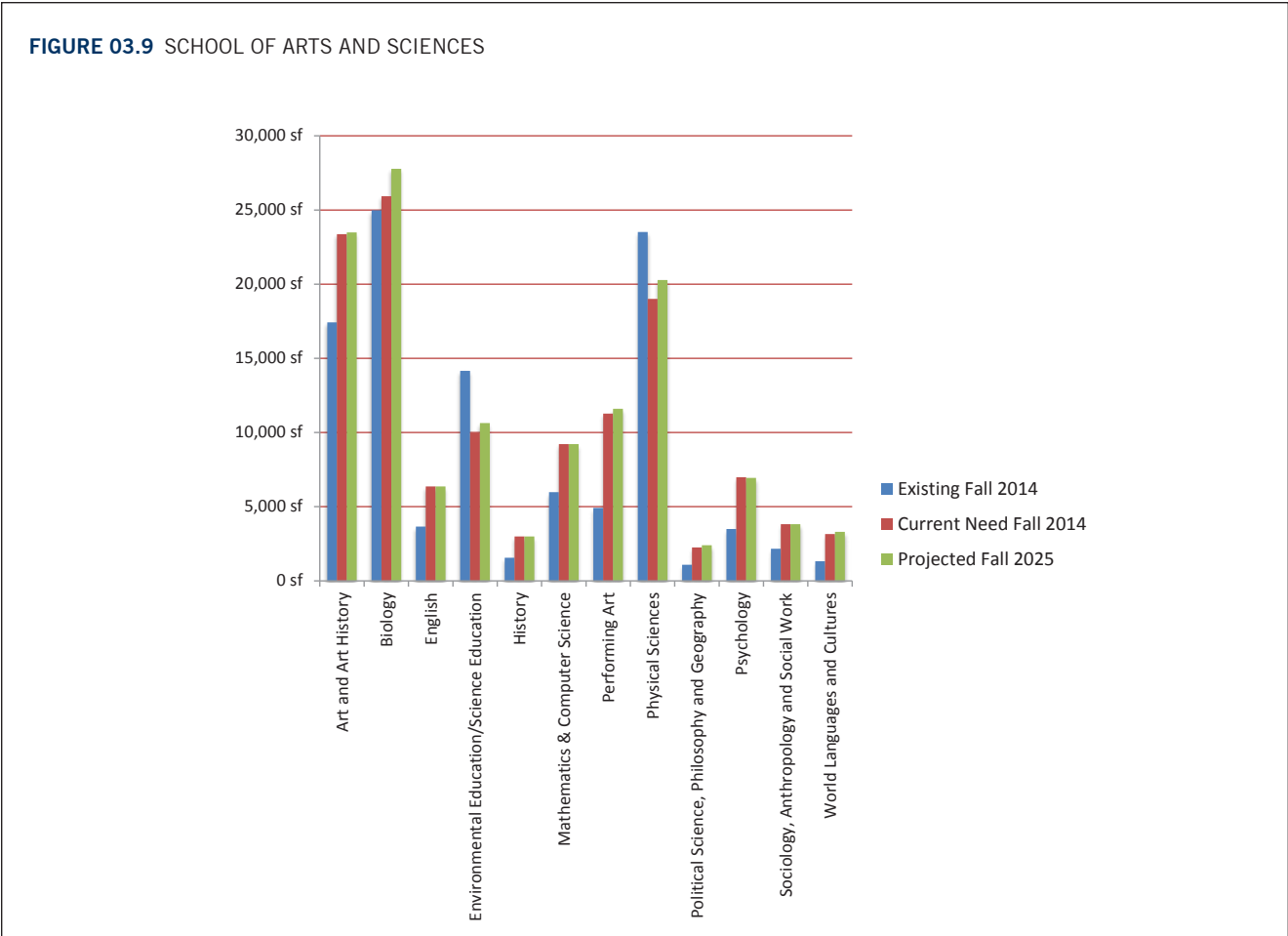
Campus Services

Campus Services includes critical "infrastructure" departments including Facilities and Campus. Totaling 54,954 ASF, the Campus Services will expand by 30%, required to develop adequate centralized shops and appropriate vehicle storage given the region's climate.

BREAK DOWN BY SCHOOL

School of Arts & Sciences

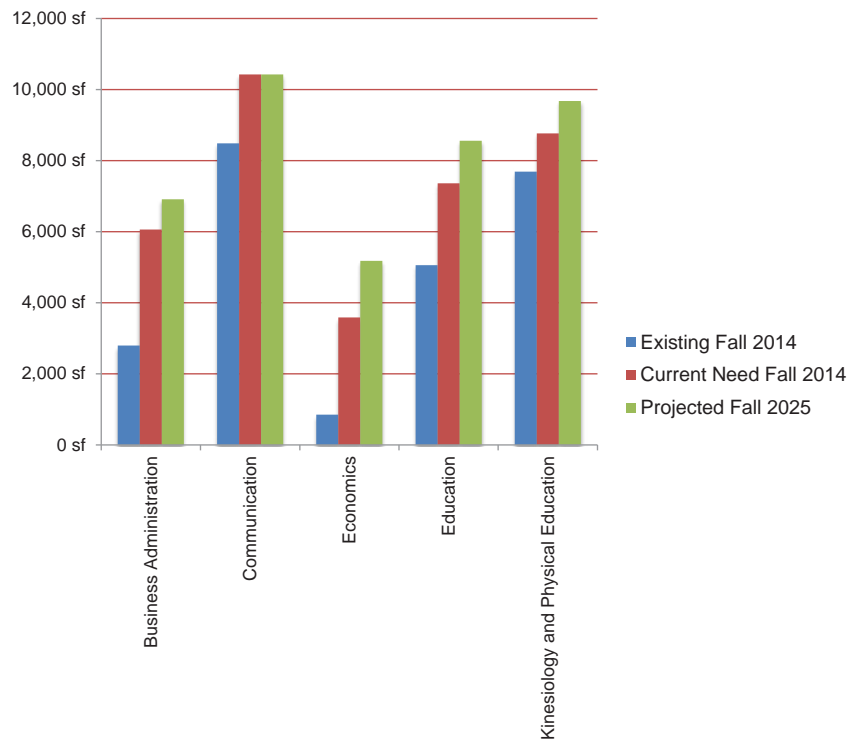
With 12 academic departments, the School of Arts & Sciences is by far the larger of the two schools. The need is not consistent though across all departments. The analysis includes the Fine Arts Instructional Center within the existing square footage from that building included for the arts departments. The Center is the second substantive academic building in the last decade with the 174,000 GSF Science Building opening in 2008.



School of Education & Professional Studies

The School of Education & Professional Studies has experienced a recent decline at both the undergraduate and graduate Education programs, though these declines have been offset by growth in other school programs. The departments include Business Administration, Communication, Economics, Education, and the recently renamed, Kinesiology & Physical Education.

FIGURE 03.10 SCHOOL OF EDUCATION & PROFESSIONAL STUDIES



Space Need Summary (Non-Residential)		(ASF)	(ASF)
Departmental Profile		Existing Fall 2014	Current Need Fall 2014
Classroom Space		55,555 sf	58,584 sf
School of Arts & Sciences		104,242 sf	124,346 sf
School of Education & Professional Studies		24,887 sf	36,202 sf
Academic Total		184,684 sf	219,132 sf
	<i>ASF per Student FTE</i>	<i>35 sf</i>	<i>42 sf</i>
Centers & Institutes		4,564 sf	4,564 sf
Grant Funded Programs		866 sf	1,234 sf
Academic Support		6,593 sf	10,458 sf
Library		75,084 sf	75,084 sf
Technology		21,175 sf	21,175 sf
Assembly & Exhibition		17,641 sf	22,641 sf
Athletics & Recreation		55,563 sf	125,000 sf
Student Activities		78,923 sf	84,408 sf
Child Care		14,172 sf	14,172 sf
Student Services		30,451 sf	29,859 sf
Administrative Services		31,924 sf	31,120 sf
Campus Services		54,954 sf	71,216 sf
Support Total		391,909 sf	490,929 sf
	<i>ASF per Student FTE</i>	<i>74 sf</i>	<i>93 sf</i>
Grand Total		576,593 sf	722,813 sf
	<i>ASF per Student FTE</i>	<i>110 sf</i>	<i>137 sf</i>
		<i>Assignable Square Feet Needed</i>	<i>122,739 sf</i>
		<i>Gross Square Feet Needed</i>	<i>211,618 sf</i>

FIGURE 03.11 Space need summary

STUDENT RESIDENCE SPACE NEEDS

Eastern’s need for student housing is two-fold – modernizing select older residence halls and replacing a number of obsolete buildings that have exceeded their useful lifespan and occupy valuable land on the main campus.

Eastern’s Strategic Plan goal is to house 60% of full-time undergraduate students on campus. This represents 2,600 beds, based on the projected 10-year enrollment and historic rates of full time to total enrollment. This goal compares favorably to Eastern’s peers in the Council of Public Liberal Arts Colleges (COPLAC) which have on-campus residential rates of 40 to 66%, with an average close to 50%, based on findings from a research survey done by Perkins+Will concurrently with the Master Plan. (Refer to the Technical Appendix).

Housing demand is dynamic. It reflects a mix of enrollment, market conditions, availability of housing options on and off campus, policy, and student lifestyle preference. Several years ago, Eastern had to rent off-campus hotel space to cover a housing shortfall. More recently, the campus has been able to accommodate all students wanting on-campus housing, however this has requires some triple-occupancy rooms as a stop-gap measure. A goal is to “de-triple” across the campus.

Residential Expansion Program

On-Campus Program (2025)	Beds
60% of est. 4,300 FT 2015 UG enrollment	2,600
On-Campus Inventory (2017)	
Existing stock, “detrilled”	2,510
Shafer Conversion added	90
Total on-campus beds, 2017	2,600
Expansion Program	0
Obsolete Housing	Beds
Winthrop / semi-suites	75
Low Rise Apartments	314
Replacement Program	389
Floor Area	
Assumptions for new construction	GSF
Semi-suites, 75 beds @ 250 GSF/bed	19,000
Apartments, 314 beds @ 320 GSF/bed	101,000
Total	120,000

Student Housing Strategy

- Aim for 60% on-campus housing to support a liberal arts experience
- Improve the quality and conditions of housing to remain competitive
- Replace obsolete, energy inefficient housing stock
- Include amenities, common and study space to enrich the residential experience
- Maintain a mix of housing types that includes affordable options

The Shafer Hall renovation project, soon to open, will add 90 beds by converting much of a former academic building to student housing.

Winthrop Hall, built in 1958, is in poor condition and is a low-density building on a key site on the south campus. Redeveloping this site reflects a significant opportunity to enhance the setting and add capacity. The Low-Rise Apartments, built in 1972 are in fair condition, but lack enclosed circulation, efficient heating systems and adequate space. They too are overdue for replacement, as recommended in the last Master Plan update as well. The planning team explored strategies for reuse of these sites in the Scenarios phase.

At the south end of campus in the town blocks, both Burr Hall, built in 1919 and Noble Hall, built in 1928, need renovation. Crandall and Burnap Halls, each built in 1970, are in poor condition and have accessibility issues given their sloping sites and internal layouts. Long-term, it may be preferable to replace these outdated buildings rather than renovate given the degree of these constraints and extent of obsolescence. Recommendations for housing renovation are described in Chapter 5.



Winthrop Hall

RECREATION AND ATHLETICS

A top priority for Eastern since the last Master Plan has been addressing a significant space deficit for athletics, student recreation, wellness and academic departments using these spaces. The 2008 Master Plan identified the need for a new Sports Center. The current Master Plan space needs analysis confirmed this need, as illustrated on the chart for Support Spaces earlier in this chapter.

To meet the needs of recreation programs for all students that can be used simultaneously with varsity athletics, two facilities are needed on the Main Campus. Another indoor facility is needed at Mansfield to provide off-season space for athletic team practice and a range of other uses. These three facilities can be defined as:

SPORTS CENTER

The recommended space program for the Sports Center totals approximately 132,000 GSF. Its main elements include:

Performance Gymnasium

- A large space to accommodate three basketball courts with retractable bleacher seating.
- For games, the seating occupies the two end courts.
- 120' wide x 200' long, 24,000 ASF.
- 35' vertical clearance required



Performance Gymnasium

Aquatic Center

- A replacement swimming pool for competition, recreational and other uses
- Pool minimum dimension: 25 meters minimum. 8 lanes wide / 100' width
- Optional if a diving program is necessary: 10 additional meters and increased pool depth for diving well.
- 127' x 140', approx. 18,000 ASF, to include 15' deck at diving end, 10' minimum deck typical
- 30' vertical clearance to underside of structure.



Aquatic Center

Support Spaces

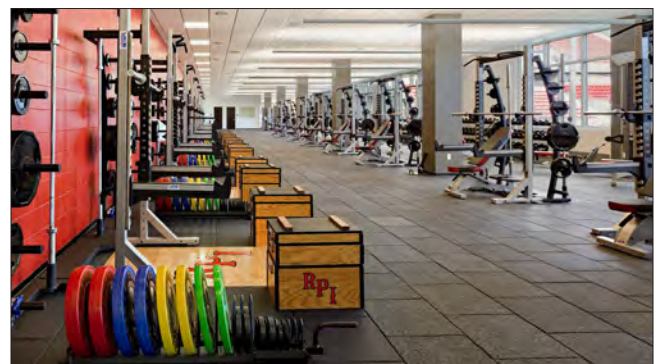
- Strength and conditioning areas
- Locker rooms, sports medicine, equipment issue and laundry, storage
- Restrooms
- 16' floor to floor

Hospitality

- Lobby
- Concessions
- Sports Hall of Fame

Offices

- Administration area for Athletic Department staff.
- Meeting space



Strength and Conditioning

- Offices, support facilities, storage.

RECREATION CENTER

The recommended space program for the Recreation Center totals approximately 39,000 GSF. Its main elements include:

Gymnasium

- A large space to accommodate two basketball courts.
- 35' vertical clearance required
- Recreation and Physical Fitness Areas

Multi-purpose rooms for dance, yoga, and other uses

- Fitness and cardio area
- Cross training, lounge, meeting space

Support Spaces

- Lounge and meeting space
- Changing rooms (full locker rooms not required)
- Storage, restrooms

FIELD HOUSE

The recommended space program for the Field House totals approximately 75,000 GSF. Its main elements include:

Track / Multipurpose Space

- A large space to accommodate a 200 meter track with artificial turf infield for multi-purpose use
- Program alternative: Artificial turf / no track

Support Spaces

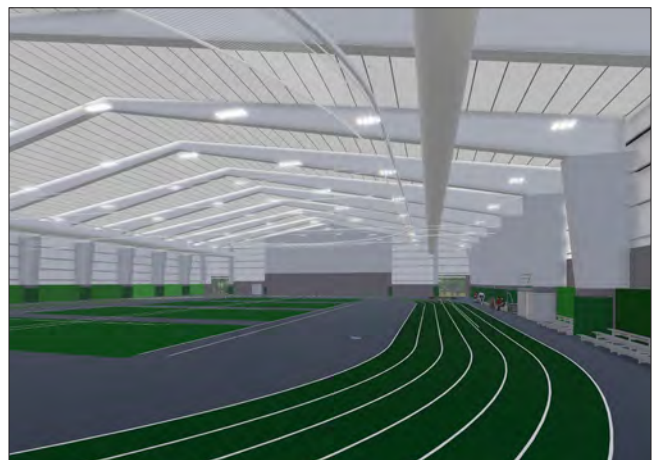
- Offices
- Restrooms
- Storage



Fitness Spaces



Multipurpose Spaces



Track / Multipurpose Space

PARKING

PARKING NEEDS

The Cervantes Garage, built in 2003, and the Shakespeare Garage of 2010, together provide ample parking at the north end of campus in two structures totaling 470,000 SF and 1,542 spaces. Since the garages have been built, the parking garages have never been full to capacity (an exception being an occasion when surface lots were closed for snow removal). The lots near Noble, Shafer and Burr have sufficient capacity for users of their adjacent facilities. The Mansfield Campus has sufficient parking for its uses. Based on these reported findings from University, Eastern has sufficient overall parking capacity in aggregate. The perception among many, however is that Eastern has a parking problem.

Determining parking demand for a university is both objective and subjective, a science and an art. There are many factors at work, including population, available modes of transportation, course schedules, economics and space. Perhaps no consideration is as important as location. At over a half mile from the north end to Prospect Street at the south, Eastern's campus is expansive. As the charts below indicate, there is an imbalance in parking supply and demand from north to south – more spaces in the north and many people having destinations in the south campus.

As a result, the Master Plan parking program reflects a working assumption of an **additional 200 spaces** in the south campus to address this imbalance, plus additional replacement spaces for those lost to development for buildings and to green the campus.

Since structured parking is costly and diverts funds from academic and other uses, the Master Plan encourages ongoing exploration of alternatives to mitigate parking demand, including a continued robust shuttle service, improved pedestrian connectivity to encourage walking, and feasible transportation demand management (TDM) initiatives. As context, the time to walk from the far end of the top level of the northern-most Cervantes Garage (worse case) to Webb Hall it is approximately a 6 and a half minutes using a typical pace. Many universities have prioritized landscape over parking in the campus core, moving lots and garages to the periphery. Creating a greener, more pedestrian friendly campus core can be worth it to create an attractive campus that supports social interaction and attracts prospective students.

- Parking Lot
- Parking Garage

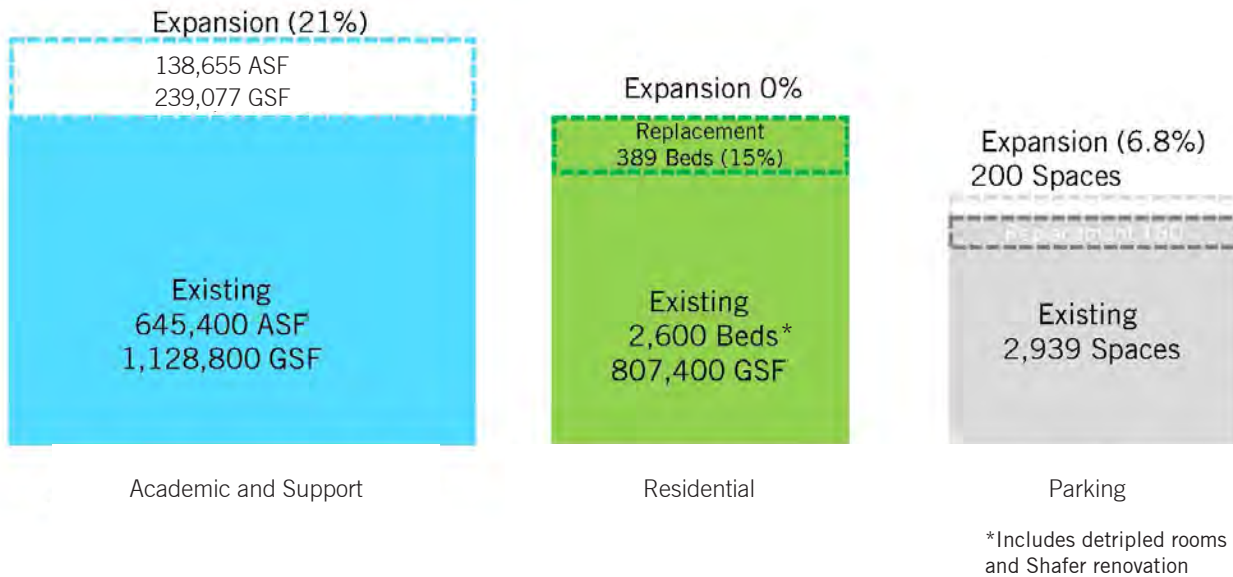


FIGURE 03.12 Existing campus parking

SUMMARY SPACE NEEDS

The 2025 Program Needs for additional space for buildings and parking can be summarized as follows:

FIGURE 03.13 Expansion Needs





EASTERN CONNECTICUT STATE UNIVERSITY

01
INTRODUCTION

02
EXISTING CONDITIONS

03
SPACE NEEDS

04
SCENARIOS

05
RECOMMENDATIONS

4 SCENARIOS

INTRODUCTION

In this task, the planning team explored a wide range of alternatives for optimizing the use of existing facilities, greening the campus core and accommodating needed expansion. The scenarios explored development for academic, research, administration, student life, housing, support and parking requirements. The scenarios also carefully considered the campus open space, landscape and circulation, and how buildings and place could work together to create a more attractive, functional and welcoming setting.

EXPANSION STRATEGY FOR SCENARIOS

Eastern’s 82-acre campus core has significant existing development. A main strategy for the Master Plan update was leveraging the value of remaining campus development potential while optimizing the investment in existing facilities through renovation. The planning strategies included:

- Redevelop sites with low-density, obsolete buildings
- Utilize infill development to both meet growth need and to strengthen the open space network
- Remove roads and green the core in keeping with a liberal arts college campus
- Provide sufficient parking for the south campus at the perimeter
- Size projects within reasonable funding parameters

CAMPUS CAPACITY

While Eastern has significant acreage, it is a mature campus with few remaining building sites. The Mansfield Campus serves athletics and recreation and is not an appropriate location for development to meet other needs, nor does it have excess capacity for significant expansion. The Arboretum serves as a nature area for teaching, research and informal recreation, but is not suitable for development. For the near term, the core campus has sufficient capacity to meet development needs. In the long term, however, acquisition of additional land would provide additional capacity and flexibility to meet on-going needs and maintain an appropriate scale.

The adjacent, 14.5-acre Windham Technical High School facility, no longer meets the school’s needs and may be relocating to a new facility. If so, it may be possible for this site to be acquired for Eastern. Eastern and Windham Tech are each owned by the State of Connecticut. A Master Plan scenarios explored the near and long-term benefits to Eastern of expanding campus land with the potential Windham Tech High School site acquisition.



FIGURE 04.1 WTHS Property

DESIGN PRINCIPLES

The following principles address the unique conditions, character and opportunities of Eastern Connecticut State University's campus. They reflect insights from University leadership, the Advisory Committee, and from the design team. The Design Principles served as a filter for assessing the Master Plan Scenarios and a guide for subsequent development of the Master Plan Recommendations.

- 1 Improve, connect and create **Quadrangles in the Campus Core** and aim to reduce or eliminate interior access drives to give priority to people over cars.
- 2 Continue to improve **Campus Sustainability** that serves as a model for others, as inspiration, and as a teaching tool.
- 3 Develop the campus as a series of **Connected, Walkable Precincts** that support a range of activities, **Strengthen Community** and enhance quality of life.
- 4 Locate and size new buildings to be **Compatible in Scale and Character** with adjacent campus development and neighborhoods, to enhance the **Character and Quality of Campus Open Space and to Reinforce Existing Uses and Activities**.
- 5 Maintain and enhance **Campus Frontages at High and Prospect Streets** with consistent landscape buffers and contextual development, while **Strengthening Pedestrian Pathways along Windham Street** extending from Main Campus, through the Town Precinct, towards Main Street.
- 6 **Improve Circulation** for pedestrians, bicycles, vehicles and shuttles, on the main campus, between campus areas and to downtown Willimantic.
- 7 Provide attractive, accessible **Student Life Facilities distributed across the Campus** to improve recruitment, quality of life, and retention.
- 8 **Replace Temporary and Obsolete Buildings** with permanent facilities to make best long-term use of campus land.
- 9 **Provide Sufficient Parking** within reasonable walking distance of campus destinations, prioritizing affordable solutions and other uses in the campus core
- 10 **Establish and Implement Design Standards** that ensure all new buildings use a complimentary palette of materials that strengthen the overall Campus identity and sense of place.



SCENARIO SUMMARY

The potential for land expansion with the Windham Tech High School site made the Master Plan Update for Eastern unique. Like Eastern's campus, WTHS is owned by the State of Connecticut. It was public knowledge that the high school's facilities were obsolete and WTHS was considering relocation. The Advisory Committee and Consultants were instructed by BOR that the Master Plan could assess the potential benefits of acquiring the Windham Tech High School site. Universities must plan for the long-term, and be strategic when singular opportunities arise. Accordingly, Scenario 3 looked at the planning benefits of using WTHS, while Scenarios 1 and 2 used only current campus land. The Planning Team understood that the Master Plan cannot recommend projects in Scenario 3 on WTHS land, since it is not certain this property can be acquired.

The Master Plan scope included all land owned by Eastern, including the Town Blocks, encompassing Noble, Shafer and Burr. They were not studied in the scenarios phase since the planned uses were relatively constant. Future needed renovations are summarized in the Recommendations.

The Kramer School on Prospect Street is owned by the Town of Willimantic. The site is a gap in Eastern's land holdings between the main campus and the two town blocks to the south. The property was discussed in the Master Plan process. Although this study did not identify a use for the building, the site may be important to physically connect campuses.

The Arboretum was included in the Master Plan scope. No change to its land use is projected.

The Mansfield Campus was included in the scope and assessed for Sports and Recreation use, consistent with its existing land use

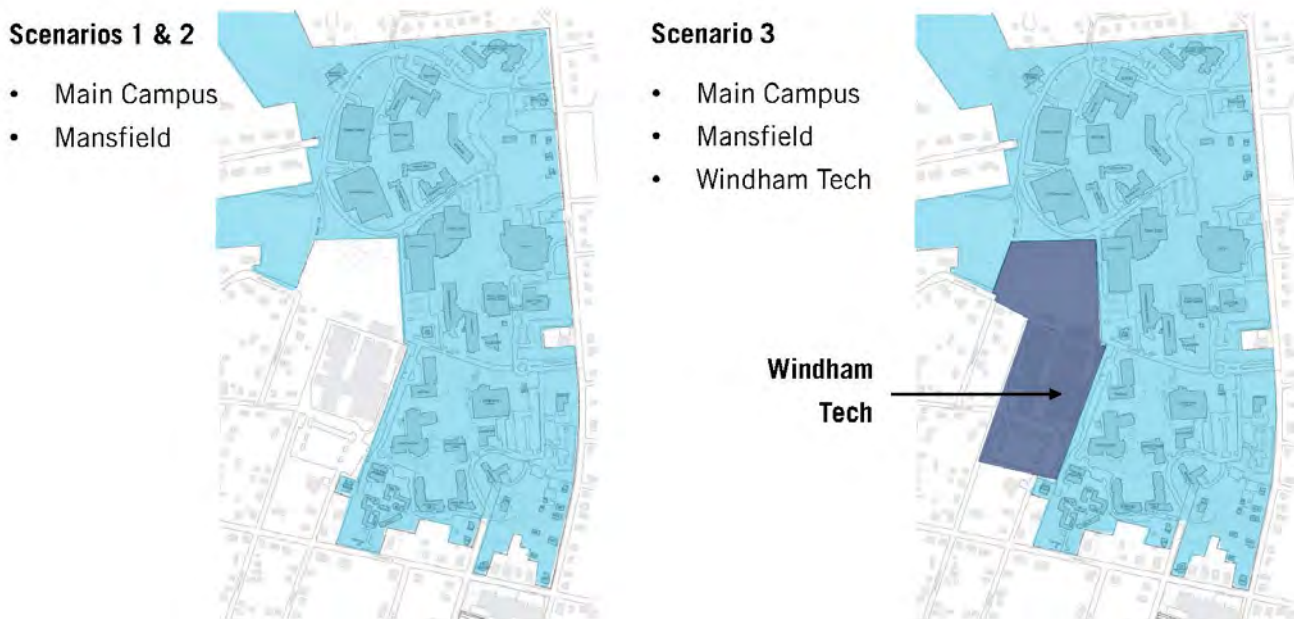


FIGURE 04.2 Scenario Areas

SCENARIO PROGRAM SUMMARY

Each scenario addressed the same program requirements, to explore various benefits and drawbacks of different locations and phasing strategies to meet the same area requirements for new buildings. The scenarios focused on the larger building facilities that presented a greater challenge for siting. They also addressed different ways of reconfiguring campus circulation in order to create a more effective vehicle network at the campus perimeter in order to transform the core into a more pedestrian-friendly environment, befitting a classic liberal arts college. Renovation projects, were not tracked in detail in the Scenarios phase since almost all were common to any future development approach.

The Building Program shared by each Scenario was as follows:

Academic and Support	
New Construction	GSF
Sports Center	132,000
Professional Studies / Classroom Building	80,000
Health and Counseling Center	14,000
Hurley Expansion	10,000
Facility and Maintenance Expansion	12,000
Field House	75,000
Subtotal	323,000
Demolition	
Eastern Hall	8,305
Existing Health Services Center	4,480
Existing Sports Center, South Wing	40,800
Subtotal	53,585
Total / Academic and Support	269,415
Residential	
New Construction	GSF
Residence Hall / Semi-suites (75 beds + amenities)	19,000
Student Apartments (314 beds + amenities)	100,000
Subtotal	119,000
Demolition	
Winthrop Hall	23,556
Low Rise Apartments	64,679
Subtotal	88,235
Total / Residential	30,765

FIGURE 04.3 Scenario Program Summary

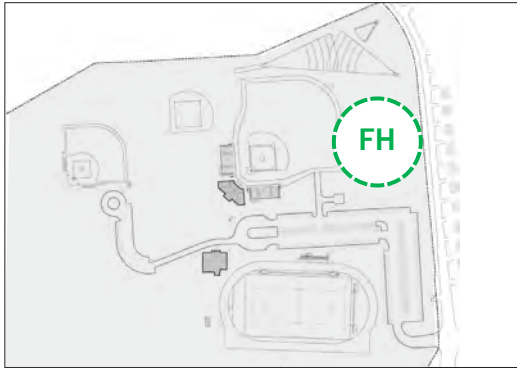
SCENARIO LOCATION SUMMARY

The planning team studied three scenarios for locating the major new facilities, as illustrated in below and on the opposite page. The pros and cons tested a range of alternative sites for new

KEY

Facilities/Maintenance	FM	Residential	R
Dining Hall	DH	Parking	P
Sports Center	SC	Field House	FH
Academic Building	AC	Recreation	R
Health and Wellness	HW		

SCENARIO 1



SCENARIO 2

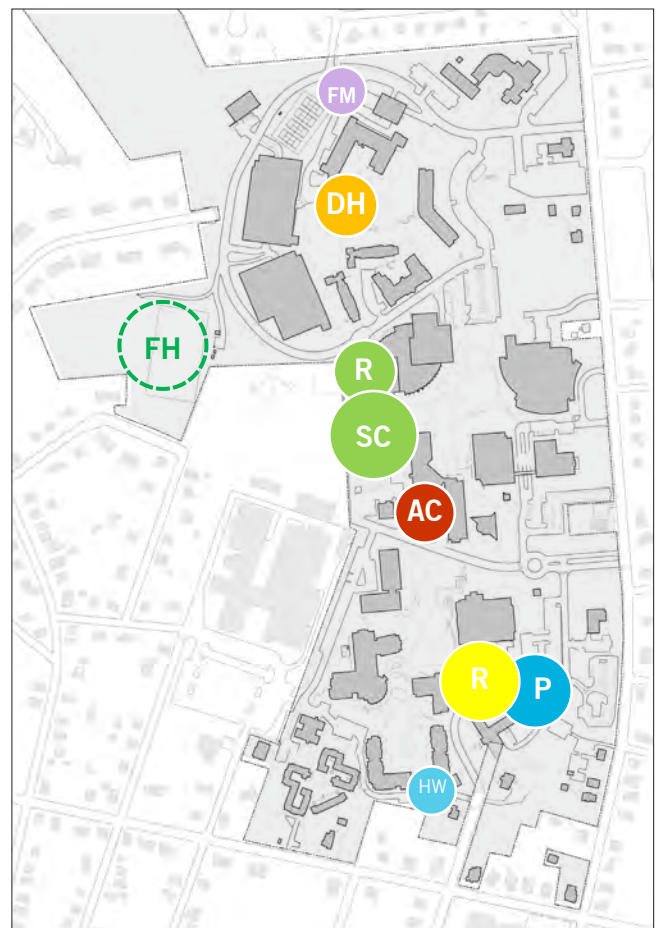
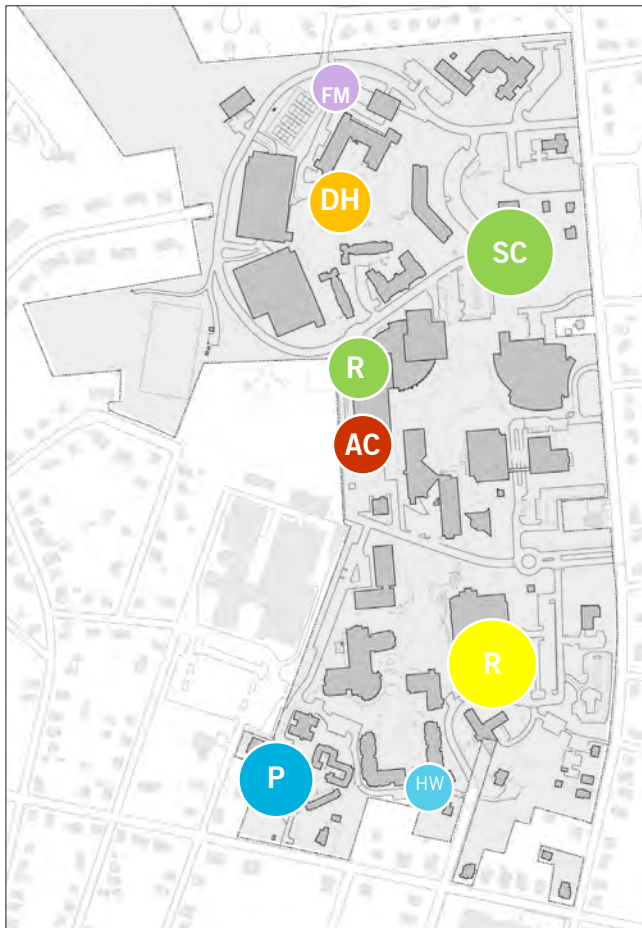
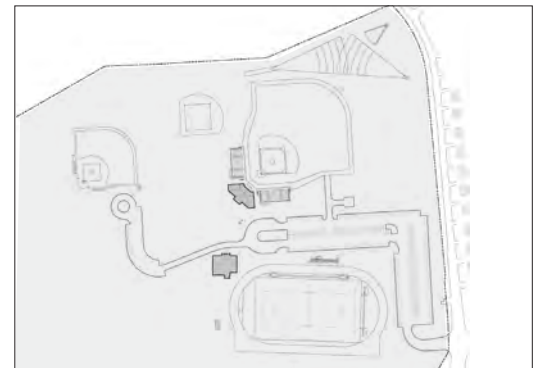
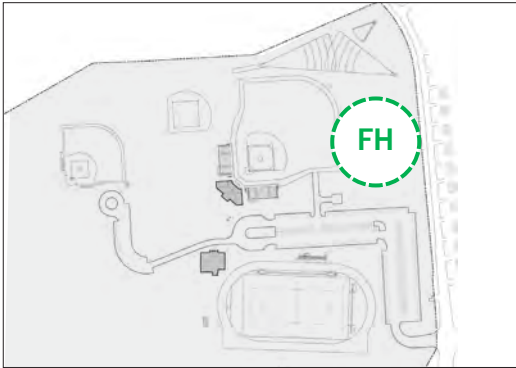


FIGURE 04.4 Scenario Summaries

SCENARIO 3 ACADEMIC BUILDING



The scenarios explored both the program and the location for the new 80,000 GSF Academic Building.

Program Alternatives

The Arts and Sciences are well positioned with the opening of the new Arts Center in 2016 and the Science Building, built in 2008. The pending renovation of Goddard and Communications will also address needs in other academic departments. The most significant remaining needs are for

Option 1

- New Bldg: Professional Studies / Classroom Bldg.
- Webb Hall: Humanities & Social Sciences / Classroom Bldg.

Option 2

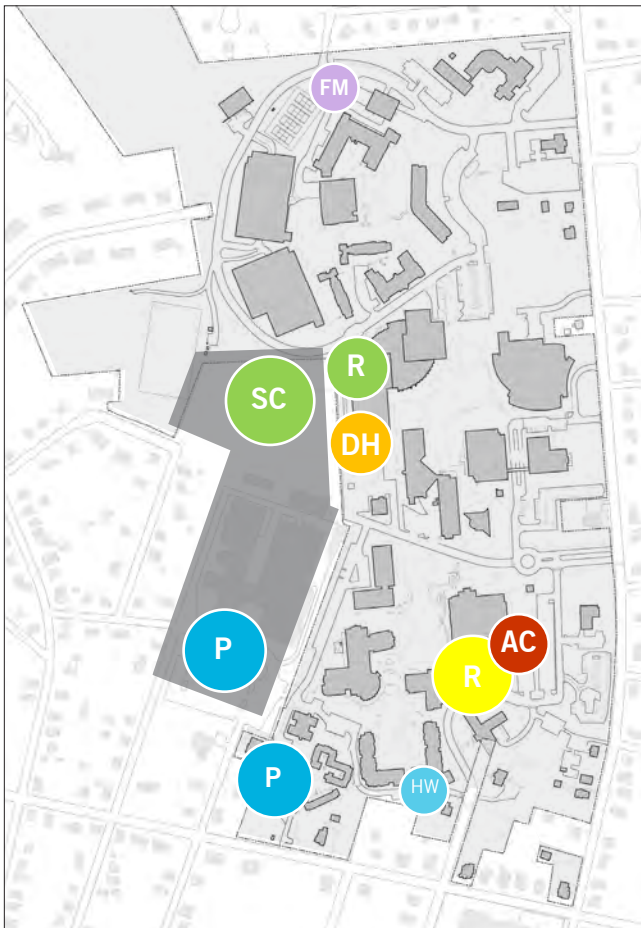
- New Bldg: Humanities & Social Sciences / Classroom Bldg.
- Webb Hall: Professional Studies / Classroom Bldg.

departments related to professional studies, humanities and the social sciences that largely residing in Webb Hall. This building is over capacity and in need of “unpacking”.

Location Alternatives

The Master Plan explored two program alternatives to this end. Each entailed a new 80,000 GSF academic building and repurposing of Webb Hall. These can be summarize as:

After careful consideration, the University Master Plan Advisory Committee and Consultant Team determined that Option 1 would be the most advantageous. Accordingly, the Master Plan recommends the new Academic Building be for Professional Studies and that Webb Hall be repurpose the building to focus on Humanities & Social Sciences. More information on preliminary program recommendations follow in the



Recommendations. Should the WTHS site be obtained, then Scenario 3 would be preferred.

The Consultant Team explored several locations for the new academic building in the scenarios. Sites studied had to have sufficient capacity for a building of this size, good access and relative proximity to related academic uses.

In Scenario 1, the New Academic Building is located to the west of the Communications Building on a site that includes the parking lot and the south wing of the existing Sports Center, which could be demolished if the Sports Center were relocated. The intent was to locate the building centrally and in relative proximity to the parking garages. In Scenario 2, the New Academic Building is located just south of Communications and Goddard in order to provide a suitable backdrop to the north end of the main quadrangle, and be centrally located in the academic core. The building site includes the parking lot and Eastern Drive, which would be closed as part of greening the heart of the campus. In Scenario 3, the New Academic Building is located on the parking lot southeast of the Library. The intent is to provide a prominent, accessible site and to frame a new quadrangle with the library and Foster Clock Tower visible from the main campus entrance. The building can be sited to work with either the current or newly planned road alignments for Windham Street Extension.



FIGURE 04.5 Scenario 1 site for Sports Center from the west



FIGURE 04.6 Sports Center Scenario 1: South of the Fine Arts Center

SPORTS CENTER AND RECREATION CENTER

Since the Sports Center is a large-scale, high priority project, the location of this new 132,000 GSF structure was the defining characteristic of the Scenarios phase. Eastern's campus has relatively few remaining sites ample enough for a building this size. Identifying the best site engaged the Planning Team in a productive exploration of not only functional matters, but also questions of place, character and a long-term vision for Eastern.

The current Sports Center is used for athletics, recreation and academic uses, like KPE. Early in the Scenarios phase, the team determined that the existing gym still had great value. The team also determined that the south wing did not have sufficient value to be preserved, given the obsolete swimming pool and low scale structure occupying a valuable central site. Accordingly the consultants proposed and the Advisory Committee confirmed in each scenario that the north wing of the current Sports Center would remain and be repurposed and renovated as a Recreation Center, for student and shared academic use, and the south wing would be demolished and redeveloped for other uses to be studied in the scenarios.

In Scenario 1, the new Sports Center was located on a site north of the Arts Center, a wooded lot behind houses fronting High Street. The site is beneficial since it does not require displacement of any existing functions or demolition of any major structures (removal of the houses on High Street eventually is anticipated but not mandated). The site also has good access to the campus north entrance and is in a 5 minute walking distance from the Shakespeare and Cervantes Garages.

Scale was a primary consideration for this site. Would the Sports Center be too large here and potentially detract from the soon-to-open Arts Center? Would a structure this large be at odds with the broader goal of maintaining a campus scale reminiscent of a classic liberal arts college? To address these questions the consultant team engaged in a thorough analysis of the site and in massing studies. The findings were generally positive. The size of the site allows the building to be set back almost 200 feet from High Street. This would allow either a wooded buffer or a more open entrance if desired, similar to the Arts Center. The new Arts Center occupies a high point of the campus. This site is lower, so the Sports Center does not compete for attention in height. The topography of the site allows the building height to be reduced and the perceived bulk to be minimized, given that the grade slopes downward going away from High Street. As a result, the ground level can be set into the hill, with an entrance on the west side.

In Scenario 2, the new Sports Center was located on the site of the redeveloped south wing of the current Sports Center and a portion of the adjacent parking lot. This location was recommended for this project in the 2008 Master Plan. The consultant team took a fresh look at the implications for an updated space program on this site. The findings were not positive. In order to fit the large scale gymnasium space and swimming pool and have circulation around these functions, the building footprint must occupy the full width of the site between the access drive and the Communications Building. As a result, the building blocks campus pedestrian flow in both the north-south and east west directions. The photo montage below illustrates how this footprint blocks the pedestrian circulation at arcade on the west side. It also shows how the scale is looming and too large. Expanding the development further south to engage the North Plant complex is not recommended since it would impact operations and needed expansion for that key infrastructure facility. It also does not resolve the circulation blockage. Constructing in this very constrained site also has logistical and phasing implications. Current functions would be impacted during construction. Design freedom is limited by the constrained site perimeter. As a result the Consultant Team did not recommend this site, and the Advisory Committee concurred.



FIGURE 04.8 Sports Center Scenario 2: Expand in Place

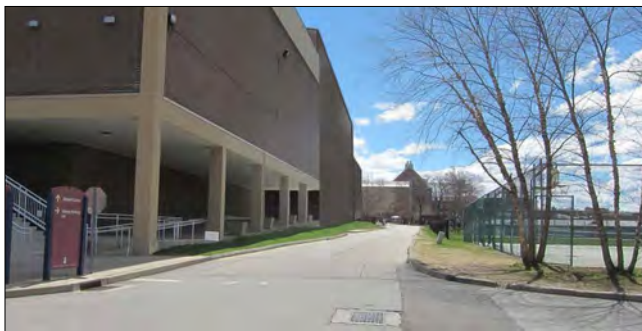


FIGURE 04.7 View of Scenario 2, illustrating undesirable bulk

In Scenario 3, the new Sports Center was located on the Windham Tech High School site to explore the possible benefits if this property could be acquired. Studies revealed that this would be an ideal location for several reasons. First, a building of this scale is best located at the campus edge, away from the low scale setting of High Street. Second, the building does not have to be partially set into the hillside to reduce massing, avoiding excavation costs. Third, it provides the desired functional adjacency – the Sports Center and Recreation Center should be near each other and additional field space for the main campus. Finally and most importantly, this site opens the door to a new vision for Eastern. It locates the Sports Center to frame a new signature open space that connects directly to the main campus with a new pedestrian plaza and stairs. The WTHS land has the potential to fulfill Eastern's needs for sports, outdoor recreation, additional student housing, parking and other potential uses for decades to come, beyond the 10-year timeframe of this study.

Given that Eastern does not own the WTHS site, it cannot be the basis for the Master Plan for the new Sports Center. Accordingly, the recommended site for the Sports Center in the Master Plan is the High Street site (Scenario 1) with the WTHS site (Scenario 3) as a preferred alternative in the event Eastern is able to acquire this adjacent property.



FIGURE 04.9 Sports Center Scenario 3: WTHS site

FIELD HOUSE

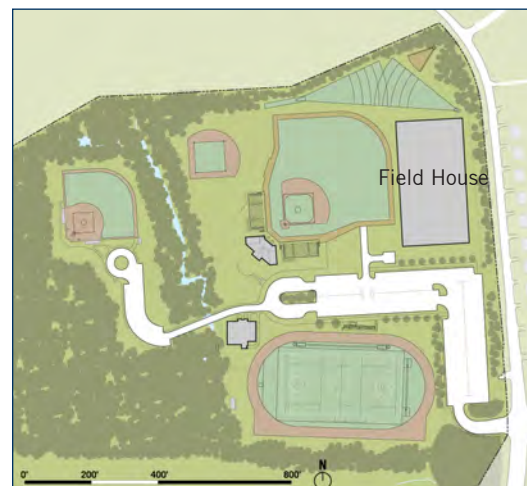
A new Field House was part of the program to address the deficit in Sports and Recreation space and more specifically the need for Eastern's athletic teams to access to have cold-weather practice facilities to remain competitive. The program basis for the building reflected the ability to house a 220 meter track, plus support spaces, including offices, restrooms and storage facilities. Given budget considerations, the Master Plan assumes a pre-fabricated, steel frame structure. The team considered a "bubble" but based on experience with an inflatable structure at Central, concluded that the lower first cost is off-set by higher long-term costs for maintenance and replacement and by vulnerability to snow. A custom-built structure was considered inappropriate given its higher cost than prefab.

Several location scenarios were considered. The practice field at the Mansfield Campus between the baseball field and the road has sufficient size and is already partially screened from the residences across the road by a berm and row of evergreens. Using this site for a structure requires finding a replacement field used by the rugby club for practice and games, and by others. The planning team found space for this relocated practice field west of Nevers Field on the main campus. Regrading and screening would be required, but appear feasible.

The area at Mansfield west of the creek and south of the softball field appears to have sufficient space outside the designated wetland areas, but would require clear cutting a mature wood lot that is an environmental resource and credited towards Eastern's carbon profile. For this reason, the team eliminated it from consideration. Sites on the main campus were also considered in the scenarios for the Field House. Nevers Field and its adjacent open space have capacity, but were not considered appropriate given the large scale of the structure and the nearby residences. The site north of the Arts Center was assessed, but considered too important for this ancillary use. The planning team assessed the Windham Tech High School site but did not select this given the uncertainty for acquisition, although should the site become available, it would be suitable for the Field House. Accordingly, the Mansfield Campus practice field was selected as the preferred site.

FACILITIES AND MAINTENANCE EXPANSION

This project aims to consolidate maintenance workshops and storage spaces now scattered inefficiently across the campus, to provide needed expansion to support campus operations and to accommodate some snow removal vehicles under cover so these can be properly maintained for reliable service. The team studied a range of sites. An expansion to the north of the Facilities Warehouse is not feasible given the small site and adjacent wetlands, (which reduced the planned size of the warehouse). The tennis courts near the Cervantes Garage would have sufficient size and be near the current Facilities Building. The drawback would be the cost and space required to replace the tennis courts. The Mansfield Campus was too remote and disconnected. The Planning Team assessed a three-level and expansion on the west side of the existing building. This site is recommended since it appears feasible and provides the necessary floor area and adjacencies.



HEALTH AND WELLNESS CENTER

The current health center, in a converted physicians office, does not meet the needs for this function. The structure also occupies a key location next to the Windham Tech High School Site. If the WTHS site were acquired, this would be a prime location to connect. Counseling current is located in former houses as well, which do not meet accessibility requirements. The Planning Team explored a range of sites for a combined 14,000 GSF facility in scenarios phase. The ideal location would near the edge of the campus for privacy, but readily accessible for students. Since the structure is modest in scale, its location did not drive the overall planning.

A site off Windham Street extension and the loop road has capacity for a 7,000 SF, 2 story structure for the Health and Counseling Center. The location has adjacent parking and easy access. It requires removal of an unoccupied residential structure owned by Eastern, with no historic significance. Another site considered was on north end of the newly acquired 393 Prospect property near the reconfigured loop road. This could work, but requires first replacing the Low Rise Apartments and implementing the loop road to provide access. It also impinges on the capacity of the parking deck. For these reasons, the 393 Prospect site was not selected. Another location considered was the redeveloped Winthrop Hall site. This site is constrained by topography and is better used for housing. A podium of support space under the housing is possible, however this does not have the capacity or access needed to accommodate the Health and Counseling Center. A distributed solution, retaining Counseling in one of the houses on High Street and construction a new facility in the rear yard for the Health Clinic was considered but not advanced. The recommended location is the Windham Street Extension site.



FIGURE 04.11 Health and Wellness Center

DINING HALL

Eastern recently completed a study to renovate and expand Hurley Hall, the outdated dining hall at the north end of the campus. This project would provide upgrades needed to make this hub of student life more appealing to current and prospective students. This approach was included in Scenarios 1 and 2.

Another scenario considered was relocating the dining hall to a new facility in a more central location to provide better access to students living in the south campus. Scenario 3 explored how the site west of Communications could be developed for a new dining hall, as an ensemble with the repurposed Recreation Center. This location has distinct benefits. Once the new Sports Center is completed, the south wing of the current Sports Center is essentially surplus. The swimming pool is out of date and the low scale, obsolete wing is occupying valuable campus land. Near the campus perimeter road, this is an ideal location for servicing a new food service facility.

The Planning Team considered both scenarios – expand/renovate and replace – and decided on blended approach in a two-part solution. In the near term, the Hurley Hall expansion and renovation project is recommended to address this pressing need. Long term, the Planning Team recommends the new dining facility on the Sports Center south wing site to provide a more suitable, permanent solution. This location is especially important if Eastern can acquire the WTHS site since the Dining Hall becomes a hub at the seam between the new and existing land. The investment to expand and renovate Hurley will not be lost; the building can be retained and repurposed for events, student activities, conference, lounge and study space.



FIGURE 04.10 Dining Hall

STUDENT HOUSING

Given its large scale at 120,000 GSF, finding a suitable location for the student housing replacement units was a key factor for the scenarios. Since both Winthrop Hall and the Low Rise Apartments were low density developments, the Planning Team explored various ways of reusing these sites at the south end of the campus. A more intensive use of the Winthrop Hall site was the main focus, replacing this 7,500 GSF building with several buildings totaling 120,00 GSF. Once completed, the Low Rise Apartments residents could be relocated and those obsolete structures removed to redevelop the site for other uses, such as parking and recreation.

Studies of the Winthrop Hall site revealed several drawbacks to locating all the replacement development on this one site. First, the goal to reconfigure the adjacent access road required planning for both current and future road alignments. This cut down on the amount of usable land. Second, the effective site area was also reduced when it became clear that student housing should not be located in proximity to the library – to allow for academic expansion and to provide appropriate separation of uses. The Planning Team recognized a more distributed solution would be preferable, not only to maintain appropriate scale, but also to locate the freshmen in Winthrop closer to the other first year students at the north end of campus. As a result, the recommended scenario for student housing is to provide a new 75-bed Semi-suite residence hall near Occum Hall as the first step. Once complete, a new phase 1 student apartment building with 215 beds would be built on Winthrop Hall site, based on the scale and capacity of this site. Following removal of the vacated Low Rise Apartments, this site would then be redeveloped for a low profile parking deck and a phase 2 apartment building with 109 beds. These projects and their associated amenities are described in more detail in the following chapter.

In the long term, acquisition of the WTHS site will be beneficial to provide flexibility for future expansion of student housing, among other uses.

PARKING

The consultant team looked at a variety of solutions to add more parking at the south campus to provide more balance between supply and demand and to replace spaces lost to development. The most promising site for expanded parking were at the Low Rise Apartment redevelopment site, and utilizing a portion of the recently acquired 393 Prospect site. Scenario 1 located a one-level deck in this location, totaling approximately 275 spaces, a net add of 40 spaces accounting for all possible lost parking spaces. Scenario 2 explored the Winthrop Hall site and vicinity. The slope here and plan to reconfigure the loop road make it challenging to locate parking garage of sufficient size under a building in a cost effective manner. This approach was studied and appeared to yield about 75 spaces maximum, but dropped. Scenario 3 takes advantage of the WTHS site and its existing parking lot of 174 spaces to meet most of the demand, supplemented by surface parking at the Low Rise Apartment site.

SUMMARY

Given the multiple projects and the various pros and cons for locating each, the final recommended approach reflected a blend of the Scenarios rather than one of the three. The preferred approach reflected careful study and response to comments from President Núñez and the Advisory Committee to find the optimal framework for the 10-year Master Plan. The outcome aims to:

- Optimize use of remaining available sites
- Respect the scale and setting of the campus
- Locate facilities for the most beneficial adjacencies to related uses
- Leverage building projects to better define the campus open space system
- Facilitate phasing and minimize impacts on operations

The following diagram reflects the synthesis of the Scenarios that became the Recommended Master Plan update. The Sports Center at the Windham Tech High School site is a very promising alternative that should be explored if this site can be acquired.

KEY	
Facilities/Maintenance	FM
Dining Hall	DH
Sports Center	SC
Recreation	R
Academic Building	AC
Residential	R
Health & Wellness	HW
Parking	P
Field House	FH

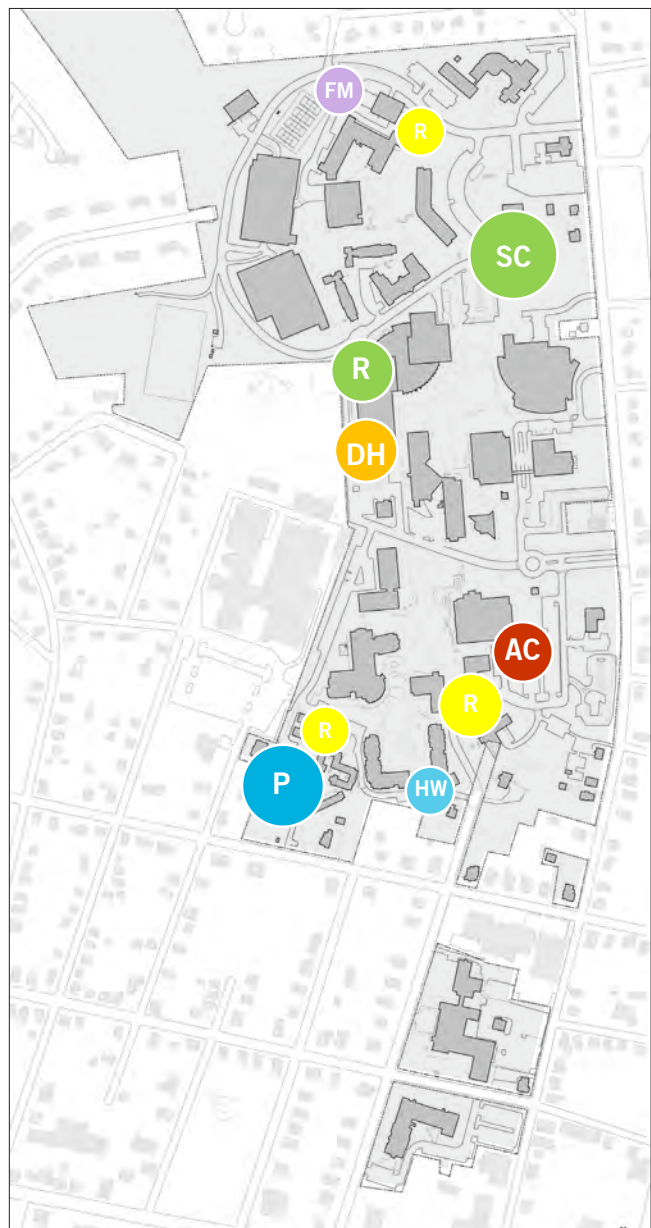
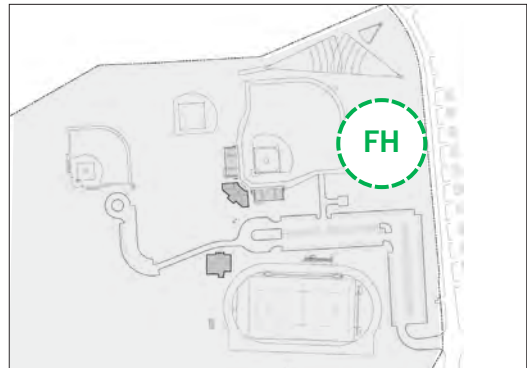


FIGURE 04.12 Recommended Master Plan Approach



EASTERN CONNECTICUT STATE UNIVERSITY

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RECOMMENDATIONS

INTRODUCTION

INTRODUCTION

The Master Plan Recommendations encompass a comprehensive range of capital projects to address the University’s needs for academics, research, student life, athletics, transportation and support functions. Campus recommendations describe land use, access, circulation, parking, and open space projects. Facility Recommendations encompass projects for new and renovated buildings. Implementation considerations include project priority categories identified by the Advisory Committee, phasing requirements and preliminary cost estimates. Together, the recommended projects reflect careful consideration by the Planning Team and Advisory Committee of the most effective and sustainable approach to meeting Eastern’s capital needs to 2025.

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CAMPUS

- LAND USE STRATEGY
- ACCESS AND OPEN SPACE PROJECTS

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- SUSTAINABILITY
- MAIN CAMPUS
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LANDSCAPE AND STREETScape

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INFRASTRUCTURE AND ENERGY

IMPLEMENTATION AND COST

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THE CAMPUS

LAND USE STRATEGY

The Master Plan strategy for land use varies by area and can be summarized as follows:

- Pursue acquisition of Windham Tech High School site, if available, for long-term flexibility and capacity
- Maintain land use zones at Main Campus with selective infill development / redevelopment
- Maintain land uses at Town Blocks, reflecting more student housing with pending Shafer Hall project
- Preserve and enhance the Arboretum as a natural resource for research, academics and recreation
- Maintain use of Mansfield Campus for Athletics and Recreation

Given Eastern's relatively long, narrow campus and the few remaining development sites, adding the WTHS site to the current property would provide a needed land bank for the future. The consultant team strongly recommends, as stewards of an institution that will endure for decades to come, that all reasonable efforts be made to acquire the site as a proactive effort. The recommended land use would be support functions – athletics, recreation, housing and parking. While the WTHS property could be used for academic expansion, it appears preferable to maintain the academic core largely as is, to support a walkable, connected campus.

The 2015 Master Plan recommends infill development and redevelopment of underutilized or obsolete sites, rather than low density, sprawling development. With few remaining clear sites, decisions on land use should be made carefully with an eye to maintaining the best long-term value for campus property.

The Main Campus and Town Blocks are separated by a property occupied by the Kramer School, owned by the Town of Willimantic. While the utilization of this facility was not studied in this master plan, if available, the future acquisition of this site may be desirable to strengthen the physical link between both campus segments.



FIGURE 05.1 Land Use



Landscape, Road, Parking, Infrastructure Projects

- A Remove Eastern Road South
- B Loop Road Improvements, Extension to Prospect
- C Library South Quadrangle
- D Eastern Road North to Pedestrian Mall
- E Relocate Windham Extension to east
- F Parking Deck, Low Rise site
- G Relocated Entry Circle
- H Expand Lots at High Street
- I Expand North Central Plant
- J Upgrade Transformers, North Loop

Labels are not in sequential or priority order

FIGURE 05.2 Open Space, Road and Parking Projects

ACCESS AND OPEN SPACE PROJECTS

The single-occupancy-vehicle will likely remain the predominant means of accessing the campus for the foreseeable future. The University should continue to look for opportunities to improve transportation options to campus, including ride share and for those living closer to campus – bicycle and walking options. Eastern’s shuttle can continue to serve as a means to get around within the campus and to the Mansfield Campus.

The Plan provides a new campus entrance from Prospect Street to connect to the extended access drive along the west edge of campus. This will provide another option for accessing the campus during peak traffic periods to address congestion. The completion of the loop road, and reconfiguring sections to ease pinch points, is an important prerequisite for closing the south and north portions of Eastern Drive that pass through the center of campus. These changes will be transformative, greening the heart of the campus and increasing pedestrian safety by reducing conflicts with vehicles. Site-specific open space projects are illustrated on the Site Plan and described below. General guidelines and recommendations for landscape and streetscapes follow in this chapter.

Enhanced Main Quad / Closure of Eastern Drive

This project will remove the roadbed of Eastern Drive between the Library and Webb Hall and convert this space to a pathway and landscaping. The deteriorated surface lot south of Goddard Hall and the Communications Building will be transformed into an outdoor gathering area and garden, surrounded by sustainable plantings (see rendering on the following page). The loading access to Communications and Goddard will be maintained and screened from view. Removing this road will allow the Main Quad to have a distinctive, collegiate character, by removing this stream of traffic. The road, with its diagonal slash across one of the most important parts of campus, is a vestige of the ad hoc evolution of the property over the decades in the absence of a founding master plan vision. Its functional purpose for accessing the west side of the campus from High Street will be served by the other four campus vehicle entrances and a reconfigured loop road to enhance capacity and flow.

Cell Tower

The Master Plan recommends removing this large structure looming over the Main Quad. Its lease comes due in the next few years and the revenue it provides the University is reportedly incidental. The location of this utilitarian tower at the literal center of the campus at odds with maintaining a beautiful setting that can compete with other public as well as private liberal arts colleges.





FIGURE 05.3 Concept: Enhanced Main Quad / Closure of Eastern Drive



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Loop Road Improvements Extension to Prospect

The west campus drive does not follow the west side of the campus smoothly, but rather takes twists and turns, routing cars into the center of campus at two points and terminating in a dead end at the south. Providing a working, well designed perimeter loop road is necessary to enable closing roads to green the campus core. The reconfiguration has four parts. The first is changing the curve of the road at the current Sports Center, to direct cars southward on the loop road, rather than to the East. The next project is eliminating the curve that directs cars near the Central Plant toward the middle of the campus. Instead, cars can smoothly continue southward. The stretch of road behind Webb Hall and the Science Building would be reconfigured to provide adequate two-way width and to move the head-in parking to the campus side to eliminate pedestrian conflicts and improve flow. Finally, the road will be extended to the south, skirting a drainage culvert, to connect to Prospect Street.

Convert Eastern Road North to a Pedestrian Mall

This road provides important service access to the Student Center and other buildings. The Master Plan recommends converting this asphalt road that divides the campus into a linear Mall with permeable pavers to create a more pedestrian-friendly setting while maintaining occasional service vehicle access. Regular car traffic would not be allowed. The appearance could be similar to the precedent image below. Using permeable pavers can reduce the amount of stormwater runoff.



Precedent image: Campus pedestrian mall

Relocate the Entry Circle

The Master Plan recommends relocating the traffic circle near the Main Entrance as shown in the before and after images below, once Eastern Drive is closed to provide clearer vehicle circulation and to green the campus. This project is an enhancement but not technically mandatory. Gelsi-Young building parking would need to be relocated as part of this project.

Clock Tower Quadrangle

The Foster Clock Tower is an icon of Eastern, but surrounded largely by roads and parking, it lacks distinctive surroundings. Locating a new academic building south of the Library creates the opportunity to frame a new signature open space, clearly visible by those arriving at the campus “front door”. This Clock Tower Quadrangle would instantly be recognizable as one of Eastern’s most notable places. A rendering of the quadrangle follows on page 124 with the Professional Studies Building.

Expand Parking Lots at High Street

Converting the parking lots adjacent to the Library to a building site and landscaped quadrangles will increase parking demand in this area near the Admissions Building and the main campus entrance. To offset this loss partially, the Plan recommends reconfiguring the surface lots along High Street to increase capacity to the extent possible, while maintaining a landscape buffer along the East edge. The enclosed area occupied by the campus electrical service entrance will remain, with its evergreen screening.



FIGURE 05.4 Concept: Relocated entry circle

Quadrangle South of the Library

The area south of the Library is currently occupied by Eastern Hall, a temporary building, a parking lot and a loading dock for the library. The Master Plan recommends overall enhancement of this area by demolishing Eastern Hall and removing most of this parking lot to create a new quadrangle. Some ADA parking should remain (to be sited in final design). The Library loading dock reportedly is used only by panel trucks (not tractor trailers) once or so a week; otherwise by UPS delivery and handtruck. The Plan recommends retaining the loading area, but treating the pavement more as a garden hardscape in appearance, but engineered for truck use.

Reconfigure Windham Street Extension

Windham Street is the main route linking the University to the Town of Willimantic. When it reaches campus, the road becomes Windham Street Extension and curves into the campus to navigate the sloping hillside. This path, however, cuts off this part of campus from the core. As in the previous Master Plan, the current plan recommends reconfiguring Windham Street Extension to locate the roadway at the eastern edge of campus and thereby reconnect the land occupied by Winthrop Hall and the McKnight House with the campus core. The current road has a slope of approximately 6%. Providing a similar slope up the hillside will require an “S” curve as shown on the site plan, given the 45-foot vertical climb required. The parking lot south of the McKnight House will be needed for this alignment. Care should be taken to minimize loss of mature trees in the surrounding area. The road should include sidewalks on at least one side to separate pedestrians and vehicles.

Parking Deck, Low Rise Site

To make up for lost parking and better balance parking supply between north and south, the Master Plan recommends construction of a parking deck at the south portion of the redeveloped Low Rise Apartment Site. The deck will include part of the recently acquired 393 Prospect property, behind the house. The solution is flexible. The proposal as drawn, for a surface lot and one deck level above grade provides 290 spaces. This would have a sympathetic scale to the surrounding residential neighborhood to the south, and could be clad in brick to enhance its appearance.

The net gain in spaces with this solution would be 40 spaces if all building and landscape projects were implemented. A second deck level would add 135 more spaces. If WTHS could be acquired, this would add 174 spaces. Proceeding with either the 135 space options or the 174 space option is a one or another alternate.

Practice Field

To replace a practice field at the Mansfield Campus that will be used to locate a new Field House, the Master Plan recommends regrading the open space west of Nevers Field. The topography is moderate; regrading will be required to create the level surface with cut and fill balanced at either end. The dimensions of the replacement field appear to allow the line of existing trees at the north and west sides to remain as buffers to the adjacent residential neighborhoods.



FIGURE 05.5 Reconfigured Windham Street Extension and Parking Deck

BUILDINGS

The Facility Recommendations describe the proposed building development, including the guidelines for architectural character and sustainability, for floor area, and for project location and program. The Plan below illustrates the recommended projects for new and renovated buildings projects.

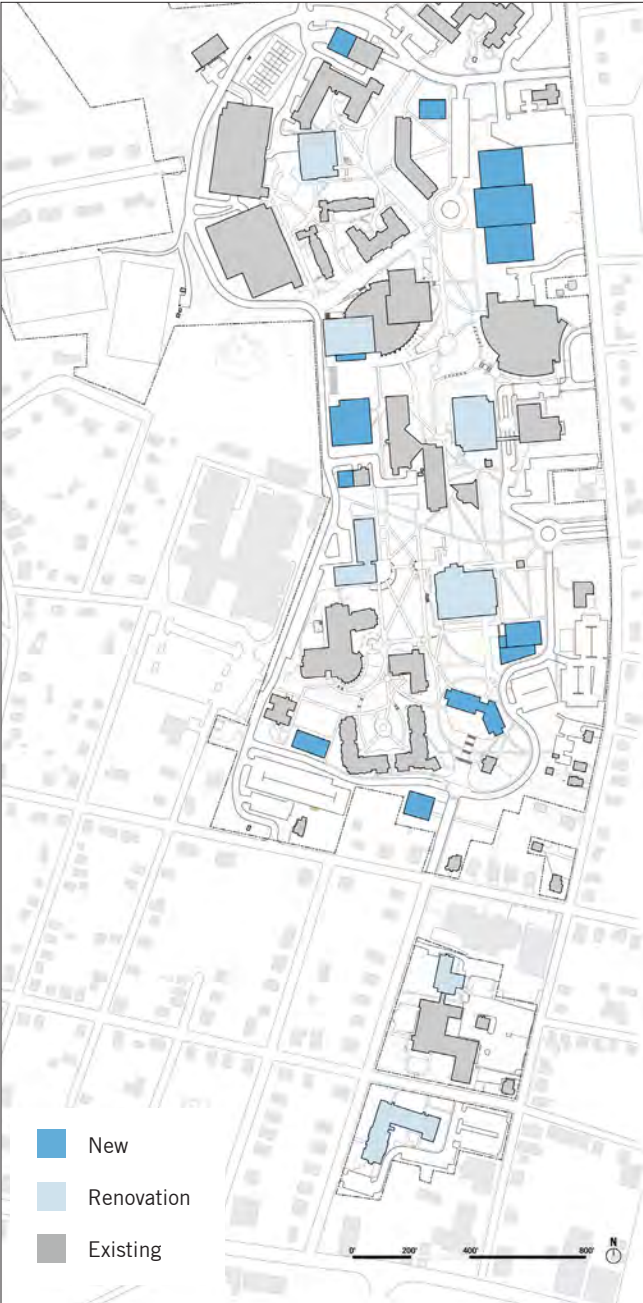


FIGURE 05.6 New and Renovated Buildings

ARCHITECTURAL CHARACTER

The location, massing and orientation of New Buildings should follow the Master Plan Design Guidelines, responding to the scale and character of the local campus setting. Buildings should reinforce the public realm – the system of open spaces and streets – by defining quadrangles, addressing street frontages and creating outdoor spaces that are vibrant and well used. The Master Plan concepts reflect one potential response to programmatic need and site context. A range of design solutions should be explored during implementation of each project.

Eastern’s campus reflects a range of styles from traditional in the houses on High Street, to contextual in Center for Early Childhood Education, to contemporary in the Fine Arts Instructional Center. New buildings should not attempt to recreate an historic style, but rather respond to the context through sympathetic use of materials, scale and location of entrances.

As noted in the 2002 Planning Guidelines, traditional masonry materials form the basic fabric of Eastern’s campus architecture. Metal and glass can be used in conjunction with masonry but should not be the only exterior cladding materials for new buildings. Materials and detail should be used with a hierarchy in mind of public function and visibility. Landmark buildings, buildings ending axes, and buildings fronting public streets should receive the most permanent materials and the most detail work. Secondary buildings and service or background buildings may not require the same level of detail, but should take into account visibility at pedestrian level, especially facades that front larger quadrangles or streets.

Typical and recommended campus building materials and forms include brick veneer; precast lintels, sills, accents; stone lintels, sills, accents. The brick veneer used on the J. Eugene Smith Library should be used as a campus standard. Brick with similar coloration / tonals and texture may also be considered. Other color/type brick veneers may be used on building exteriors but should be limited in their application. For buildings with pitched roofs, standing seam metal has been established as the campus standard roof material. Thermoplastic Membrane roofs are an acceptable alternate. Color should match existing gray tones.

SUSTAINABLE DESIGN

New buildings and additions are required to comply with the High Performance Building Standards of the State of Connecticut. This relates approximately to a U.S. Green Building Council LEED Silver Certified minimum rating or equivalent. The new Fine Arts Instructional Center will be LEED Silver. The Planning Team encourages Eastern to strive for this highest level of sustainability in building design and energy use feasible within the project budget, including potentially Net Zero Energy. This approach is in keeping with Eastern's leadership advancing sustainability and environmental stewardship, as described on page 62.

To build on this momentum, the Plan recommends new construction utilize a durable, high performance building envelop, energy efficient lighting, low-flow plumbing fixtures, recycled materials and high efficiency heating and cooling systems. The design should also consider such strategies as rainwater and gray water reuse for irrigation and green roofs for insulation value and stormwater management. Additional sustainability recommendations follow for landscape, stormwater, and energy use. The implementation of best practices in sustainable design to green Eastern's landscape, improve stormwater management and preserve its natural Arboretum areas will provide a range of student internship opportunities to develop the whole campus further into a Green Field Lab.

A separate system-wide Energy Master Plan will address opportunities at Eastern and be included in the Technical Appendix.



Library



Fine Arts Building

THE MAIN CAMPUS



FIGURE 05.7 Main Campus Building Projects

- Existing
- New

Building Projects

1. Facilities / Maintenance
2. Residence Hall, 75 Beds
3. Sports Center
4. Adaptive Reuse: Event / Study
5. New Dining Hall
6. Recreation Center
7. Academic Building
8. Health and Wellness Center
9. New Apartment Building: 215 Beds
10. New Apartment Building: 109 Beds

SPORTS CENTER

The Master Plan recommended site for the Sport Center is south of the new Fine Arts Instructional Center. This location provides adequate space for this 132,000 GSF structure. Fit will be key. While a Master Plan does not prescribe a design solution, the footprint, organization and massing of the recommended concept, shown below, were the result of careful study to ensure compatibility with the campus and the High Street frontage. This study was critical to confirm the project would not detract from the Arts Center.

The concept sets the building back about 200 feet from High Street. The existing former houses to the east are all owned by the University, can remain in the near term, and be removed later when desired with the provision of replacement facilities. The front of the building could face west towards the campus. This would allow the east side to act as a landscaped buffer, potentially with replanting of trees to offset those lost when the current woodlot is partially cleared for construction. Alternatively, the building could have an entrance for the public on the east side, though this would require another curb cut and effect views and traffic flow.

The concept takes advantage of the sloping site to recess the

bulk of the building partially below grade. Setting the lowest floor at grade on the west side allows an entrance into this level on axis with the new pedestrian wall. The west side of the building would be approximately 10 feet below grade. Likewise, the north and south ends of the building would be below grade as well, using the saddle-like depression in the site. Typical floor to floor heights are recommended at 16 feet; with 35 feet clear at the competition gymnasium and 30 feet clear at the new swimming pool. The massing concept locates the large competition gym in the center of the composition. Below sheltered by an overhang is the main entrance. This ground floor level would include offices, lockers, hospitality, and support areas. The south wing houses the swimming pool on grade with no other uses above or below. To provide implementation flexibility, the Plan recommends the pool be located so it could be built independently in a second phase if funding required. The north wing in the Master Plan concept has three levels of space to include vertical circulation and the balance of athletic and support uses. Like at the Fine Arts Center, the Master Plan recommends a flat or low slope roof for the new Sports Center rather than a shaped or pitched roof like the Library in order to minimize height and fit better into this setting. This approach is also suited for a green roof or renewable energy initiative with roof mounted photovoltaic panels.



FIGURE 05.8 Alternative at WTHS site



FIGURE 05.9 Recommended Location

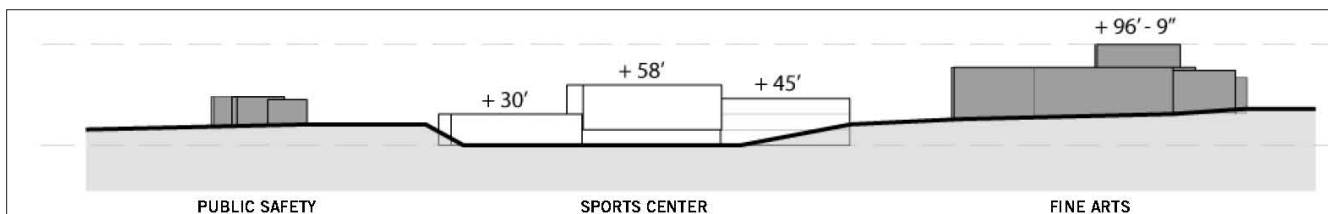


FIGURE 05.10 View from Campus looking east



FIGURE 05.11 View of Sports Center from southwest

The optimal location for this large new facility is the Windham Technical High School site if this can be acquired, as demonstrated in the Scenarios chapter. Since the Master Plan cannot include a recommendation for land not currently owned by Eastern, a conceptual for Sports Center on this site is not further illustrated here.

HURLEY HALL EXPANSION / RENOVATION

Built in 1970 and partially renovated in 2001, Hurley Hall is the only dining hall for Eastern and a regular destination for those on the meal plan. The building's condition is poor and both its layout and appearance outdated. Improving the dining experience and adding capacity in the near term is important for attracting and retaining students.

Eastern recently commissioned a schematic design study for expanding Hurley and modernizing it to meet current dining



Concept Plan

preferences and to provide updated kitchen facilities. The proposal called for a 2-level addition on the west side, to expand the seating area above and provide more space below for support. The proposal is sufficient to address much of the shortcomings and less costly than full replacement. The Plan recommends proceeding with this proposal, whose earlier estimate is included in the following cost information.

NEW DINING HALL

Longer term, following the completion of the new Sports Center, the Master Plan recommends demolishing the south wing of the current Sports Center and replacing this with a new Dining Hall that is more centrally located to serve the whole student body. This new facility can be competitive with the University's peers in its appearance and function. The seating area would occupy the upper level of this two-story building, with a view to the west and the WTHS site, possibly an extension of Eastern's campus. The main entrance and server would also be on this level. Kitchen, storage, support, receiving and mechanical areas would be on the lower level. The roof of this building could be shaped to give it a distinctive exterior and interior appearance.

The earlier investment in the Hurley Expansion and Renovation would not be wasted. This building would stay and could be repurposed for a number of needed functions, including events, individual and group study, student activities, multipurpose or support space.

RECREATION CENTER

Built in 1973, the Sports Center still has value and should be repurposed and modernized for student recreation and shared academic use for KPE. The building reuse can be considered in two phases.

Phase 1: Reuse existing building without renovation, closing pool, once new Sports Center opens

Phase 2: Renovate and demolish south wing once funds available for this and adjacent new Dining Hall

Phase 1 can be accomplished with investment as needed to address the generally poor building condition. Phase 2 is more transformative. In this scope, the building is transformed with a gut renovation of the lower levels to repurpose the existing areas to meet contemporary needs for students and the KPE program. Program concepts are described in the Space

Needs chapter. A small infill addition should be considered on the north side of the building in the arcade to link this building to the Student Center and its related student fitness areas. The main gymnasium could be retained as-is for the most economical solution. The recommended approach is to renovate the gymnasium space to add a mezzanine at the west side to provide expanded fitness / multipurpose areas. The west exterior wall, now windowless and unattractive on the exterior, could be opened up with energy efficient glazing to provide light and views and improve the identity of the building. This mezzanine approach at the west third of the space retains the two basketball courts needed for student use. Removing the obsolete south wing will require a small addition to the gym volume to provide an entry lobby, stairs and an elevator to connect vertically and makeup mechanical areas (now in the south).



Existing gym to be adapted as Recreation Center

CENTRAL PLANT EXPANSION

The existing north central plant west of the Communications Building has limited additional capacity. To serve the full build-out of the recommended 2015 Master Plan projects, this facility will need to expand to provide greater boiler capacity and redundancy. There is space to expand on the west side of the current structure. Retaining sufficient clearance around these buildings is important for servicing and ventilation. See Infrastructure and Energy section below regarding equipment needs and the basis for adding capacity.



Existing Central Plant



FIGURE 05.12 Central Plant Expansion

FACILITIES AND MAINTENANCE EXPANSION

The Recommendations include an addition to the north side of the existing Facilities and Maintenance Building to expand and consolidate shops and storage areas now scattered inefficiently around the campus, and provide covered storage for mission-critical snow removal vehicles. An addition on this side allows lower level vehicle access for storage and for the vehicle maintenance function. Upper levels will be used for shops, and have access from the loop road given the slope around the building. The project will require reconfiguration of the access drive into this area from the north side.



Facilities and Maintenance expansion site



FIGURE 05.13 Facilities / Maintenance Expansion

STUDENT RESIDENCE HALL

The Recommended location for this project to replace the 75 semi suite beds in Winthrop Hall is next to Occum, to form an ensemble with a new quadrangle. A 4-story building fits well on this site, with ample room between it and Occum. Locating these first year students near their peers and Hurley Hall where they take their meals will be an improvement on Winthrop's relatively remote location. To clear the site, the art installation, Aeolian Garden, will need to be relocated to a suitable place.



FIGURE 05.14 Student Residence Hall

WOOD HALL RENOVATION

Originally built as the Library in 1970, Wood currently houses a range of student and campus services functions on two main levels and a partial lower level. The building condition is poor and the layout confusing and not user-friendly. A thorough gut renovation is recommended to address these deficiencies and provide a more welcoming and organized experience. Restacking the two main levels is also recommended to allow functions used after hours to be more accessible on the ground level and those that close earlier to be secured on the upper level. Auxiliary Services, Center for Internships, Career Development, Housing and Residential Life, Judicial and the Veterans Center – all now on the upper level - would move to the first level. Bursar, Financial Aid, Registrar, Continuing Education and the Student Affairs Waiting Area – all now on the first level – would move to the upper level since they need less after-hours access and have greater security needs. A design challenge will be making good use of the high-volume space on the upper level for office-related functions. To facilitate implementation, the south wing of the current Sports Center could be considered for swing space once the new Sports Center opens.



Wood Hall



Wood Hall interior



FIGURE 05.15 Concept: Professional Studies / Classroom Building and Foster Clock Tower Quadrangle



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PROFESSIONAL STUDIES / CLASSROOM BUILDING

This 80,000 GSF new building, illustrated on the preceding pages, will occupy a prominent site just south of the Library framing a new quadrangle as shown in the rendering on the opposite page. The 4-story façade can convey in its design and openness to students, visitors and industry partners that the program is vibrant and dynamic, similar to the effect of the Arts Center. The building footprint should be located for a sufficient setback from the J. E. Smith Library to compliment rather than crowd this important campus landmark. The north and west sides of the Professional Studies Building would accommodate the reconfigured campus drive and step down to break up the perception of the mass of this building as it faces toward residential areas and another new quadrangle south of the Library once obsolete Eastern Hall is demolished.

The program functions in this building could include the Dean of Education and Professional Studies, Business Administration (Accounting, Business Administration, Business Information Systems, and Finance), Economics, Education, shared Classrooms, an Academic Computing Center, a GIS Lab, a BIS Lab, Multipurpose Space, potential incubator space and a Student Lounge.

WEBB HALL RENOVATION

Once the Professional Studies Building is completed and these functions are relocated, Humanities and Social Science departments can be right-sized by expanding into vacated and renovated space in north wing of Webb Hall. These areas would include the Dean of Arts and Sciences, English, History, Political Science, Philosophy, Geography, Sociology, Anthropology, Social Work and World Languages and Cultures. The south wing can be renovated to provide updated, flexible classrooms, computer labs and a student lounge.



FIGURE 05.16 Professional Studies / Classroom Building and Foster Clock Tower Quadrangle



Webb Hall

LIBRARY RENOVATION

Built in 1998, the J. E. Smith Library houses not only library functions, but also a café, academic advising areas, special collections, classrooms and event rooms. The building is in good condition, but needs renovations to address a range of programmatic needs. The Master Plan scope does not include a detailed assessment of all Library functions and collections. Planning for Library facilities is especially complex given significant changes in technology, how libraries are used, how collections are stored and how users prefer to retrieve information. The consultant team recommends a detailed study be conducted to assess the needs of the Library and Academic Advising Center functions and the ability of the current building to be renovated to meet these needs. In general terms, the following areas in the Library need attention in the follow up study to address reported and perceived deficiencies.

The Library main entrance is poorly configured, confusing and not welcoming, especially entering on the lower level. A renovation should explore making the library entrance on the second floor and the academic advising areas more visible.

The Academic Advising Center, Writing Center, Math Center on the ground floor each need expansion based on the projected 10-year enrollment. These areas are strategically important to Eastern's success in supporting and retaining students. They are now in a location that is hard to find and space constrained. The Library is a very good location for Academic Advisement services; they should not be relocated. Expansion in place is preferable, but how remains to be determined.



Ground level lobby with view to Library entry above blocked by stairs



Library entry, second floor



Mathematics Achievement Center, Library ground floor

Much of the Library ground floor is occupied by collection areas, including microfiche and bound periodicals. The recent trends in academic libraries nation-wide has been toward dedicating less on-site space for print collections, especially those getting less use. The feasibility of any reduction would need to be determined based on an assessment of collection policy, collection utilization analysis, potential to digitize portions of the collection, potential for compact storage, and potential for off-site storage of under-utilized portions of the collection.



Library entry



Library Reading Room

STUDENT APARTMENTS, WINTHROP HALL SITE

Once the new student residence is built near Occum to replace these first year beds, Winthrop Hall can be demolished to make better use of this important site. Winthrop is outdated, has a poor layout and its appearance detracts from the south campus. The new 314 bed residence should include a mix of shared spaces and amenities. Given the sloping site, a podium / terrace could be created to take advantage of the site and provide an outdoor gathering space for residents. Skylights could activate the space below. The 4 floors above would house the apartments. While the final form and footprint of the building will come from a later design process, the Master Plan concept reflects a shaping of the form to respond to unique aspects of this site. The building inflects to receive the important axis of Windham Street extending up from town. Currently, there is a view from town up the hill to the clock tower on campus. Creating a similar architectural focal point could anchor this building to its site and to the town beyond. To provide flexibility, the footprint of this building works both with the adjacent Windham Street Extension as it is now and in its realigned location to the east side of the property.

STUDENT APARTMENTS, LOW RISE SITE

Once the apartment building is completed on the Winthrop Hall site, the Low Rise Apartments C and D (at the north side of the complex) can be demolished so this valuable site can be redeveloped. The Master Plan shows a four story bar building in this location between High Rise and Nutmeg Hall to frame a new open space. The building would house 109 beds in a suite-style configuration. Once a south access road is created, the narrow, sharp-turned access drive that cuts through this area today can be removed and replaced with a landscaped quadrangle. The building shape is to illustrate massing only. Once this project is completed, the remaining Low Rise Apartments can be demolished to be replaced with the parking deck.

HEALTH AND WELLNESS CENTER

The recommended location for this new 14,000 GSF facility is the south end of campus off Windham Street Extension. The site is just south of Constitution Hall. It is currently occupied by a parking lot and vacant house of no historic significance, to be demolished. To make best use of the site, a 2-story building is recommended, resulting in a 7,000 SF footprint. A potential approach to stacking the building would be the health functions on the ground level and counseling above. As for all projects, a detailed programming study would be needed to confirm specific individual rooms needed.



FIGURE 05.17 South Campus building projects

TOWN BLOCKS

Shafer Hall Renovation

This project to convert much of Shafer Hall to student housing was identified as a need and funded prior to the 2015 Master Plan Update. The programming and design for this project was concurrent with Master Plan. Since the renovation will be completed soon, the additional 90 beds were considered an existing condition.

Burr Hall Renovation

Built in 1919, Burr Hall is the oldest building on campus that was not a former house. Though the building's brick exterior was recently repointed and its windows replaced, it still is in poor condition overall. A significant renovation is needed to provide new mechanical systems and air conditioning, insulation, sprinklers and an upgrade of electrical service which is now at capacity. Bathrooms need gut renovation. An addition is needed to provide an elevator for ADA access and for a fire stairs to meet code. More lounge space is needed. The interior layout will need to retain the load-bearing walls lining the center corridors. The project will retain the existing theater for student use.

Noble Hall Renovation

Built in 1928, Noble was last renovated in 1990. Repointing of the exterior brick is urgently needed. Overall, it is considered in fair condition, however bathrooms and kitchens have outlived their useful lifespan and need to be replaced. The room types will remain as suites. A detailed programming study can assess the benefit of potentially dedicating more common space for study and amenities.



Shafer Hall



Burr Hall



Noble Hall

MANSFIELD CAMPUS

Field House

To be efficient and cost effective, this facility will utilize a prefabricated structure. The maximum standard width is 200' given structural considerations. The 75,000 GSF building will be located on the practice field east of the baseball field. The existing berm and screening row of evergreen trees along the frontage will provide a good buffer for this structure for the residential area across Mansfield City Road. The interior will include a large space with a 200 meter track and artificial turf infield for off-season team practice. Restrooms, offices, storage and an entry lobby will occupy a "headhouse" under a sloped roof facing the parking lot.

If additional practice fields are needed, it may become necessary to purchase additional land to support that use. The Field House could also be located on the WTHS site, should that become available.

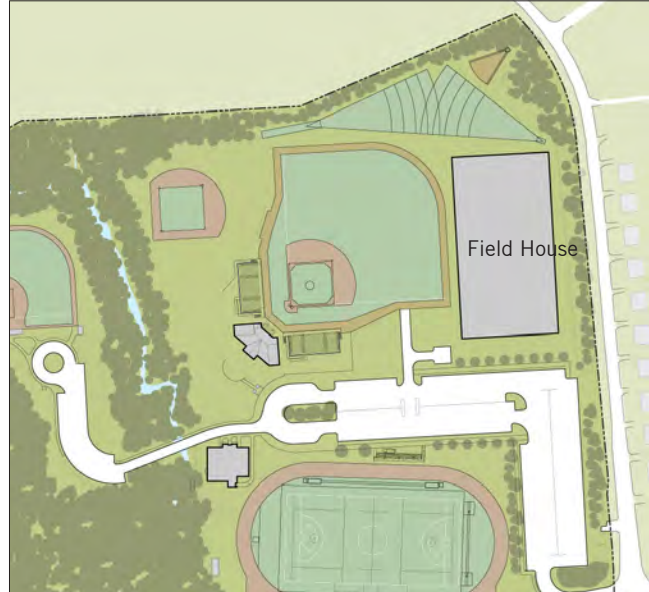


FIGURE 05.18 Site Plan: Field House at Mansfield



Existing Site: Practice Field

LANDSCAPE AND STREETScape

LANDSCAPE CHARACTER

Emphasis on improving the Eastern campus landscape should focus on three aspects:

- Incremental tree planting
- Transition from mown lawn to perennial ground cover or woody shrubs in targeted areas
- Reduction of impermeable vehicular pavement where possible.

Progress on these three topics will help change the perception of the campus from car-dominant to pedestrian-friendly. An increase in tree canopy, especially the planting of multiple replacement trees for each large specimen removed or lost, will move the Eastern campus closer to the idealized goal of prototypical liberal arts campus dominated by large canopy deciduous shade trees. Taken together, these three factors will ultimately have an outsized impact on forming first impressions with prospective students, faculty and alumni.

Planting multiple trees of smaller caliper to replace lost or removed mature trees will pay dividends over time, accelerating the re-vegetation of campus districts following anticipated building or road projects. Assigning a dedicated



FIGURE 05.19 Illustrated Site Plan 2015 Master Plan Update

landscape budget to these larger capital projects ensures that the comparatively smaller landscape budget is incrementally funded and implemented over time, keeping pace with the brick and mortar improvement to the campus.

Lines of trees, mass planting of shrubs, and replacement of grass with perennial ground cover can all reinforce pedestrian desire lines, provide ample shade and attenuate wind, rain and snow. Deployed in larger numbers, these landscape components begin to define outdoor space, and destinations for lingering, and gathering. They can also help differentiate between formal active campus spaces and more amorphous informal spaces. This approach reinforces areas for a more intensively maintained campus fabric, and makes distinct those areas that can be less frequently maintained, and allowed to mature in a more sustainable manner without weekly intervention.

The contrast will accentuate the changing character of Eastern by focusing finite resources of labor, while expanding lower intensity landscapes, visually demonstrating a calculated shift toward a more sustainable collegiate campus. Eastern staff has already begun to identify zones for removing mown lawn in favor of more sustainable ground cover and mass perennials, acknowledging challenging terrain, and the more targeted application of labor and dollars in support of more low intensity landscape.



Landscape Recommendations

- Expand pedestrian pavement in high traffic routes that have worn “cow paths” / desire lines.
- Incrementally replace short foundation plantings with species that do not require annual shearing that can result in odd shapes
- Plant ample, flexible-use mown lawns at dormitories, academic buildings to allow for impromptu or infrequent social events
- Locate utility transformers and enclosures away from building entrances, or front elevations
- Locate and screen garbage dumpsters appropriately
- Prevailing horticultural practice recommends against placing “mulch volcanos” around trees.
- On steep slopes or shaded locations, consider changing to meadow or perennial ground cover.
- Deploy a variety of low maintenance native and adaptive plantings
- Increase planting, particularly deciduous shade trees, along streets, pathways, entranceways and across quadrangles
- Conserve and preserve mature trees. Where removed or lost, replace with multiples of new, smaller trees.
- Reduce depth of mulch used for new tree plantings to no more than 2-3”.
- Configure new quadrangles with distinct character and uses.

Streetscape General Recommendations

- Increase number of street trees or planting along streets within campus, and along frontage with state and city streets
- Increase planting, tree or shrub, in and around parking areas
- Improve drainage opportunities (permeable paving, swales, etc.) adjacent to sidewalks
- Install speed table crossing for pedestrians at select locations. Consider pedestrian activated flashing lights to further alert drivers of pedestrian crossing
- Introduce bike lanes where viable
- Provide a robust, complete perimeter loop road to permit closing roads that bisect the campus core

Street Furniture Recommendations

- Update wayfinding signage
- Provide consistent site furnishings
- Install sufficient outdoor furniture to support intended uses in each space and to maintain flexibility in use
- Provide wheelchair niches next to benches and at outdoor space

STORMWATER RECOMMENDATIONS

Campus stormwater management techniques, standards and regulations are evolving away from traditional closed drainage systems. New stormwater systems promote the storage, treatment and infiltration of stormwater. These systems are becoming increasingly prevalent in university-level development projects. Transitioning the Eastern Connecticut State University campus away from an off-site stormwater conveyance strategy will have many positive impacts on campus. In addition to reducing polluted stormwater runoff, transitioning the campus stormwater system towards decentralized management practices also positively effects urban heat island effect, aquifer replenishment, campus pride, and other elements of student and faculty health.

The master plan recommendations include 21 new building and site projects. Ten of these recommendations are buildings and eleven of these recommendations are landscape, roadway and infrastructure projects. All efforts should be taken in projects to reduce hardscape and impervious surfaces wherever possible. One example of this in the master plan recommendations is in the removal of Eastern Road South. The restoration of this existing impervious surface with new landscaped areas is consistent with Eastern's commitment to a more sustainable campus.

Stormwater Surface Treatments

Where existing impervious surfaces exist on campus, the installation of surface stormwater systems such as bioretention areas, rain gardens, and bio-swales may minimize the need for additional piping and reduces the impact on existing closed drainage systems. These techniques are commonly referred to as Green Infrastructure. Green Infrastructure techniques focus on capturing, treating, and infiltrating stormwater where stormwater is generated. By capturing and infiltrating stormwater, rather than conveying it downstream, any pollutants that are suspended in stormwater runoff are also prevented from being conveyed to surface water bodies such as wetlands, rivers, and streams. This approach also provides groundwater recharge, similar to the natural hydrologic cycle. The stormwater treatment in Green Infrastructure is achieved by the strategic selection of both plants and soil media. Not only do these treatment solutions offer stormwater runoff quality and quantity improvements, but they also offer both aesthetic and educational benefits. The University should consider installing Green Infrastructure techniques such as bio-swales and bioretention facilities to the improved sections of the loop road and during the construction of new roadway, such as the relocation of Windham Street Extension. Green Infrastructure installations can also serve as collaborations between students, faculty and administration. Green Infrastructure offers both opportunities in water-quality research by connecting theory to practice, but can also offer educational opportunities for all students and connect to Eastern State University's mission towards a more sustainable campus environment.

Stormwater Harvesting

In addition to treating and infiltrating stormwater, there are alternative methods of utilizing stormwater that can benefit the University. Collecting stormwater and reusing it for building uses such as toilet flushing water, laundry water use, and landscape irrigation reduce downstream stormwater impacts. Stormwater harvesting is most widely used for new building construction projects. Typically, stormwater generated by building rooftops is collected in large cisterns and reused. New campus building projects should consider reusing stormwater when practical. A secondary benefit of installing rainwater harvesting facilities is to reduce flows to existing storm drainage systems and reduce stormwater impacts to wetland systems. Harvested rainwater can also be considered for irrigation of formal landscaped areas (e.g., campus quadrangles). When clusters of new buildings are constructed simultaneously, opportunities for district-level (shared) rainwater harvesting should be explored.

Stormwater Site Considerations

Installations of Green Infrastructure and Rainwater Harvesting require conducive sites and soils to function properly. In some areas, topography and geology (i.e. soils) may make the construction or functionality of Green Infrastructure techniques infeasible. Eastern's dense development pattern, combined with the new developments, will make space a concern as Green Infrastructure installations are considered. Space considerations are important for all surface and subsurface stormwater management techniques. In areas where adequate space for Green Infrastructure facilities does not exist, traditional closed drainage systems could be installed with appropriate water quality Best Management Practices such as catch basins with hoods or structural water quality structures. The University should consider synergies between proposed landscape and building projects to maximize effectiveness of bioretention and other stormwater Best Management Practices (BMP's). In other words, a district level or regional BMP may be considered when multiple building or site projects are planned and constructed at the same time. For example, the suggested Windham Road Extension, which is located close to the development of a new residential building, may provide a location where a district wide stormwater BMP is feasible.

Stormwater Quantity & Quality Targets

The University should continue to strengthen its stormwater initiatives to include more Green Infrastructure techniques, consistent with both national and state regulatory trends. The

University should consider the development of campus-wide stormwater quality standards to establish metrics for the retention, treatment and infiltration of runoff. For example, one standard that could be evaluated is to require all new campus projects to retain the first inch (1") of stormwater runoff on-site either through infiltration or rainwater harvesting. This volume, known as water quality volume should be captured and treated in order to remove a majority of stormwater pollutants on average annually. Both LEED Neighborhood Development projects and EPA regulations for federal buildings require the retention of the first inch of stormwater. The University should also consider water quality targets for pollutants such as nitrogen, phosphorus and Total Suspended Solids (TSS). The University should coordinate with Connecticut Department of Energy and Environmental Protection (DEEP) to review impairments to the Willimantic, Natchaug and Shetucket Rivers.

SEWER RECOMMENDATIONS

With the addition of ten new building projects, there will be an increase in sewer flows from the University. Currently, it is unclear whether the existing sanitary sewer lines that discharge from campus are sized adequately to handle the increase in flows associated with the increase in sanitary sewer flows. Additional analysis of the existing sanitary sewer infrastructure is needed to determine the existing capacity of the sanitary system on campus. The University should consider performing a more detailed analysis of the existing sanitary sewer infrastructure. This analysis should assess the condition of the existing sanitary sewer lines.

Generally, with all new building and landscape projects on campus, efforts should be taken to inspect existing sanitary lines for plant root intrusions, leaks or cracks, even if the projects do not directly involve these existing pieces of infrastructure. This investigation will determine the condition of the existing lines as well as identify locations of stormwater infiltration into the sewer lines. Inflow and infiltration (I & I) include stormwater and groundwater that enter dedicated sanitary sewer lines. Inflow and Infiltration reduce the ability of sanitary systems to perform optimally and place stresses on downstream wastewater treatment facilities.

The University should consider reducing I&I into its sanitary sewer lines. Strategies for reducing I&I include replacing or relining existing sanitary sewer lines, removing illegal stormwater discharges to the sanitary sewer system, and replacing existing sanitary sewer manhole covers with watertight manhole covers.

CLIMATE CHANGE MITIGATION RECOMMENDATIONS

The installation of Green Infrastructure BMP's can greatly enhance the University's resiliency to climate change impacts. These strategies can reduce urban heat island effects, while reducing the reliance on existing stormwater infrastructure systems. The installation of Green Infrastructure generally results in the reduction of impervious surfaces that are directly linked to increased ambient air temperatures. By reducing the amount of impervious surfaces and increasing the amount of trees and plants, urban heat island impacts are not as severe. By infiltrating stormwater into the ground using Green Infrastructure BMPs, the amount of stormwater that is collected and conveyed by existing closed drainage systems is reduced. This effectively increases the capacity of closed drainage systems, allowing them to handle flows from larger storm events. Rainwater harvesting techniques will also decrease the University's dependence on potable public water supplies. This could also result in cost savings associated with the purchase of less potable water.

The University is to be commended for their forward-thinking position on sustainability. In 2000 the Connecticut State University Board of Trustees created the Institute for Sustainable Energy at Eastern. Since this time, Eastern has committed to three major LEED certified (or equivalent) building projects in the South Residential Village, Science Building and Fine Arts Instructional Center as well as many other smaller sustainability projects. The university should continue its efforts with the campus-wide Sustainability Week to promote climate change leadership and adaptation discourse at all levels of the university.

INFRASTRUCTURE AND ENERGY

CENTRAL PLANT \ HEATING

The current North Heating Plant (NHP) capacity meets the existing demand of 72% of the campus gross square footage. 6% of campus development is connected to the south heating plant. The remaining 22% of development, including the new Fine Arts building, has local boilers. Any new building on campus will require its own boiler plant as no additional capacity is available in the distribution system in its current configuration.

The output of the NHP needs to utilize the existing central distribution system to support a future project. The NHP main pipe connections will also need to be increased. The main feed from the plant is only 6", as are the two branches it connects too. Therefore if the main from the NHP were to be up sized from 6" to 10", for both supply and return pipes, the flow rate in each subsequent branch could then be increased without any required change in pipe size downstream. The existing pipe system within the NHP would also need to be upgraded to accommodate the additional flow from the boilers and pumps. Additional pumps could be added to the primary circuit to increase flow rate while retaining the existing primary pumps. The existing secondary pumps have not yet been upgraded. As they are water cooled it is recommended that they be replaced as part of any NHP upgrade project.

According to the master plan, it is estimated that a total campus demand of approximately 60,000-65,000 kBtu/h would be required to serve the existing buildings and new construction and expansion projects from the High Temperature Hot Water (HTHW) system. The current capacity of the NHP including the smallest boiler is 56,000 kBtu/h, with redundancy of approximately 65% if the largest boiler were to be taken off line. To meet the future demand, two additional 18,750 kBtu/h (gross) boilers are required to meet the load and provide N+1 redundancy. This would require expansion of the existing NHP building to house the additional boilers. The removal of the smallest existing 7,500 kBtu/h boiler, which is largely underutilized would assist in reducing the additional space required.

Due to the lack of redundancy in the existing campus system it is recommended that, regardless of the decision to connect new buildings to the existing HTHW system, the boiler plant should be upgraded by removing the existing 7,500 kBtu/h boiler and replacing it with a new larger 18,750 kBtu/h boiler

to provide N+1 redundancy to the existing building plant. In addition, all existing water cooled pumps should be replaced, as described above. This will dramatically reduce the campus water consumption.

It should be noted that the HTHW demand projections are preliminary estimates only and based on benchmark data for buildings of the type and size proposed in the Master Plan and on existing utility data provided by the University. An alternative to the expansion of the existing HTHW system is to continue to provide local boilers plants in each new building. The master plan has proposed locations for each new building on site and some are in closer proximity to the HTHW loop than others. The distance and size of building both have an influence on the economic value of linking the building to the existing loop rather than providing local boilers. It is recommended that an assessment of the two options be performed during the early phases of any new building project to determine the most cost effective solution.

HTHW AND STEAM DISTRIBUTION

The existing HTHW system is subject to issues related to the high water table at the campus. There are areas where the pipework has required frequent maintenance and pipe replacement.

Due to these issues it is recommended that an assessment of ground water level be performed when assessing the routing of any new underground pipe distribution system.

As previously described the existing distribution pipes have additional capacity with the exception of the pipes from the NHP to the first 'T' branch. The locations identified in the master plan for new buildings would require new connections both north and south of the NHP building and therefore do not appear to overload the existing distribution lines. Additionally the renovation of the existing recreation center and relocation of the existing pool to a new sport center building are likely to mitigate the net increase in demand to the north. The existing recreation center has been identified as a large energy user on campus due to inefficiencies in the existing HVAC and pool systems.

It is also recommended that metering be installed to provide and data for system flow rates to each building with supply

and return temperatures and site weather data, such as air dry bulb and wet bulb temperature. Access to this information on the building management system allows the facilities staff to monitor the building systems and identify any unusual fluctuations in demand.

COOLING

It is recommended cooling systems continue to be handled on a per building basis. Depending on the phasing of new construction projects, opportunities may arise to share a chilled water system amongst multiple buildings, e.g. the renovated recreation center and new dining hall. There are a large number of existing building which also have small AC units or window units. It is recommended that these be upgraded to more efficient variable refrigerant flow (VRF) systems or chilled water systems as part of any future refurbishment or deferred maintenance project for each building. This could potentially provide energy savings and reduce peak electrical demand during the summer months.

ELECTRICAL INFRASTRUCTURE

Loop Typology

The Medium Voltage (MV) distribution topology shown on the campus single line diagram implies that 2500 kVA Transformers 1 and 2 serve all the interconnected loads in a single radial loop under normal operating conditions. The 3500 kVA Transformer 3 is interconnected at the midpoint of the loop to address redundancy concerns. During a service event or utility failure, it may be switched to power loads covered by one or both of Transformers 1 and 2 during normal operation. This strategy provides 5 MVA of gross capacity to power connected loads in the primary radial loop, and 75% redundancy overall assuming maximum connected load in the event of both transformers failing. The topology is lacking in that the junction served by Transformer 3 effectively couples the operation of the north and south half of the primary loop.

A much more flexible approach is to provide two entirely independent radial loops. It is recommended that this topology be upgraded to provide:

- 1 Similar redundancy to power existing and future buildings during a service event.
- 2 Sufficient capacity to accommodate existing and future buildings.
- 3 (2) Distinct, radial loops – one serving the northern half of the current primary radial loop and the other serving the southern half. These loops could reasonably be partitioned at the existing Transformer 3 interconnection point in order to decouple these sides of the existing primary loop, though topology should ultimately be selected following a detailed load study.

Capacity and Redundancy Concerns

The combined gross capacity for the primary loop when either of Transformers 1 or 2 is taken off line in favor of Transformer 3 is 6 MVA. However, during normal operation only 5 MVA of gross capacity may be guaranteed assuming any one transformer is offline. System design should account for this fact as a load of greater than 5 MVA cannot consistently be supported by the existing system during infrequent, though routine service events. Preliminary campus electrical demand studies based on information received from Eastern indicate that this 5 MVA of total capacity is insufficient to support

proposed new construction. These preliminary studies should be confirmed to suggest proper sizing and structure of new electrical infrastructure. Further, new construction should address concerns that the 8.5 MVA of overall capacity will provide insufficient redundancy for new construction.

Considering electrical demand during normal operation, the loading on the primary substation from the Arts Center and planned new Sports Center will likely exceed the 5 MVA capacity in the primary radial loop (to be confirmed via a detailed load study). Utilization of the available 3.5 MVA of additional capacity is not recommended in normal operation as affected loads may not be served during a service event or failure.

Capacity of the primary loop under both normal operating conditions and during a service event should be extended to support this initial phase of construction. Hence it is recommended that at a minimum each of the 2500 kVA Transformers 1 and 2 be upsized; final sizes are to be determined pending a detailed load study.

In conjunction with the Art Center and Sports Center, which both lie on the north side of the existing primary loop, additional loads from proposed construction in subsequent phases in the Master Plan will further extend capacity requirements.

Preliminary load calculations suggest that upgrades will need to incorporate an additional transformer, whose size is to be determined pending a detailed load study and selection of final system topology. This addition permits a true loop structure to be implemented to ensure proper redundancy. Such a topology is recommended. This will likely consist of a separation of the north and south sides of the main radial loop, with 500 kcmil 15 kV feeders to accommodate interconnection of the new transformer.

Topologies proposed herein are estimated. For proper sizing and topology choices, it is imperative that a thorough load study be conducted on a per-building basis before any final topology may be selected. Necessary interconnection studies must also be conducted with the utility to ensure utility circuits have necessary capacity for the proposed construction.

Cogeneration

We recommend a cogeneration or combined heat and power (CHP) study be undertaken. No feasibility study for utilizing CHP technology on campus, other than fuel cells, has been

conducted to date. A project to upgrade the existing NHP building and boiler plant may be a good opportunity to install a CHP system as part of the project, in place of or in combination with a new boiler, to provide additional power to the campus.

To confirm the economic feasibility of any CHP system, a detailed load study must be conducted. The large thermal loading of the campus will likely mandate that the system be sized to the base electrical loading of some subset of buildings in order to avoid wasting excess heat or exporting generated electricity. The subset of buildings that may reasonably be served by such a system is hugely dependent on system topology. The corresponding system size is then almost exclusively determined by the chosen MV distribution interconnection topology and may not be determined at this time. It is recommended that the load study previously recommended above shall also determine a feasible system size which respects changes to the MV distribution topology in future construction. Plans should be carefully developed and amended in conjunction with long term project goals.

The CHP system will require a dedicated facility and mandates coordination between electrical and thermal loading to ensure a responsible payback period. Assuming a radial loop topology with the present campus loading, a 500 kW-1MW cogeneration system could reasonably serve the campus. A cogeneration system on the order of around 3 MW could reasonably serve the campus towards the end of those additions outlined in the Master Plan, topology permitting. As it is most efficient to operate CHP systems at capacity, these estimates are probably nearest the maximum limit of what a CHP system could feasibly accommodate electrically. In such a circumstance, it would be advisable to provide MV infrastructure and interconnect the system to the campus MV distribution. Such infrastructure would typically include MV switchgear, control and protection equipment, and 500 kcmil 15 kV feeders for interconnection at a minimum. MV construction would require coordination with proposed changes in downstream (low voltage) topology. Interconnection studies would also need to be conducted with the utility, during which time a suitable sequence of operations for a CHP system would need to be determined. Smaller systems may be advisable pending final topology choices; such systems are in general more flexible, but may be somewhat less financially beneficial in the long-term. A life-cycle cost analysis must be conducted in conjunction with a detailed load analysis before any firm technical recommendations can be made. A properly selected system could greatly benefit the campus' electrical network by reducing costs, enhancing resiliency and contributing

to the expansion of the capacity in the existing electrical infrastructure.

INITIATIVES TO OPTIMIZING ENERGY USE

There are several recommended energy and water efficiency initiatives for Eastern;

- Initiate a lighting retrofit program and utilize available utility incentive programs for energy efficiency, for both interior and exterior lighting (e.g. roadway, parking or path lighting). This could include lamp and ballasts or bulb replacements or full fixture replacements. Highest priority is to eliminate T12 fluorescents and incandescent bulbs.
- Conduct energy audits of existing buildings. Use the existing energy data to prioritize buildings with the highest energy use for an audit. Based on the age and condition of buildings at Eastern, significant opportunities for energy savings exist. Energy audits allow for detailed analysis of energy conservation measures with return on investment (ROI) analysis.
- Energy Use Intensity (EUI) is a measure of total energy consumption of a building (i.e. electricity, natural gas and/or fuel oil) expressed in kBtus per square foot per year. This metric normalizes a buildings' energy use for comparison purposes against similar building types. The average EUI of buildings at Eastern connected to the campus loop is 100.0 kBtu/SF/year. This is comparable to a poorly performing office building. A new office building would range between 60-80 kBtu/SF/year. This suggests there are considerable opportunities for energy savings in the Eastern building stock.
- Take advantage of planned renovation or deferred maintenance projects to maximize energy savings potential within those projects. For example, when replacing a roof consider increasing insulation beyond the minimum required by code.
- Perform retro-commissioning programs for existing buildings and especially new construction projects to ensure predicted energy savings are being realized.
- Maximize the use of the building management and energy systems and install metering on all buildings linked to the campus loop. Increase the logging of data to be captured so Facilities staff can trend energy performance over time (i.e. years) within the system.
- Assess the feasibility of renewable energy on campus, including photovoltaic panels in suitable locations that will not detract from the campus setting. Implement a design standard that all new construction have PV-ready roofs.
- Develop Campus Standards for energy and water efficiency for all new construction and renovation projects. Examples could include:
 - Water savings - All new plumbing fixtures are recommended to be low flow 'water sense' listed and should provide a water reduction of approximately 30% on average from code compliant restroom fixtures. This not only results in reduced water consumption but also in reduced demand for domestic hot water and energy use.
 - Evaluate feasibility of water recycling systems on new construction projects, particularly for rainwater.
 - Replace all water cooled pumps on campus with air cooled pumps.
 - Evaluate feasibility of solar thermal systems on new construction projects, in particular planned residence halls and new recreational center for pool heating.
 - Conduct and revisit feasibility studies for renewable energy systems, particularly solar photovoltaic systems, as their capital cost continues to decrease while efficiency increases over time. Incentive structures also change and impact ROI.
 - Lighting fixtures – all new fixtures should be LED fixtures, as applicable for specific end use. The cost of LED fixtures has reduced significantly in recent years to make them equal or even cheaper than fluorescent fixtures.
 - No new installations of DX systems except in special circumstances.
 - Evaluate feasibility of daylighting strategies
 - A commitment to a minimum level of LEED Silver, or equivalent, Connecticut High Performance Building Guidelines exceeding the energy code, e.g. 20% better than code.

IMPLEMENTATION AND COST

Project feasibility hinges on a careful understanding of implementation factors. The Master Plan Update considered swing space and sequencing, and project priorities. The Recommendations also factored land use and environmental issues that could affect subsequent project approvals. To guide the capital budgeting process, the Planning Team also prepared order-of-magnitude cost estimates for the project concepts.

The Master Plan coordinated with projects currently in the planning, design and implementation stages. These included:

- New Fine Arts Center: In construction
- Communications and Goddard Renovations: In design
- Shafer Renovation: In design

PROJECT SEQUENCE AND SWING SPACE CONSIDERATIONS

Many projects recommended in the Master Plan can be implemented directly once funding, detailed programming, design and approvals are in place. These could be considered “Independent” Projects since they do not require any enabling projects – swing space, demolition or relocations – before construction. These are listed as follows:

INDEPENDENT PROJECTS

- New Residence Hall near Occum
- Hurley Renovation / Addition
- Wood Renovation
- Library Renovation
- Noble Renovation
- Burr Renovation
- Convert Eastern Road North to Pedestrian Mall
- Central Plant Upgrade
- Electrical Capacity Upgrades



LINKED / SWING SPACE PROJECTS

Other projects recommended in the Master Plan do require either swing space, relocation of other functions and / or demolition of existing structures to be realized. These could be considered “Linked” or “Swing Space” Projects. The prior enabling tasks required are listed below each such project, as follows (not in sequential or priority order):

Close Eastern Drive South, Enhance Main Quadrangle

- Loop Road enhancements at West, extend to Prospect
- Loop Road connection across south end of campus

Sports Center

- Electrical transformer upgrade
- Relocate functions, Demolish houses at High Street

Sports Center Alternative at Windham Tech High School Site

- Site acquisition following WTHS relocation

New Academic Building and Clock Tower Quad

- Expand parking at High Street South Lots
- Remove surface lot
- Webb Hall Renovations (to follow)

New Apartment Building at Winthrop Hall Site

- Build new Semi Suite Residence Hall near Occum
- Demolish Winthrop Hall
- Demolish Low Rise Apartments A and B
- Optional: Realign roadway

New Apartment Building at Low-Rise Apartment Site

- Complete new apartment building at Winthrop Hall Site
- Demolish Low Rise Apartments C and D
- Realign roadway

Health and Counseling Center

- Demolish vacant house

New Dining Hall + Recreation Center Renovation

- Complete new Sports Center
- Demolish south wing of existing Sports Center
- Infrastructure upgrades (Central Plant and North Elec. Loop)

Parking Deck at South Campus

- Build new Apartments at South Campus (above)
- Demolish Low Rise Apartments A, B, and E

Field House at Mansfield

- Regrade provide replacement practice field next to Nevers

COST ESTIMATES

The Planning Team prepared order-of-magnitude cost estimates for the Master Plan recommended projects. The estimates were based on the space program, site design and building massing assumptions noted above. The basis of the estimate reflects the following approach / assumptions. Given the broad, preliminary scope of Master Plan projects, and the fact that needs, conditions, and priorities can change over time, it is important to review and refine program and budget assumptions prior to implementation.

The construction cost includes markups for General Conditions, General Requirements, Insurance & Bond, Permits (15%); Construction Manager Fee (4%) and a planning contingency to address the preliminary conceptual nature of the project scopes.

The construction cost excludes a construction contingency (5%). Costs are 2015 3rd quarter dollars; Escalation is not included. Once a project bid date known, budget figures to be will need to be updated / escalated to reflect inflation in intervening years. Construction costs assume labor costs included at local union rates, and that long lead items can be purchased to meet schedule.

Project Cost below includes a CSCU recommended markup of 45% to include the following soft costs: predesign studies, AE Fees, DCS Fee, CA Fee, Construction Contingency, Public Art, Testing, Surveys, Geotech, Commissioning, Third Party Review, Moving and Miscellaneous other project requirements.

An additional 20% of Hard Cost is recommended for the Equipment and Telecom Budget.

CHEFA FUND / STUDENT FACILITIES

New Construction	GSF	Const. Cost	Project Cost
Residence Hall, Semi-suites, 75 beds	19,000	\$10,469,000	\$15,180,050
Residence Hall, apartments, 215 beds	69,000	\$33,534,000	\$48,624,300
Residence Hall, apartments, 109 beds	35,000	\$19,110,000	\$27,709,500
Dining Hall	42,000	\$22,302,000	\$32,337,900
Subtotal	165,000	\$85,415,000	\$123,851,750
Demolition			
Sports Center South Wing	40,800	\$734,400	\$1,064,880
Low-Rise Apartments	61,061	\$1,099,098	\$1,593,692
Winthrop Hall	23,556	\$423,000	\$613,350
Subtotal	84,617	\$1,522,098	\$2,207,042
Renovation / Expansion			
Recreation Center (existing Sports Center north wing)	23,400	7,324,200	\$10,620,090
Hurley Dining Hall (cost provided by owner)	41,840	\$12,256,000	\$17,771,200
Burr Hall	31,000	\$9,114,000	\$13,215,300
Noble Hall	72,000	\$24,408,000	\$35,391,600
Subtotal	168,240	\$12,256,000	\$17,771,200
CHEFA Fund Totals	417,857	\$99,193,098	\$143,829,992

GENERAL FUND PROJECTS**New Construction / Expansion Projects ***

	GSF	Order-of-magnitude Const. Cost	Project Cost
Sports Center	132,000	\$72,864,000	\$105,652,800
<i>Sports Center Alternative WTHS Site</i>	<i>132,000</i>	<i>\$65,472,000</i>	<i>\$94,934,400</i>
Academic Building and Clock Tower Quad	80,000	\$42,800,000	\$62,060,000
Health and Counseling Center	14,000	\$5,572,000	\$8,079,400
Field House	75,000	\$10,575,000	\$15,333,750
New Nevers Practice Field	81,400	\$2,197,800	\$3,186,810
Facilities / Maintenance Vehicle Storage	12,000	\$3,864,000	\$5,602,800
Subtotal (excluding Sport Center Alternative)	394,400	\$137,872,800	\$199,915,560

Demolition

Eastern Hall	8,200	\$147,600	\$214,020
Health Services House	4,480	\$80,640	\$116,928
House, Windham Street	2,500	\$45,000	\$65,250
Subtotal	15,180	\$273,240	\$396,198

Renovations

Webb	59,500	\$14,518,000	\$21,051,100
Wood	39,900	\$9,935,100	\$14,405,895
Library	54,000	\$13,176,000	\$19,105,200
Subtotal	153,400	\$37,629,100	\$54,562,195

Roads / Parking / Open Space Projects

Remove Eastern Road South, convert to quadrangle	30,000	\$2,340,000	\$3,393,000
Loop Road Improvements, Extension to Prospect Street	75,000	\$2,625,000	\$3,806,250
Library South Quadrangle (Eastern Hall site area)	24,000	\$1,872,000	\$2,714,400
Convert Eastern Road North to pedestrian mall	22,000	\$1,540,000	\$2,233,000
Relocate Windham Street Extension to east	38,500	\$3,888,500	\$5,638,325
Parking Deck at Low Rise Site (2 levels, 270 spaces)	81,000	\$9,825,000	\$14,246,250
Parking Deck additional level (spaces)	14,000	\$1,722,000	\$2,496,900
South Loop Road Reconfiguration Extension to WTHS	20,000	\$6,200,000	\$8,990,000
Entry Circle Drive Relocation	28,000	\$1,736,000	\$2,517,200
Expand Parking Lots High Street South	35,106	\$1,474,452	\$2,137,955
Subtotal	367,606	\$33,222,952	\$48,173,280

Infrastructure

Shared cooling plant & chilled water network distribution		\$5,590,858	\$8,106,744
North Central Plant Expansion / HTHW	3,100	\$2,523,400	\$3,658,930
Transformer Upgrade for Sports Center		\$1,198,925	\$1,738,441
Transformer Upgrade for Other Expansion Projects		\$618,800	\$897,260
Subtotal	3,100	\$9,931,983	\$11,765,674

General Fund Totals	933,686	\$218,930,075	\$314,812,908
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PROJECT PRIORITY CATEGORIES

The University Master Plan Advisory Committee considered the relative need of the range of recommended projects. The Committee with the Planning Team arrived at these two priority categories:

Priority 1: Projects with the greatest need

Priority 2: Projects to follow

The Advisory Committee confirmed the Master Plan projects in the categories below. The following lists are not in priority or sequential order. Project funding is designated through two district sources: General fund projects funded from state bond funds, and the student use projects financed from student funded bonds through the Connecticut Health and Education Authority (CHEFA)

PRIORITY 1 PROJECTS

General Fund

- Sports Center (High Street or WTHS Site)
- Green the Campus Core by completing the loop road, closing Eastern Drive south
- Academic Building and Clock Tower Quadrangle
- Health and Wellness Building
- Expand Parking at High Street Lots
- Plant / Infrastructure Upgrades, Phase 1

CHEFA

- Hurley Hall Renovation / Expansion
- Burr Hall Renovation
- Noble Hall Renovation
- New Residence Hall, 75 beds

PRIORITY 2 PROJECTS

General Fund

- Webb Hall Renovation
- Library Renovation
- Wood Hall Renovation
- Facilities & Maintenance Expansion
- Field House at Mansfield Campus
- Parking Deck at South Campus
- Convert Eastern Drive North into Pedestrian Mall
- Realign Windham Street Extension to east side, landscape west side
- Plant / Infrastructure Upgrades, Phase 2

CHEFA

- Recreation Center, renovation to repurpose current gym
- New Apartments, 324 beds on Winthrop and Low Rise sites
- New Dining Hall

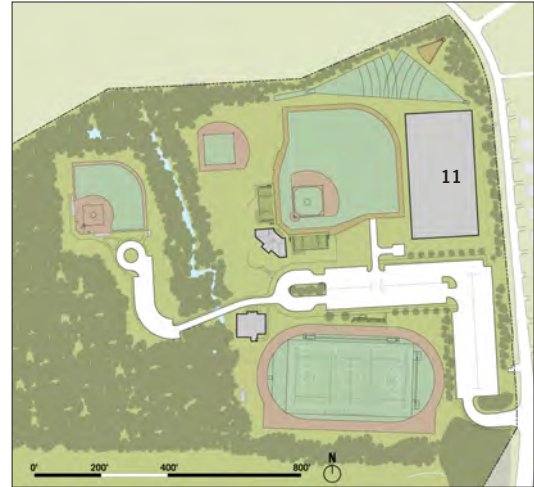
CONCLUSION

The 2025 Master Plan Update responds directly to Eastern's strategic goals and highest priority needs. The Recommendations focus not only on existing campus areas, but also explore the benefits of the potential historic acquisition of the adjacent Windham Technical High School site, which would provide additional development capacity for decades to come. The projects have been defined so they can be implemented in a flexible manner as funding permits over time. The Plan embeds sustainability throughout in land use, access, buildings and resource use, making the most of available land on this mature campus. The investment in existing buildings and infrastructure is optimized to the greatest extent possible, retaining and renewing today's buildings, whenever possible. Obsolete and energy inefficient buildings that occupy valuable real estate will be replaced by more efficient and sustainable buildings. The campus setting is transformed and strengthened to support Eastern's unique role as Connecticut's only public liberal arts university.

CONCLUSION



FIGURE 05.20 Campus Master Plan



Mansfield Athletic Complex

New Construction Projects

- 1 Sports Center
- 2 Residence Hall, 75 beds
- 3 Facilities / Maintenance
- 4 Adaptive Reuse: Event /Study
- 5 New Dining Hall
- 6 Recreation Center
- 7 Academic Building and new Quad
- 8 Health and Wellness Center
- 9 New Apartment Building, 215 beds
- 10 New Apartment Building, 109 beds
- 11 Field House

Landscape, Road, Parking, Infrastructure Projects

- A Eastern Road North to Pedestrian Mall
- B Loop Road Improvements, Extension to Prospect
- C Expand North Central Plant
- D Remove Eastern Road South
- E Relocated Entry Circle
- F Library South Quadrangle
- G Upgrade Transformers, North Loop
- H Expand Lots at High Street
- I Parking Deck, Low Rise site
- J Relocate Windham extension to east

Labels are not in sequential or priority order

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MASTER PLAN TEAM

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