2012

University of Massachusetts Amherst Campus Master Plan 2012

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CAMPUS MASTER PLAN
2012

April 2012

UMass Amherst Campus Planning

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CHAPTER I. INTRODUCTION

The University of Massachusetts Amherst has a long tradition of campus planning that dates back to 1866 and the first plan for the campus by Frederick Law Olmsted. Successive planning efforts in the modern era have documented strategies for continued development of the campus. Despite this long tradition of planning, development of the campus has at times diverged from the recommendations of successive master plans. The last plan was adopted in 1993 and updated in 2007. The campus is once again growing: UMass is in the midst of a ten-year, billion-dollar capital improvement program that started in 2004. The University has determined that it is time for a renewed effort to generate a Plan for the campus.

MISSION AND VISION

This initiative addresses the deteriorated conditions of existing campus facilities, accommodates planned enrollment growth and advances the goals of the Framework for Excellence and Rising to the Challenge developed under the leadership of Chancellor Holub. This Plan will serve as a guide for sustainable future development that reinforces the vision set out in the Chancellor’s documents. This plan documents a clear vision and identity for the campus with planning principles, goals and recommendations to guide all future growth. Fundamentally the vision is to raise the stature of the campus to one of the best research universities in the country. Key elements to achieve this include hiring 250 new faculty members and increasing student enrollment by 3,000 in the next ten years.

The vision documents also recognize that the deteriorated condition of the existing physical plan “presents the University with perhaps its greatest challenge.” Over the past several decades, state funding has been substantially below the level necessary to maintain and renew University facilities and infrastructure. As a result, many facilities can no longer support the demands of modern education, including contemporary science and educational pedagogy. The backlog of deferred maintenance currently stands at $2 billion. This master plan addresses this backlog and articulates a vision for the campus that is commensurate with its stature as a top-level research university.

The planning effort has been an intensive process that has engaged University leadership, the campus community and many other interested stakeholders. The area of this study includes over 1,400 acres on the main campus, as well as the 150 acre Hadley Farm, the 32 acre North Village Residential Area, and the 94 acre Tillson Farm. To reach this point, Campus Planning has been working on the plan for over a year and has created this that was finalized in the spring of 2012.
PURPOSE OF THE PLAN

- The Chancellor has created a vision for the campus as articulated in the Framework for Excellence and begins implementation of this vision in Rising to the Challenge. The campus master plan helps to guide the capital planning process to ensure that the physical campus develops to support this vision.

- Campus Planning supports the overall mission of the University of Massachusetts by guiding the physical development of its flagship campus through the creation, maintenance and administration of a campus master planning process. This process creates a campus plan or a blueprint of the campus’ vision for its growth and development. With the vision, and as academic plans are created to support this vision, the campus plan reflects the spatial organization and the facility support that will guide the construction and renewal of buildings, the uses of the spaces outside buildings, transportation on the campus, utility needs, and all that is required to run and create a physical campus that supports excellence.

- To grow the student population and to become one of the best public research institutions in the United States we will need to have an attractive, logical and sustainable physical campus environment to attract the best students, faculty and staff.

- In 2012 the campus will be 150 years old. The campus Master Plan will help celebrate this event by creating a plan for the campus that honors the past by boldly looking into the future. The last campus plan was created almost 20 years ago. Great campuses create and update a plan every five years. We need to add to our legacy. It is time to create a plan.

- The campus is over 1,400 acres accommodating nearly 1 million GSF of building space and 12,000 parking spaces with a population of over 30,000 individuals during the day - we are a small city that needs to develop uniquely to support a community of learners. Create a campus to support our population.

- We need to provided an education and create an experience for the students that will serve them over a lifetime and be something they will never forget.

- There are many aspects of the UMass campus we all enjoy, but there are many things we would like to see change. The master plan and the process gives us the opportunity to discuss what we like and do not want to change and what we do not like and would like to see change.
PLANNING PROCESS

To be most useful and successful the plan needs to have wide support from everyone on and off campus. Participation throughout the process has helped and continues to help create support and understanding for the final master plan. Students, faculty and staff work, live and play on the campus. Their experiences today are very useful in crafting and implementing a plan for the future.

Good ideas and solutions come from everywhere and the more people that are asked about the future of the campus, the more ideas and different ideas we will receive. The following process was used to help provide an inclusive and transparent process in creating the master plan.

Phase I: Confirm Master Planning Process - The team developed and confirmed a campus planning process to be used as a roadmap for creating the Master Plan and for undertaking future campus planning efforts.

Phase II: Participate in Campus Services System Master Plans - Campus Planning lead and participated in planning for the utility and transportation systems on the campus. In addition the team has supported will continue to support other planning efforts such as housing, student life, athletics and auxiliary services.

Phase III: Build upon the Observation Report / Vision - Campus Planning led a series of work session with identified
stakeholder groups (Stakeholders) to build upon the findings in the Wilson/ASG Observation Report. During these sessions the collected and formulated ideas and thoughts regarding a vision for the physical development of the campus.

Phase IV: Assemble the Master Plan Program - During this phase Campus Planning collected and coordinate the future facility requirements for the campus, beginning with the 2011-2016 capital list as the near-term program and relying on the 2017-2021 capital list as the mid-term and projected trends for beyond 2021.

Phase V: Create Alternative Plans - Through a collaborative and iterative process with the Stakeholders, Campus Planning with the assistance of Wilson\ASG created a series of alternative solutions to meet the planning goals and accommodate the master plan program. The Stakeholders, through these alternatives tested land use, density, transportation, building condition and program assumptions and visualized the effect(s) on the physical campus, identifying a preferred direction.

Phase VI: Draft Plan - During this phase the preferred direction was used to create a draft document that explained and illustrated the physical future of the campus. This document was made available to the campus community for review and comment through another round of stakeholder community meetings. Comments on the draft through our online master plan explorer application were also incorporated.

Phase VII: Final Plan - This phase incorporated the refinements discovered during reviewing the draft into a final document. The intention is to create a living document that through technology becomes part of a decision supports system for ongoing planning efforts and supports the Master Plan.

Planning process and schedule

UMASS AMHERST CAMPUS MASTER PLAN
COMMON THEMES

Throughout the process there were ideas that were consistently raised. The plan was developed to include and support each of these common themes.

- Build a beautiful pedestrian friendly campus
  
  Remove pedestrian barriers operated by vehicular circulation
  Expand the vehicular free pedestrian zone
  Plant trees
  Build more WOWs and small spaces
  Remove small surface parking lots from within the core
  Create a strong positive visual character

- Add and upgrade facilities
  
  Additional Classrooms
  Additional Beds
  Larger/New Student Union
  Wellness and Health Center
  Swimming Pool
  Admissions Center
  Laboratories
  Reuse historic structures
  Infrastructure to support excellence

- Develop a mixed use campus 24/7/12
  
  Academic uses in the loop with campus life
  Add more housing in the loop
  Remove non-essential uses from within loop
- Future tours to start at the new Admissions Center

  Within the Massachusetts Ave. corridor
  Connections to host communities and region
  Different alternatives for public–private ventures
  Connection to Amherst Center
  Make the campus welcoming and accessible

- Demonstrate New England Sustainability

  Wind turbines
  Solar panels
  Local farming
  Shuttle Buses
  Renovate / Retrofit Existing Facilities
  Expand bike paths
  Use infill sites
  Manage storm water

- Students choose to come to UMass

  Comprehensive academic selection
  A great value and high quality education
  Diversity of experience
  Many neighborhoods, one city
  Graduates are able to start a career
  Proud to be at the Flagship
  “the world opened up...”
GOALS

To support the Framework for Excellence and help to meet the goals in Rising to the Challenge, Campus Planning created a Campus Master Plan. A Master Plan will be created for the campus through an efficient, collaborative effort, incorporating the interests of multiple stakeholders. In addition, we will establish a process for ongoing campus planning. The initial goals for the Master Plan are:

- Establish a shared common vision for the future development of the campus.
- Accommodate the master plan program.
- Create a sense of place by designing a unique, cohesive physical character for the campus.
- Develop physical connections throughout the campus and between the campus and the host communities and region.
- Support communities of learning and collaboration by creating appropriately programmed and designed spaces.
- Plan for the effective use of our land and financial resources.
- Advance the campus’ sustainability agenda.

GUIDING PRINCIPLES

- Long-Term 50 Year perspective.
- Create growth opportunities in the core.
- Form an open space framework to include courts, spines and complete Streets.
- Building campus not just buildings.
- Untangle vehicular and pedestrian circulation.
- Develop a 24/7/12 campus core-mixed use.
- Unify academic campus.
- Respect planning and building heritage.
CHAPTER II. CAMPUS CONTEXT

The location a campus occupies on the globe (Latitude: -72.52, Longitude: 42.39) shapes the history, academic programs and historical environment. The institution’s location will always influence the future.

NEW ENGLAND

New England is a region of the United States located in the northeastern corner of the country, bordered by the Atlantic Ocean, Canada and the state of New York. It consists of the six states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut. New England has played a dominant role in American history, serving as its cultural and economic center until well into the 19th century. This is due in part to one of New England’s strongest legacies, as home to so many of the country’s top institutions of higher education. Massachusetts alone is home to over 130 colleges and universities, including America’s first college. New England lacks the large expanses of rich farmland and mild climate that has helped much of the rest of the country gain wealth. However, in business, New Englanders have gained a reputation for hard work, shrewdness, thrift and ingenuity, which is no doubt a result of their value of education.

The University of Massachusetts Amherst was established in 1863 as the Massachusetts Agricultural College, located on the farmland of the Connecticut River Valley in the central part of western New England. The campus is located approximately 100 miles west of Boston and 150 miles northeast of New York City. Amherst is located near Interstate 91, one of the major north/south interstates in New England, just north of the junction with Interstate 90, one of the major east/west interstates of the region. The University
is also accessible by railroad and is serviced by major airports in Hartford, CT, Boston, MA, Manchester, NH, Providence, RI and New York City. The primary catchment area for student enrollment is the Commonwealth of Massachusetts, then the New England region, then nationally and internationally. Among the national students from outside of New England a large contingent come from the states of New York and New Jersey.

**PIONEER VALLEY AND THE KNOWLEDGE CORRIDOR**

In contrast to the New England landscape in general, the Pioneer Valley is the largest area of rich agricultural land in the region. The valley floor is a patchwork of fields and meadows dotted with tobacco barns along the Connecticut River. The valley is bounded on the west by the Berkshire Hills, on the east by the Pelham Hills and dissected by the unique east west running ridge of the Holyoke Range. This picturesque landscape with its quintessential New England character of neatly maintained farmsteads and fields surrounded by forested hills, provided the ideal location for one of the country’s first land grant institutions, the Massachusetts Agricultural College. While farming remains important in the region, the scenic countryside along with the cultural offerings of the educational institutions, make tourism one of the most important current economic engines.

Recently this part of the Connecticut River Valley has been referred to as the “Knowledge Corridor” which also includes Northeastern Connecticut. Encompassed in this area are the communities in Franklin, Hampden and Hampshire Counties in Massachusetts and Hartford, Middlesex and Tolland Counties in Connecticut. The 3,058 square mile region is home to a population of nearly 2 million people in 111 municipalities, including the metropolitan areas of Hartford, CT and Springfield, MA. Only 25 miles apart, these two cities anchor a combined region that constitutes the second largest population, education and economic center in New England. This is a unique region, with a diverse economy, population and labor force. The area’s 27 colleges and universities (with a combined total enrollment of over 125,000 students), and rich history of innovation – are the
reason it is dubbed, “New England’s Knowledge Corridor.”

Within this “Knowledge Corridor” located inside a 5 mile radius of each other, are the five institutions that make up Five Colleges. The University of Massachusetts along with Amherst, Hampshire, Mount Holyoke, and Smith Colleges make up the consortium that enriches the excellence of its members through academic and administrative collaboration. The consortium facilitates intellectual communities and broad curricular and cocurricular offerings that afford learning, research, performance and social opportunities that compliment the distinctive qualities of each institution. A student enrolled in any one of the institutions, can take classes at any of the other institutions and take advantage of their shared library resources. Five Colleges, Incorporated is a nonprofit educational consortium established in 1965 to promote the broad education and cultural objectives of its member institutions. The consortium is an outgrowth of a highly successful collaboration in the 1950’s among the University of Massachusetts and Amherst, Mount Holyoke and Smith colleges that resulted in the founding of a fifth institution, Hampshire College, in 1970.

AMHERST/HADLEY

Three of the Five Colleges are located in the Town of Amherst. With a 2010 population of 37,819 it is a relatively small town to host three institutions of higher education. The influence of the educational institutions is reflected in every aspect of the Town making it the number one college town in America as declared by several national websites in recent years. There are many things that contribute to the high quality of life that make Amherst such a great place to live and learn. The town has maintained its rural historic character by preserving over a third of its land mass as permanently protected open space and working farms, including three Community Sustaining Agricultural operations. There are over 50 miles of hiking trails in town that are easily accessible by the many bike paths and bike lanes, or by the transit system with bike racks on every bus. While small, the downtown is full of restaurants of all kinds, coffee shops, bookstores, boutiques, pubs and clubs featuring jazz, rock, and dance music, literary readings, and more. The area has 10 museums, many art, craft, and food fairs on the common, and the colleges and university host Broadway shows, dance troupes, and world music.

This picturesque landscape with its vibrant social and cultural environment is part of what allows the University of Massachusetts Amherst to attract the best and brightest students, faculty, and staff.
Town of Amherst and Hadley with Bus Routes
In fact, 30% of the faculty and staff live in Amherst. This is reflected in the highly educated profile of the population that has 93% with high school diplomas and 64% with college degrees. Because of the University and Colleges, the population is also diverse in its racial and ethnic makeup, with large communities of people born outside of the United States and dozens of languages spoken in the local school system. Amherst has become a Mecca for ex-urbanites who are looking for a high quality, rural lifestyle in a place that is also culturally rich with a great school system. The heritage and character of Amherst are embodied in its Town Seal, a book and plow.

There are land holdings of UMass Amherst throughout the commonwealth. However the large portion of the University of Massachusetts campus that resides in Amherst and the Town of Hadley is the focus of this plan. The western edge of campus that includes the Mullins Center, athletic fields, stadium and horse farm are all located in Hadley. With a population of 5,250 Hadley is a much more a rural agricultural town than Amherst. In fact, the Town of Hadley leads the state in farmland acreage protected under the states’ Agricultural Preservation Restriction Program with over 2,000 acres protected (Amherst is second with over 1,600 acres). However, while much of the Town is devoted to farming, the commercial strip along Route 9 that runs east/west through the center of the town includes two large malls and big box stores like Home Depot, Lowes, and Walmart that provide a shopping destination for students and much of the region.

Both Hadley (2005) and Amherst (2010) have recently adopted Master Plans in which one of their primary Goals or Guiding Principles is to “Work with UMASS” or “Enhance Town/Gown relations”. Amherst is also currently working with planning consultants engaged in two targeted planning projects within close proximity to the UMass campus. One is looking at rezoning and redevelopment of the North Amherst Village center located just north of campus where a large number of students live. They have also commissioned an “Urban Renewal Assessment, Vision and Action Steps for the Gateway Corridor Project.” The Gateway Corridor is an adjacent area along North Pleasant Street directly south of campus that also contains two parcels owned by the University. This project is looking at redeveloping and improving the area to provide a better connection between the campus and the downtown of Amherst. Both of these projects have the potential to provide needed housing, new business opportunities and other amenities for the University. Members of the University Community Relations Office and Campus Planning staff have been directly involved in these projects. These efforts are providing a dynamic context and represent an opportune moment for the University of Massachusetts Amherst to undertake its Campus Master Planning efforts.
Chapter III. THE CAMPUS THROUGH TIME - HISTORICAL DEVELOPMENT

HISTORY

The real estate the campus occupies and the programs offered shaped the physical form of the campus. The town and region influenced the University from the school’s inception as would the general approach to agricultural education. Some background of agricultural education is warranted to understand the growth of the campus and the decisions made by its leaders.

The Beginning 1797-1910

Agriculture was one of the four mainstays of New England’s economy during the United States Plantation, Colonial and Federal periods. The other contributors to our economy were fishing/whaling, millworks of various types, and quarrying. Initially, agrarian education was managed at the society level; as early as 1797, the Massachusetts Society of the Promotion of Agriculture began publishing agricultural bulletins. The Norfolk, Massachusetts, Agricultural Society started formal exhibits in 1849 to help livestock farmers better manage their stock. In Massachusetts, prior to the Morrill Land Grant Act, the state had a board of agriculture and a farmer’s institute that would educate and consult to farmers throughout the state. The Massachusetts Agricultural College was charted in 1856, not to open until the land grant endowment gave it a new beginning.

Justin S. Morrill a Vermont Representative to the House advocated forcefully that the United States had to prepare its farmers and scientists and this should be the responsibility of publicly funded colleges and schools. In 1862 the congress passed the Morrill Land Grant Act. Each state was granted acres of undeveloped land in the Western United States. 360,000 acres of land was granted to Massachusetts. The state legislation decided to use the monies to support both the Massachusetts Institute of Technology (MIT) and the Massachusetts Agricultural College (MAC). One third of the grant went to MIT, MAC received two-thirds of the money and 1/10th of the grant was used to purchase the founding farms.

In 1864, the legal name of the school was codified as Massachusetts Agricultur-
al College and the honorable Henry Flagg French was elected president. As late as
1864, Lexington, Chicopee, Northampton, Springfield and Amherst were vying for the right to host the college. The
Trustees opened the sitting to bidders. Amherst raised $75,000 through taxation
and subscription. On May 25, 1864 the MAC Trustees voted to locate the college in Amherst.

The first land holdings for the campus were cobbled together from six farms
and parcels totaling 310.55 acres. President French characterized the property as “…much of wood, rough pasture and
swamp” he went on to note that it was “…a judicious investment. Additional
land from the Durfee family was quickly added to the land holdings to bring the
total to approximately 383 acres. Durfee was a Trustee and also the Trustee Treasur-
er.

In 1864, the Trustees hired Vaux and Richards of New York, to develop a site
assessment and plan for building location. The recommendations were not
well received. In 1866, Fredrick Law Olmsted was hired to provide his opinion
of the college layout that had been cre-
at ed by Vaux and Richards. Olmsted took
the assignment seriously and developed
da detailed plan for effectively recreat-
ing a New England village. The center of
campus was a village green and the major
buildings of the college would form a row
facing the green. Radiating out from the
green were streets lined with cottages for
professors and the students. A mixed-use
environment organized by a central open space system was the very first organizational concept conceived of by the University’s campus planners.
The “Campus Pond,” one of our key landscape features was first shown on a reconstructed drawing of the Frederick Law Olmsted’s 1866 design for the campus. However, it was not constructed until 1893 as an “ornament to the grounds” and as a facility to manufacture a supply of much needed ice. Given the agricultural heritage of the campus, the idea of working landscapes, like permaculture gardens, rain-gardens and other working landscape features should have a “place” on our campus. In 1911 landscape architect Warren Manning showed the campus pond as an existing feature and included a bridge over the water to help connect the Upland, Midland and Lowland Sections of the campus.

The 1910 Plan continued to conceive of the campus as a working-living-learning village. This concept created a land use pattern of classrooms, labs, offices and residential halls within close proximity to each other and reflected the agricultural mission of the University. Other key features of the plan include pulling major circulation for the campus to the edge of the campus on proposed “marginal roads” and continuing North Pleasant street as a trolley corridor.
1953 Campus Master Plan by Schurcliff, Shurcliff and Merrill
1910-1953

During these decades a campus planning process was overseen by several campus planning committees and councils. Their recommendations created much of the campus we see today. The planning and development of the campus during this period strengthened the northern curve of Ellis Drive, better defined the central core along the ridge west of the campus pond and it placed the Student Union defining the northern edge of the campus pond and lawn landscape. The Student Union’s location within the “Central Park” was chosen after consideration of many alternatives based on its comparable distance between the Central and North-east residential districts. Major science buildings primarily as additions to Morrill Hall continued to be developed along the Stockbridge corridor.

1953 Campus Plan Shurcliff, Shurcliff and Merrill

The 1953 plan started to integrate the automobile into the campus by showing sites for new parking lots and roads as it anticipated a growth in student population from 4,400 to 10,000. This plan shows North Pleasant Street closed to through traffic; Stockbridge Road and Thatcher Way serve as a through route to North Amherst. A new campus design concept illustrated in this plan was to create view corridors from the campus out to the surrounding landscape of the rolling hills and mountains. One such view corridor suggested but not developed.
1962 Campus Master Plan
was one in the north-west corner of the campus.

1962 Campus Plan Sasaki, Dawson and Demay

By the 1960s, the campus mission had evolved into that of a major undergraduate/graduate facility with emphases in agriculture, engineering, and general liberal arts. As a principal in the larger University of Massachusetts system, UMass-Amherst was also a founding member of the Five Colleges, Incorporated, along with Amherst, Smith, Mount Holyoke and Hampshire colleges.

The concentration on the physical organization of the campus increased in the 1960’s and the reliance on the internal planning committees of the early decades was replaced by professional planning consultants. The campus grew considerably from the completion of the 1953 plan and now instead of anticipating 10,000 students, they were thinking about 35,000 students. Many planning studies were completed. Many of the recommendations define the campus’ current appearance. The stadium was sited, 52 acres of the campus was being used for surface parking, the Massachusetts Avenue Boulevard was developed along with Haigis Mall and the campus focused upon creating pedestrian only zones in the core.
1993 Campus Master Plan
1993 Campus Plan

The 1993 plan was developed by an internal team of faculty, administrators, planning professionals and students. The plan continued to recommend infill, improved pedestrian connectivity and flow, interdisciplinary education and research and definition of campus open spaces to improve campus identity. North Pleasant remained open as a public street and the plan advocated the Campus and the Town of Amherst work together in redeveloping the corridor between campus and downtown. The 1993 plan was supplemented by a series of area plans that looked in more detail at different geographical areas of the campus.

Governors drive was redesigned to complete the loop road around the core of the campus, Another accomplishment in the plan was the initial moves to create the Stockbridge corridor.

2007 Campus Plan Update

The 2007 plan built on the recommendation from the 1993 plan by recommending potential sites for new buildings and defined capital projects. This plan update continued the trend emphasizing infill within the core of campus.

It also worked toward highlighting the deferred maintenance issues.


**Legacy Building**

One of the legacies of our nearly 150 year history as an institution is a long list of buildings that are greater than 50 years old. In fact, in 2008 when the University contracted with the architectural firm of Einhorn, Yaffee and Prescott (EYP) to undertake a historic resources inventory, there were 112 institution-listed properties that were built prior to 1959. Begun in the fall of 2008 and completed in August of 2009, this Campus Cultural Resources Survey prepared Massachusetts Historic Commission (MHC) inventory forms for the 112 properties on 103 separate Form B’s. The survey work included; identifying buildings that had been documented previously on MHC forms, more thoroughly documenting these buildings on updated forms, and creating new forms for any building over 50 years old that had not been previously documented. The work also included a formal assessment of these buildings eligibility for listing on the National Register of Historic Places as part of an UMass National Historic District.

The Campus Cultural Resources Survey includes structures from every developmental stage of the institution. Construction types range from 19th century wood-frame and masonry buildings to 20th century steel and masonry buildings designed with both historicist and modern architectural details. The survey identified 53 buildings that were recommended as eligible for inclusion in a National Register district. Of those 53 buildings, the Campus Master Plan recommends 50 of those buildings identified to remain on the campus into the future. One of the Guiding Principles of the Campus Master Plan is to “respect the planning and building heritage.” One recommended approach to rehabilitating and repurposing and thus keeping historic structures on campus, is to use additions to those buildings to solve building code issues and provide the funding mechanisms to reinvest in these structures. An example of this approach in the near term is an addition to South College to provide space in order to empty out Bartlett Hall for demolition. The respect for building heritage in the Campus Master Plan also recognizes that there are certain historic structures, like the Chapel, that should not be paired with additions and must await the right opportunity for reinvestment and reuse.

The “respect the planning and building heritage” Guiding Principle of the Campus Master Plan also includes respect for the landscape as well. The Campus Cultural Resources Survey also noted that the sites historic development from an agricultural college to a research university has resulted in a significant transformation from a rural to a suburban, some would argue urban, population density. And although aesthetic concerns have been constant since the design of the earliest facilities, there has been a gradual transition from the utilitarian and practical land use management to grounds maintenance focused on beautification and recreation. Gone are the active agri-
cultural fields and the making hay on the campus pond lawn, where now you are more likely to see people sunbathing or playing Frisbee.

The Campus Master Plan pays respect to the planning and landscape heritage in several ways. First and foremost, it recommends no more buildings within the campus pond lawn areas bounded by the dike to the north, the Fine Arts Center to the south, North Pleasant Street to the east, and the Library, Chapel and Memorial Hall to the west. In a nod to past planning efforts the plan recommends bringing back the defining arc of Ellis Drive, renamed “Ellise Way” in the Master Plan as it will be pedestrian only, which includes a bridge across the pond, an element that was contained in 5 of 7 previous plans for the campus. The northwest viewshed corridor, or feather, is another nod to a past plan element that provides a connection from the campus landscape to the valley environs around us. This landscape feature is also envisioned to bring back some of the actively working landscapes through its use as a regional storm water management system for the northwest end of campus. The permaculture gardens that are proposed are another nod to the idea of a working landscape on campus.

The “respect the planning and building heritage” Guiding Principle is very closely related and integrated with two other Guiding Principles: “Form an open space framework to include courts, spines and complete streets” and “Build campus, not just buildings”. Together these Guiding Principles of the Campus Master Plan will help insure that as the campus evolves into the future to meet the ever changing demands of the higher education environment, it will maintain its connection to the heritage and legacy of the institution that was founded in 1863”. To create an environment that is at once firmly rooted in history, yet timeless, is to achieve an environment that is ideal for academic pursuits.
CHAPTER IV. CAMPUS TODAY

Much of what can happen in the future images upon that has been built in the past and the physical condition of the land the campus occupies. This chapter reviews the condition of the campus in 2010 in campus population, the landscape and the buildings.

Campus Population and Facilities

In 2010 the UMass Amherst campus was comprised of 27,569 students and 5,419 employees (headcount). Of that number 3,229 were Continuing and Professional Education students, leaving a total of 32,988 individuals associated with the physical campus.

Since World War II, the University experienced rapid growth in its enrollment, physical facilities and quality of programs. The physical growth of the campus crested in the decade of the 1970s, which was the beginning of a fairly stable enrollment plateau that continued, with a peak in 1988, until budget cuts and tuition increases triggered enrollment declines in the early 1990s. Enrollments have been increasing steadily since the late 1990s and were at a historical high in 2010.

During that time the campus physical assets increased in a corresponding manner. The greatest increase in construction occurred in the late 1960’s and early 1970’s when the enrollment at UMass Amherst was projected to eventually reach 35,000 students” (Ward, 1980).

Today UMass Amherst has 11.5 million gross square feet of physical assets in 360 buildings of various size and 4,400 acres of land in locations that include Amherst, Hadley, Belchertown, Boston, Concord, East Wareham, Gloucester, Montague, New Salem, Pelham, Princeton, Shutesbury, South Deerfield, Springfield, Sunderland, Waltham, Wareham and Worcester. The main UMass Amherst campus comprises 10.7 Million gross square feet of facility space on 1,411 acres of land primarily in Amherst and Hadley.

<table>
<thead>
<tr>
<th>Head count Student Majors</th>
<th>Full-Time</th>
<th>Part-Time</th>
<th>Total</th>
<th>On-Campus</th>
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</thead>
<tbody>
<tr>
<td>Undergraduate &amp; Stockbridge</td>
<td>19,669</td>
<td>457</td>
<td>20,126</td>
<td>20,126</td>
</tr>
<tr>
<td>Graduate</td>
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<td>2,051</td>
<td>4,214</td>
<td>4,214</td>
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<tr>
<td>Cont. &amp; Prof. Education</td>
<td>361</td>
<td>2,868</td>
<td>3,229</td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>22,193</strong></td>
<td><strong>5,376</strong></td>
<td><strong>27,569</strong></td>
<td><strong>24,340</strong></td>
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UMass Amherst Students - Fall 2010 (OIR Fact Sheet as of 1/5/11)
<table>
<thead>
<tr>
<th></th>
<th>Full-Time</th>
<th>Part-Time</th>
<th>Head Count</th>
<th>FTE</th>
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<tbody>
<tr>
<td>Executive, Administrative &amp; Managerial</td>
<td>113</td>
<td>2</td>
<td>115</td>
<td>115</td>
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<tr>
<td>Professional</td>
<td>1,515</td>
<td>147</td>
<td>1,662</td>
<td>1,605</td>
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<tr>
<td>Instructional Faculty (Tenure and Non-Tenure track)</td>
<td>1,231</td>
<td>323</td>
<td>1,554</td>
<td>1,347</td>
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<tr>
<td>Classified</td>
<td>1,969</td>
<td>119</td>
<td>2,088</td>
<td>2,043</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td><strong>4,828</strong></td>
<td><strong>591</strong></td>
<td><strong>5,419</strong></td>
<td><strong>5,109</strong></td>
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<tr>
<td>Graduate Appointments</td>
<td></td>
<td></td>
<td>2,550</td>
<td>1,119</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,828</strong></td>
<td><strong>3,141</strong></td>
<td><strong>7,969</strong></td>
<td><strong>6,228</strong></td>
</tr>
</tbody>
</table>

Faculty and Staff, Fall 2010 (OIR Fact Sheet as of 1/5/11)

**Student Enrollment 1920 - 2010 (excl. C&PE)**

**Total Campus GSF 1920 - 2010**
In the Framework for Excellence: Vision, Mission, Goals (Holub, 2010) UMass Chancellor Robert Holub articulated a clear vision for UMass Amherst: “it aspires to be among the very best public research universities in the country, and more specifically it aspires to match the excellence of the public universities that are members of the prestigious Association of American Universities (AAU).” This vision was accompanied by 12 components of the Framework that have significant implications for the campus’ physical growth and development. Those that are most relevant to campus population growth and the attendant growth in campus facilities are listed below.

Meeting these goals will result in an increase of the campus population over the next decade. The “Framework of Excellence” Program subsequently outlined in this report is designed to meet the Master Plan Framework goals by providing adequate space for the increase in students, faculty and staff as well as by addressing other systemic issues such as inadequate and/or insufficient space for campus functions and activities, deferred maintenance, preservation of the campus physical heritage, and the building of a unified campus landscape.

- **Increase undergraduate enrollment to 22,500 by 2020**
- **Grow the number of out-of-state students to 6,500**
- **Increase the size of the tenured track faculty to 1200 by 2020**
- **Double federal research awards/expenditures (up from $80 million)**
- **Increase post-doctoral appointments by 50% (up from 160)**
- **Increase doctorates awarded to 375 degrees/year (30% increase from 2007-2008)**
- **Increase the number of international graduate students**

Key Elements of the Framework for Excellence Plan
<table>
<thead>
<tr>
<th>Students</th>
<th>2010</th>
<th>Rising to the Challenge Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td>Undergraduate and Stockbridge</td>
<td>20,126</td>
<td>22,500</td>
</tr>
<tr>
<td>Graduate</td>
<td>4,214</td>
<td>5,214</td>
</tr>
<tr>
<td><strong>Total Students (excl. CPE)</strong></td>
<td><strong>24,340</strong></td>
<td><strong>27,714</strong></td>
</tr>
<tr>
<td>Instructional Faculty (Tenure and Non-Tenure track)</td>
<td>1,554</td>
<td>1,776</td>
</tr>
<tr>
<td>Executive, Administrative &amp; Managerial</td>
<td>115</td>
<td>115</td>
</tr>
<tr>
<td>Professional</td>
<td>1,662</td>
<td>2,031</td>
</tr>
<tr>
<td>Classified</td>
<td>2,088</td>
<td>2,386</td>
</tr>
<tr>
<td>Graduate Appointments</td>
<td>2,550</td>
<td>2,630</td>
</tr>
<tr>
<td><strong>Total Employees</strong></td>
<td><strong>7,969</strong></td>
<td><strong>8,938</strong></td>
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</tbody>
</table>

Campus Population Targets 2020
Student Life

In the fall of 2011 Campus Planning initiated a Study of Campus Union Functions for the Vice Chancellor for Student Affairs and Campus Life and a committee that included representatives from the Undergraduate and Graduate student government associations, the Center for Student Development (“CSD”), Auxiliary Services, Facilities Planning, Physical Plant and the Provost’s Office.

The vision for the study was to create a plan through an inclusive process that identifies the needs of current and future co-curricular activities on campus and develops creative solutions to help meet these needs.

Study Process

One goal of the study was to establish a comprehensive inventory of existing activities and the Campus Planning team conducted 35 meetings and met with over 85 stakeholders, including the Student Life Committee, focus groups, department heads, and student organization advisors. The focus groups included: the University Programming Council, Center for Student Development (CSD) staff, Southwest Area Government, Graduate Student Senate, Student Businesses and the Southwest Resident Hall Association and Facilities & Campus Services. A review of departments within the Center for Student Development included the Office of Student Activities & Involvement, Center for Student Businesses, Center for Multicultural Advancement and Student Success, Office of Fraternities & Sororities, Student Legal Services, Stonewall Center, Religious & Spiritual Life, Student Union Craft Center, Student Union Art Gallery, Center for Educational Policy Advocacy, Student Bridges, WMUA Radio, the Daily Collegian and Union Video Center UVC TV19. In addition to personal interviews, we analyzed information on building space and location from Facilities Planning (Horizon database), data on events scheduled in academic buildings from the Provost’s R25 database, summary meeting data from Conference Services, and informa-

Figure 1: Student Union, exterior in 1957,
tion on student organizations and events from CSD’s Campus Pulse database.

**The Student Union Functions - Before and Now**

When it was first built in 1957, the 105,000 GSF Student Union served a community of 4,516 undergraduate and 353 graduate students. The capital costs of the building was paid for by the proceeds from a $10 Student Union Tax to pay for a bond issue and relied on additional revenue from the operation of a University Store, Food Service, Games area and other activities to contribute toward the bond repayment and the costs of one full time administrator.

On the lower ground floor, the original building featured a University Store, a Union coffee shop with tables that spilled out to Metawampe Lawn, a barber shop, game room for billiards, ping pong, bowling and a sports lounge; on the upper 1st floor it had a main lobby atrium with a lounge on the north and a reading room on the south, ticket sales and retail merchantize shop, a browsing library, a listening room, a record playing room, a piano room, two ballrooms with coat and dressing rooms, a kitchen with six private dining rooms for catered parties, and two meeting rooms; and on the 2nd floor it had a lounge in the southwest corner, a meeting room, a variety of offices for administrative and clerical staff and student organizations, as well as offices for the Collegian that included a sound booth, the Student Senate, a chaplain, and 3 general meeting rooms. The building hosted a variety of events and was able to accommodate commencement exercises and reunions in the Student Union Ballroom. 1

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1 Original building description is based on 1955 archive building plans available from the Facilities Planning archives.
UMASS AMHERST CAMPUS MASTER PLAN

The activities and functions of the Student Union today can be considered to fall in three categories: student leadership/administrative areas, functional campus life space and event venues.

### Student Leadership/Administrative Functions

<table>
<thead>
<tr>
<th>Buildings</th>
<th>NASF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chadbourne</td>
<td>1,362</td>
</tr>
<tr>
<td>Middlesex</td>
<td>266</td>
</tr>
<tr>
<td>Thatcher</td>
<td>800</td>
</tr>
<tr>
<td>Worcester DC</td>
<td>804</td>
</tr>
<tr>
<td>Photo Lab</td>
<td>874</td>
</tr>
<tr>
<td>Student Union</td>
<td>30,727</td>
</tr>
<tr>
<td>Wilder</td>
<td>6,227</td>
</tr>
<tr>
<td>Cold Storage</td>
<td>614</td>
</tr>
<tr>
<td>Dickinson</td>
<td>104</td>
</tr>
<tr>
<td>Crampton</td>
<td>1,344</td>
</tr>
<tr>
<td>Hampden DC</td>
<td>852</td>
</tr>
<tr>
<td>Berkshire DC</td>
<td>1,923</td>
</tr>
<tr>
<td>Lincoln Campus Center</td>
<td>7,170</td>
</tr>
<tr>
<td>LCC Garage</td>
<td>120</td>
</tr>
<tr>
<td>Total NASF</td>
<td>53,187</td>
</tr>
<tr>
<td>Total Proportional GSF</td>
<td>87,200</td>
</tr>
</tbody>
</table>

Center for Student Development Locations
The student leadership and administrative functions of CSD comprise of staff and student organization offices, reception areas, copy/mail rooms, meeting rooms, file storage, equipment storage, and information desk functions. These are needed to support approximately 84 full time employees and about 360 other student employees. Today these functions are distributed in multiple buildings on campus, including the Student Union, Lincoln Campus Center (“LCC”), Wilder, Crampton and Middlesex. Student Leadership/Administrative Functions currently constitute about 56% of total CSD space.

**Functional Campus Life Space**

The Student Union has minimal lounge space available in the building atrium, and the Cape Cod Lounge is often used for campus community meetings. In support of general student and campus life activities, the Center for Student Development currently works with Auxiliary Services (“AS”), the Registrar and other campus departments to provide general meeting and assembly rooms for student organizations.

In the Student Union food service and a retail food market is provided by student businesses established in the 1970’s such as the Earth Foods Café and the People’s Market, and is also provided by AS weekdays from 11:00am – 3:00pm at the Hatch. Additional food services options are available in the LCC weekdays from 9:00am – 11:00pm at the Blue Wall, Market Place, Bento Box, and French Meadow and Freshens Cafés, and weekends from 8:00am – 9:00pm in the Blue Wall. Greeno Sub Shop, Sweets ‘N More and Sylvan Snack Bar have facilities that serve their associated residential populations.

The Five College Credit Union has a bank retail space in the student union and additional banking stations are available in the LCC. Student businesses such as the Bike Coop and Campus Design & Copy are also accommodated at the Student Union, as are special use facilities for the Craft Center, Art Gallery and UVC-TV 19. WMUA Radio and the Daily Collegian are accommodated in the LCC, as is the University Bookstore, which is currently managed by Follet and the efollet.com network. Spiritual events occur in multiple locations on and off campus and
recreational activities are accommodated in spaces and fields both on campus and through off-campus relationships with other organizations. Functional campus life space currently constitutes 44% of total CSD space.

**Event Venues**

UMass currently has approximately 400 organizations, about 200 of which are Registered Student Organizations. Based on self-reporting from student leaders, these organizations have a total of approximately 11,000 student members. CSD currently does not have any assembly rooms within its inventory and the activities associated with these organizations are accommodated in space across the campus that is negotiated with Auxiliary Services, Mullins Center, Physical Plant, Athletics, Registrar and other academic departments. The scheduling and negotiation process for student meetings and events is often complex and takes up significant staff and student time.

Campus Planning conducted program analysis that included interviews with advisors, review of multiple data sets and application of space planning methodologies in order to quantify existing need and develop a preliminary program of event-related space need. CSD maintains organization and event information in its Campus Pulse application, which utilizes

<table>
<thead>
<tr>
<th>Organization Category</th>
<th># of Org’s</th>
<th>Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>47</td>
<td>2,063</td>
</tr>
<tr>
<td>Arts &amp; Media</td>
<td>30</td>
<td>690</td>
</tr>
<tr>
<td>Center for Multicultural Advancement and Student Success</td>
<td>3</td>
<td>38</td>
</tr>
<tr>
<td>CSD Departments &amp; Offices</td>
<td>13</td>
<td>474</td>
</tr>
<tr>
<td>Cultural</td>
<td>25</td>
<td>1,051</td>
</tr>
<tr>
<td>Fraternities</td>
<td>22</td>
<td>369</td>
</tr>
<tr>
<td>Governmental</td>
<td>14</td>
<td>363</td>
</tr>
<tr>
<td>Graduate Student Organizations</td>
<td>29</td>
<td>311</td>
</tr>
<tr>
<td>Honor Society</td>
<td>5</td>
<td>369</td>
</tr>
<tr>
<td>Political</td>
<td>23</td>
<td>560</td>
</tr>
<tr>
<td>Religious and Spiritual Life</td>
<td>16</td>
<td>312</td>
</tr>
<tr>
<td>Residence Hall Association (RHA)</td>
<td>23</td>
<td>198</td>
</tr>
<tr>
<td>Residence Life</td>
<td>8</td>
<td>202</td>
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<tr>
<td>Service</td>
<td>20</td>
<td>989</td>
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<tr>
<td>Sororities</td>
<td>18</td>
<td>396</td>
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<tr>
<td>Sports and Recreation</td>
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<td>2,419</td>
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<tr>
<td>Student Affairs and Campus Life</td>
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<td>74</td>
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<tr>
<td>Student Businesses</td>
<td>8</td>
<td>130</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>397</strong></td>
<td><strong>11,008</strong></td>
</tr>
</tbody>
</table>

Campus Pulse Information on Student Membership by Category
self-reporting conventions for student organization leaders to manage information about membership, meetings and event requests.

A large proportion of events are scheduled in academic space, and Campus Planning analyzed data from CSD to study existing patterns of use. Starting with fall of 2008 – fall of 2011, there was a total of approximately 1,300 events held in academic buildings, averaging 426 events per year. About half of those events occur on weekends (Friday evening – Sunday) and almost 40% of the events utilize auditoria. Analysis of the data on the basis of event category and capacity indicate that rehearsals and auditions, performances and movies pose the greatest need for event accommodation – both in terms of the number of events and the large capacity of participants. On the basis of 640 contact hours per year (8 hrs./day * 5 days * 32wks * 50% utilization), current

<table>
<thead>
<tr>
<th>Types of Student Life Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitions</td>
</tr>
<tr>
<td>Conferences</td>
</tr>
<tr>
<td>Meetings (including music and/or amplified sound)</td>
</tr>
<tr>
<td>Movies</td>
</tr>
<tr>
<td>Performances (including music, dance and theatrical)</td>
</tr>
<tr>
<td>Rehearsals /Auditions</td>
</tr>
<tr>
<td>Social Events</td>
</tr>
<tr>
<td>Speakers</td>
</tr>
<tr>
<td>Training/ Workshops</td>
</tr>
</tbody>
</table>

Analysis of CSD Events in Academic Space by Event Category and Seating Capacity from 1/09 - 10/11
CSD Events in Academic Buildings
space utilization by CSD of space in academic buildings would account for 1 20-40 seat classroom, 1 40–60 seat classroom and 4 140-160 seat auditoria (or 10,800 NSF).

In addition, reservations by CSD of Auxiliary Services space in the Campus Center and Student Union account for 28% of all campus reservations (or 12,700 proportional NSF).

**Critical Needs**

Student Life accommodation on campus faces a number of difficulties at present, many of which center around the condition of the Student Union and the extensive need to negotiate event space from multiple campus organizational units. Student Life activities are largely accommodated in space that is not directly controlled by Student Affairs, resulting in scheduling difficulties and increased workloads for student leaders and staff.

The Student Union has not had a building-wide modernization since it was built in 1957. There is a lack of general meeting rooms equipped with AV/projecting capabilities and on-demand scheduling is constrained. The available event spaces in the Cape Cod Lounge, Student Union Ballroom and meeting rooms in the LCC have minimal acoustical properties and cause conflict with adjacent uses. The building’s finishes lack modern signage, restroom accommodations for diverse populations and digital display options. The building systems are reaching the end of their useful life and, despite recent upgrades, some areas have poor ventilation. Existing functions are hampered from expansion by inadequate electricity, internet access and IT capabilities. Food service provided by The Earth Foods Café and The Hatch are only available in the early part of the day, the Earth Foods kitchen is not directly connected to the serving area.

We have identified the following list of critical functional needs that challenge Student Life at present:

- Practice/rehearsal spaces for group physical movement with open space plan and acoustic treatment (1/3 of all events scheduled in academic buildings)
- Large 350 seat auditorium with stage for theatrical rehearsal, multi-media performance events and senate meetings
- Physical configuration that supports event security
- Visible, day-lit student lounge space/campus living room with late night food venue
- Information desk and electronic display of events
- General Meeting space controlled by CSD
- Dedicated Spiritual Space
- Signature “usable” outdoor space
- Gender-neutral restrooms, footbath and lactation areas
- Recreational fields to support variety of student teams
- Training Room for student organizations leadership training
- Storage for student organization files and equipment
- Cooking/serving facility for cultural programs
- Graduate Students Community Center and expanded housing options near campus
- Student Business incubator space to support entrepreneurship

**Space Needs Summary**

Student Leadership/Administrative support space is generally sufficient for accommodating staff and student organization offices; however there is a need for student organization file and equipment storage and for a building information kiosk that provides up-to-date information on upcoming events and access to information on student organizations. For master planning purposes there is a need for approximately 20% of additional administrative space.

Functional space needs include general meeting rooms for student government bodies and organizations, larger lounge spaces and better configuration and systems operation of existing functional areas. The scope of the study did not permit a thorough program development of specialized spaces, but for master planning purposes there is a need for approximately 30% additional space for specialized functions.

CSD currently does not have event functions space and is primarily utilizing space managed by Auxiliary Services and the

<table>
<thead>
<tr>
<th>New Space Program</th>
<th># Rooms</th>
<th>NSF</th>
<th>GSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rehearsal/ Practice</td>
<td>2</td>
<td>4,000</td>
<td></td>
</tr>
<tr>
<td>Performance Auditorium</td>
<td>1</td>
<td>3,400</td>
<td></td>
</tr>
<tr>
<td>Ticket Booth/Check Room</td>
<td>1</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Campus Living Room</td>
<td>1</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>Multi-Cultural Food Prep</td>
<td>1</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Information Desk</td>
<td>1</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>General Meeting/ Video</td>
<td>2</td>
<td>1,200</td>
<td></td>
</tr>
<tr>
<td>General Meeting/ Video</td>
<td>8</td>
<td>9,600</td>
<td></td>
</tr>
<tr>
<td>Spiritual Space</td>
<td>1</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal NASF</strong></td>
<td></td>
<td>22,400</td>
<td>37,300</td>
</tr>
</tbody>
</table>

**CSD New Space Program**
Provost, which can be estimated to be approximately 39,200 GSF Total – 18,000 GSF in the Campus Center and Student Union (28% of meeting and assembly areas) and 18,000 GSF in academic buildings (on basis of classroom utilization analysis). There is still a significant need for cultural/performance space for activities that pose acoustical challenges and for the ability to schedule space consistently. On the basis of the list of critical needs and for master planning purposes there is a need for approximately 37,300 GSF of additional space for student event functions.

Below is a master plan level summary of the total CSD space need requirements, which shows 67,800 GSF of unmet need and approximately 194,400 GSF of total space, required for modernized CSD functions if shared management of event space were to be discontinued.

**Future Direction**

The Student Life Committee developed recommendations for near-term and long-term approaches to addressing the identified needs of student organizations. These recommendations could be characterized as management-type solutions, use of potential backfill opportunities and plans for the development of new and/or renovated facilities.

Management solutions that could be developed in the short term include request scheduling priority for students in all space in the Student Union and negotiating pre-approved blocks of time for functions in buildings and fields that are managed by Auxiliary services, Provost, Marching Band, Athletics, Physical Plant and Housing. Technology-related recommendations suggest the development of fields in its Campus Pulse database that allow the documentation of unmet need and common names for buildings and assembly spaces, as well as using a common scheduling platform that aligns with the Provost and Auxiliary Services databases. Recommended campus-level management solutions include developing a culture in which buildings are considered a campus resource; identifying underutilized common spaces in existing buildings (conference rooms, computer labs, lounge spaces, departmental classrooms

<table>
<thead>
<tr>
<th>CSD Functions</th>
<th>Existing CSD GSF</th>
<th>Existing GSF (Other)</th>
<th>CSD Unmet Need GSF</th>
<th>Total CSD Need GSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Leadership/Administrative Space</td>
<td>49,300</td>
<td>0</td>
<td>13,300</td>
<td>62,600</td>
</tr>
<tr>
<td>Functional Space</td>
<td>38,700</td>
<td>0</td>
<td>17,200</td>
<td>55,900</td>
</tr>
<tr>
<td>Event &amp; Meeting Space (proportional Campus Center+ Academic space)</td>
<td>0</td>
<td>39,200</td>
<td>37,300</td>
<td>76,500</td>
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<td><strong>Totals</strong></td>
<td><strong>87,400</strong></td>
<td><strong>39,200</strong></td>
<td><strong>67,800</strong></td>
<td><strong>194,400</strong></td>
</tr>
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</table>
and food venues) that can be harvested for shared use with student organizations; and planning renovations of existing and construction of new buildings in a manner that accommodates shared use of event rooms.

There are a number of existing facilities that have underutilized space that could be renovated in the near or long term to accommodate student activities in a manner that serves the entire campus community. Hampden DC is located in the SW Residential area and could become a great place for practice and cultural performance venues. In addition, as projects on the capital plan get accomplished in service of required needs by other units, opportunities will open up to consider the introduction of a coffee house or meeting/event space in buildings such as Flint, Curry Hicks and the Chapel.

On the basis of the facility condition inadequacies and depending on the degree to which backfill opportunities have been developed, the Student Life committee recommends plans for the full building renovation of the Student Union (and the construction of a building addition if required) in a manner that addresses current facility condition issues, meets CSD space needs, provides a modernized facility for all student life functions and accommodates new desired functions. Campus Planning is continuing to work with Student Life stakeholders to facilitate the implementation of the some of the management-based near-term recommendations.
The Campus Landscapes

This discussion of the campus landscape incorporated the natural land features that enhance our campus environment. The developed open spaces that are integral to the campus and the image of the campus painted on the landscape and buildings.

Natural Features

The campus extends from the top of a glacial drumlin in the east (Orchard Hill) to a lake bed in the west (former Lake Hitchcock). Slopes across the campus reflect these land forms. Along the western slope of Prexy’s Ridge, grades average 10% or higher. From the base of Prexy’s Ridge extending westward, slopes level off to 10% and less. A series of parallel north-south terraces step down to the western campus which sits on the bed of former glacial Lake Hitchcock. The soils of Orchard Hill are quite different than those of the center and west campus. On this lake bed area, grades range between 0 and 5%. Based on slopes alone, the campus’ western half appears most desirable for building construction.

Surface water, wetlands and their associated buffer zones cover 30% of the University’s land. The Mill River at the campus western edge and the Wildwood Brook at the campus northern end creates most of this wet area. Most of the length of the Tan Brook now exists in culverts to the south and is the principal drainage way for central Amherst and the southern half of the campus. This water way and the dike that crosses it at the Metawampee Lawn creates the Campus Pond. There are significant regulations and best practice measures that protect and help to guide development around these water ways. These regulations and measures help to create a significant amount of natural open space to the north and west of the campus.

The campus is home to a rich diversity of vegetation much of which can be credited to the early species collections of President Clark and Frank A. Waugh. Other natural factors contribute to this diversity such as the western slopes of Prexy’s Ridge that is home to native vegetation which stand over 40 feet tall. Larger forested areas abutting the Sylvan dormitory complex and McGuirk Stadium serve as screens, and provide valuable habitats for wildlife.
The composite of the campus’ physical features shows that the land best suited to future development are located in the campus core, where land has been drained and leveled during past development. The severely constrained land which contain wetlands are located mostly at the north and west of the campus. Steep slopes appear along the western slopes of Orchard Hill. To the south the developed neighborhoods of the Town of Amherst present an adjacent feature to be considered during any planning and
construction. Together, these areas constitute the biggest constraints to building and road construction.

The yellow circle represents a 20 minute walking diameter. It is important to consider this distance to have the campus develop as an environment where the user is predominately a pedestrian once arriving on campus and helping to build a collaborative and creative academic environment.
Campus Open Space

The campus is located in the beautiful and diverse regional landscapes of the Connecticut River valley. The campus has the opportunity to link and visually connect with many of these landscapes. At the northeast corner, the campus landscape has the opportunity to connect to the Town of Amherst protected system of open spaces that extend throughout the town and into the Pelham Hills. As noted earlier the northern and western edges of the campus are wetlands and floodplains that are part of the regional water way system of the Mill River and eventually part of the Connecticut River valley system of waterways. The southwest edge of campus is part of the regional agricultural lands, many of which are permanently protected from further development by the Commonwealth’s Agriculture Preservation Restriction program. The south edge of the campus is linked to the Town of Amherst system of roadways, parks and the natural open space system of the Tan Brook.

All these regional landscape systems and their presence on the campus present the opportunity for connecting the campus to the regional ecological, recreational, working and cultural landscape of the Valley. Many places on campus offer views out to the surrounding rural landscape which are important reminders and components of the identity and image of the campus. There are other places on and near the campus at which the views onto the campus remind us of the diverse and
The best of these views are located along the Whitmore-to-Library corridor, from Orchard Hill and Clark Hill Road, and from the northern end of the campus core. All of these views are oriented to the west and should be considered in developing the opens spaces system on campus. The important views into the campus are from Route 116 and its intersection with Massachusetts Avenue over the recreation fields at that intersection.

On the campus there are several important open spaces. The Campus Pond, lawns and residual spaces in the campus core are the symbolic center of the campus and intimately associated with the campus identity and history. The Rhododendron Garden and the Durfee Conservatory and gardens, Hampden Court, and the William S. Clark Memorial represent the finest designed landscapes on campus.

These individual landscapes collectively are within the larger system of the Frank A. Waugh Arboretum that is the campus. However, there are very few fine physical landscape connections linking these fine individual landscapes on the campus. The Arboretum includes the entire campus and consists of an outstanding collection of plants that support teaching and research and represent an important regional landscape.

The campus has a variety of varsity and intramural sport venues that are also part of the campus open space system that in-
include Warren McGuirk Stadium, the baseball and outdoor track facilities, and the fields south of the Mullins Center. They are all located on the west side of campus helping to create the views and image of the campus as you arrive at campus from the west.

Campus Image

In order to obtain input from a diverse population that is interested in UMass Amherst, a web based survey was created to request the respondents’ favorite and least favorite places on the campus. With over 800 responses to the survey, the Campus Pond and Lawns were overwhelmingly identified as the most favored spot on campus. The campus center arcade and the old power plant were top in the least liked places on campus.

“Quotes from the like and dislike web based survey “

- The campus pond “is a wonderful part of campus and promotes a lasting imagery of education cooperating with the new england landscape. new projects here should be approached with caution. I would not like to see the school eat up all of its natural areas for a couple of extra classrooms.”

- “Metawampe Lawn is not just a practice space for the Quidditch and Frisbee teams, but also a nice place to sit between classes or after eating lunch in the campus center”

- “The old brick bus stop is great when there’s rain, but it’s disappointing that they never clean up the inside of it. Why not give it a swinging door too? You can still see where the old hinges used to be.”

- “The power plant and surrounding buildings are the ugliest buildings on campus. When prospective students visit, this is what they see, and that is embarrassing”

- “The whole Student Union area is a MAJOR eyesore. The sea of asphalt in front of the building should be turned into a pedestrian-only zone with new sidewalks, trees, and benches. Standing at the back of the library and looking toward Draper Hall makes for a very ugly view. Way too much asphalt for an area not really meant for vehicles. Clean it up.”
Dislikes (372 Comments, as March 2012)
Buildings

The main UMass Amherst campus community resides on 1,411 acres of land primarily in Amherst and Hadley and has 10.7 Million gross square feet in 383 buildings of various age and size that support a large variety of functions that include academic, research, agricultural, administrative, health care, athletic, residential and cultural/campus life activities and operations.

Building Location

Currently the building distribution on campus is based on zoning principles developed largely in the 1950’s and 1960’s that emphasize a concentration of academic and administrative functions within a largely pedestrian campus core (the area bounded by Eastman Lane, North Pleasant Street, Massachusetts Ave, and Commonwealth Ave) and development of the campus periphery for athletic, residential and infrastructure functions. This results in primarily single-use zones with the academic area active during the day and residential zones active during meal times and evenings. A campus life zone in the center of the pedestrian zone is a noted exception, centered on the Lincoln Campus Center, Student Union and the DuBois Library, which operate largely 24/7 during the academic year.

Most of the academic buildings are sited within the campus core with the exception of School of Education and the academic/agricultural and outreach functions of Hadley Farm. Facility support and administration buildings are generally located to the west and south, with the notable exception of the Admissions building, which is located remotely on the eastern edge of the campus. The campus has a distributed classroom model with most academic facilities housing both centrally scheduled classroom and departmental classrooms. It is also worth noting that some residential buildings have classrooms for the residential academic program.

Except for the Northeast residences, which were built in the 1950’s, residential facilities are concentrated in areas peripheral to the campus core: in the Southwest residential area, the campus East Ridge and in the North along East Pleasant street and at North Village graduate apartments. The current construction of the Commonwealth Residential College on Commonwealth Avenue challenges the segregated zoning patterns of previous decades by introducing student housing and associated academic space within the campus core.

Athletic facilities and fields are generally located south and west of the campus, with the exception of Totman Gym just north of Eastman Lane and recreational fields that are associated with each residential complex.
Campus Land Use Map
Building condition assessment is a complex process that requires the evaluation of multiple factors, but building age is often a determinant factor in building health. Approximately 72% of campus facilities are between 30 and 60 years old and in most cases have not been substantially renovated since they were first built. Consequently, the majority of deferred modernization needs ($2 billion) have been identified in these buildings. Compared to a peer group of 13 institutions the campus had significantly greater percentage of buildings that were 25 years or older and had not yet been renovated – 83% as compared to 61% for its peer group.

Building Condition

The Amherst campus maintains an updated comprehensive database of facilities condition and space utilization information for the campus built environment. The campus relies on comprehensive building condition assessment (building systems and code review, accessibility and occupant comfort), academic program and space utilization studies of science, engineering, classroom and academic space to inform the development of the master plan and capital priorities.

At the beginning of the master planning process the project team assembled previous studies and solicited feedback from Facilities Planning and Physical Plant
personnel with the aim of developing a campus-wide map that represents general building condition in terms of four simple categories: good, fair, poor and not rated. Those facilities that are in poor condition offer an opportunity for adaptive reuse or removal due to obsolescence or lost development opportunities of the site. Some of these building are also historic and continue to be evaluated in terms of their campus legacy. The campus approach to our legacy building is presented in the legacy building section of this document.

In 2006 the University contracted with Sightlines to develop an annual Integrated Facilities Plan (IFP) that provides a continuous review of “Keep-up-Costs” - the annual investment needed to ensure that buildings properly perform - and “Catch-Up-Costs” - the accumulated backlog of repair and modernization needs.

Campus Building Condition Map

[Campus Building Condition Map with legend: Green = Good, Blue = Fair, Red = Poor, Black = Not Rated]
resources required for capital development

and the definition of the resource capacity to correct them. The latest Sightlines report identifies $2.4 Billion in total campus project needs of which $1.7 Billion is required to address building deferred maintenance and modernization, $85 Million is required for site and infrastructure needs, and $603 Million is needed for new space construction.

The timeframe for addressing total campus needs was also identified and underscores the importance of continual funding for new construction and investment in building renovation and replacement in a manner that reduces the campus deferred maintenance load. The newly approved UMass Amherst capital plan will significantly improve the campus’ ability to meet those needs.

Building Program

The programs and activities located on a campus the size of UMass Amherst are many and diverse, reflecting the life of a small community and are comparable to other public research institutions of higher education. In 2010, buildings on campus accommodated a large number of functions that include academic space (general and departmental classrooms, classroom laboratories, research laboratories, special classrooms and studios), administrative space (offices, conference rooms and meeting areas for academic faculty and general administration as well as central support facilities), residential, recreation (athletic and recreational sports facilities) and student life space (student organization space, health
services and cultural facilities for campus life). Academic space accounts for approximately 34% of the total campus net assignable area (NASF); residential functions accounted for 32% of the total NASF and administrative facilities accounted for 18%. The other functions – student life, recreation and structured parking – accounted for 6%, 6% and 4% respectively.

This distribution is comparable to space at other public universities as seen in the chart below, with the exception of research and health care space, which are both about 3% below the average (the space categories definitions follow the Facilities Inventory Classification Model or FICM). The master plan proposes to remedy that by providing opportunities for the construction of new academic and research buildings and has identified a potential location for a new health services facility.
Campus Pedestrian Circulation

5 minutes

10 minutes

15 minutes walking radius

UMASS AMHERST CAMPUS MASTER PLAN
Circulation and Parking

The purpose of this section is to highlight the major features of, and issues facing, the campus transportation and parking systems. The framework of this section follows these five principles for UMass transportation and parking:

- Think Pedestrian First
- Complete the Bicycle Network
- Enhance Transit Connections
- Complete the Streets
- Capitalize on existing parking supply

Think Pedestrian First

The campus supports a high volume of pedestrian traffic with an extensive network of pedestrian paths. Therefore, the first principle for the transportation network and parking system is to emphasize pedestrian needs and accommodation first, and then address the needs of other modes of transportation for travel to and within the campus.

Pedestrian Circulation

The primary mode of travel is walking within the core campus, which is the area bounded by Massachusetts Avenue, Commonwealth Avenue, Governors Drive, Eastman Lane, Thatcher Road and North Pleasant Street. Most of the pedestrian network on campus consists of asphalt or concrete paths; however, unpaved desire lines are evident in many areas.

At the same time, some of the paved paths seem to be underutilized.

The current pedestrian network is quite complex, often disorienting, and has numerous intrusions of roads and service routes, which create conflicts between pedestrians, passenger cars and service vehicles. It is often not clear what are service roads and what are pedestrian paths. Generally, north-south movement across the campus is direct. The pedestrian spine, which serves the campus well, could be extended north toward Sciences and Engineering. East-west movements are more difficult because of the Campus Pond and topography. The system would benefit from better design of pedestrian paths, roads and the inevitable “mixed-use“ ways.

Great care has been taken to continue to support and build an environment that is equally accessible for individuals of all abilities. The plan continues to support the accessibility shuttle service and its drop-offs.

Pedestrian Roadway Crossings

High volumes of pedestrians walking between residence halls, classrooms, administration buildings, and parking areas are frequently in conflict with vehicular traffic along North Pleasant Street, Commonwealth Avenue, Massachusetts Avenue, Governors Drive, and Eastman Lane. Distracted drivers and pedestrians using mobile phones and portable audio play-
Pedestrian/Vehicular conflicts
ers compromise attentiveness and safety for all modes of travel on the roadways. Attempts to divert pedestrians toward safer routes and away from routes with conflict areas have met with mixed success. Students choose the shortest route regardless of the risk. Continuing the University’s accessibility (for sidewalk ramps and grades) and (crosswalk signage and marking) improvements will help improve mobility. An example of a success in making drivers and pedestrians more aware of each other is the raised crosswalk on Eastman Lane between Totman Hall and the Northeast Residential Area.

**Complete The Bicycle Network**

The Five College Bikeway is a significant regional resource to UMass. The UMass/Amherst Bikeway serves as a connector to the Norwottuck Rail Trail, which links the campus to Amherst, Northampton, Hadley, and beyond. Currently, the bike lanes connecting the campus to downtown Amherst end on North Pleasant Street at the junction with Massachusetts Avenue. There are no formal bike connections to the North Amherst Village Center.

The striped bicycle path on campus is part of the Pedestrian Spine between Whitmore Hall and W.E.B. Du Bois Library. While bicycling is popular on campus, this path has had mixed success because of conflicts between pedestrians and bicyclists on the same path.

The University has installed hundreds of additional bike racks over the last two years. The first covered storage facility is located next to the Student Union. Bike racks on campus are well utilized and there are areas where additional bike storage is necessary, such as along Thatcher Road. The campus has started a removal policy for abandoned bicycles. Such a program will open up more storage spaces without requiring additional racks.

**Enhance Transit Connections**

Regional bus service provided for PVTA by UMass Transit throughout Amherst and the immediately surrounding towns provides good service to the Campus. All routes serve UMass from a hub at Hagis Mall and are fare-free for students and employees. In 2009, 29 percent of UMass employees used the bus—up from 17 percent in 1999. Greyhound and Peter Pan Bus Lines also provide intercity bus service at Hagis Mall.

UMass Transit also provides on-campus bus service, which operates two bus routes made up of two loops. One loop serves the western part of the campus and includes North Pleasant Street, Massachusetts Avenue, Commonwealth Avenue, and Governors Drive. This loop includes the regional and intercity stop at Hagis mall. The other loop serves the eastern part of the campus and includes North Pleasant Street, Eastman Lane, and East Pleasant Street.
Complete The Streets

Campus Gateways

Strengthening the gateways into the campus is a theme from past planning efforts. The objective is to better define the gateways to convey a sense of arrival, calm traffic, and strengthen wayfinding. Strengthening the gateways into the campus is important to emphasize the transition from regional/higher speed roadways to lower speed roadways through the campus that also accommodate heavy pedestrian and bicycle traffic along and across them.

North Pleasant Street is the main street through the heart of the campus. The entrance to the campus along North Pleasant Street from the north at Eastman Lane/Governors Drive does effectively convey a sense of arrival. With, the recent construction of a roundabout at that intersection has created a strong sense of arrival from the north, slowed traffic entering the campus and provided better traffic operations than the previous signalized operation.

A similar treatment at the Massachusetts Avenue intersection with North Pleasant Street could have an equally dramatic effect for traffic arriving from the south via downtown Amherst. Similarly, the intersections of University Drive at Massachusetts Avenue might benefit from a gateway treatment to provide a stronger sense of arrival on campus from the west.

Access and On-Campus Circulation

Vehicular circulation on and around the campus is characterized by different types of roadways that can be confusing to drivers, appear disconnected from the core campus, and presents challenges to pedestrians crossing them. The following summarizes the existing condition of main streets that surround the core:

North Pleasant Street
- The main roadway through the campus, carrying mostly University related but also some non-University traffic
- Fifteen unprotected pedestrian crossings in a distance of less than two-thirds of a mile
- A major transit route for the UMass buses, with three bus stops in each direction
- Provides no accommodations for bicycles

Massachusetts Avenue
- A four-lane median divided roadway that is oversized for the volume of traffic it carries
- Separates the core campus from housing and parking
- Constitutes a significant barriers for pedestrians trying to cross
- Heavily used unprotected pedestrian crossings
- Provides no accommodation for bicycles

Commonwealth Avenue
- A four-lane undivided
roadway that is oversized for the volume of traffic it serves
- Separates the core campus from athletic facilities, playing fields and parking
- Constitutes a significant barrier for pedestrians trying to cross
- Heavily used unprotected pedestrian crossings
- Provides a sidewalk on only one side of the road south of the Mullins Center
- Provides no accommodation for bicycles

**Eastman Lane**
- A two-lane roadway separating the North and Sylvan residential areas and Furcolo Hall from the campus core
- Six unprotected pedestrian crossings, one with a raised crosswalk
- Provides no accommodations for bicycles

**Governors Drive**
- A two-lane roadway separating three surface lots from the core campus
- Six unprotected pedestrian crossings
- Provides no accommodation for bicycles
- Varying road widths, some of which are excessive

**Service Access**

Loading and service routes throughout the campus are not well designated and are often shared with heavily used pedestrian corridors. Many of the loading access roadways are used by pedestrians as cut-through routes into the campus. The wide walkways provided throughout campus tend to be perceived as roadways and are frequently used by unauthorized private and service vehicles. The Campus Landscape Improvement Plan attempts to address this conflict by requiring different pavement materials for pedestrian paths and loading/service truck routes but in some locations pedestrians and service vehicles share the same paths with pedestrians circulation being the primary user.

**Capitalize on Existing Parking Supply**

The campus has about 13,650 parking spaces distributed among numerous surface parking lots and one parking garage.

**Core Campus Parking**

About 25 percent of the campus parking supply is located in the campus core (bounded by Thatcher Road, North Pleasant Street, Massachusetts Avenue, Commonwealth Avenue, Governors Drive and Eastman Lane). 2,400 of those spaces are in surface lots scattered across the core campus. The access roadways to the core campus parking facilities often cross campus pedestrian pathways, creating many pedestrian/vehicular conflict points. The
remaining spaces are outside the core in surface lots, requiring most parkers to walk across busy roadways to reach their destinations on campus. Some of these crossings can be difficult for pedestrians to cross, especially the crossings on Massachusetts Avenue and Commonwealth Avenue – both heavily traveled four-lane roadways.

**Surface Parking**

Almost 93 percent of the parking spaces on the UMass campus are in surface parking lots. UMass is using significant land resources, approximately ninety-six acres, to accommodate campus parking. If the existing surface parking lots were combined in one location, the paved land area would be nearly the size of the academic core. Most of the surface parking areas are comprised almost exclusively of impervious surfaces, which add to storm-water management issues. Almost 75 percent of the surface parking spaces are located outside the core campus.

**Parking Utilization**

Parking utilization in the fall of the 2010-2011 academic year was about 9,650 spaces, or 71 percent of the total supply of spaces. Almost 4,000 spaces were available during peak parking time. Most of the available spaces (2,860) were in surface lots outside the campus core. Campus parking policy establishes fees by a tiered system based on parking location and employee salary. The most convenient lots are priced at a premium.

**Summary**

The following summarize the major features of, and issues associated with, the UMass transportation and parking systems:

- The primary mode of travel on the core campus is walking
- There are many pedestrian/vehicle conflict points on the core campus because of service roadways and surface parking access routes
- Most of the parking supply is outside the core campus, requiring many parkers to cross the busy roadways around the core
- Except for the UMass/Amherst Bikeway, there are no bicycle accommodations serving the UMass campus
- There is good bus transit service to, through and around the core campus but there is no direct bus service between the campus core and remote parking areas
- Many of the campus gateways are ill-defined and provide no clear sense of arrival on campus
- The busy and wide roadways around the core campus separate residential, athletic and parking facilities from the core campus.
- The roadways around the core campus do not provide a pedestrian or bicycle friendly environment for crossing or traveling along the roadway
- There are currently about 30 acres of unused, mostly impervious parking areas.
Utilities

Stormwater Management System

The UMass drainage system consists of pipes, box culverts, swales, open streams, detention/retention ponds, underground storage chambers, and infiltration systems. The system also includes several oil and grit separators, and storm water storage tanks for water reuse purposes. Within the piped network there are approximately 620 manholes, 1500 catch basins, and 40 outfalls. Pipes within the system range in size from 4-inches in diameter to 84-inches in diameter. The material of these pipes is predominately vitrified clay and corrugated metal within the older sections of campus such as around the campus pond, and reinforced concrete, PVC, and HDPE in the newer sections of campus such as the North Dormitories.

The drainage system collects storm water runoff from a watershed totaling approximately 870 acres. Approximately 375 acres of this watershed is within the Town of Amherst and includes the areas around Wildwood Elementary School, Amherst Middle School, Amherst Regional High school, and downtown Amherst. The remaining 495 acres of the overall watershed is on campus.

There are four major outfalls that all contribute to the Mill River which eventually flows into the Connecticut River. Two outfalls are constructed in the same headwall which is located just north of the Mullins Center, another outfall is located just north of the wastewater treatment plant, and the last outfall is located at the intersection of Massachusetts Avenue and Commonwealth Avenue.

Sewer System

The Amherst Waste Water Treatment Plant (WWTP) receives the flow from three distinct mainlines that are fed from North Amherst, Amherst Center, and the University of Massachusetts campus. While there is a dedicated UMASS line that enters the treatment plant, the campus contributes in part to each of the three distinct mainlines into the plant. Furcolo Hall and Marks Meadow Elementary School, as well as the Totman Physical Education Building and the Central Heating Plant all contribute flow to the North Amherst sewer mainline. Lincoln Apartments, the Visitor Center, and the athletic facilities along University Drive all contribute flow to the Amherst Center mainline. However, the vast majority of the sewer flow generated on the UMASS campus passes through the dedicated UMASS sewer mainline into the Amherst WWTP.

The UMASS sewer mainline branches off into three primary directions just north of the WWTP. One of the branches is an 18-inch diameter pipe that traverses Mullins Way towards Commonwealth Avenue and splits the Practice Rink and the Mullins Center. This branch receives
sewerage from a large portion of campus. To the north it collects flow from as far as Sylvan Residential Area and the Computer Science Building. From the south it collects flow from as far as Morrill Science Center and the Curry Hicks Building. The other two branches that contribute to the UMASS sewer mainline run diagonally across the Athletic Fields, one as a 15-inch diameter pipe and the other as a 12-inch diameter pipe. They pass under the intersection of Massachusetts Avenue and Commonwealth Avenue, with the 15-inch diameter pipe serving the Southwest Residential Area and the 12-inch diameter pipe serving the remainder of campus, not picked up by the other two primary sewer mainline branches. This area is bounded to the northeast by Orchard Hill Residential area, to the south by the School of Management, and includes the Studio Arts building, Central Residential Area, and Boyden Gymnasium.

The UMASS sewer mainline contributes approximately 1 million gallons per day on average to the Amherst WWTP. The age, condition, and material of the sewer lines in this area vary widely depending on when the contributing buildings were constructed. The newer pipes are typically PVC or ductile iron, while the sewer pipes found in the older central part of campus are typically vitrified clay. Very few buildings that are not part of the UMASS Amherst campus contribute to this branch.

Water System

The UMass water distribution system consists of approximately 25 miles of water mains, more than 200 hydrants, a 1.5 million gallon capacity steel storage tank, and numerous valves, meters, and appurtenances. The water mains vary in size from 1½-inches to 12-inches diameter. Approximately 55% of the pipes are cast iron and approximately 40% are ductile iron, with asbestos cement, PVC, and copper comprising the remainder.

The UMass system is supplied from the Town of Amherst public water system. The Town of Amherst system is supplied from two surface water treatment plants and five active groundwater wells. The Town’s system is designed so that water can flow through the campus in order to provide adequate transmission capacity between sources, storage facilities, and customers. In particular, the water mains through the campus in North Pleasant Street are important for providing adequate capacity for fire fighting in the North Amherst area. For this reason, the campus is supplied through a system of metering facilities that can measure flow either entering or leaving the campus. There are five metering facilities, located at North Pleasant Street at Eastman Lane, North Pleasant Street at Massachusetts Avenue, East Pleasant Street at Eastman Lane, between East Pleasant Street and Windmill Lane, and Fearing Street at Sunset Avenue, respectively.
Water consumption on the UMass campus ranges from approximately 0.4 MGD during summer and semester breaks to approximately 0.75 MGD when semesters are in session.

The UMass storage tank is a 62 foot diameter welded steel standpipe, 66 feet tall from invert to overflow, located on East Pleasant Street. The storage tank is connected to the Town of Amherst water main in East Pleasant Street, outside the UMass campus metered zone. The overflow is at elevation 470 ft MSL. The entire Town including the UMass campus is at the same nominal hydraulic grade, controlled by the water level in the UMass tank and three other storage tanks owned by the Town. Ground elevations in areas of campus served by the water system range from approximately 150 to 365 ft MSL, resulting in a static pressure range of approximately 40 to 130 psi.

**Steam System**

There is currently no formal “plan” for the steam system. Like many of the utilities on campus, when a building is built, the utilities are laid in to service it. However, there has always been an effort as the system is expanded, to include loops wherever possible to build in flexibility and reliability, providing multiple feeds to buildings. The goal is to create a system with 100% reliability, or n + 1 as it is referred to. There is also considerable effort put into continuously maintaining and renewing the system. Flyovers using helicopters with thermal imaging are undertaken every November to identify leaks and deteriorating lines. Since the year 2000, 30,000’ of new steam line has been installed and only 6,000’ of line installed prior to 1960 remain active. When new lines are put in, manholes are spaced a maximum of 300’ apart and many more valves than used in the past are installed to provide both ease of maintenance and increased flexibility of operation.

The steam system consists of three major components, the Central Heating Plant that produces the steam, steam lines that convey the steam to campus buildings, and condensate return lines that catch and return condensed water back into the system. The new Central Heating Plant, which began operation in 2009, is a great source of pride for the University. It is one of the cleanest and most efficient power plants in the country, winning a Combined Heat and Power Energy Star award from the U.S. Environmental Protection Agency. It is a combined facility, which generates both electricity and steam using natural gas and oil, as the current fuels, but can be expanded to burn biofuels. The plant recovers 80% of the energy used per pound of fuel consumed, twice the average of current power plants, reduces our greenhouse gas emissions by 75%, and has cut our overall energy use by 21%. The plant has a combustion gas turbine capable of producing 10 million watts of electricity at 13.8 kilovolts and a 4.5-megawatt steam turbine generator. A heat-recovery steam
generator and three package boilers produce 450,000 pounds of steam per hour for on-campus consumption.

Two 20-inch main steam transmission lines connect the plant to the existing campus steam distribution system. 27 miles of different lines provide steam to campus at two different pressures. Low Pressure (LP) lines provide steam to buildings at 17 lbs. High Pressure (HP) lines (although often referred to as Medium Pressure) provide steam at 85 lbs of pressure and are used to supplement the Low Pressure system. There are pressure reading valves in some of the manholes that monitor the LP lines and if pressure falls below 17 lbs., steam pressure is added from the HP system to augment the system and keep it at 17 lbs. The steam system is responsible for everything up to the first valve within a building. Here pressure is reduced to 3-5 lbs. and maintenance is taken over by the plumbers/mechanical people assigned to that building. The exceptions are the dining commons which often uses 17 lbs of pressure in their operations.

The condensate return lines are part of the system that catches water that is condensed as steam loses energy and pressure, taking it out of the steam lines, and providing it for other uses. The operators of the system try to conserve and reuse as much condensate as possible because it is such high quality water. It is valuable and represents using less water from other sources and because it is clean and contains far less minerals than other water, it is much more easily controlled. In some buildings that are using steam to heat water. Another great example of the water conservation efforts in the Steam system here at UMass is that the Central Heating Plant conserves 65 million gallons of clean drinking water each year by using approximately 200,000 gallons of treated grey water daily from the Amherst wastewater treatment plant, rather than clean drinking water, to replace water lost in steam distribution and use.

While there have been many improvements to the steam system and continuous maintenance over the years, there still remain some issues for the future. There is still only one line along Commonwealth Avenue that feeds all of the residences in Southwest. The entire residential area must be shut down for 3 weeks each year, in order to perform routine maintenance and insure that there won’t be the need for any emergency shutdowns during the academic year. The Sylvan Residential Area is another steam dead end on campus and the Central Heating Plant itself is also located at a dead end.

Electrical System

There is currently no formal written “plan” for electric utilities. Planning for electric has been done when new buildings are proposed and the electrical needs for that building are defined. Then a solution to meet those needs is figured out. The current system was in
a large part created by Lawrence Perry Jr., who managed the system from 1968 until leaving the University in 2009. His approach was to use every opportunity to build in a lot of redundancy for reliability and extra capacity to meet future development needs. The system was built to never run out of power.

The basic design of our current electrical system would be described as a “Primary Selective System.” The beauty of this system is that if there is a failure in a lateral line at one point in the system, it is possible to switch loads from one set of feeders through cross ties to feed the laterals from another part of the system. Within a matter of seconds power is maintained and we are able to take the disabled part of the system off line immediately for repairs. Key to this system is having the capacity within system so that any part of the system can handle the full load. Most of the time, the wires are used at less than half of their capacity, so that if a failure occurs, they can handle the full load.

Another key to this system is that there are two electrical substations, one on the east side and one on the west side of the campus. The east substation is located on Orchard Hill near the water towers. The west substation is located within the new Central Heating Plant. This allows electricity to be fed into the campus from either direction. Normally all of the electricity is fed to the campus from the new Central Heating Plant and/or WEMCO electricity coming through the substation there. There is currently an east/west tie on the north end of campus running from the substation on Orchard Hill through the center of campus north of the Campus Center and Parking Garage to the Central Heating Plant. There is a strong desire to create a new east/west tie along the southern edge of campus to build in even more redundancy and flexibility to the system.

In order to protect research, life and safety, this highly flexible and redundant system is also supplemented by emergency generators located outside many key buildings. Each of these generators represents time and effort because they must be continually maintained and are required to individually be fired up once a month to ensure safety and reliability. Because of the maintenance and manpower load that these individual emergency generators represent, the campus is moving toward a system where generators and switchgear are located together and designed to serve a region of campus rather than individual buildings. The first example of this new approach will be three generators installed along the southern side of the Campus Garage that will serve many buildings in the central part of campus.

Another changing trend that is affecting the electrical system is the move toward using more electric chillers for cooling buildings. In the past steam absorbers were used to produce chilled water in buildings that were already being served by steam lines for heat. This worked
out well because it has provided a need for steam in the summer as well as the winter thus maintaining more of a balance in steam needed for the generation of electricity throughout the seasons.

The switch to more electric chillers, primarily because they are cheaper to purchase and install initially, is affecting the system in a couple of ways. First, it is increasing the demand for electricity, and therefore load through the system, which is beginning to push the capacity on the north end of campus. Secondly, it is reducing the need for steam in the summer months which is used to generate electricity, therefore necessitating the blowing off of excess steam. While there has been a desire to create chilled water loops within different areas of the campus made up of a combination of steam and electric chillers to provide additional redundancy and capacity, the balance of these different approaches will need attention in the future.

**Telecommunications System**

There is currently no formal “plan” for the Telecommunications (Telcom) system. Like all of the other utilities on campus, when a building is built, the Telcom lines are laid in to service it. Also like the other utilities on campus there is a continuous effort to maintain and improve the system. However, unlike most of the other systems on campus, Telcom also has to deal with a much more dynamic and quickly evolving technological environment. This dynamic and ever changing technological environment presents both challenges to keep up with, but also opportunities as we move forward.

The Telcom System is made up of two primary pieces of infrastructure; the telephone lines and the data lines that run from building to building on campus, and connect the campus to the rest of the world. The telephone lines are still primarily copper wires in 2,100 pair cables that run from place to place. The telephone cable system is in relatively good condition, however some spliced pairs need to be redone. Spliced pairs need to be redone every 20 years or so and the operators have done a good job keeping up with that maintenance. While the system is still predominately copper wire, there are places on campus where telephone is running along new fiber optic cables. These new fiber optic cables are smaller, lighter and have far more capacity, so Telcom is slowly phasing out the copper wire infrastructure in favor of fiber optic.

Because of the ever increasing demands to move more data more quickly across the wires, the data side of the house has already migrated to fiber optic cables throughout most of campus. However, there are still some older or more remote buildings that still have the legacy copper wires and data is transferred using DSL. There are even a few instances still of dial up modems on campus. On the flip side, every year more and more of the campus is also served by wireless modems that allow students even more freedom to use...
their laptops in many locations on campus and this is often expected as the new norm.

Both of these cable systems primarily run through conduits that are buried underground across the campus. One of the big advantages of moving to fiber optic cable, because it is smaller and lighter, it means that even the existing conduits can provide more capacity. There are new fiber mesh products that get pulled through the conduit, providing structure for the cables to sit within the conduit that further increase the capacity. In the past, extra conduit was often laid in the ground alongside that which was needed immediately to provide some additional capacity for the future. While some of this additional capacity remains, Telcom knows that it needs to examine the resources in the ground now to look for future uses of existing conduit. For instance, the Fire Alarm system for all the buildings is now wireless. That means that the existing copper wires in the ground could be pulled out to make way for new lines.

Telcom did a survey of the manholes in 2005 to try to get a good handle on what resources were already in the ground. While the manholes are very congested and make it difficult to determine what is there, they created a series of “butterfly” drawings to capture the inventory data. The “butterfly” drawings show the different faces of the manhole and diagram how many conduits are there, where they are located and what wires are in each. They now have a lot of information about what the existing conditions are, but some questions still remain. Telcom also maintains other information about their infrastructure. They have schematic drawings that provide a good view of the structure of the system. They also have geographically accurate drawings that show where lines are laid that are used for Dig Safe operations. These drawings are maintained on a regular basis and provide a good foundation of information about the system. Telcom also uses floorplan drawings of the buildings to keep track of phone and data jack locations and how the buildings are wired. Telcom has a very high level of confidence in their jack location information. Their wire location information is more generalized but still fairly complete and useful.
V. THE FUTURE

“We start with the idea that the purpose of a university campus is to provide a setting for the life of the university. Much of that life of course takes place in buildings and its richness depends on the quality of these buildings. But there is also a large part which goes on outside the buildings, in the landscape. The daily passage of people in the landscape should provide a nexus of meetings, of recreations, or merely of relaxation all of which greatly enrich university life. If a campus has an image in the mind as a place to be loved and admired, it is likely to be formed not so much by the buildings as the space between. When people say that Venice is a beautiful city, they speak not so much of interiors of its buildings – which few of them see – as of the squares and streets and the life that goes on there; some cities like Paris, have a splendid image in spite of mediocre architecture, because of the delightful layout of streets and boulevards. A University is a kind of small city, where much of the value and pleasure of being there comes from the daily life of the place. The plan of a university, like that of a city, should be a mechanism for enabling things to happen, for the enhancement of life.”

Sir Peter Shepheard University of Pennsylvania, 1977

This quote appeared in the 1993 Master Plan. It continues to remind us of the importance of planning and the discipline and support of a process that focuses on building campus not just building buildings. The University of Massachusetts continues to achieve national and international recognition for its teaching and research program. The 2012 master plan charts a course that moves our campus physical condition, image and appeal into the ranks of a recognized leader in building a world class campus. Building a community of learners requires a special place for all students, faculty, staff and visitors to meet, work, learn and generate knowledge for future generations.

LANDUSE

The 2012 master plan supports creating a mixed use environment in the core of the campus. Past planning efforts sought to separate uses and create single use zones on the campus. The most obvious example of this is the location of our undergraduate housing. Throughout the process many participants wanted to create a campus that was active all day and everyday of the year. Creating a condition where all the campus uses are within close proximity to each other will help to create an environment that is active and well used throughout the day. To create this special environment the 2012 plan suggests three key concepts: First, continuing to site community buildings around the edge of the pond and lawns. This strategy will support 24 hour a day activity around the Pond and the Lawn and in the heart of the campus. Second, the plan also illustrates developing more graduate and undergraduate housing within the core of the campus. Creating living facilities near the other facilities
Campus Master Plan - Proposed Open Space
will help generate activity throughout the day. Third, the plan suggests holding sites for key public facilities like museums and the expansion of the library. Having the appropriate sites that are supported and easy for the general public to find will support a positive visitor experience to our campus and help create an active campus throughout the year.

**OPEN SPACES**

A central principle that guided the development of this plan was to create a “systems” framework in which buildings are developed. The proposed open space system connects existing campus spaces with new courtyards, pedestrian spines and complete streets. The 2012 plan creates a new open space framework in which future development of buildings and the other systems that support the campus are accommodated.

**CIRCULATION AND PARKING**

This section of The Future chapter of the Master Plan presents the Transportation and Parking Plan, which addresses existing needs and supports the development of the campus as presented in the Master Plan. The planned improvements address the following areas of current and future needs:

- Think Pedestrian First
- Enhance Multi-modal Access
- (Bicycles and Transit)
- Manage Traffic and Parking Effectively

The Transportation and Parking Plan provides improvements for all modes of travel but shifts the emphasis from automobiles to other, more sustainable modes of transportation.

The Think Pedestrian First element provides increased emphasis throughout all phases of the Master Plan as an already major component of on-campus transportation system. The Enhance Multi-modal Access element supports strengthening two other alternative modes to automobiles: bicycles and transit. These first two elements support a major goal of the Master Plan to remove automobiles and improve pedestrian circulation in the core of the campus. The final element, Manage Traffic and Parking Effectively, provides the roadway improvements necessary to accomplish the first two elements and maintain adequate vehicular access to the campus.

**Summary Of Recommendations**

The following summarize the transportation and parking recommendations of the campus Master Plan by phase. Following this summary, descriptions of the planned improvements, their expected impact, and how they support the Master Plan are presented.

**Think Pedestrian First**
The improvements included as part of the rising to challenge plan include:

- Mullins Way Access Improvements
- Extension to Parking Lot 12
- Roundabout at Massachusetts Avenue/North Hadley Road
- Complete Streets Enhancements

- Commonwealth Ave
- North Pleasant Street Governors Drive
- Eastman Lane Parking Garage at Power Plant
- Direct Shuttle Routes to Lots 11 and 12
- Bike Path to North Amherst
- Complete Streets/Road Diet for Massachusetts Avenue
Future opportunities 1 improvements, which are shown on Future opportunities 1, include:

- Roundabout (Massachusetts Avenue and North Pleasant Street)
- Parking Garage on south side of Massachusetts Avenue
- Butterfield to North Hadley Road Connection
- Ellis Way Pedestrian Improvements
Future opportunity improvements, which are shown on Future opportunity 2, include:

- Thatcher Way Improvements
- North Pleasant Street Vehicular Restriction – Bikes, Buses and Service Vehicles
- Relocate Governors Drive
- Garage on Governors Drive
- North University Drive
- Realignment with Roundabout at Mullins Center Drive
- North End of North University Drive Closed to Traffic
- Route 116 Connection to Governors Drive with Roundabout
Future opportunities 3 improvement, which is shown in the diagram above, includes:

Garage at Southeast Gateway
(East of North Pleasant Street at Massachusetts Avenue)
The first element for the transportation network and parking system emphasizes pedestrian needs and accommodation in the core campus. The core campus is defined as the area bounded by Massachusetts Avenue, Commonwealth Avenue, Governors Drive, Eastman Lane, Thatcher Road and North Pleasant Street. This element includes making the pedestrian environment in the campus core and along adjacent streets more inviting and friendly, and reducing pedestrian conflicts with vehicular traffic.

**Core Campus Pedestrian Improvements**

Pedestrian improvements in the core campus consist of two major components: removing parking from the core, and upgrading and extending the existing walkway system.

**Remove Parking from the Core**

A major component of the Think Pedestrian First element is to remove parking from the campus core to reduce vehicular conflicts with pedestrians and provide a more comfortable pedestrian environment. This component, which is addressed in detail under, Redefine the Parking system, calls for the elimination of most surface parking from the core and providing additional needed parking along the periphery of the core. The required spaces for the disabled will be maintained within the core.

**Ellis Way Pedestrian Improvements**

The core of the campus will see many improvements to pedestrian walkways that include new walkways, upgraded walkways and elimination of vehicular conflicts as described in the previous section. The improvements to walkways are numerous the most significant one being the creation of Ellis Way. Ellis Way will be created in Phase 2 to form an arc through the center of the campus with both ends at North Pleasant Street: south of the West Experiment Station and north of the Fine Arts Center. The arc would pass north of the Campus Center, west of the Student Union, east of the Library, and across the center of the Campus Pond (see Figure 2). This will reflect and incorporate similar concepts from previous campus plans.

**Complete Streets**

The second major component of Think Pedestrian First element is to improve pedestrian, bicycle and transit accommodation along roads adjacent to the campus core and improve traffic control at pedestrian crossings and intersections on these roads. The key roads addressed include:

**Rising to the challenge plan**

- North Pleasant Street
- Commonwealth Ave/Mullins Way
- Governors Drive
- Eastman Lane
- Massachusetts Avenue
The approach taken to improving these streets is to develop them into complete streets, which is a concept that addresses the needs of all users not just motorists. Improvements provide for pedestrians, bicyclists, and transit in a balance with vehicular improvements. Complete streets shifts the emphasis from accommodating just traffic to taking account of the needs of all non-vehicular users as well.

North Pleasant Street

North Pleasant Street within the boundaries of the campus is a central concern for the quality environment, both literally and figuratively. It bisects the core of the campus core, it is one of the most intensive areas of pedestrian/vehicular conflict and it currently serves as an important transportation route. As a general principle, this plan seeks to limit vehicular traffic on North Pleasant Street, starting with private and service vehicular traffic. Ultimately, the campus would work better from many perspectives if vehicular traffic were removed altogether from North Pleasant Street, as the 1953 and 1962 plans envisioned. The extent to which that goal can be accomplished, and at what speed, depends on many factors, not the least of which is reaching accommodation with the owner of the right-of-way, the Town of Amherst and providing acceptable alternatives for private and service traffic and public transit. This plan suggests one approach to phasing a vehicular de-emphasis, but opportunities to further limit or eliminate vehicular movement in this corridor will be studied and pursued as they become available.

Changes to North Pleasant Street are planned for later phases. Early work would include changes to the roadway while later changes could involve restriction of traffic and possible closure if bus access can be resolved.

Rising to challenge

North Pleasant Street between Massachusetts Avenue and Governors Drive/Eastman Lane is a public street that
travels through the core of the campus. Although it serves through traffic, including bus transit, between Amherst and North Amherst, the principal users are UMass related students, staff, faculty, service and delivery vehicles, and shuttle buses. In addition to cars, trucks and buses, it carries bicycles and has a large volume of pedestrians using its sidewalks and crosswalks.

The proposed concept for North Pleasant Street provides improved accommodations for pedestrians, bicyclists and transit users while maintaining vehicular access. This concept would be implemented in the early part of the Master Plan. Figure 6 shows the typical cross section for the street, which includes:

- One 11-foot vehicular travel lane in each direction
- A four-foot bike lane in each direction
- A 10-foot wide sidewalk separated from the roadway by a 10-foot landscape buffer on each side of the street.

The proposed North Pleasant Street graphic shows a typical layout for bus stops and crosswalks. Where feasible, crosswalks should be placed behind bus stops to discourage passengers from crossing in front of stopped buses.

The proposed concept addresses the needs of various users as follows:

- **Pedestrians** – The landscape area between the sidewalk and roadway will buffer pedestrians from traffic. The landscape area will also accommodate street trees, which will enhance the pedestrian environment and provide a more campus like atmosphere along North Pleasant Street.
- **Bicycles** – A bicycle lane is provided to separate motor vehicles from bicyclists and provide better visibility of bicyclists by motorists.
- **Transit** – Bus pullouts, which are ten-feet wide and 130-feet long allow two buses can safely load and unload passengers at the same time without interfering with vehicular traffic.
- **Vehicles** – Eleven-foot travel

<table>
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<th>Affected Roadways</th>
<th>Partial Closure (vehicles)</th>
<th>Complete Closure (vehicles)</th>
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<tbody>
<tr>
<td>Commonwealth Avenue</td>
<td>1,880</td>
<td>2,080</td>
</tr>
<tr>
<td>Thatcher Way</td>
<td>1,530</td>
<td>1,660</td>
</tr>
<tr>
<td>East Pleasant Street</td>
<td>2,440</td>
<td>2,630</td>
</tr>
<tr>
<td>Total Diversion</td>
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<td>6,370</td>
</tr>
</tbody>
</table>

**Projected Increase in Daily Traffic on Alternative Routes**
lanes provide sufficient width to be comfortable to motorists without encouraging excessive speed.

Future opportunities 2

In the long term to provide an environment more appropriate for pedestrians, bicyclists and transit users, the Master Plan calls for restricting vehicular traffic from North Pleasant Street, except for buses and service vehicles in Phase 3. This restriction would apply to the section of roadway between Governors Drive/Eastman Lane and Thatcher Way. The planned improvement to Thatcher way in later years would allow for implementing this restriction.

Commonwealth Avenue

The planned long-term concept for Commonwealth Avenue combines a complete streets approach with a “road diet.” The existing four-lane cross section creates a barrier for pedestrians crossing between the core campus and the athletic facilities and parking areas west of Commonwealth Avenue. Further, four lanes provide more capacity than needed to accommodate a typical daily volume of less than 13,000 vehicles.

The near-term recommendation includes the extension of Mullins Way to the rear of parking Lot 12, which would allow for the reduction in travel lanes on Commonwealth Avenue to allow for the provision of bicycle lanes in both directions and a sidewalk on the west side of the roadway.
Mullins Way Extension/Roundabout at Commonwealth Avenue

Mullins Way is a two-lane roadway that provides access from North Hadley Road/Massachusetts Avenue to Parking Lots 36 and 67, the Central Heating Plant, Lordon Field, and the lower tennis courts. To reduce the amount of traffic on Commonwealth Avenue, the Rising to the Challenge Phase recommendations include the extension of Mullins Way as a two-way, two-lane roadway north to Parking Lots 12 and 25 (see Figure 1), which currently can only be accessed from Commonwealth Avenue. The extension of Mullins Way would provide a second direct access to Lots 12 and 25, and alternative route to other lots on the north end of the campus currently accessed via Commonwealth Avenue. The Mullins Way extension would be particularly useful for traffic traveling to and from the west (North Hadley Road) and southwest (Route 116 and North University Drive). The extension of Mullins Way would also provide a second major entrance and exit for Mullins Center event traffic.

To facilitate movement in and out of Mullins Way, this recommendation includes installation of a roundabout on Massachusetts Avenue at Mullins Way. Along with the extension of Mullins Way and the roundabout, a change in lane use on the Massachusetts Avenue eastbound approach to North University Drive would be made. The existing two-lane approach would be modified to one through lane and one right-turn lane. The departure side would consist of only one lane. This change would make it easier for traffic exiting North University Drive to identify right-turning vehicles and move concurrently with those turns.

Commonwealth Avenue

The reduction of traffic volume on Commonwealth Avenue resulting from the Mullins Way access improvements would allow a reduction in the number of traffic lanes on Commonwealth Avenue to one
12-foot lane in each direction. This would make additional space available within the existing right-of-way to provide a five-foot bicycle lane in each direction and a ten-foot sidewalk on the west side of the road adjacent to the playing fields. The proposed sidewalk would extend from the end of the existing sidewalk at the south end of the Mullins Center to the intersection of Commonwealth Avenue and Massachusetts Avenue.

The narrower cross section would provide for easier pedestrian crossings between the Recreation Center and the Mullins Center/playing Fields, and between Boyden Gym and the playing fields. The provision of bicycle lanes on Commonwealth Avenue would provide a link between the Norwottuck Rail Trail Connector and the proposed North Amherst Connector. The bicycle lanes would also provide access to major campus locations including Boyden Gym, Commonwealth College, the Recreation Center, the Mullins Center, and Campus Way and the Campus Center.

Future Opportunities 2

**Relocated University Drive/Roundabout at Fearing Street**

University Drive is a two-lane roadway that connects Route 9 and North Hadley Road/Massachusetts Avenue. Currently, the intersection of Massachusetts Avenue at North University Drive is approximately 1,000 feet from the intersection of Mullins Way at North Hadley Road. The proximity of the Commonwealth Avenue intersection and the two lane approaches on Massachusetts Avenue in both directions makes it difficult for northbound traffic to exit North University drive.

With the extension of Mullins Way, the re-alignment of North University Drive to intersect North Hadley Road opposite Mullins Way would provide a more direct connection for traffic accessing Lots 12 and 25 from North University Drive. It would provide greater separation between the North University Drive and Commonwealth Avenue intersections and would create a longer storage length for eastbound traffic on the Massachusetts Avenue approach to Commonwealth Avenue. The proposed realignment would also include the provision of a roundabout at Fearing Street where the realigned roadway would diverge from the current alignment of North University Drive.

**Governors Drive/Eastman Lane**

As with North Pleasant Street, Governors Drive and Eastman Lane are proposed for development of complete streets in Rising to the Challenge Phase. This would principally involve a minor widening of the pavement as needed in several locations to provide for one-eleven foot travel lane and one five-foot bike lane in each direction. The bike lanes would provide a connection between Tillson Farm Road, and Commonwealth Avenue and North Pleasant Street.

The existing configuration of sidewalks would be retained with potentially only
minor changes. Governors Drive has a sidewalk along its south and east side from Holdsworth Way to North Pleasant Street. There is also a sidewalk on the north side along the frontage of Parking Lots 26, 31, and 68. Similarly, Eastman Lane has a sidewalk along its south side except for a short section opposite the Sylvan Residential Area. There is a sidewalk along the north side from the sylvan Residential Area to North Pleasant Street. As with governors Drive, the remaining frontage is currently undeveloped and there is no need for sidewalks in those areas.

There are four bus stops in each direction on Governors Drive and Eastman Lane. All but one have pullouts and are located near crosswalks. The exception is the westbound stop on Eastman Lane at East Pleasant Street. Consideration should be given to installing a pull out and sidewalk at that location. Consideration should also be given to relocating two other stops on Eastman Lane from before a crosswalk to beyond the crosswalk.

Massachusetts Avenue

As with Commonwealth Avenue, the planned long-term concept for Massachusetts Avenue combines a complete streets approach with a “road diet.” Massachusetts Avenue between North Pleasant Street and Commonwealth Avenue is a four-lane divided roadway with an approximately 55-foot median. There are two 13-foot travel lanes in each direction. The highway type design of this roadway is oversized for the recorded daily traffic volume of just over 12,000, which can be accommodated by a two-lane roadway. The improvements to Massachusetts Avenue are proposed for Future Opportunities 2.

Roadway Cross Section

The road diet part of the concept for Massachusetts Avenue consists of reducing the roadway from a four-lane divided cross section to a two-lane roadway with left-turn lanes at intersections and major driveways. The existing left turn and through volumes indicate the need for
separate left-turn lanes to prevent turning vehicles from blocking through traffic and creating congestion along the roadway. Future traffic growth and consolidation of parking into a garage will increase the need for separate left-turn lanes.

As with North Pleasant Street, the complete streets approach includes bicycle lanes, bus pullouts, sidewalks and planting strips. As shown in diagram the major features of the concept for Massachusetts Avenue include:

- Closure of the existing westbound barrel
- Widening of the existing eastbound barrel from the south curb to the north to include:
  A five-foot bicycle lane in each direction
  One 11-foot travel lane in each direction
  One ten-foot center turn lane for left turns at intersections and major driveways
  One ten-foot sidewalk and one ten-foot planting strip on the north side of the widened road
- Retention of the existing sidewalk and planting strip on the south side of Massachusetts Avenue
- Retention or relocation of existing bus pullouts where feasible to conform to the concept plan for bus pullouts shown previously in typical North Pleasant Street diagram

The proposed change in the cross section of Massachusetts Avenue would provide safer pedestrian crossings by eliminating the two-lane vehicular approaches to crosswalks in each direction. The current configuration can result in a situation where a driver in one lane continues moving while the driver in the adjacent lane stops to allow a pedestrian to cross. The driver in the moving vehicle may not see the pedestrian crossing in front of the stopped vehicle, putting the pedestrian at risk of being hit by the moving vehicle.

Another advantage of the proposed change is that it would provide a significant amount of additional land for UMass and community development along the north side of the roadway. Between the driveway to Lot 34 and the bus stops at Sunset Avenue, an additional approximately 85-foot wide strip of developable land would be available between the back of the existing sidewalk and the back of the future sidewalk.

**Roundabout at North Pleasant Street**

The plan for Massachusetts Avenue also includes the installation of a roundabout at its intersection with North Pleasant Street. Existing overall operating conditions at the North Pleasant Street intersection with Massachusetts Avenue are deficient during both the morning and evening peak hours, reflecting congestion and delay to motorists. Conversion of Massachusetts Avenue to a two-lane roadway would be compatible with a one-lane roundabout with single approach lanes on all three approaches. With a roundabout, all three approaches
to the intersection will operate at acceptable levels of service during both the morning and evening peak hours. As with the roundabout on the north end of campus, a roundabout at this location would provide a significant gateway to the campus for vehicles approaching from the south and the center of Amherst to compliment the roundabout recently installed at the north end of campus at Eastman Lane and Governors Drive.

**Thatcher Way**

The planned improvements for Thatcher Way include completion of the sidewalk on the west side of the road opposite Lot 63, provision of one eleven-foot travel lane in each direction and one four-foot bike lane in each direction, the same pavement configuration as the planned roadway treatment on North Pleasant Street as shown on Figure 5. No sidewalk additions are proposed for the east side of the roadway because of the topography and vacant parcels north of the University Health Services. The Master Plan proposes no additional development in that area. The Thatcher Way improvements are planned for Future Opportunities 2. An improvement to the intersection of Thatcher Way and North Pleasant Street is included in the Rising to the Challenge opportunities improvements for North Pleasant Street.

**Enhance Multi-Modal Access**

The second major element in the Transportation and Parking Plan is to Enhance Multi-modal Access, specifically by completing the bicycle network and enhancing transit connections.

**Complete the Bicycle Network**

As described previously under Complete Streets, the following roadways would add bicycle lanes:

- North Pleasant Street
- Commonwealth Avenue
- Governors Drive/Eastman Lane
- Massachusetts Avenue
- Thatcher Way

In addition to the on-road improvements, completing the bicycle network would include the development of an off-road connector to North Amherst. The North Amherst Connector will be a cooperative effort between UMass and the Town of Amherst to provide a bike path between the northwest corner of the campus and Meadow Street in North Amherst. It is expected that the connector would start on Commonwealth Avenue or Governors Drive and follow a cinder path on the UMass campus east of Route 116 to the south edge of North Village where it would connect to a route through or adjacent to North Village, Puffton Village, and the townhouses on Meadow Street or travel along the Western edge of the apartment complexes. The connector would complete the route between North Amherst and Northampton, and South Amherst. All bicycle improvements except the bike lanes on Massachusetts Avenue and Thatcher Way are planned.
Enhance Transit Connections

for Rising to the Challenge Phase of the Master Plan.

The single purpose bikeways will be removed from the core of the campus. Bike travel will be allowed as appropriate on the pedestrian paths in the core.

Enhance Transit Connections

In addition to bus stop improvements provided with Complete Streets improvements, two other transit enhancements are planned. They include providing direct shuttle service between the core campus and Lots 11 and 12, and providing two transit/mobility hubs on the core campus.

Provide Transit/Mobility Hubs

Two transit/mobility hubs are planned for the core campus. These hubs will be designed to accommodate shuttle, local and intercity bus service; bicycle storage, rental and repair service; easy pedestrian access to most areas of campus, showers, lockers and parking.

One location will be provided in Rising to the Challenge phase as part of the planned expansion of the Campus Center Garage on the site of the former power plant. The site is located near major activity centers including, the Campus Center, Campus Hotel, Student Union, Library, Mullins Center and Northeast Residential Area.
The second transit/mobility hub will be incorporated into the garage planned for the south side of Massachusetts Avenue in Future Opportunities 2 phase. It will replace the existing bus stop at Haigis Mall and will be conveniently located near the Whitmore Administration Building, the Robsham Visitors Center, the Southwest Residential Area, the new Admissions Office, and the Fine Arts Center.

**Provide Direct Shuttle Routes to Lots 11 and 12**

As parking is removed from the core campus to provide room for new buildings, parkers will be directed to park in more peripheral locations, especially Lots 11 and 12. To encourage use of these facilities and provide better access to the campus for their users, direct shuttle connections between these lots and the core campus are planned. One shuttle would connect Lot 12 directly with the planned transit/mobility hub in the planned expansion of the Campus Center Garage. A second shuttle would connect Lot 11 directly to the Haigis mall in Phase 1 and the new transit/mobility hub in the new garage on Massachusetts Avenue in the Future Opportunities 2 phase.

**Manage Traffic And Parking Effectively**

The third major element of the Transportation and Parking Plan provides continued accessibility for users who drive to the campus. It includes refinement of parking and the campus roadway system in the context of the recommended improvements presented above:

**Redefine the Parking System**

As noted earlier, removing parking from the core campus is goal and requirement of the plan. It is a goal to reduce pedestrian and vehicular conflicts and necessary to provide sites for growth within the core campus. This can be accomplished by providing parking structures along the periphery of the core at locations with easy access from the regional roadway surface. The major feature is to provide replacement parking in four new structured facilities located to intercept traffic before entering the campus. The locations and schedule for providing the four structures are as follows:
• Power Plant site next to the existing Campus Center Garage (Rising to the Challenge phase)
• South side of Massachusetts Avenue on the eastern portion of Lot 32 (Future Opportunities)
• South side of relocated Governors Drive on Lots 31 and 68 (Future Opportunities 2)
• Southeast Gateway on the east side of North Pleasant Street Massachusetts Avenue (Future Opportunities 3)

The parking supply projections represent the net effect of displacements and new parking by phase. Most displaced parking results from new buildings planned for the parking sites. New parking represents the structured parking proposed in the plan as listed above. Demand for students and staff was projected using existing ratios of the number of staff and students to the peak number of cars parked for each group. These ratios were applied to projected increases in faculty/staff and students.

New and Realigned Roadways

Several roadway changes are included in the Transportation and Parking Plan. These include the extension of Mullins Way to Lot 12, realignments of North University Drive and Governors Drive in conjunction with other improvements, two new links in the roadway grid south of Massachusetts Avenue as part of the redevelopment of Lincoln Apartments, and a new roadway connection to Route 116 from the northwest corner of the campus. The extension of Mullins Way and realignment of North University Drive are discussed above under the complete streets plan for Commonwealth Avenue.

Relocate Governors Drive

The realignment of Governors Drive would allow for the expansion of the core campus to the north. The realignment would bring Lots 26, 31, and 68 within the core campus. This would provide sites for the development of new campus buildings that would be within the campus core and a new garage to replace lost spaces and maintain parking on the north end of campus. This would happen during Phase 3 along with the planned construction of a garage on Lots 31 and 68.

Connection to Route 116

In conjunction with the realignment of Governors Drive and construction of a garage on the north end of campus, a direct connection to Route 116 from Governors Drive is planned. This would allow traffic from the north to reach the new garage and Commonwealth Avenue without traveling through North Amherst or along North Hadley Road and Massachusetts Avenue. The intersection of the connector and Governors Drive would be designed as a roundabout.

Roadway South of Massachusetts Ave.

In conjunction with the redevelopment of Lincoln Apartments, a new link will be
added to the roadway grid south of Massachusetts Avenue. This link includes the extension of Phillips Way west to Lincoln Avenue and the extension of North Hadley Road from Lincoln Avenue to Nutting Avenue along the south edge of Lot 32 and the Robsham Visitors Center Lot. This link will contribute to completing the street grid south of Massachusetts Avenue. The town has envisioned adding to the street grid further in the plans for the Gateway project by providing more and better/nicere Routes to the South & East from campus, it will held disperse the foot traffic from campus that is now concentrated along Fearing street.

**Improve Intersection Operations**

Given the recent success with the installation of a roundabout at the intersection of North Pleasant Street and Governors Drive/Eastman Lane, there is interest in considering roundabouts at other locations. The new roundabout greatly improves traffic flow at the location and presents a much more appealing entrance or gateway to the campus. Other locations considered as possible candidates for a roundabout include Massachusetts Avenue at North Pleasant Street, Massachusetts Avenue at Commonwealth Avenue, and North Pleasant Street at Thatcher Way. These three locations were analyzed to evaluate if the installation of a roundabout is feasible and will result in improved traffic operations. The installation of a roundabout at Massachusetts Avenue and North Pleasant Street is included in the Complete Street recommendation for Massachusetts Avenue as described above. Roundabouts are not planned for the other two locations as discussed in the following sections.

**Massachusetts Avenue and Commonwealth Avenue**

The intersection of Massachusetts Avenue and Commonwealth Avenue currently experiences operating deficiencies for the eastbound approach in the morning peak hour and the southbound approach in the evening peak hour. Analysis of a roundabout at this location shows that the southbound movement on Commonwealth Avenue would continue to be deficient in the evening peak hour. The provision of a channelized southbound right-turn lane would improve operations on the southbound approach to the roundabout to an acceptable level of service. However, construction feasibility is a major issue for providing a channelized right-turn lane. Currently, there is a significant grade difference between Commonwealth Avenue and the athletic fields next to it. It would entail significant cost to construct a channelized right turn lane on a steep grade, which would require considerable fill and construction of retaining walls on a portion of the playing fields.

In addition to the issue of construction feasibility, there is an operational issue not reflected in the level of service analysis. A substantial portion of the southbound traffic turning right onto Massachusetts Avenue also turns left onto
North University Drive. This left-turning traffic would be required to weave across through traffic along Massachusetts Avenue. Due to the short distance between the Commonwealth Avenue and North University Drive intersections, this weaving movement could be a difficult maneuver for many drivers. Because of this and the construction feasibility issue, the Master Plan does not include a roundabout at this location.

North Pleasant Street and Thatcher Way

The existing intersection of North Pleasant Street and Thatcher Way is a T-type unsignalized intersection with STOP control on the Thatcher Way approach. Although the Thatcher Way approach operates at good levels of service during the morning and evening peak hours, there is a perception that the intersection is difficult to navigate for traffic exiting Thatcher Way. A roundabout has been suggested as a way to make the intersection more comfortable and to slow traffic entering the core of the campus.

The roundabout analysis shows that all approaches would operate at excellent levels of service. This represents a minor improvement over existing conditions. Given the proximity of this intersection to the Massachusetts Avenue and North Pleasant Street intersection, installation of roundabouts at both locations is not desirable. Since the Massachusetts Avenue intersection is in need of operational improvement and serves as a major gateway to the campus, the installation of a roundabout at that location is recommended.

In conjunction with the recommended improvements to North Pleasant Street, the geometry of the Thatcher Way approach could be modified to reduce the existing skew to provide a right angle to North Pleasant Street. Currently, vehicles approaching North Pleasant Street from Thatcher Way often roll across the STOP bar and into the pedestrian crosswalk in order to have a better view of the traffic on North Pleasant Street. If the intersection were re-aligned to a 90-degree T-type intersection, the sight distance would be improved. The realignment would also provide a better environment for pedestrians crossing Thatcher Way.
Utility Systems – Future

The Campus Master Plan Approach for Utilities in the Future

The completion of a physical Campus Master Plan will first and foremost improve planning and decision making about utilities by providing system wide direction about where new buildings are to be located, what types of buildings they will be, and where the utility corridors to serve them should be. This information will help the University to understand and budget for the total cost of building projects. This information will also allow better coordination of projects and their timing so as to realize significant potential savings from combined efforts and eliminating duplication of effort. Routine maintenance and upgrades of systems can be put into the context of the overall plan so we only have to do it once.

The basic approach to improve planning and decision making processes about the utilities is to build a Geographic Information System (GIS) that will provide operators and decision makers immediate access to key information in a form that is easily visualized and understood. Having the existing conditions information available to decision makers can increase the quality of the decisions. The GIS will also provide the modeling and analytical capabilities to do “what if” scenarios to explore alternative development approaches and identify strengths and weaknesses of each system. All of these tools will greatly enhance the University’s ability to plan and scope all capital development projects.

An additional approach to improving the utilities planning process is to write policies regarding utility development that mandate and support system flexibility and reliability. These policies will also help the University to execute green building guidelines, identify greenhouse gas goals and implement other sustainability efforts. Part of this approach is to update and supplement design standards and guidelines to support these plans and policies.

All of these efforts will help the Campus to create sustainable utility corridors. The idea behind creating sustainable utility corridors is to identify appropriate permanent ways to route utilities to serve both current and future needs and configure them so utilities can be installed and maintained with minimal disruption to the surface features such as roads, walkways and plazas.

Electrical System

The current system is in good condition, very efficient and reliable. As we look toward the future of the electrical system, there is a strong desire to create a new east/west tie along the southern edge of campus. A good location for this new cross tie would be in the vicinity of Massachusetts Avenue. With the proposed reconfiguration of Massachusetts Avenue, this would be an opportune time...
to install this tie or at least put in the duct
banks and infrastructure to allow for its
installation in the future. Another desire
is for a duct bank to be installed from
Eastman Lane to Orchard Hill to provide
additional capacity and flexibility. A new
substation in the middle of campus is an-
other idea to further enhance the system.

The University has made great strides in
energy conservation and efficiency over
the years. Currently most of the ma-
jor buildings on campus are fitted with
Johnson Control systems that allow them
to be managed more efficiently. How-
ever, with the future expansion of the
gross square footage of buildings and the
ever increasing reliance on technology,
the need for more power will increase.
The Campus Master Plan accommodates
the flexibility to increase power capacity
through a number of different ways. In
the short-term the University is currently
working with Western Massachusetts
Electrical Company (WMECO) to nego-
tiate a new contract for power. Near-
term expansion of the Central Heating
Plan (CHP) to include a biomass boiler
would take advantage of the campus’
proximity in western Massachusetts to
significant biomass resources from tim-
ber harvesting waste products and the
like. To meet mid-term needs there is an
unused bay in the current configuration
of the CHP to add another dual fuel boiler
for additional steam and electric power
generation. In the long-term the plan
also provides for either further expansion
of the existing CHP, or the possible provi-
sion of a new power plant on the north or
east side of campus to help keep up with
the demand and provide additional flex-
bility in the system. Through research
and development the University is also
continually looking at other ways to in-
clude renewable resources as part of our
energy producing portfolio in an effort to
reduce our greenhouse gas emissions and
reach our sustainability goals.

**Steam and Condensate System**

The future of the steam and condensate
system is closely linked with that of the
electrical system since both need util-
ity corridors and both rely on power
and energy. Like the electrical system,
the steam and condensate system could
greatly benefit from a new utility cor-
ridor on the southern edge of campus
in the area of Massachusetts Avenue. If
a southern loop of the system could be
installed in the reconfigured Massachu-
setts Avenue corridor, it could provide
an alternative feed for the Southwest
Residential area and alleviate one of the
most troublesome dead ends of the sys-
tem. A southern loop would also provide
the infrastructure needed to service the
new buildings along that corridor and
strengthen the reliability of the system
as a whole. As this infrastructure is built
out, we must continue to do the basic
best practices such as build manholes
every 300’ and install all the necessary
valves to provide the flexibility and reli-
ability we want to achieve. We must
also continue to identify opportunities to
complete loops and eliminate any dead
ends from the system.
Over the next few years as several large new buildings like the New Laboratory Science Building, Academic Classroom Building and the Commonwealth College Residential Complex come online we will begin to reach the current capacity for steam generation at the CHP. As part of the strategy to meet future energy demands, the University will need to collaborate with other entities to work toward increasing the regional capacity of the natural gas delivery infrastructure to ensure the future availability of this source of energy.

**Stormwater Management System**

As part of the Campus Master Planning process, the University has hired Tighe & Bond Engineering to do a thorough inventory and analysis of our Stormwater management system. They are performing a hydrologic and hydraulic analysis of the existing drainage system. This project derives from both historical and more recent flooding problems being experienced on campus. This study will determine the causes and effects of the flooding problems, and will include improvement alternatives to alleviate flooding. As part of this project, the existing drainage system is being compiled in a GIS format to create a base map and data model of the system. The University is also planning to purchase additional software capabilities to do modeling of the system and provide the ability to do this type of analytical work in house. This will allow the University to more efficiently develop and design infrastructure projects in the future.

One of the important observations derived from the study so far, is the important role that the campus pond plays in our storm water management system through its function as a retention basin. This functionality will be further enhanced when the dike is rebuilt with better water level control as part of the utility infrastructure upgrades on the utilities that run through the existing dike. The ability to control the water level more easily and precisely will allow it to be used for flood control by lowering the level and increasing the storage capacity in anticipation of large storm events. The campus pond receives runoff from a large part of the east and southern areas of campus providing a regional stormwater facility. Because the campus pond is so effective, the Campus Master Plan is promoting the use of more such regional stormwater facilities rather than the more expensive and less effective site specific solutions like storage tanks under buildings. The Campus Master Plan contains a viewshed corridor leading from the center of the campus to the northwest corner of campus that will also function as a working landscape to deal with stormwater runoff and treatment. This landscape would contain rain gardens, bio-swales and other plantings and structures that would provide for both storage capacity and water quality treatment as the runoff eventually makes its way down hill toward the large wetland areas.
adjacent to the northwestern edge of campus. The University will also continue to explore opportunities to install other regional and local sustainable stormwater management facilities like the recently re-configured landscape and plazas around the Southwest Residential area.

**Sewer System**

As part of the Campus Master Planning process, Tighe & Bond Engineering is also doing a thorough inventory and analysis of our sewer system. They are performing a preliminary inflow and infiltration study. This study will help develop a condition assessment and hydraulic analysis of the existing sewer system. Also as part of this project, the existing sewer system is being compiled in a GIS format to create a base map and data model of the system. The modeling of the system will provide the ability to identify pipe capacity and develop improvement alternatives that take into consideration future development needs. This information and data modeling system will also help the University to continue to expand and improve its collection and use of grey water. The University already saves 65 million gallons a year of drinking water, by recycling 400 million gallons a year of grey water from the waste water treatment plant for use as make up water in the boilers at the CHP.

**Water System**

Tighe & Bond Engineering is also doing a thorough inventory and analysis of our water system. This study will develop a condition assessment and hydraulic analysis of the existing water system. Also as part of this project, the existing water system is being compiled in a GIS format to create a base map and data model of the system. The modeling of the system will provide the ability to identify pipe capacity and develop improvement alternatives that take into consideration future development needs.

One issue that needs to be addressed in the near term with the Town of Amherst is to upgrade and replace the main town waterlines in the campus along North Pleasant Street. Since 2002, numerous water conservation projects have dramatically reduced the campus’ water consumption by 43%. In the future, the University will continue to seek ways to conserve, recycle, and use water more efficiently by educating the students, faculty, and staff on campus and pursuing technologies and best practices to use this invaluable resource in a more sustainable manner.

**Telecommunication System**

Understanding the impact of future buildings, will provide a huge benefit for the development and upgrade of the telecommunications system. This information will be very helpful in determining what existing resources can be reused or need
to be upgraded to serve the system. Telecommunications will continue to work on expanding and improving the data that they have about the system. A&F Information Technology (OIT) will work with them to eventually bring all this data into the central enterprise GIS. The integration of this data into the base map and data model will provide all the analytical benefits of being able to run “what if” scenarios to determine the best options for future development. For instance, the GIS could be used to find the optimum sites for locating new wireless modems as we continue to improve our wireless infrastructure.

The Campus Master Plan has also identified two new data center locations for OIT that will affect the Telecommunications system. In the near-term, one is being developed in the new Laboratory Sciences Building that is currently under construction. In an effort to get IT staff that do not directly deal with the public out of valuable core campus space (ie. Lederle GRC) the Master Plan has also identified a location on Tillson Farm as a mid-term solution for another data center location to replace the one in Lederle. Tillson Farm was determined to be the ideal location because it is directly adjacent to one of the major fiber optic trunk lines that comes into the campus. Campus Planning is also in the process of working with OIT to develop an IT Master Plan to help the University and its activities into the future. The results of this process will help to inform the impacts on the Telecommunications system as well.
The Plan: Rising to the Challenge

The master plan program uses 2010 as a baseline for tracking physical area so as to be aligned with the base year for the Framework of Excellence/Amherst Rising reports, and because the campus master plan process was initiated in 2010.

Comprehensive Science and Engineering Facilities Plan (CSEFP)

During 2008-2009 DCAM and UMass Amherst partnered in conducting a comprehensive needs assessment of science and engineering facilities that reviewed 56 buildings and approximately 1.47M NSF in 27 science departments. The study identified a total of 352K NSF of additional space required to provide appropriate space for existing science and engineering research faculty and new space for the planned growth in faculty outlined in the Framework for Excellence. In addition, 20 buildings were found to be in poor condition, requiring the replacement of 278K NSF. The analysis and planning options for how these needs may be met through a combination of new construction, modernization, whole-building renovation and/or replacement continue to this day, and have resulted in capital plan development and allocation that addresses the most pressing needs. Initial projects that meet this need include a New Laboratory Sciences Building Phase 1 and 2 of 310K GSF that is already under construction, and a New Life Sciences Building of 148K GSF that is identified on the capital plan and awaiting funding. Additional projects that are in the planning stages include a new Physical Sciences Building to address the highest priority need for chemistry and physics facilities.

Comprehensive Academic and Classroom Facilities Plan (CACFP)

In 2009 DCAM and UMass Amherst carried out a comprehensive needs assessment of classroom/learning environments and facilities supporting non-science academic programs that reviewed 27 buildings and approximately 703K NSF, 118K of which was in centrally registered classrooms with approximately 12,500 seats. The study recommended an increase of classroom seats by 2,300 required to accommodate planned student growth, alleviate overcrowding and update the existing inventory from tablet and arm chair seating to table and chair flexible seating; and the need to create mid-size classrooms in the 60 – 120 seat range to better balance the current inventory. In addition, the study’s needs assessment identified a total of 67K NSF of additional space required to provide appropriate space for existing non-science departments. The study was halted before specific growth-related needs could be ascertained.
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<td>Southeast Parking Structure</td>
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<td>East Pleasant St. Residence 1</td>
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<td>82</td>
<td>Orchard Hill Residence 2</td>
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<td>Paige Replacement Building</td>
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<td>McGuirk Alumni Stadium New Press Box and Rest Rooms</td>
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<td>East Pleasant St. Residence 3</td>
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<td>Mass Avenue Residence 1</td>
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<td>122</td>
<td>Academic Research/ SPHHS</td>
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<tr>
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<td>Academic Research/ SPHHS</td>
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</tr>
<tr>
<td>124</td>
<td>Academic Research/ Physical Sciences</td>
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<td>Dickinson Addition</td>
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<td>152</td>
<td>Tillson Farm Building 1</td>
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<tr>
<td>153</td>
<td>Tillson Farm Building 2</td>
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<td>154</td>
<td>Tillson Farm Building 3</td>
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<td>155</td>
<td>Tillson Farm Building 4</td>
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<td>156</td>
<td>Building Construction Technology Test Center</td>
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<td>157</td>
<td>Tillson Farm Building 5</td>
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<td>159</td>
<td>Tillson Farm Building 7</td>
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<td>169</td>
<td>CHP Alternative Energy Boiler Addition</td>
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</tr>
<tr>
<td>176</td>
<td>Hazardous Waste Materials Facility</td>
<td>36,000</td>
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</table>
Prior to 2010, the university engaged in feasibility studies and comprehensive plans for science, academic facilities and classrooms that have resulted in a number of capital projects that are currently in design and/or construction and will be completed by early 2014. These projects, listed below, will meet some previously identified facility needs for administrative services, student life, academic, research and administrative support, and will provide new classrooms that will meet some of the expected student growth needs. The Police Station and the George N. Parks Minuteman Marching Band Building were completed in the spring of 2011. The Research & Education Greenhouse for the College of Natural Sciences was completed in the fall of 2011. The New Life Sciences Building Phases 1 and 2 is currently under construction and is expected to be complete by 2013. Construction has begun on the Commonwealth Residential College with expected completion in fall of 2013, and the New Academic Classroom Building is currently in design, scheduled to be completed in spring of 2014.

The capital plan for fiscal years 2011 – 2016 also identifies building replacement, additions, and new facilities that are cur-

<table>
<thead>
<tr>
<th>Bldg ID</th>
<th>Building Name</th>
<th>Gross Area</th>
<th>Year to Complete</th>
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<tr>
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<td>Police Station</td>
<td>27,250</td>
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<tr>
<td>696</td>
<td>George N. Parks Minuteman Marching Band Building</td>
<td>21,424</td>
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<tr>
<td>701</td>
<td>Research &amp; Education Greenhouse</td>
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<td>2011</td>
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<td>TBD</td>
<td>New Laboratory Sciences Building Phase 1 and 2</td>
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</tr>
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<td>TBD</td>
<td>Commonwealth Residential College</td>
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<tr>
<td>TBD</td>
<td>New Academic Classroom Building</td>
<td>172,126</td>
<td>2014</td>
</tr>
<tr>
<td>TBD</td>
<td>Structural Testing Facility, Tillson Farm</td>
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**Capital Projects to Be Completed 2010 - 2014**

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Building Name</th>
<th>Gross Area</th>
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<tbody>
<tr>
<td>56</td>
<td>Academic Building/ Integrated Design</td>
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<tr>
<td>121</td>
<td>Champion Center</td>
<td>49,000</td>
</tr>
<tr>
<td>122</td>
<td>School of Public Health and Health Sciences</td>
<td>16,000</td>
</tr>
<tr>
<td>52</td>
<td>New Life Sciences Building Phase 3</td>
<td>148,000</td>
</tr>
<tr>
<td>116</td>
<td>New Press Box and McGuirk Alumni Stadium Renovation</td>
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</tr>
<tr>
<td>17</td>
<td>South College Renovation/ Bartlett Replacement</td>
<td>84,000</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>356,000</strong></td>
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</tbody>
</table>

**Capital Plan FY11 – FY16 Projects**
Rising to the Challenge Plan
rently in programming or design phases and will likely result in new construction. (Site ID refers to the new sites identified in the Master Plan Framework).

In addition to new construction the capital plan also includes funding allocated to building projects that implement planned replacement of building systems, address deferred maintenance, building-wide and targeted space renovation, code compliance, information technology, and other capital facility needs. The list of projects on the capital plan, as well as their scope and budget, is subject to on-going review and revision as the campus business operations require flexibility and the ability to respond quickly to opportunities as well as urgent needs as they occur in the academic, research and service mission of the University.

**Academic Building/Hills Replacement Building**

The Hills Replacement Building is a project that is necessitated by the deteriorating condition of Hills House and the lack of sufficient space on campus to accommodate the over 87,600 GSF currently occupied by academic and service programs such as three departments from the School of Education, International Programs Office (IPO), University Health Services (UHS) and Landscape Architecture and Regional Planning. Over the last couple of years Facilities Planning has developed multiple scenarios for accommodating those departments within available space in existing buildings and/or new construction. One major opportunity is the repurposing of the Furcolo School of Education/Mark’s Meadow facility, recently returned to the University by the Town of Amherst after it chose to close the Mark’s Meadow Elementary School. Allocating funds to renovate this facility for the School of Education will provide a solution to housing approximately 25 – 30% of the programs currently located in Hills and consolidating the School of Education in one complex. The University has identified existing building space that can be renovated to accommodate IPO and University Health Services (UHS).

To address the need of the remaining Landscape Architecture and Regional Planning department, which occupies about a third of Hills, and in order to support multidisciplinary collaboration of disciplines focused on integrated design, the University is planning a new facility that would also house the Architecture + Design program and possibly the Building & Construction Technology program. This new Integrated Design Building will not only provide state of the art facilities for multidisciplinary and project based teaching and learning focused on the
built environment, but it will also be balanced by renovation of the west wing of the Fine Arts Center to meet the decompression and growth needs of the Music department (previously documented and identified in the CACFP).

The master plan framework is able to accommodate a number of locations for a new facility, including the south edge of Lot 62 as a possible building site for the School of the Built Environment, so as to take advantage of an opportunity to anchor the south end of the Stockbridge corridor and to develop pedestrian paths and working landscapes that can manage the grade change from North Pleasant Street to Stockbridge Road and provide a connecting landscape framework.

The future opportunities site titled Thatcher Road Parking Structure is an alternative location for this facility that provides an opportunity to combine the relocation of science programs currently housed in French into new facilities, with the full building renovation and expansion of French Hall. This site offers the landscape and regional planning programs adjacency to the Durfee gardens and other natural landscapes such as the Chancellor’s Garden.

The Master Plan framework has identified the south edge of Lot 62 as a building site for the School of the Built Environment so as to take advantage of an opportunity to anchor the south end of the Stockbridge corridor and develop pedestrian paths and working landscapes that can manage the grade change from North Pleasant

Street to Stockbridge Road and provide a connecting landscape framework.

**Champion Center**

The Champion Center will attend to the needs of the women’s and men’s varsity basketball program, currently poorly served in outmoded space in Curry Hicks Cage, by developing a new practice facility connected to the Mullins Center that includes adequate facilities for the teaching and training of athletes and coaches. The building site provides an opportunity to develop the pedestrian paths that connect the proposed development of Mullins Way to the west with the core campus landscape framework on the east.

**School of Public Health and Health Services**

The Totman Addition was among the high priorities identified in the CSEFP and will address the needs of the Kinesiology Department and eventually become the “home” of School of Public Health and Health Sciences and the Kinesiology department. The building site also offers an opportunity to build pedestrian paths
and landscape connections to the School of Education and North Amherst.

New Life Sciences Building Phase 3

The New Life Sciences Building Phase 3 is part of a phased approach to meeting the campus science research needs. The New Laboratory Sciences Building Phases 1 and 2 will have provided state-of-the-art research space for many of the multi-disciplinary science clusters on campus and shell space for future research lab fit-out and a data center for Information Technology. Phase 3 is envisioned as providing research laboratories for the Collaborative Biomedical Research program, a joint initiative between the Baystate Medical Center in Springfield and UMass Amherst that is part of the Governor’s Life Sciences Initiative. In addition to completing the life sciences research complex, this project could provide an opportunity to complete the Stockbridge Pedestrian Corridor, envisioned as a pedestrian “spine” that would be enhanced with landscape improvements clarifying building entrances and service roads, and connecting to existing landscapes such as Durfee Gardens.

McGuirk Alumni Stadium Renovation and New Press Box and Rest Rooms

The McGuirk Alumni Stadium and Press Box project will develop a training facility at the existing UMass stadium for the Varsity Football team, which recently moved up to become full members of Division I Football Bowl Subdivision of the National Collegiate Athletic Association and members of the Mid-American Conference. The currently inadequate stadium facilities will be renovated and expanded to include lockers, weights, training, team meetings, coaching staff and equipment storage, as well as a new press box and toilet facilities.
South College Renovation/Bartlett Replacement

Bartlett Hall is a major academic building in the campus core housing classrooms and departments primarily within the College of Humanities & Fine Arts. The facility is in critical condition and has been the subject of feasibility studies identifying the necessity of replacement of its exterior envelope and all major building systems, or its potential demolition. With the construction of the New Academic Classroom Building, which will provide academic program space as well as approximately 1,900 seats and a wide range of new classroom sizes and types, UMass has the classroom resources to proceed with the Bartlett Replacement project. The need to build space for CH&FA in the campus historic core provides a synergistic opportunity to couple this project with a much needed renovation and adaptive reuse of South College, which is a historic building identified in the UMass Amherst Historic Building Inventory of August 2009 that currently houses primarily H&FA programs. The Bartlett Replacement project will comprise of a building addition of approximately 84,000 GSF and a careful and historically sensitive renovation of South College. The building site also provides invaluable opportunities to develop the campus east-west connector path between North Pleasant Street and the New Academic Building on the east, the center of the campus core between the Student Union and the Du Bois Library, and the Recreation Center on the west contributing to the redesign of Hicks Way.

Rising to the Challenge - Vision and Site Plan Opportunities

In addition to projects identified on the current capital plan, the Rising to the challenge program identifies future projects and sites that are essential to building the master plan physical framework for the campus West Core, centered at the former Power Plant ravine and encompassing major north-south and east-west campus pathways and connections that knit the campus together. The project list includes new academic projects such as the CNS Physical Sciences Building and Machmer Replacement identified in previous academic plans; a vision for the old Power Plant ravine; a number of utility-related improvements and student life projects addressing the need for renovation of the Student Union and Hampden DC. With the construction of the Central Heating Plant, UMass is engaged in a project to remove the former coal plant at the heart of the campus and remediate the site, making it ready for future development. This is an unprecedented opportunity to build con-
Rising to the Challenge: Vision and Site Opportunities

Connections in the west core of the campus and revitalize pedestrian connections and programs between the north and south portions of the campus that have historically been divided by the ravine and old power plant.

Parking Structure

The site of the coal-fired Power Plant provides the opportunity to capitalize on the depth of the existing ravine topography spanning an elevation change of 50’ from ground level at the base of Campus Center Way access road (at 178’ elev.) to ground level at the Campus Garage turnaround (at 228’ elev.). The Master Plan Framework proposes a Parking Structure of 273,600 GSF and 3 stories (Site ID 24) that will provide a multi-modal facility to accommodate parking for approximately 500 cars, a regional bus station, bicycle storage and other amenities for campus visitors and commuters that integrate mixed-use facilities and technology to promote alternative transportation. The roof of this facility will align with the campus mid-level terrace, providing a structural base for the North extension of Hicks Way so that it can connect with Natural Resources Road. Further east the parking structure provides an opportunity to become a structural base for a 4-story Academic/Student Life Building (Site ID 47) of 105,600 GSF that could provide student life and academic facilities. The new multi-modal transport complex and parking structure would include elevator access to multiple levels of the campus pedestrian network, facilitating campus accessibility from the lower terrace at Commonwealth Drive to the mid-level of
The new facilities have the potential to become a nexus of activities that support the entire campus community by connecting to the existing Campus Garage, Lincoln Campus Center and Student Union complex and. The Parking Structure would provide affordable and efficient facilities (in terms of space, energy and other costs) for pedestrians, bicycles, public transportation, both single and multi-occupant vehicles (including ride sharing/WeCar rental), and service/freight vehicles. By consolidating local transit opportunities, such as campus bus shuttles and the campus core bus loop with regional bus lines, a multi-modal facility will enhance regional transit access to campus events at the Mullins Center and other campus venues such as the Fine Arts Center and the Stadium.

**Campus Center Landscape**

This is one of the most important landscape areas on campus because it is often the first thing people see as they emerge from the parking garage to go to the Campus Center or Student Union. The Master Plan proposes that it be improved as part of the Ellis Way Pedestrian Corridor connecting it to the rest of the campus. However, it must also act as a gateway or entrance to campus for people parking or using the proposed mobility hub in the central parking garages.

**Academic/Student Life Building**

The new Academic/Student Life Building has the potential to enhance campus community facilities by providing lounges and locker facilities space for commuters, retail food facilities and increasing study areas that support the campus learning and student life landscape. This building site is also ideal for an extension of the New Academic Classroom Building by providing additional centrally scheduled classrooms that accommodate student population growth and new pedagogical and academic needs identified by the CACFP.

**Academic Research/Physical Sciences Building**

The New Physical Sciences Building is one of the future projects identified in the
SCEFP as required to meet the academic and research needs of the College of Natural Sciences, in particular Chemistry and Physics whose research laboratories are housed in Lederle, Goessmann and Hasbrouck outdated buildings built between 1930 and 1974 in which lab renovation has shown to be more costly than new construction. New construction for the most complex lab space in these disciplines will be balanced by renovation of some of the better buildings, repurposing for other use buildings that can’t be effectively used for science, and demolishing buildings that will serve no identified purpose and have excessively high costs to renovate and operate. The master plan framework is able to accommodate a number of locations for a new facility, including this site adjacent to Draper, in which the new building can become a modern partner in the related modernization of a legacy facility.

**New Academic Buildings 2 and 3**

After the Capital Plan has been fully realized, the demolition of Bartlett will become possible. This provides a site that could accommodate an academic facility of up to 130,000 GSF. The existing Bartlett building massing did not fully respond to the important view sheds to the west and to the Holyoke range and southwest afforded from the pedestrian mall at the upper-level terrace of the campus. This site identifies two distinct foot prints (Site ID 119 and 120) that enhance and frame an important view to the mountains. One possible use of the site outlined in the CACFP is as a replacement for Machmer, which was recommended as a bridge building and considered for replacement in the long term.

Machmer Hall is located on a prominent site adjacent to the W.E.B. Du Bois Library, Student Union and Campus Center Garage. The building is awkwardly placed and its south façade and entrances are not on axis with the pedestrian mall and do not contribute to the campus landscape and streetscape. Though currently in fair condition, the building is in need of renovations and will require considerable investment in order to fully meet modern accessibility requirements. This site provides opportunities to plan for its replacement in the future.
Building Construction Technology Test Center

The Building Construction Technology program in the Environmental Conservation department is planning to raise funds for a new BCT Research Facility to conduct stress tests on wood and other building materials. Currently a site has been identified for this purpose at Tillson Farm, adjacent to the Civil Engineering department’s new Structural Testing Facility.

Central Heating Plant Alternative Energy Boiler Addition

The Campus is in the process of planning for an Alternative Energy Boiler Addition to the Central Heating Plant (CHP) that could produce up to 8% of steam load generation from renewable sources such as biomass. The award-winning CHP currently relies on natural gas and diesel for fuel and generates both steam electricity, reducing campus greenhouse gas generation by 6% in the first year of its operation. The addition of an alternative energy boiler was part of the initial plan for the facility and will help the campus advance its climate action plan by further decreasing GHG emissions.

Hazardous Waste Materials Facility

The campus currently has a 90 Day Hazardous Waste Materials Storage trailer located near the entrance to the former Power Plant ravine. Given the increase in research activities on campus and the continuous changes in regulatory requirements for hazardous materials storage, the programmatic needs of this function have increased. As part of the vision for transforming this area into a vibrant nexus for student life and multi-modal transit facility, the campus plans to relocate this function and in the process build a new Hazardous Waste Materials Facility.

Student Union/Hampden Renovation

The Student Union, built in 1957, was the first facility on the UMass Amherst campus to accommodate student extracurricular activities and organizations and became a significant component of the post-WWII academic experience. Location at the heart of the campus core was carefully chosen for its centrality, visibility and accessibility to student residence halls. But over the past five decades the
social life and community engagement requirements of students in the 21st century has changed considerably, and the Student Union building is sorely in need of space modernization and the ability to provide contemporary technology and assembly facilities for the diversity of approximately 400 student organizations on campus. The whole building renovation or replacement of the Student Union at its existing pivotal site location will require the short-term accommodation of its users in alternative locations on campus.

As noted above, one of these site opportunities could be the new Academic/Student Life building. Another could be a renovated Hampden DC at the heart of the Southwest Residential Area. When Hampden Dining Commons was built in 1967 it served as a dining commons on the upper level, with a loading dock, centralized kitchen and bake shop on the lower level. Together with Berkshire and Hampshire DC, it provided dining for over 5,000 students that live in the area. Since then Hampden DC has lost much of its functionality to serve student life: the only functional spaces that remain are a small gallery space, some student organization offices, a retail convenience store and a café on the lower level. Many of the building’s systems have exceeded their life span, and the existing bake shop suffers from a poorly configured loading dock that conflicts with vehicular and pedestrian traffic. The successful renovation of Berkshire DC in 2007 demonstrated the benefit of whole building renovation and adaptation to modernized dining, which now delivers improved food services in a highly efficient manner – the facility recently served 20,000 patrons in one evening at the start of the semester. The renovation of Hampden DC was one of the primary recommendations of the Southwest Residential Area Master Plan Phase II study of 2007 and has the potential to serve as a student performance center and swing space for the Student Union renovation and to reenergize student life on campus and at the core of its most dense residential area.

Rising to the challenge: Campus Landscape Improvement Opportunities

The focus on “building campus” that underlies the Phase 1 projects and opportunities also extends to proposing landscape and street improvements that will help to knit the campus into a coherent pattern, to reinforce its pedestrian appeal and to facilitate the safety and flow of multiple levels of traffic. The projects below are characterized by a common focus on placing the needs of pedestrians in the core campus as a high priority for future work. Each one contributes to improving pedestrian accommodation on key campus roads, improving traffic control and crossing locations, clarifying the location of sidewalks, crosswalks and paths, and completing the streets in a manner that allows them to provide safe, attractive and comfortable access and travel for all users.
**Stockbridge Pedestrian Corridor**

In the last decade the University engaged in major construction projects on the East side of the campus that included the Studio Arts Building, Skinner Hall renovation for the School of Nursing, the Integrated Sciences Building (ISB) and the New Life Sciences Phase 1 & 2 (NLSB) currently under construction. In 2004 the University and the UMass Building Authority sponsored a planning charrette to coordinate the design of these separate projects and consider the effect they will have on the East district and Stockbridge Road, a significant part of the historical fabric of the campus. The resultant Stockbridge District Master Plan developed by Payette became known as the “Fish” and has largely influenced subsequent design and planning for the area. A major component of this plan was the reconfiguration of Stockbridge Road, which was envisioned as a primarily pedestrian way that would be enhanced with landscape improvements clarifying building entrances and service roads, and connecting to existing landscapes such as Durfee Gardens.

The completion of the Integrated Sciences Building initiated the implementation of the Stockbridge Pedestrian Corridor by closing the north end of Stockbridge Road and providing a pedestrian path that terminates at the south entrance of the ISB’s spectacular atrium. The current construction of the NLSB Phase 1 and 2 will develop the north end of the pedestrian corridor by providing a carefully landscaped gathering space, rain gardens and accessible entrances to the new building. The Master Plan proposes the completion of the Stockbridge Pedestrian Corridor to
its south termination at the Studio Arts Building within Phase 1 of campus development and plan implementation. The Stockbridge Road entrances on Infirmary Drive and North Pleasant Street will be maintained to provide service access to buildings within the area, while the planting of trees, articulation of paths and knitting of landscape elements, such as the new permaculture garden and the structured gardens at Durfee will enhance the pedestrian experience and historical fabric of the area.

Massachusetts Avenue

A major opportunity that the campus Master Plan has identified is the reconfiguration of Massachusetts Avenue to create a college street. A major addition of the 1962 Sasaki Plan, Mass Avenue functions as a 4 lane highway on the South side of the campus that over the years has not fulfilled the promise of becoming the processional threshold campus space that it was intended to be. Because it reverts to two lanes on the East at North Pleasant Street and on the West beyond its intersection with University Drive, the avenue gives the impression of the ability to increase the speed of through traffic for its 4-5 block length that is then thwarted with the much slower pace of the connected 2-lane roadways. The sea of parking spaces, though convenient, do not afford a welcoming edge to the campus and the scale, size and landscaping of Haigis Mall is not in keeping with the campus pedestrian character.

The Master Plan proposes the elimination of Mass Avenue’s north barrel of traffic that results in a 2-lane roadway, the design of a roundabout at the southeast intersection with North Pleasant Street and the construction of a complete street for pedestrians, bicycles and motor vehicles similar to those proposed for Commonwealth Avenue. This will equalize the flow of east – west traffic speeds along the avenue and will improve the safety of pedestrian crossings. Though this change will not address directly the bottleneck that currently exists at the Southwest Residential Area pedestrian crossing, it is likely to improve it by providing alternative routes for accessing the campus core. The future development of an academic courtyard at the southwest corner of the campus core will further increase the at-
tractiveness of the southwest pedestrian tunnel and reduce the number of pedestrians crossing Mass Avenue from that complex.

This proposal has the additional benefit of providing growth opportunities along the north edge of Massachusetts Avenue that will allow the construction of new academic, administrative and residential buildings within the campus core, and the development of buildings along the street edge that are welcoming, community oriented and improve town-gown relations. The related restructuring of North Hadley road and the relocation of small scale historic structures accompanied with the development of new townhouse multi-unit residences will create a buffer zone to the Amherst residential community. The development will emphasize the revitalization of Mass Avenue’s south edge as a pedestrian corridor that will attract student traffic patterns away from Amherst neighborhood streets and north toward the campus core.

**North Pleasant Street Improvements**

North Pleasant Street is currently the most heavily used road on campus and it is a vital part of the campus core. Only 20% of traffic vehicles use the road for through-way traffic, with the other 80% entering the campus to service buildings, drop off individuals or park in parking lot across from the Fine Arts Center. There are multiple mass transit stops and pedestrian crossings that generate significant pedestrian/vehicle conflicts, and

![North Pleasant Street Cross Section and Typical Bus Stop](image)
the road lacks street trees for much of its southern portion to support a pleasant experience, particularly during the summer. The multiple construction projects that were undertaken in the last 5 years often required utility upgrades across North Pleasant Street; consequently the University and the Town of Amherst, which owns the street, have been reluctant to invest capital funds in the surface replacement and/or redesign of the road and pedestrian paths. As the NACB construction is completed and the upgrade of the east/west steam lines and other utilities are accomplished, the University will have an opportunity to begin planning and implementing traffic calming measures and streetscape improvements that give coherence to North Pleasant Street and provide a Complete Street environment that balances safety and convenience for everyone using it. Following is a list of some of the street improvements that will be planned as part of the Master Plan Framework: sidewalks, bike lanes, comfortable and accessible public transit stops, frequent & safe crossing opportunities, accessible pedestrian signals, street lighting (and replacement of utility poles), a roundabout at the intersection of the street with Massachusetts Avenue, and more. In future phases it could become a pedestrian buses and service vehicles only corridor.

**Hicks Pedestrian/Service Way**

The current construction of Commonwealth Residential College (CRC) and the future demolition of the coal-fired Power Plant and development of a new multi-modal Parking Structure offer an important opportunity to develop north – south connections at the mid-level terrace of the west campus core. Hicks Way has previously functioned primarily as a vehicular service road with few amenities for pedestrians, who are often found on the road in large numbers during class change periods in transit between the Machmer auditoriums, Bartlett and Tobin academic buildings, multiple campus recreation facilities and SW Residential Area. With the construction of the CRC the pedestrian traffic will increase and offers an opportunity to develop a Woonerf — a Dutch name for a “street for living” in which a common space is shared by pedestrians, bicyclists and low-speed motor vehicles and enhanced with trees, planters and social areas. The transformation of Hicks Way could begin as soon as CRC is complete with improvements that rationalize and increase pedestrian connections to the Southwest Residential Area as well as to north to Thompson auditoria. After the Parking Structuring and New Academic/Student Life Building are complete, the transformation can continue north to connect to Natural Resources Road.

**Mullins Way Extension**

Mullins Way is currently a peripheral road that provides access to the Central Heating Plant, as well as the Mullins Center Lower Level service entrance, parking lot and recreational fields. The proposed Mullins Way Extension will further devel-
op the roadway to the north across the Tan Brook so that it can access Parking lots 12 and 25 from the West. This will provide an alternative way for vehicles to approach and exit the Mullins Center parking lots, expediting access to Route 116 and reducing the peak traffic on Commonwealth Avenue and its intersection with Massachusetts Avenue. The project will plant street trees and will develop pedestrian paths within the parking lots that support connections to the North Campus.

Commonwealth Avenue Street Improvement

The UMass campus perimeter road system provides efficient vehicular circulation for private vehicles and busses and defines the edges of the campus – Governor’s Drive/Eastman Lane on the north, Thatcher Road on the east, Massachusetts Avenue to the south and Commonwealth Avenue on the west, with North Pleasant Street bisecting the campus core from north to south. Commonwealth Avenue currently functions as a high speed campus edge road with 4 vehicular lanes from the north intersection with Holdsworth Way to the south intersection with Massachusetts Avenue. It lacks shoulders and a pedestrian sidewalk on the southwest corner of the road, though there is clear demand for it in terms of access to athletic fields and pedestrian traffic at peak Mullins Center events as evidenced by the larger dirt path along the west side. With the completion of the Commonwealth Residential College the need to reduce traffic conflicts and reduce the risks associated with them will increase, and the urgency to provide pedestrian access and accommodation will increase.

The Commonwealth Avenue Street Improvement project proposes to improve traffic control, crossing locations and pedestrian/vehicular traffic conflicts by narrowing the vehicular flow to 2 lanes and providing bicycle lanes, pedestrian sidewalks, street trees, and Mullins...
Way Extension the traffic at events can be accommodated very efficiently, and other Complete Street improvements similar to those proposed for North Pleasant Street. Together with the Mullins Way Extension and North Pleasant Street Improvement, this project will untangle vehicular and pedestrian circulation conflicts around the campus core, build living streets that support the campus community, and further the completion of the bicycle network that connects the existing Norwottuck Rail Trail Connector, bike lanes by the Town of Amherst and Proposed North Amherst Connector.

**Ellis Way and Bridge over Pond**

One principal core campus landscape improvement project is the return of Ellis Way as a major pedestrian path that forms an arc through the center of the campus with both ends at North Pleasant Street: south of the West Experiment Station and north of the Fine Arts Center. The arc passes north of the Campus Center, west of the Student Union, east of the Library, and across the center of the Campus Pond, clarifying pedestrian circulation and providing structure to the open space framework within the center of the campus. It incorporates a bridge across the Campus Pond which was recommended in previous campus plans, including the Warren Manning plan of 1910 and the Shurcliff, Shurcliff and Merrill plan of 1953, and will serve to unify the east and west areas of the campus, as well as to make this landmark cultural landscape a central hub of the campus community.

**East Campus Pond Lawn**

The East Campus Pond Lawn is one of the largest and most visible of the campus green spaces. Together with the West Lawn, it is also one of the most historic landscapes on the campus. Both the lawns are remnants of the “Central Park” or “Campus Green” shown in historic plans. The Master Plan proposes to protect and enhance this iconic landscape through the addition of an alumni memorial walk, supplementary planting and careful maintenance.

**Sustainable Energy Sources: Solar**

The University recognizes the imperative to develop renewable energy sources for power generation on campus and has allocated land in the northwest area of Hadley Farm for the development of a Solar Electric Generation Project spearheaded by the Center for Agriculture, which will conduct research on combining
power generation with agricultural production. Additional sites for photovoltaic arrays have been identified on the agricultural lands north of the campus and at the parking lot 44 northeast of Furcolo.

Future Opportunities Program

In addition to the Rising to challenge program opportunities, the Master Plan has developed general areas of the campus where opportunities for future development and growth to support future goals of the campus community. These areas include campus threshold projects along Massachusetts Avenue, the long term development of the Northwest Greenway, and core campus sites that allow whole building replacement in a manner that completes the campus framework. In addition, the proposed projects provide significant opportunities to develop state-of-the art and efficient academic, research and administrative facilities, to advance the development of the campus community by expanding housing and campus life facilities, and to apply smart growth principles to addressing future

<table>
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<th></th>
<th>Phase 1 GSF</th>
<th>Future Opportunities GSF</th>
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infrastructure and transportation/parking needs.

It is worth noting that although building program sites have a suggested envelope, area and title and are grouped with recommended functional uses, each project site opportunity is flexible and can accommodate potential formal and functional requirements by adapting to user needs as they are determined by future building planners. What is important is that the location, general layout and the program of future campus buildings support existing and newly defined communities of learning and collaboration that reinforce well-defined places, courtyards, landscapes and complete streets.

**Streets and Landscapes**

The Rising to the Challenge outlined whole street developments along North Pleasant Street, Massachusetts Avenue and Commonwealth Avenue as well as the creation of the Mullins Way Extension. It also described the completion of the Stockbridge and Hicks pedestrian corridors, and other landscapes associated with building projects as well as improvements of the lawn areas surrounding the Campus Pond. Future landscape and street development opportunities must be undertaken in order to complete the campus fabric and heal certain areas that have not lived up to their potential, such as the south boundary of the campus core, the improvement of campus courtyards and pedestrian paths at the southwest and northwest of the campus core, the street level development of campus connections with the School of Management to the northeast, and the integration of landscapes and street edges along East Pleasant Street.

**Southwest Campus Core Academic Courtyard**

The existent landscape at the southwest portal of the campus core is characterized by parking lots and a small academic building for the Army ROTC program. As the campus expands its structured parking options, this site offers phased development opportunities that can create a carefully planned academic courtyard with a more formal gateway mass at a major campus entry point. The area’s adjacency to recreational facilities and Graber field - a unique core athletic field that currently hosts UMass Lacrosse games - will draw students north from the Southwest Residential Area through the existing tunnel and will provide a well-defined pathway to the rest of the campus core. It offers the opportunity to construct a community of buildings that could be the home of a future professional school or could be a mixture of academic and residential buildings that
combine to enhance campus living and learning opportunities.

**Northeast SOE Connection**

The School of Education, located at the Furcolo facility in the northeast area of the campus is presently somewhat isolated from the campus academic core. Former recreational fields have been converted to a working landscape for storm water retention related to the North residential area. The campus master plan suggests a strategy to remedy this isolation by planting trees along the eastern edge of North Pleasant Street and developing north-south paths from Totman gymnasium to Furcolo. Future development of academic buildings along North Pleasant Street will complete the street edge starting with and addition to Totman. Building sites at Lot 47 and Lot 23 could serve an academic and/or research function and will help to frame the open landscape and connect the School of Education to the campus core.

**East Campus Pond Lawn**

The East Campus Pond Lawn is one of the largest and most visible of the campus green spaces. It is also one of the most historic landscapes on the campus, together with the west lawn, remnants of the “Central Park” or “Campus Green” shown in historic plans. The Master Plan proposes to protect and enhance this iconic landscape through the addition of an alumni memorial walk, supplementary planting and careful maintenance, along with an addition to the FAC that will improve and define the building’s north edge.

**Goodell Green**

The quad that runs from Whitmore to the Du Bois Library and is framed by Herter, Memorial Hall, Old Chapel, Goodell,
Bartlett and Curry Hicks is one of our best examples of a successful campus landscape. However, it contains a lot of pavement and has a somewhat confusing path system. With the replacement of Bartlett with academic buildings we have an opportunity to further improve this core campus landscape with a reconfigured pedestrian system and carefully planted trees and landscape treatment.

**West Academic Courtyard**

One of the goals of the master plan is to develop a mixed use campus that operates 24/7/12; this goal suggests the concentration of academic, residential and student life activities within the campus core and the removal of non-essential functions from within the loop. Over time, as demands for new academic facilities increase, and if improving the condition of existing administrative support space requires full-building replacement of the Physical Plant complex, the master plan proposes the relocation of administrative units to the campus periphery at Tillson farm, so as to consolidate the development of the campus core for academic functions. The creation of a new academic courtyard on the west end of the academic core would formally clarify the edges of the campus core and will allow the creation of a new neighborhood that provides opportunities for future expansion of the science and engineering programs or support for other emerging academic initiatives.

**Governor’s Drive Moves North**

In the distant future, if the campus continues to expand, the Master Plan proposes moving Governor’s Drive north to the current northern edge of parking lots 26, 31 and 68. This would expand the area available within the campus core for academic and residential uses. This area would also include a parking structure to replace the existing surface parking with the campus core.

**Route 116 Connector**

The proposed Route 116 Connector will provide direct access to campus from the north and west. Traffic would be able to avoid having to come through North Amherst and down North Pleasant Street. It would also improve traffic management before and after events at the Mullins Center.
Orchard Hill Open Space and Recreation

The Master Plan recommends that this area of open space on campus that was once orchards and experimental farm fields remain as open space into the future. It’s proximity to several residential areas also make it ideal for use as a more active recreation area. One popular proposal for this area is the development of a formal Disk Golf course with tees, baskets and signs. This would provide an inexpensive form of recreation for people of all age and skill levels.

Residential

The majority of campus dormitories were built in the late 1960’s and early 1970’s and almost 70% of them are over 40 years old. The newest and most popular residential buildings on campus in 40 years were the North Area dorms, completed in 2006 with the intention of meeting the increasing demand for housing and allowing the Housing office to focus on reinvestment and modernization of their existing facilities. However, demand for housing, particularly singles, still persists and the University is preparing to meet it with the construction of the Commonwealth Residential College by 2013. The addition of 1,500 beds will accommodate the anticipated growth of the undergraduate student body outlined in the Framework for Excellence by increasing the total number of beds to 14,000. However, it will not solve the persistent problem of aging housing stock that requires ongoing building systems, code compliance and envelope repairs beyond those that could be accomplished during the summer session. Housing officials estimate the need for approximately 800 additional beds to provide an opportunity to initiate full building renovation and meet increasing demand.

In addition to on-campus dormitories for students there is a growing need for graduate student housing in the area – both family and single person units. Lincoln Apartments were built in 1958 and North Village apartments were constructed in 1971. Together they provide approximately 600 beds. While the campus houses 60% of its on-campus undergraduate population FTE, it only accommodates about 17% of its graduate FTE positions. The surrounding communities meet some of the unmet demand, but there is a shortage of housing available within close distance to the campus, particularly for international students and families.

Mass Avenue Residential

The Master Plan proposes a residential development on the south edge of Massachusetts Avenue that creates new
housing for members of the campus community and includes classrooms and student life spaces on the lower level to engage the street. This is an opportunity to introduce a new building typology. Mass Avenue Residence 1 across from Whitmore creates an appropriate neighborhood street corridor and screens structured parking.

A controlled parking entrance associated with a newly created courtyard across from Haigis Mall will simplify the vehicular and pedestrian traffic pattern at a major crossing of Mass Avenue. Mass Avenue Residences 2 – 5 together complete the campus’ southeast entrance and reinforce the development of a lively and community-engaging campus street.

<table>
<thead>
<tr>
<th>Plan ID</th>
<th>Plan Building Name</th>
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**Mass Avenue Residential**

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**Lincoln Apartment Replacement**
**Lincoln Apartments Replacement**

With the construction of new housing units along Mass Avenue the University will be able to replace Lincoln Apartments with individual townhouse units that could be occupied by faculty, staff or graduate students and would extend the fabric of the existing neighborhood toward the campus edge. This housing would be of a size that is more compatible with the surrounding neighborhood, helping to provide an appropriate use and scale of development as the campus meets the town.

**East Pleasant Street Housing**

To provide the opportunity for our on-campus housing to adapt and change for future unknown needs, East Pleasant Street provides opportunity for developing campus residential areas north of Orchard Hill and along the west edge of the street.

**North and Northwest Housing**

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The future development of the northwest view shed over existing parking lots and administrative support spaces offers an opportunity to accommodate future growth of the student population by developing residential areas within the campus core that are similar to the Commonwealth Residential College and can add vitality to the campus by providing a mix of residential, academic and campus life spaces.

**Academic Program**

Numerous studies of the academic need for classroom, science and non-science disciplines, and research space have documented the necessity of providing modern buildings through a mix of new construction and adaptive reuse of the campus aging building stock so that the functional needs of the campus academic enterprise can be adequately met and new opportunities provide for future academic growth. The Master Plan Framework outlines future development opportunities throughout the campus core that can support those needs as funding becomes available and in a manner that encourages the building of academic neighborhoods and communities of related practice.

It is worth noting that administrative space for academic departments (faculty and staff offices and meeting rooms) constitutes about 35% of all net space that is currently assigned to academic programs. The master plan intends to meet academic administrative space needs within the framework of new construction opportunities for academic programs.

**South Core Academic Projects**

The south campus core currently houses a mix of functions that include general classrooms and academic facilities that

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predominantly house the humanities, fine arts and social and behavioral sciences, the School of Management, as well as some administrative and recreational facilities. Most academic programs are compressed within limited office space, are fragmented among multiple buildings and departments lack student and faculty gathering spaces that support community identity. Existing building configurations often do not allow departmental growth or the creation of special program support spaces that support new pedagogies and are equipped with appropriate technology. The construction of new facilities will trigger opportunities to reorganize fragmented programs, reconfigure existing buildings and implement a carefully sequenced modernization that helps to improve the accommodation of all programs. The opportunities for academic buildings within the south campus core include a mixture of infill, building replacement, and the development of the south edge of the campus where there is an opportunity to create threshold buildings that welcome visitors upon entry to the campus and provide a vibrant academic environment.

**Recreation Center – Du Bois Library Corridor**

The area east of the Recreation Center and south of the access road to the New Parking Structure envisioned in Rising to the Challenge phase provides opportunities for two new mid-scale academic/campus life buildings that create a series of courtyards and complete the spaces adjacent to the newly created Marching Band building. These buildings will support the renovation of and addition to Dickinson Hall as a general classroom/academic building.

Most importantly, as Hicks way is redeveloped into a north-south living street and east-west pedestrian corridors are developed connecting to the north edge of the campus pond, this central part of the campus can be utilized for the expansion and changing needs of a social and behavioral science neighborhood currently centered on Thompson Hall and the expansion of campus life spaces that is intended for the central core of the campus.

**Fine Arts Center Addition**
The programs in the Fine Arts Center need the ability to change and adapt to the future and this addition provides the opportunity. The northeast edge of the FAC could benefit from a structure that improves the appearance and function of the service entrance to the FAC main theater and creates a more open façade to the campus pond.

Isenberg School of Management Addition and Mass Avenue Building

Over a decade after the completion of Harold Alfond Addition, the Isenberg School of Management will need to evolve and change into the future. This site creates a strong formal complement to the FAC arcade and the landscape plaza to the north, while enclosing an academic courtyard to the south that is further defined by the existing ISOM building and Mahar, a major campus classroom auditorium.

The reconfiguration of Mass Avenue also provides an opportunity to develop an academic building that anchors the south-east corner of the SOM complex and provides active learning environments to support the new residential community planned to be built along the south edge of the avenue. The resulting courtyard has the potential to work in conjunction with Haigis Mall to provide a series of welcoming open spaces that commence at the Robsham Visitors center and align north to the campus core.

Thatcher Road Building

The demolition of Hills House will initially provide an opportunity for additional surface parking. In the long term, and as structured parking is provided this location will be a valuable site for a new academic building, perhaps for the humanities and fine arts disciplines.

Southwest Campus Core Academic Courtyard

The three former dormitories, Hampshire, Berkshire and Hampden, have been converted over time to administrative space and are in poor condition. They sit within a zone that is characterized by a significant east – west slope change. The
existing landscape is characterized by parking lots and a small academic building for the Army ROTC program. As the campus expands its structured parking options, this site offers phased development opportunities that can create a carefully planned academic courtyard with a more formal gateway mass at a major campus entry point. The area’s adjacency to recreational facilities and Graber field - a unique core athletic field that currently hosts UMass Lacrosse games - will draw students north from the Southwest Residential Area through the existing tunnel and will provide a well-defined pathway to the rest of the campus core. It offers the opportunity to construct a community of academic buildings (Mass Avenue buildings 1 – 4) that could be the home of a future professional school or could be a mixture of academic and residential buildings that combine to enhance campus living and learning opportunities. These sites will allow the campus flexibility to change and adapt over time.

**North Core Academic Projects**

The north campus core currently houses a mix of functions that include general classrooms and academic facilities that

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largely house the natural sciences and mathematics and the college of engineering, along with central administrative facilities to the east and student housing to the north. The Comprehensive Science and Engineering Facilities Plan proposed a program of new construction and facilities modernization, renovation and replacement that envisions the future support for sciences in the 21st century and the creation of neighborhoods of related practice. Some of this vision will be realized by the sciences facilities planned for construction in Phase 1 of the master plan, while the rest will be completed with the future opportunities outlined below.

**Governor’s Drive Building 1**

The building site west of the Computer Science building provides a terrific opportunity to develop a new facility to support the academic goals of the Engineering and Environmental Science neighborhood. The site development includes demolition of the Engineering Lab and Duda buildings, which the CSEFP noted as being in deteriorating condition and unable to serve the science needs of the future. The proposed new facility provides an opportunity to clarify north-south circulation in the north core and to define a courtyard space providing open space for the community of users, connecting Gunness, Computer Science and Engineering Lab 2 into a coherent precinct.

**Paige Replacement**

As new science facilities are developed, particularly Governor’s Drive Building 1 and other research buildings in the north core, the campus will be able to retire “bridge” buildings such as Paige and Thayer and replace them with a modern facility that can support evolution in engineering and environmental science teaching and research. The new Paige Replacement facility will also be designed to build the campus landscape in a manner that supports the development of the Northwest corridor.

**Pleasant St. Connection to School of Education**

The School of Education is located in the Furcolo building at the northernmost edge of the academic campus, a location that originally served to mark the community outreach function of the
academic programs, which included a training and collaborative research/laboratory school - the Mark’s Meadow Elementary School - for children from the North Amherst area, including those of university-related families housed in North Village Apartments. Since 1962 when the original facility was constructed the School of Education faculty and staff had expanded so much that over 40% of its program was housed in Hills, which is ¾ mile distant from Furcolo. In 2009 the Amherst school board closed the elementary school due to decreases in the school budget as well as declining student enrollments, giving the University an opportunity to renovate the existing facility and unite its programs.

The renovation of the Furcolo facility will provide modernized teaching facilities for the academic and professional programs of the SOE, but it will not improve the spatial isolation of the academic program. The campus master plan suggests a strategy to further incorporate Furcolo Hall and the School of Education into the campus by proposing building sites along North Pleasant Street that complete the street edge begun by the Totman Addi-

Academic Research/possible Physical Sciences

The Plan proposed a program of new construction and facilities modernization, renovation and replacement that envisions the future support for sciences in the 21st century and the creation of neighborhoods of related practice. This site can accommodate a 40,000 GSF building to help meet these needs. Unlike other building sites that generally have a capacity of 4 stories, this site is capped at 2 floors in order to ensure the visual connection and spatial contiguity between Ellis Way and Prexy’s Ridge, both important natural landscapes that are part of the campus open space framework.

Academic Research/Physical Sciences Building
A comprehensive plan for the construction of new science facilities offered opportunities to renovate or replace existing science buildings whose configuration and dimensional characteristics no longer served the nature of modern laboratory science. With the construction of the CNS/Physical Sciences Building in the Rising ton the Challenge Plan the campus will have the opportunity to renovate and/or replace Hasbrouck with a facility that supports physical sciences teaching and research. This building site will improve the campus landscape by framing the north section of the Ellis Way.

**Holdsworth Addition**

The campus has experienced a steady increase in the environmental sciences; the plan identifies an addition to the Holdsworth facility to support the growth of faculty and research in environmental conservation.

**Natural Resources Road Buildings**

With the construction of new buildings for the College of Natural Sciences and with the development of the site of the former Power Plant, the campus has an unprecedented opportunity to knit the north and south halves of the academic core and to develop Hicks Way and Natural Resources Road in a manner that reinforces the street and landscape infrastructure. The Agricultural Engineering and Cold Storage buildings have low occupancy and space utilization and are currently insufficient for modern teaching and science except for the most demanding forms of experimental work or storage needs. As swing space becomes available in new and/or modernized facilities, this complex of buildings will provide a great new opportunity to build science and/or engineering space for expanding academic programs.

**North Academic Buildings**

As the campus community grows and the Northwest View Shed and Working Landscape neighborhood is developed,
the campus has the opportunity to build two new academic buildings that support an integrated living and teaching experience and further develop the campus landscape infrastructure by framing open green space and creating community courtyards.

**West Experiment Station Restoration/Reuse**

The West Experiment Station is one of the historic architectural jewels on campus and represents the legacy of scientific experimentation and entrepreneurial spirit of UMass. The Master Plan recommends that this legacy building be brought into the 21st century so that it can continue its use as an academic facility. Its contribution to the Ellis Way pedestrian corridor also calls for the removal of surface parking and improvement of the surrounding landscape.

**West Core Buildings**

Over time, as demands for new academic facilities increase and if improving the condition of existing administrative support space requires full-building replacement, the master plan proposes the relocation of administrative units to the campus periphery at Tillson farm, so as to consolidate the development of the campus core for academic functions. The creation of a new academic courtyard on the west end of the academic core would formally clarify the edges of the campus core and will allow the creation of a new neighborhood that provides opportunities for future expansion of the science and engineering programs or support for other emerging academic initiatives.

**Research Facilities**

The research space on campus is generally accommodated in academic buildings that have wet or dry non-class laboratories such as in science and engineering buildings or in non-class laboratories, studios and interview/meetings rooms that support research and scholarship in the social and behavioral sciences, as well as humanities and fine arts and the professional programs. In the last 3 years the University conducted on average approximately $110 Million dollars of sponsored research in 626,000 NASF of space within multiple disciplines. If the University is to reach its goal of increasing the amount of sponsored research grants by $80 Million within the next 10 years, it will need to provide approximately 454,000 NASF of new research space (or approximately 825K GSF).

The UMass Capital Plan campaign will build about half of the required science space, or 458K GSF in the next 5 years (NLSB Phases 1, 2 and 3). The campus has also identified the need for future capital project funding for a new CNS/Physical Sciences building and BCT Research facility at Tillson Farm, adding another 176K GSF of research space, bringing the total of new science and engineering related research space within the Rising to the Challenge Plan to 634K GSF. In addition the master plan envisions
a push for funding new academic facilities that would include space that supports research and scholarship in the social sciences and humanities by constructing a Integrated Design Building to replace Hills, and by planning the construction of a new Academic/Student Life building and the replacement of Bartlett and Machmer, all of which total 367K GSF. Together with planned modernization of existing buildings, these new facilities will be able to provide the facility support space that will be needed to meet the campus ambitious research growth goals.

The campus master plan provides multiple opportunities for sites that support public-private research partnerships. The Mass Venture Center in Hadley is one location where the University has established a mechanism for developing facilities in partnership with private entities. In addition, the northeast and south edges of Hadley farm also offer opportunities within UMass-owned property where partnerships may be developed, as is the case with the desired solar array research project contemplated by the Center for Agriculture. Finally, the building sites along North Pleasant Street (Lots 27 and 43), which are closer to the north campus cores and science and engineering neighborhoods also offer an opportunity for public-private research partnerships.

**Classroom Facilities**

Given the University historical land development patterns, the campus has a distributed model of classroom delivery - that is, the majority of the core academic buildings have space that is dedicated to both general classrooms (scheduled by the Registrar) and specialized learning environments (scheduled by academic units). In addition the University provides informal learning spaces throughout its academic buildings in the form of student study areas, and within the UMass Libraries, in a variety of formal and informal study spaces, with the Learning Commons at the lower level of the Du Bois Library being the most notable. The availability of the UMass wireless network to select campus outdoor areas also extends the available classroom spaces to the exterior campus landscape, providing increasing opportunities to expand the landscape of learning.

The Comprehensive Academic and Classroom Facilities Plan conducted an extensive analysis of the campus classroom space needs and an assessment of physical condition of classroom buildings, concluding that 92% of classrooms are substantially overcrowded, 13% of existing classroom seats are in poor classroom condition and 74% lack accessibility. Only 7% were rated as “good” with full accessibility and modernized seating that supports new pedagogical methods. One direct result of the CACFP conclusions was the allocation of state funds to design and build the New Academic Classroom Building. Planned to be completed in 2013, the new building will provide 1,900 new classroom seats in a variety of configurations, including mid-size classrooms (60 – 120 seats), audito-
ria, case-study and team based learning classrooms that will meet 100% of the new classroom seats necessary to accommodate the planned student growth of the campus in the Rising to the Challenge Plan and 70% of the total increase of student seats required to meet student growth, to alleviate overcrowding and update the existing inventory to better meet modern pedagogical requirements. With the completion of the NACB the campus will also have the opportunity, in the next decade, to develop a program of classroom modernization that will reduce overcrowding and improve the overall condition of the classroom inventory. The master plan vision and future building opportunities includes academic facilities that will continue to build modern learning environments tailored to the pedagogical needs of the future.

**Administrative and Support Facilities**

The campus administrative functions, as identified in the land use map, are generally located in the south and west of the campus core. The Whitmore Administration Building houses most of the central administration offices with the exception of Admissions, which is currently located at the east periphery of the campus in the Mather building. The Goodell building, formerly the university main library, currently houses a small number of administrative programs and is mostly configured for administrative groups, such as the Procurement office and campus mail functions. The Physical Plant building houses all of the physical plant, facilities and campus planning staff as well as shops, maintenance, storage, garage and other support facilities. The PVTA and RTIC facilities house the regional transportation fleets and a number of facilities in the periphery of the campus to the northeast and at Tillson Farm house support and alterations staff, storage, waste management and other campus support functions.

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**Administrative Future Program Opportunities**
**Academic Administrative Space**

It is worth noting that administrative space for academic departments (faculty and staff offices and meeting rooms) constitutes about 35% of all net space that is currently assigned to academic programs. The master plan intends to meet academic administrative space needs within the framework of new construction opportunities for academic programs.

**Whitmore Addition and Admissions**

Due to space constraints Admissions was relocated about a decade ago the Mather building, which was formerly a fraternity house. Though warranted from a space needs perspective, the relocation unfortunately removed this vital central administrative function to the periphery and left only the Robsham Visitor’s center and the Bernie Dallas room in the Goodell building as campus spaces that serve a welcoming function to new students and campus visitors.

The reconfiguration of Massachusetts Avenue provides an opportunity to develop an addition to the Whitmore Administration Building that can accommodate central administrative functions and/or the return of Admissions to the campus core in a manner that also supports improvements in operations between various administrative units within the office of the Provost, Administration & Finance and Student Affairs and the development of streamlined, one-stop student services. It will also improve the campus identity by facilitating the reception of prospective and new students and allowing campus tours to begin at Haigis Mall - a landmark formal landscape space.

**Tillson Farm Development Capacity**

The Tillson Farm Buildings shown in the master plan illustrate a location to house campus support services in order to use the west campus core for academic and residential functions. Facilities will be developed as academic space in the campus core becomes scarce and as the university reviews future space and facility needs for campus services.
Future Distributed Utilities Facilities

As the campus grows in the next decade, and if future growth continues, there will be a rise in the need for future facilities housing utilities functions and to increase infrastructure capacity for steam, chilled water, electrical, renewable energy generation, natural gas, storm water, waste water, telecommunications, waste disposal and other utilities. These challenges will require systemic study and review on an ongoing basis in a manner similar to the utilities review undertaken in this master plan framework document.

Proposed facilities to serve utilities functions that are required by the growth in the earlier phases have been identified, such as the CHP Alternative Energy Boiler Addition and a Hazardous Waste Materials Facility. In addition, the University has allocated land in the northwest area of Hadley Farm for the development of a Solar Electric Generation Project spearheaded by the Center for Agriculture, which will conduct research on combining power generation with agricultural production. Additional sites for photovoltaic arrays have been identified on the agricultural lands north of the campus and at the parking lot 44 northeast of Furcolo. This parking lot could also be a possible site for a future utility plant to supply the campus north and east districts.

In order to keep up with the University’s ever increasing demand for electricity, the master plan locates a new electrical substation at the former coal pile on Tillson Farm. This location is in close proximity to the major electrical supply line that runs north/south through Amherst. It is also on the east side of campus, opposite the CHP on the west side, which will provide the flexibility to draw more power from the east side if necessary, increasing the reliability of our system.

Campus Life and Cultural Facilities

Campus Planning is currently conducting studies to determine the current and future needs of campus student life functions and campus collections. Below is a list of possible building sites and opportunities that have been identified within the master plan framework to support campus life and cultural facilities.

Arts and Humanities/Community Building

This prominent site on North Pleasant Street offers a good opportunity for a community building with excellent relationships to the Arts and Humanities. In 2010 the University Gallery engaged GUND Partnership to explore opportunities...
ties to provide a vision for Clark Hall for the 21 century and for the development of an arts district that unites the study, creation and display of the arts at the south end of the Stockbridge corridor. GUND’s plan envisions renovating and expanding Clark Hall into a new Center for Visual Cultural Studies at UMass, and could be a good fit for this location.

Community/Campus Life Building

The University has conducted a two-phase feasibility study of the condition of the University Health Services facilities and the need for space required by 21st century ambulatory care in our community. The study recommended four alternatives to meeting the extensive needs of UHS with the construction of a new University Health Center as the preferred option. The master plan framework is able to accommodate a number of locations for a new facility, including this site on Massachusetts Avenue at the southwest edge of what is currently lot 32. The site will give a future health services facility prominent visibility at this location that is the university’s edge with the Amherst community; is within close proximity of the largest residential concentration of students at the Southwest Residential Area; and is close to Boyden gymnasium and the Recreation Center, where UHS has related programs and services. Finally, this location will contribute to the construction of the Massachusetts Avenue vision for complete streets.

Gateway/Community Use

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<td>University Health Center Replacement Building</td>
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Campus Life Program Opportunities
This site, located at the Southeast Gateway to the campus, is an ideal location for a large mixed use development that, coupled with a parking structure would provide additional parking for campus and community events. A community center at this location would provide easy access to the facilities from off-campus and its proximity to Downtown Amherst would help foster a synergistic relationship that could help support adjacent downtown business and services.

**Campus Community Building**

A signature campus/community building such as a Museum carefully placed in Haigis Mall would provide a new focal point on the mall and help create a more human scale for this outsized formal landscape. It would also help to better define the Fine Arts Center Plaza and its entrance. The location of such a civic building would bring more life and a sense of vibrancy to this often vast empty space which is such an important gateway to the campus.

**Hampden Dining Commons Renovation**

Campus Planning is conducting studies to determine the current and future needs of campus student life functions. Given the large amount of students that live in the Southwest Residential area, one of the ideas to provide additional campus student life facilities is to refurbish Hampden Dining Common as a satellite student union. This would provide amenities to a large student population that is fairly remote from the center of campus.

**Campus Legacy Buildings**

The campus values its legacy buildings, sites and trees for both aesthetic and education purposes, and plans to preserve its heritage with creativity and respect. An area of excellence first proposed in 1993 and undergoing phased implementation today and in Phase 1 of the master plan is the corridor following the path of Stockbridge Road from the Studio Arts Building to the Integrated Sciences Building. Part of the corridor is a historic path that will be part an Alumni Walk incorporating legacy buildings that line the campus East Ridge such as Fernald, Wilder, Clarke, and The University Club buildings.
Old Chapel

The Old Chapel is one of the most visible historic landmarks on Campus and is a familiar and beloved icon. It should be renovated into a campus community common space for special events and campus activities.

Fernald Hall Revitalization

Fernald Hall built in 1910 is an example of a historic academic building in a prime location that requires creativity in planning for preservation and rehabilitation. It is one of several legacy buildings that will contribute to a vibrant cultural landscape along the old Stockbridge Road corridor as it becomes a pedestrian way. One idea for adaptive reuse is to create a museum for special collections that would facilitate public access to academic collections that are currently distributed across the campus.

Wilder Hall & The University Club

Wilder Hall is an example of a historic building in a prime location that requires creativity in planning for preservation and rehabilitation. The buildings that make up The University Club and Wilder Hall, which is home to many community support functions, are good examples of historic buildings that are serving the campus well and will contribute to a vibrant cultural landscape along the old Stockbridge Road corridor as it becomes a pedestrian way.

Recreation Facilities

The campus has approximately 383,000 GSF of recreational and athletic facilities (excluding the Mullins Center) as well as about 29 acres of formal athletic fields and another 59 acres in informal fields, which are a vital part of our campus investment in community health, wellness and athletic achievement. The master plan supports the continuous maintenance and improvement of these assets and their incorporation into new residential life communities.

Recreation Center Expansion

The new Recreation Center has been a huge success and is an extremely popular addition to the campus, evidenced by the fact that it often reaches full utilization at peak times of the day. A Phase 2 expansion would provide additional facilities to support future growth and to build a new swimming pool for collegiate competitions.

Parking Facilities
As noted in the Transportation section of this report, only 7% of the parking supply is located in a parking structure and 75% of it is located outside the core campus, requiring many individuals to cross busy roadways. Providing site opportunities for structured parking is part of the systemic effort to improve all modes of travel, enhance the pedestrian network and open space framework, and manage and maintain adequate vehicular access to the campus.

**Massachusetts Avenue Garage**

The Mass Avenue Garage structure is envisioned as an opportunity to introduce a new building typology that has successfully been deployed at other higher education institutions and includes residential space surrounding multi-level structured parking. A 274,000 GSF building with a controlled parking entrance associated with a newly created courtyard across from Haigis Mall will simplify the traffic pattern of vehicles and pedestrians at the major crossing of Mass Avenue and supply 800 parking spaces.

**North Parking Structure 1**

The future development of the northwest view shed over existing parking lots and administrative support spaces offers an opportunity to accommodate future residential areas within the campus core that could be similar to the Commonwealth Residential College. The 213,000 GSF North Parking Structure will provide approximately 660 parking spaces that

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**Parking Opportunities**
will off-set the removal of surface parking in this area and build additional capacity. The building site offers an opportunity to design access points that connect to the north-south campus pedestrian paths and improve campus pedestrian circulation.

**Parking/Academic/Integrated Design Building**

An 86,000 GSF parking structure on the site of the old French Hall Greenhouses would provide parking for this neighborhood. This site could also be an academic building that functions as an addition to French Hall, possibly as an Integrated Design Building.

**Sustainability (TBD)**

“... The goal we all want: moving UMass Amherst into the upper echelon of public research universities in the country.”

-Chancellor Robert Holub, February 3, 2009

The current goal of the Climate Action Plan - to become carbon neutral by 2050 - is difficult for us to conceive of today, given the serious challenges that we face in the future and the need for higher education to meet them through education and innovation. As discussed throughout the master plan document, achieving the goals of the UMass Amherst Framework of Excellence will require new physical resources and careful stewardship of existing physical assets. Capital construction of facilities, utilities, transportation and landscape infrastructure is an energy intensive process. Furthermore, the energy utilization requirements of modern facilities, particularly research buildings, have changed dramatically over the last century and electrical power demand in particular has increased exponentially. In order for the University to begin planning for reductions of our greenhouse gas emissions we need to extend the culture of planning for sustainability across all of the disciplines that affect our operations and to seek innovative ways to transform the culture of learning, teaching, working and living at UMass in ways that reduce our community’s environmental footprint.