<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
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<tr>
<td>Introduction</td>
<td>1</td>
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<td>Executive Summary</td>
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<td>Program + Space</td>
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<td>Specific Proposals</td>
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<td>General Plan</td>
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<td>Appendix</td>
<td>55</td>
</tr>
</tbody>
</table>
In March 2015, Bullock Smith & Partners was employed to assist the update of the University of Tennessee Knoxville Master Plan. The master plan will most directly affect students, faculty, and staff, and are represented on the working committees. In addition, presentations seeking input from the Deans, the Faculty Senate, Student Government Association, and Graduate Student Association were set forth by the Chancellor as necessary components for building the strongest plan for the future of the campus. The Chancellor additionally charged the group to seek input broadly from the University community, the local community, alumni/ae, and all interested parties by hosting a series of public meetings and maintaining a web site through which progress could be displayed and comments received.

The 2016 Master Plan Update will serve as a guide for future construction, renovation, land acquisition, and physical improvement.

Our primary mission is to move forward the frontiers of human knowledge and enrich and elevate the citizens of the state of Tennessee, the nation, and the world. As the preeminent research-based, land-grant university in the state, UT embodies the spirit of excellence in teaching, research, scholarship, creative activity, outreach, and engagement attained by the nation’s finest public research institutions.

University of Tennessee, Mission
Figure 1.01 Long Term Rendered View of the Pedestrian Mall connecting east to 'The Hill'.
Process

CAMPUS MASTER PLAN SCOPE

The goal of the University of Tennessee, Knoxville (UTK) 2016 Master Plan is to create a master plan document that will serve as a guide for future growth at UTK and on the Knoxville Campus of The University of Tennessee Institute of Agriculture (UTIA).

The master plan portrays a 30-year vision for the two adjacent campuses, identifies long-term opportunities, and defines phases for the cohesive development of facilities on the two campuses as a unified plan.

The governing principles of this Master Plan update are:

- Align campus improvements to support UT Knoxville’s Strategic Plan.
- Assume student population needs.
- Continue to develop a safe, more accessible and pedestrian friendly campus.
- Optimize limited space on campus.
- Promote energy and environmental responsibility.
- Expand and improve the east-west spine with better linkages north-south.
- Accommodate vehicles at the periphery of campus and reinforce the pedestrian core.
- Continue to develop the campus transit system.
- Encourage preservation of historic and cultural resources.
- Recommend refinements to various campus design guideline documents.
- Maximize connections to surrounding communities.
- Coordinate with Cherokee Campus Master Plan.

Campus master plans are living documents and require review and updating on a regular basis to be relevant to the campus it informs. The 2011 Long Range Master Plan reflected wide ranging changes in the direction of UTIA and UTK. These changes included:

- Revisions to the anticipated enrollment mix.
- Significant changes in research productivity and sponsored research projects.
- The UTK Chancellor’s signing of the American College and University Presidents’ Climate Commitment (UTK goal of climate neutrality by 2061 - signed in 2007 and reiterated 2010).
- Increased strength in disciplines within the arts, humanities, social sciences and in professional schools.
- Economic changes.
- Strengthened relationships with the City of Knoxville and Knox County.

EXECUTIVE SUMMARY

This Master Plan update builds on the 2011 Plan. In March 2015, a planning team with the assistance of Bullock Smith and Partners was selected to complete the update. The planning process has been highly participatory and relied on consensus building activities. A wide cross section of campus groups including administrative, academic, student life, athletics, faculty, staff, and students have been invited to provide input and feedback. In addition, off-campus stakeholder groups and organizations from the City of Knoxville and surrounding neighborhoods were invited to participate. Accomplishments emphasized in the previous plans which have progressed toward their goals include:

- Expansion of a campus transit system
- Completion of a transit hub on Phillip Fulmer Way.
- Installation of Greenways—on both the north and south sides of the river.
- Adoption of the Campus Landscape Vision & Site Standards (2012).
- Conversion of the Steam Plant from coal-fired to natural gas.
- Expansion of the regional chiller plant program.
- Major increases in recycling and energy conservation.
- Increase in available parking.

Projects completed since the 2011 Master Plan:

- Ayres Hall - North Slope/West Connector
- Brehm Animal Sciences
- Brenda Lawson Addition
- Golf Team Facility
- Intramural Fields
- John D. Tickle Building
- Lake Avenue Early Learning Center
- Lake Loudoun Blvd. Beautification
- McLeod Food Sciences
- Min H. Kao Electrical Engineering & Computer Sciences
- Natalie L. Haslam Music Center
- North Greenhouse
- Pat Summitt Plaza
- Student Union - Phase I & Pedestrian Bridge
- Sorority Village
- Student Health Clinic
- Veterinary Hospital
- Vol Shop / Panda Express / Raising Kane’s
- Volleyball Practice Facility
- William Bass Anthropology Center
Master Plan Recommendations

The 2016 Master Plan strategies and recommendations are a result of detailed analysis completed during the master planning process. They are organized into a three-phase implementation plan: Near Term, Mid Term and Long Term. The Phases define a list of projects within generally understood year range. Every effort has been made to provide flexibility in the phasing recommendations so that if the timing for approvals or funding changes, project sequence can shift to meet that need. Near term projects are those anticipated to begin within five years. Mid term projects are reasonably expected to begin within five to fifteen years. Long term is understood as the period more than fifteen years away.

Improvements within these phases include facility renovation, the addition of new space and site improvements including such systems as open space, campus edges, entrances, districts, transportation, parking, utilities, and land acquisition. The outlay lists are not intended to be a proposed order of construction. For example, a project listed at the end may be executed at the beginning of its recommended phase. The list’s hierarchy is structured first by Campus (UTK or UTIA), second tier is Funding Source (State or Other), third tier is Project Type (Building or Site) and the ordering tier is Alphabetically.

Space Needs

These calculations were generated with Fall 2015 Data. The existing UTK and UTIA campuses are comprised of 257 buildings encompassing 14,939,647 gross square feet of space. A space needs analysis was undertaken to project the academic, administrative, research, and student life facility requirements for the current enrollment of 27,733 student head count. The analysis incorporated the following components: existing baseline square footage; square footage anticipated due to successful requests made through the capital budget process; and benchmark square footage need per full-time equivalent student enrollment. The space needs analysis was based on the Tennessee Higher Education Commission space allocation guidelines.

While preparing the Fall 2015 annual report, the campus revealed missing course records in the Registrar’s timetable file and miscoded rooms in the space database. The campus performed a two-part audit: providing missing course information and visually inspecting academic space for correct coding. The calculations included in this document have been amended with the most current data the campus can provide.

Application of the THEC Space Allocation Guidelines User’s Manual (2013) reveals there is a significant space formula deficiency. There is a deficit of about 688,702 Net Assignable Square Feet (NASF) of academic and research space that includes classroom, classroom service, lab, class lab service and open lab space. Using an efficiency factor of 0.50, this translates into 1,377,579 Gross Square Feet (GSF) of building space required to meet the current academic and research needs of the university. In addition, there is a deficit of 195,387 NASF, or 390,774 GSF of office, library and physical education space. The THEC Space Allocation Guidelines exclude auxiliary staff from the office space calculation. Following the guidelines auxiliary staff were not included in any THEC tables or calculations. However, recognizing the importance of auxiliary functions on campus, auxiliary staff were recognized in a separate table with office multipliers.

RENOVATED SPACE

Renovation needs were identified by the university by assessing the physical condition and functional suitability of existing facilities. The resulting master plan recommendations for each campus’s facilities renovation require verification on a project-by-project basis as part of the detailed planning and design process prior to construction. There are approximately 299,834 GSF of renovations currently under construction or funded. Near-term renovation projects represent approximately 47,800 GSF; Mid Term represents 225,800 GSF; and Long Term projects 834,816 GSF.

NEW SPACE

Specific and clearly justified programmatic space needs for specialized functions have been identified and added to the Capital Outlay List over a period of years by the campus administration. Additional spaces are added in this update to accommodate the university’s strategic plan. These additions are listed in Tables 102 and 103 in the Constructed/Funded and Near Term and representing 1,058,547 GSF Constructed/Funded and 867,003 GSF in the Near Term. Per phase this new GSF is offset by space lost to demolition and the deficit defined by the THEC space allocation guidelines. The near-term has a total deficit of 1,306,490 GSF.

Table 101 - THEC Space Allocation Model

<table>
<thead>
<tr>
<th>Category</th>
<th>Available (NASF)</th>
<th>Justified by THEC Formula</th>
<th>(Deficit) or Excess (NASF)</th>
<th>(Deficit) or Excess (GSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom</td>
<td>310,785</td>
<td>297,810</td>
<td>12,975</td>
<td>25,950</td>
</tr>
<tr>
<td>Lab/Reactor</td>
<td>310,973</td>
<td>384,290</td>
<td>(73,317)</td>
<td>(146,634)</td>
</tr>
<tr>
<td>Open Lab</td>
<td>113,104</td>
<td>128,365</td>
<td>(15,261)</td>
<td>(30,522)</td>
</tr>
<tr>
<td>Research</td>
<td>459,173</td>
<td>1,072,272</td>
<td>(613,099)</td>
<td>(1,226,198)</td>
</tr>
<tr>
<td>Office</td>
<td>1,275,377</td>
<td>1,183,498</td>
<td>91,879</td>
<td>183,758</td>
</tr>
<tr>
<td>Library</td>
<td>1,275,377</td>
<td>1,183,498</td>
<td>91,879</td>
<td>183,758</td>
</tr>
<tr>
<td>Physical Education</td>
<td>89,457</td>
<td>350,403</td>
<td>(260,946)</td>
<td>(521,892)</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>2,841,156</strong></td>
<td><strong>3,725,245</strong></td>
<td><strong>(884,089)</strong></td>
<td><strong>(1,768,178)</strong></td>
</tr>
</tbody>
</table>

* Assumes an efficiency factor of 0.50 for planning purposes.
There exist several significant open spaces that should be preserved and enhanced. They include the land on ‘The Hill’, Circle Park, Fiji Island at UTK and Morgan Hill and the Indian Mound and UT Botanical Gardens at the UT Institute of Agriculture.

The creation of additional space and interconnected pedestrian areas are recommended. This would be accomplished at the UT Knoxville campus by additional closures of Andy Holt Avenue and a portion of Volunteer East, by the careful siting of building additions, and the development of “pocket parks”, such as Melrose Park, Fiji Island, Blueberry Falls, and the Indian Mound. The existing green space along Cumberland Avenue established by College of Law, Henson, Hoskins Library, and Jessie Harris should be respected and reinforced by future project entrances and setbacks. Strong Hall and the new Student Union incorporate pedestrian circulation along the Cumberland Avenue Corridor. Likewise at UTIA, a new quad would be developed between Morgan Hall and the new Biotechnology Research Building. Long term surface parking will be converted to green space connecting the Indian Mound with the UT Botanical Gardens.
TRANSPORTATION

The transportation component of the Master Plan encompasses all modes of travel relevant to the UT Knoxville and UTIA campuses including automobile, transit, bicycles, and pedestrians. The overall concept of the Master Plan recommends moving parking to the perimeter; developing a comprehensive bicycle system; extending the Joe Johnson Drive, and the Joe Johnson/John Ward Pedestrian Mall that services bikes and pedestrians; and providing service and accessible parking to all buildings. It is the recommendation of this document that a full transportation study be included in the next Master Plan Update.

ROAD NETWORK

The proposed road network provides reasonable access to the campuses through several existing portals. Neyland Drive portals will continue to meet the access needs of the traffic entering and exiting the campus. Cumberland Avenue portals will continue to service campus access needs but significant traffic will shift away from Melrose Place and Volunteer Boulevard East in favor of a wider two way Phillip Fulmer Way.

Major changes proposed to the internal UT Knoxville and UTIA campuses road network include:

• Removing on-street parking from Volunteer Boulevard and adding landscape and improved pedestrian zone (Near Term)
• Andy Holt Avenue would be converted to a grand mall from Melrose Place to 20th Street, thus interrupting vehicular access into the heart of the campus (Near Term)
• Closing Volunteer Boulevard East to vehicular traffic at the Joe Johnson and John Ward Pedestrian Mall (Long Term)

PARKING

There are approximately 16,200 off-street and 1,060 on-street parking spaces on the campuses. The Master Plan calls for continuing the trend of moving parking to the perimeter so that vehicular trips are intercepted on the outside edges of the campus. Campus circulation will be accomplished by the transit system and a better developed bicycle and pedestrian infrastructure.

A net gain of parking supply is proposed. Parking spaces that were eliminated such as on-street parallel parking will be replaced, primarily by parking garages on the perimeter of the campus. Major new parking garages that are proposed include:

• 1,000 space garage at the former Stokely Athletic Site (Constructed/Funded)
• 1,000 space expansion of the Lake Avenue Parking Garage (Constructed/Funded)
• Replace the Andy Holt Tower parking structure at Circle Park with a similar size structure (Mid Term)
• 1,700 spaces on Volunteer Boulevard West one block south of Cumberland Avenue (Long Term)

Most of the on street parking would be eliminated in favor of bike lanes, “sharrows”, stormwater infrastructure or added green space. These spaces would be replaced by parking garages in key locations. The overall concept is to move parking to the perimeter, but the Master Plan recognizes that adequate accessible parking will need to be provided for each building.

BICYCLES AND PEDESTRIANS

Generally, pedestrian facilities are adequate on the two campuses but bicycle facilities are not. The Master Plan will change that. Some strategic changes to the pedestrian infrastructure are proposed and the proposed street closures will significantly improve pedestrian mobility and safety. The significant bicycle changes include:

• Provide bicycle facilities so that bicyclists can travel from Neyland Drive to ‘The Hill’ via a combination of greenways, dedicated bike lanes on the Joe Johnson bridge, and bike paths on the pedestrian mall.
• Provide a bike path or shared lane (“sharrow”) on Volunteer Boulevard.
UT Knoxville campus acreage in Knoxville totals slightly more than 400 acres, with 375 acres constituting the core campus area. The UT Institute of Agriculture core campus totals approximately 75 acres. The University's long-range projected building needs exceed both its current acreages and that provided through parcel-by-parcel acquisition. Balancing the need for more academic, research and auxiliary space with the desire for green space and the limited suitable building sites will require the campus to build with more density, taller buildings where appropriate and overall more innovative site design. Also identifying non-academic functions that can be relocated to alternative sites will maximize academic uses in the campus core.

The revised institutional zone resembles that of the 2011 Long Range Master Plan. The northeast boundary adjacent to the Fort Sanders Neighborhood has not changed from the 2011 plan. At Lake Avenue the zone moved north one-half block to the alley between Cumberland Avenue and Lake Avenue. Potentially stronger pedestrian connections can be made between the Cumberland Avenue Corridor and campus.

A corridor along Concord Street/Sutherland Avenue has been added to include the new Support Services Complex and a large tract utilized by another state agency, among other properties. This area is largely commercial/industrial and is ideally suited to serve off-campus functions. Long term recommendations include acquisition of the CSX Rail Yard, and, if the Third Creek Sewer Treatment Plant is replaced, acquiring that property to complete the move to the natural boundary of the campus.

The Institutional Zone is only a representation of the general area the campus would be interested acquiring if the property could serve an identifiable campus need.
## Constructed and Funded Projects

### Demolished GSF | Renovated GSF | New GSF | Total Building GSF | Budget (2015 Dollars)
---|---|---|---|---

**UTK Main Campus**

<table>
<thead>
<tr>
<th>State Funds</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>Henson Hall Renovation</td>
<td>0</td>
<td>17,109</td>
<td>0</td>
</tr>
<tr>
<td>0.02</td>
<td>Mossman Building (Chem Lab Building)</td>
<td>(173,947)</td>
<td>0</td>
<td>224,100</td>
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<tr>
<td>0.03</td>
<td>Steam Plant Conversion &amp; Natural Gas</td>
<td>0</td>
<td>49,570</td>
<td>0</td>
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<tr>
<td>0.04</td>
<td>Strong Hall Renovation &amp; Expansion</td>
<td>(91,346)</td>
<td>16,546</td>
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<tr>
<td>0.05</td>
<td>Support Services Complex</td>
<td>0</td>
<td>909,902</td>
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<th>Other Funds</th>
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<tbody>
<tr>
<td>0.06</td>
<td>Hodges Library Improvements</td>
<td>0</td>
<td>6,000</td>
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<tr>
<td>0.07</td>
<td>Lake Avenue Garage Expansion</td>
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<td>0.08</td>
<td>Parking Improvements (Hospitality Avenue)</td>
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<td>0.09</td>
<td>Rolling Hall Renovation</td>
<td>0</td>
<td>89,300</td>
<td>0</td>
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<tr>
<td>0.10</td>
<td>Athletics Hall (Marlin Hailey arena)</td>
<td>(150,000)</td>
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<td>375,000</td>
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<td>0.11</td>
<td>Student Union - Phase II</td>
<td>(293,685)</td>
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<td>251,070</td>
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<td>0.12</td>
<td>Tennis Pavilions</td>
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<tr>
<td>0.13</td>
<td>Thompson-Boling Arena Renovation &amp; Repair</td>
<td>0</td>
<td>34,800</td>
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<td>0.14</td>
<td>West Campus Housing Phase I (Shelbourne Towers, SRO)</td>
<td>(167,677)</td>
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<td>193,547</td>
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</table>

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>0.01</td>
<td>Andy Holt East Improvements (Blueberry Falls)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>0.02</td>
<td>Circle Park &amp; Torchbearer Plaza</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>0.03</td>
<td>Engineering Square &amp; College House</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>0.04</td>
<td>Haslam Pavilion Expansion</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>0.05</td>
<td>Tom Black Track Renovation</td>
<td>NA</td>
<td>NA</td>
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**UTIA**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>0.01</td>
<td>CVM Small Animal Clinic Second Floor Finish-Out</td>
<td>0</td>
<td>10,000</td>
<td>0</td>
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Table 1.02 Constructed/Funded Projects Outlay List
Figure 1.04 Constructed/Funded Projects Phasing Plan
(see page 8 for list of projects)
### Near Term Projects

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Demolished GSF</th>
<th>Renovated GSF</th>
<th>New GSF</th>
<th>Total Building GSF</th>
<th>Estimated Budget (2015 Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UTK Main Campus</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>State Funds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.01 Engineering Complex (Including Mechanical Plant)</td>
<td>(86,793)</td>
<td>0</td>
<td>219,000</td>
<td>219,000</td>
<td>$113,100,000</td>
</tr>
<tr>
<td>1.02 Melrose Renovation &amp; Addition (Academic Building I)</td>
<td>(172,197)</td>
<td>47,800</td>
<td>198,000</td>
<td>198,000</td>
<td>$90,500,000</td>
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<tr>
<td><strong>Other Funds</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.03 West Campus Dining Hall</td>
<td>(114,748)</td>
<td>0</td>
<td>77,300</td>
<td>77,300</td>
<td>$41,043,500</td>
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<tr>
<td>1.04 West Campus Housing (Apartment Residence Hall Site)</td>
<td>(136,488)</td>
<td>0</td>
<td>233,203</td>
<td>233,203</td>
<td>$64,319,356</td>
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<tr>
<td>S1.01 Pedestrian Mall - West Extension</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>$7,060,000</td>
</tr>
<tr>
<td>S1.02 Volunteer Boulevard Streetscape East</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>$17,150,000</td>
</tr>
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<td><strong>UTIA</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>State Funds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1.01 Ellington Plant Sciences</td>
<td>(81,082)</td>
<td>0</td>
<td>160,000</td>
<td>160,000</td>
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<tr>
<td>A1.02 Research Building II (Academic Surge for Near)</td>
<td>(4,121)</td>
<td>0</td>
<td>20,000</td>
<td>20,000</td>
<td>$8,800,000</td>
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<td><strong>Other Funds</strong></td>
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<td>A1.03 CVTR Teaching &amp; Learning Center</td>
<td>0</td>
<td>0</td>
<td>9,500</td>
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<td>$3,700,000</td>
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<tr>
<td><strong>Off-Campus</strong></td>
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<td><strong>State Funds</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>Library Storage</td>
<td>IBM</td>
<td>IBM</td>
<td>IBM</td>
</tr>
</tbody>
</table>

* Indicates Split Funding

Table 1.03 Near Term Capital Projects Outlay List
Figure 1.05 Near Term Projects Phasing Plan
(see page 10 for list of projects)
### Mid Term Projects

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Demolished GSF</th>
<th>Renovated GSF</th>
<th>New GSF</th>
<th>Total Building GSF</th>
<th>Estimated Budget (2015 Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UTK Main Campus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>State Funds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.01 Austin Perry Renovation</td>
<td>0</td>
<td>62,900</td>
<td>62,900</td>
<td>0</td>
<td>$14,000,000</td>
</tr>
<tr>
<td>2.02 Gilbert Nuclear Lab</td>
<td>0</td>
<td>100,000</td>
<td>100,000</td>
<td>0</td>
<td>$22,500,000</td>
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<tr>
<td>2.03 College of Nursing Renovation and Expansion</td>
<td>0</td>
<td>250,000</td>
<td>250,000</td>
<td>0</td>
<td>$5,500,000</td>
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<tr>
<td>2.04 Hobbs Library Restoration</td>
<td>0</td>
<td>150,000</td>
<td>150,000</td>
<td>0</td>
<td>$3,000,000</td>
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<tr>
<td>2.05 OBSER Building Renovation and Early Learning Center</td>
<td>0</td>
<td>100,000</td>
<td>100,000</td>
<td>0</td>
<td>$22,500,000</td>
</tr>
<tr>
<td>2.06 Jeffs Lab Building (Lawrence St.)</td>
<td>0</td>
<td>250,000</td>
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* Indicates Split Funding

Table 1.04 Mid Term Capital Projects Outlay List
Figure 1.06 Mid Term Projects Phasing Plan
(see page 12 for list of projects)
## Long Term Projects

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<thead>
<tr>
<th>Project Description</th>
<th>Demolished GSF</th>
<th>Renovated GSF</th>
<th>New GSF</th>
<th>Total Building GSF</th>
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<td>3.01 Academic Building (Circle Park Drive)</td>
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<table>
<thead>
<tr>
<th>Project Description</th>
<th>Demolished GSF</th>
<th>Renovated GSF</th>
<th>New GSF</th>
<th>Total Building GSF</th>
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<td><strong>Site Projects</strong></td>
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<tr>
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Table 1.05 Long Term Projects Capital Outlay List
Figure 1.07 Long Term Projects Phasing Plan
(see page 14 for list of projects)
Figure 1.08 Master Plan Building Out
Figure 1.09 Birdseye Massing Study of Master Plan Build Out.
Figure 2.01 Long-Term Rendered View of the Pedestrian Mall extending west at West Campus Housing.
The University of Tennessee, Knoxville (UTK) combines the roles of State University and Land Grant institution. The primary mission of the institution is to move forward the frontiers of human knowledge and enrich and elevate the citizens of the state of Tennessee, the nation, and the world.

The UTK Carnegie Classification is: Research University (very high research activity). Most undergraduates are full-time and admission is selective with a fairly low transfer-in rate. Admission to graduate programs is also competitive. Graduate offerings range from professional master’s to doctoral programs focused both on research and on practice. Nationally ranked graduate programs combined with partnerships at Oak Ridge National laboratories are among unique characteristics of graduate study at UTK.

UTK has embarked upon a strategic plan refresh process and writing a guiding or ‘Journey’ document for the long term commitment to the pursuit of excellence in the spirit of continuous improvement. The ‘Journey’ is anticipated to be release in late Spring 2016.

UT originally adopted five strategic priorities in 2010 to support our journey to become a Top 25 public research university:

- Undergraduate Education: Recruit, develop and graduate a diverse body of undergraduate students who through engagement in academic, social and cultural experiences, embrace the Volunteer Spirit as life-long learners committed to the principles of ethical and professional leadership.
- Graduate Education: Educate and graduate increasing numbers of diverse graduate and professional students who are equipped to address the pressing concerns of their fields, to extend the frontiers of knowledge and to contribute to the public good through service to the academy or their professions.
- Research: Strengthen our capacity and productivity in research, scholarship and creative activity to better educate our students; enhance economic, social and environmental development; support outreach to our various constituencies; and extend the reputation and recognition of our campus.
- Faculty & Staff: Attract and retain stellar, diverse faculty and staff who will proudly represent our campus, execute our mission, embrace our vision, exemplify our values and collaborate to realize our strategic priorities.
- Infrastructure & Resources: Continually improve the resource base, including attracting and retaining excellent staff, to achieve campus priorities by carefully balancing state revenues, tuition and private funding; and by embracing stewardship of our campus infrastructure and a culture that values sustainability.

Having sufficient and appropriate facilities is an absolute prerequisite for increased actual and perceived quality, and is a base element within each of the strategic priorities. This Master Plan sets forth the immediate and long-range needs of the institution within a planning framework that insists upon universal design; application of requirements for sustainability; commitment to preservation of the culture and history of the institution in its built environment; superior land-use planning; and, through careful planning, results in a better organized campus that provides significant green spaces and emphasizes pedestrian and bicycle movement throughout.

The University of Tennessee Institute of Agriculture (UTIA) includes the College of Agricultural Sciences and Natural Resources (CASN R), the College of Veterinary Medicine (CVM), UT AgResearch (formerly the Agricultural Experiment Station) and UT Extension (formerly the Agricultural Extension Service). The instructional programs of the two colleges within the Institute are also part of the UT Knoxville academic enterprise. Integral to the university’s land-grant mission, the Institute contributes to improving the quality of life, increasing agricultural productivity and income, protecting the environment, promoting the economic well-being of families, and conserving natural resources for all Tennesseans. The clientele served includes students, farmers, families, homeowners, 4-H and other youth, agribusinesses, state and federal governmental agencies, consumers and the general public. UT AgResearch administers ten Research and Education Centers located throughout the state, including Jackson, Milan, Grand Junction, Spring Hill, Lewisburg, Springfield, Crossville, Oak Ridge, Knoxville and Greeneville.

UT Extension has agents and offices in all 95 counties in the state. Extension also operates three 4-H centers, located in Greeneville, Crossville and Columbia, and three regional offices in Jackson, Nashville, and Knoxville. In addition, Extension faculty (specialists) located in Knoxville, Nashville and Jackson provide expertise and support the transfer of knowledge to field staff (agents) throughout the state. UT now owns property in West Tennessee which will be the future site for the UT Extension 4-H Center at Lone Oaks Farm. Lone Oaks Farm is a unique property in Hardeman County comprised of 1,200 acres of forest, pastures and lakes. With meeting and entertainment spaces, multiple residences, a state-of-the-art cattle handling facility and world-class horse stables and riding facilities, Lone Oaks can serve as a site for teaching youth about agriculture, natural resources and science, as well as a site for organizational retreats and business or group meetings. UTIA will request master plan services for planning, site and facility development in the first quarter of 2016.

Having sufficient and appropriate facilities is essential for the UTIA, both for the units with on-campus instructional responsibilities (College of Agricultural Sciences and Natural Resources and College of Veterinary Medicine) and those (UT Extension and UT AgResearch) with direct responsibility for the continuation and growth of the land-grant mission of the institution. UTIA has immediate need for building renovations, expanded and new facilities, and greenhouse upgrading or replacement, and for additional parking facilities.
Figure 2.02 Buildings Coded by Condition.

Legend
- Significant Attention Req.
- Attention Required
- Acceptable
- Newly Renovated
- New Construction
ANALYSIS

EXISTING CONDITIONS:

UTK currently operates its programs and services in on-campus buildings which total 14,939,647 gross square feet, ranging in age from 1872 to 2015. As of June 2015, approximately 7,279,496 gross square feet were used for auxiliary purposes. The auxiliary category includes intercollegiate athletics (1,507,209 gsf), fraternities (203,827 gsf), housing (2,779,171 gsf), sororities (209,560 gsf), parking (2,397,375 gsf), dining and bookstores (355,780 gsf), and UT Foundation-controlled space (46,574 gsf). Eleven buildings totaling 437,911 square feet are exclusively dedicated to student activities and services.

A portion of the space on UTK’s campus is considered as being used on a temporary basis and does not provide spaces that are necessarily efficient. 266,622 square feet are in former residences purchased for land acquisition but remain in use because of lack of other space. Of the 12,906,927 square feet of space in permanent buildings, 55% is auxiliary space, and 3.7% (473,755 square feet) consists of former residence halls and buildings intended to be temporary which have been pressed into service for academic programs. An additional 76,263 square feet of space in Neyland Stadium’s former dormitory areas are being used for academic purposes (see Table 2.03).

UTK research expenditures in FY 2015 totaled $173.53 million which represents a growth of $22.9 million since FY 2010. UT was included in the Carnegie Foundation 2015 list of universities classified as “highest research activity.” This list includes a total of 115 public and private universities. In 2015, the University of Tennessee Knoxville and the University of Tennessee Institute of Agriculture earned a joint designation of Carnegie Community Engagement Classification for the first time. Effort is being made to expand our funding base in a climate where annual federal research and development appropriations remain flat or decrease. We are focusing on interdisciplinary and trans-disciplinary discovery and on grand challenges which are unique to UT but aligned with external opportunities. This will help advance the fertile intersection of the arts, social sciences, and STEM disciplines.

The Governor’s Chairs program, funded by the state and Oak Ridge National Laboratory, attracts top researchers to broaden and enhance this unique research partnership. The program now includes 14 of the nation’s top research authorities and seeks to hire as many as 20 scientists in the areas of advanced manufacturing, advanced materials, biological sciences, energy sciences, nuclear security, and urban design.

Working with the University of Tennessee Research Foundation, faculty have the ability to take their research from ideation to the marketplace. The results of that collaboration can be seen in the following examples. Over the past four years, license and option agreements have increased. There was a 58 percent increase in patents filed from 2013 to 2014. Over the past two years, the National Academy of Inventors and intellectual Property Owners Association named UT among their Top 100 Worldwide universities Granted US Patents.
ACADEMIC SPACE NEEDS:

In 2009, THEC issued new "space guidelines" designed to compare academic space needs among Tennessee public universities. The formula uses class size and number of course sections matched with the prescribed space standard to determine how many square feet of classroom space is needed. A similar formula is used for scheduled lab space but the sections are categorized by discipline since the size of labs required for various disciplines can vary significantly. Space for open laboratories is simply a function of FTE enrollment.

Though this space standard formula lends some perspective to the situation, unfortunately, there are also aspects of space management that may not be adequately addressed. For example, every campus must have surge space to use for departments having to vacate their normal facilities due to major renovations or new construction. More typical than not, the temporary spaces used for this purpose are not ideal in terms of efficiency or function, but they are "made to work" for the temporary situation. However, the space guidelines do not handle these highly inefficient spaces separately from properly designed and used spaces. Additional challenges with the space formula include the lack of (1) a qualitative deflater for older, unrenovated space that no longer meets the current pedagogical needs but is still in use, and (2) special allowances for disciplines which require dedicated classrooms or distinctly different space requirements such as music, art, architecture, law and business. For campuses that offer many or all of the disciplines with special space needs, the overall results can become skewed.

UTK also, being the State’s oldest public university, has the greatest complement of older buildings, buildings not up to current codes, and whose infrastructure does not support today’s pedagogy, equipment, or inquiry.

The paradigm of higher education has shifted from large lecture halls with the instructor anchored behind a podium to smaller collaborative groups taking advantage of the latest technology. SCALE-UP or "Student-Centered Active Learning Environment for Undergraduate Programs" was developed at North Carolina State University. It began with a re-design of the classroom. Each room held approximately 100 students. The students were seated around tables with laptops in groups no larger than 9. Whiteboards were mounted around the room for use by the students. Multiple projectors and screens were arranged so every student had a clear view of the instructor materials. The students engaged in hands-on activities, computer simulations and worked collaboratively on problems. SCALE-UP students had better scores on problem-solving exams and concept test, and less attrition than students in traditional courses. By 2011, nearly 100 colleges and universities had adopted the SCALE-UP approach with specifically designed classrooms for physics, chemistry, mathematics, engineering and literary courses (National Research Council).

The natural evolution of the SCALE-UP classroom was to extend opportunities for collaboration beyond the threshold of the formal instruction space. The
had a recommended allocation for new construction or renovations. Instead they relied on their design consultants to determine the square footage on a project-by-project basis that were heavily budget-driven. At the University of Tennessee collaborative/extended learning space is a requirement listed in new building programming documents. In spring 2015 consultants, Lord Aeck Sargent (LAS) prepared a study of ‘The Hill’ district primarily for STEM education and research. LAS followed a three phase approach for their collaborative space recommendation. First, for existing structures, LAS inventoried rooms that met the collaboration/extended learning function. Next, for current construction projects, they followed the building programming documents recommendation. The programming documents consistently recommended between 7-8% of the gross building square footage be collaborative assignable square footage. Lastly, for proposed projects, LAS extrapolated their findings from the programming document analysis. The Hill Study recommends 7% of the gross building square footage be collaborative/extended learning assignable square footage.

Where the study above was a project-driven formula, the University System of Georgia created a new metric to benchmark collaborative/extended learning spaces throughout the entire system called Social/Study. The Georgia Social/ Study Metric recognizes with the advent of tablets, laptops and wireless access to the Internet, the boundaries between social and study space have blurred. Students study and work collaboratively in computer labs and in lounge areas as well as libraries. In 2013, the University System of Georgia published its Space Utilization Initiative. Regarding the social/study metric, its objective was to capture within a single cluster all spaces where students collaborate. Due to the initiative being written for the system and not a single campus and the campuses sometimes sharing students, the metric was based on Assignable Square Foot per Credit Hour. The campuses ranged from 3ASF/1CHr to 0.25/1CHr. The median was 1.25ASF/1CHr. Using a general conversion factor of 12 Credit Hours per FTE, the average collaborative/extended learning or social/study space was 15ASF/FTE. Translating this data to the University of Tennessee Knoxville and Institute of Agriculture the THEC recommended space model only allows for 5NASF/FTE for Open Labs. Based on Fall 2015 FTE of 25,673 only 128,365 NASF were recommended. Absorbing the THEC recommended space into the Georgia model the total recommended assignable square footage is 385,000.

This is a departure from past master plans. However, with the emerging importance of collaborative/extended learning spaces and the desire on the part of students for such spaces, the campus found the University System of Georgia Social/Study Metric to be an appropriate precedent and applicable benchmark for inclusion in the master plan update.

As part of the update to the Master Plan, collaborative/informal learning space will be more clearly defined and recommendations made for future projects. The THEC space allocation guidelines group informal collaboration space under the Open Lab Category with computer labs, writing labs, language labs, art studios and practices studios. However, the terminology and weight of informal collaboration space in the formula do not fully capture the growing importance of softer spaces as a compliment of the formal learning environment.

The master plan working committee surveyed our peer schools in the Southeastern Conference (SEC) and Top 25 universities on the importance they placed, if any, on informal interaction spaces and their recommended space allocations. The names for such spaces ranged from collaboration spaces, extended learning spaces, informal interaction space, commons, lounges and social/study. The University of Montana differentiated its extended learning space from generic informal space as follows: “Extended learning spaces serve to expand the available square footage for active learning in both new building construction and renovations through creative use of hallways, niches, lobby space and areas near building columns/supports. These spaces differ from informal interaction space by allowing for more structured collaborative project-based work with group learning to occur. Spaces like these are increasing in number across campus and are in high demand by students.” In their responses, our peer schools recognized the emerging importance of collaborative/extended learning spaces but none had a recommended allocation for new construction or renovations. Instead they relied on their design consultants to determine the square footage on a project-by-project basis that were heavily budget-driven. At the University of Tennessee collaborative/extended learning space is a requirement listed in new building programming documents.

The recently completed renovation of Henson Hall has student common spaces for informal study and extended learning. Strong Hall and the Mossman Building building programs included student commons, lounges and collaborative spaces.

Figure 2.05 Photo of Humanities Corridor condition prior to renovation.

Figure 2.06 Photo of Humanities post renovation. The corridor provides bench seating, counter height ledges to layout course materials or laptops. Power is provided for devices, as well. The illuminated panels are magnetic for displaying posters, flies, etc.
UTK has never had sufficient space for its academic programs. It has gladly accepted and “made do” with space abandoned by the auxiliary functions of athletics and housing, and has used former residences and other properties acquired within its “institutional zone” for academic purposes because of lack of alternatives. In the facilities it does have, aging and astounding changes in equipment and requirements within disciplines make facilities an absolutely critical issue for this institution. In buildings which have been renovated (Humanities, Henson, and Perkins) use of modern building techniques have resulted in greatly improved academic usefulness of the building and have resulted in significant energy efficiencies. New buildings and major renovations will comply with the TN High Performance Building Requirements, thus decreasing the operational cost of buildings, going forward.

Table 2.01 quantifies renovated square footage compared to new square footage per phase in the master plan. On average, 23% of the proposed construction activity is renovation. The Mid Term has the highest concentration of renovation projects at almost 40% (39.8%). This is primarily due to projects that will be completed in the Constructed/Funded and Near Term Phases allowing departments to move into new or recently vacated space while their building gets renovated.

Table 2.02 illustrates the combine negative square footage when the deficit from the THEC space allocation model and the demolition of existing structures is compared to projects in the Constructed/Funded Phase and proposed projects in the Near Term.

Table 2.03 represents how the campus has adapted older and in some cases ill-suited structure to meet current programmatic and academic needs. It shows that of the total 14,939,647 GSF of campus buildings 14% is considered temporary.
The 2011 Master Plan identified three major facilities needs in the student services and programs area: a new Student Union (Phase I opened in 2015, Phase II will open in 2018), a consolidated Student Health Facility, and intramural playing fields. The Student Health Facility was completed in January 2012 and a new intramural field complex on Sutherland Avenue opened in Summer 2013.

The West Campus Redevelopment plan for campus residential facilities has been completed. It confirms the inadequacy of the existing residence halls built in the 1960’s, requires their complete upgrading, replacement, or re-purposing, and requires construction of new residence halls. The West Campus Redevelopment Project is phased within the boundaries of Caledonia Avenue, Andy Holt Avenue, Francis Street and 21st Street. It will be phased over four years, with two buildings scheduled to open for Fall 2016. The new buildings will have a variety of unit mixes, ranging from individual, semi-suites, suites and apartments. The new building configuration is more ‘residential’ in character compared to their predecessors. The new residence halls will be better suited to fostering communities of students than the previous ‘institutional’ structures.

In the area of athletics, golf facilities were added on the Cherokee Farm, and a new indoor volleyball practice facility was constructed in the Stephenson Drive. Renovations of Neyland Stadium and Thompson-Boling Arena will continue.

Table 2.02 Constructed/Funded and Near Term Gross Square Footage Tracking

Table 2.03 Total Campus Gross Square Footage in Permanent versus Temporary Buildings
Figure 2.07 Long Term Rendered View of Lake Loudoun Blvd. looking north toward Volunteer Blvd.
The projects are organized into a three-phase implementation plan: Near Term, Mid Term and Long Term. The Phases define a list of projects within a generally understood year range. Every effort has been made to provide flexibility in the phasing recommendations so that if the timing for approvals or funding changes, project sequence can shift to meet that need. Near term projects are those anticipated to begin within five years. Mid term projects are reasonably expected to begin within five to fifteen years. Long term is understood as the period more than fifteen years away. Improvements within these phases include facility renovation, the addition of new space and site improvements including such systems as open space, campus edges, entrances, districts, transportation, parking, utilities, and land acquisition. The outlay lists are not intended to be a proposed order of construction. For example, a project listed at the end may be executed at the beginning of its recommended phase. The list hierarchy is structured first by Campus (UTK or UTIA), second tier is Funding Source (State or Other), third tier is Project Type (Building or Site) and the ordering tier is Alphabetically.
## Near Term Projects

### UTK Main Campus

**State Funds**

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Demolished GSF</th>
<th>Renovated GSF</th>
<th>New GSF</th>
<th>Total Building GSF</th>
<th>Estimated Budget (2013 Dollars)</th>
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<tr>
<td>1.01 Engineering Complex (Including Mechanical Plant)</td>
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**Other Funds**

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**Off-Campus**

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* Indicates Split Funding

Table 1.03 Near Term Capital Projects Outlay List
Figure 1.05 Near Term Projects Phasing Plan
(see page 28 for list of projects)
Figure 2.08 Birdseye Massing Study of Near Term Projects
Figure 2.09
1.01 ENGINEERING COMPLEX
219,000 GSF

Five to six story College of Engineering classroom and research building and mechanical plant.

Figure 2.10
1.02 Melrose Renovation & Addition
195,800 GSF

Five story classroom building.
Figure 2.11
1.03 WEST CAMPUS DINING
77,300 GSF
New two to three story dining facility to replace service of Presidential Court.

Figure 2.12
1.04 WEST CAMPUS HOUSING (APARTMENT RESIDENCE HALL SITE)
233,200 GSF
Two three to five story residence halls.
Figure 2.13
A101 ELLINGTON PLANT SCIENCES
160,000 GSF
New classroom building.

Figure 2.14
A102 RESEARCH BUILDING II
20,000 GSF
One story research and near term academic surge building.

Figure 2.15
A103 COLLEGE OF VETERINARY MEDICINE TEACHING & LEARNING CENTER
9,500 GSF
One story addition to the College of Veterinary Medicine.
Figure 3.01 Long Term Rendered View of ‘The Hill’ from Neyland Drive.
The General Plan section provides the background information used to develop the proposed physical master plan for the Knoxville campus (UTK) and the Institute of Agriculture (UTIA) within the oxbow of the Tennessee River. The Cherokee Campus and the UT Medical Units campus are not a part of this plan. The Master Plan for the Cherokee Campus is an appendix to this plan. The goals and governing principles of the plan are identified; an analysis of existing buildings and systems is summarized; proposed improvements are described and illustrated.

OVERVIEW AND HISTORICAL CONTEXT

Two major entities of The University of Tennessee System have facilities in the Knoxville area: The University of Tennessee, Knoxville (UTK) and The University of Tennessee Institute of Agriculture (UTIA).

UT, Knoxville is both Tennessee’s State University and Tennessee’s 1862 Land Grant institution. It is the flagship institution of The University of Tennessee and, as such, has a broad mission in instruction, research, and public service. The Institute of Agriculture has four divisions: the College of Agricultural Sciences and Natural Resources; the College of Veterinary Medicine; UT AgResearch (formerly designated as the “Agricultural Experiment Station,” which remains a part of this division); and UT Extension – Outreach. The College of Agricultural Sciences and Natural Resources (CASNR) is located on the Knoxville Agriculture campus. Its instructional functions are funded as part of UTK, and are jointly administered by the UTK Chancellor and the UTIA Chancellor. The College of Veterinary Medicine, funded by a line-item State appropriation, is predominantly located in Knoxville and is responsible to the Chancellor of UTIA. Base funding for the remaining two Divisions, UT AgResearch and UT Extension – Outreach, comes from federal land-grant statutes and their extensions and line-item State appropriations. These Divisions are statewide, responsible to the Chancellor of UTIA, and have headquarters and major presences in Knoxville and the surrounding area.
After World War II, the influx of veterans attending under the G.I. Bill required rapid growth of facilities and land upon which to build them. Parcel-by-parcel acquisition was slow, and failed to provide the contiguous areas required for a long-term building program that would accommodate immediate and intermediate institutional needs. The University had developed a concept plan of the area required for its expansion and in 1963 entered into an agreement with the Knoxville Housing Authority (now Knoxville Community Development Corporation) which provided that KHA would acquire all land not then owned by UT lying between 15th and 23rd Streets on the east and west and between Rose Avenue and the railroad properties on the north and south—134 acres. KHA acquired the land, relocated the more than 400 families living in the area, razed the more than 325 houses and other buildings not owned by UT, and graded the area. UT purchased the area from the KHA for $3,000,000. UT also leased land from the City of Knoxville on Sutherland Avenue for a temporary “barracks village” for returning service men, property which it purchased in 1970 and developed along with the Golf Range Apartments, land for which was acquired in 1965.

UT projected that its expansion needs would be greater than the boundaries of the federal urban renewal project, and in 1965 the Knoxville City Council passed a Zoning Ordinance designating the area south of Lake Avenue, between west Volunteer Boulevard and Melrose Place and south of White Avenue between Eleventh and Seventeenth Streets as an “institutional zone.” To the east of the campus, the blighted area between the campus and the Central Business District was removed as an urban renewal project, providing land for an interim use by the 1982 World’s Fair. UT’s property at 1000 White Avenue was acquired as part of the assembling of land for the Fair, and UT obtained the land along the river which it had been renting from the railroad and other parcels at the east end of the campus at the conclusion of the Fair.

UT’s Knoxville campus is today somewhat fragmented—there is the central campus; the intramural fields on Sutherland Avenue because of lack of closer land which can be used for the purpose; a major office and storage facility on Middlebrook Pike; a large office and storage facility, formerly the headquarters of Albers Drug, off Kingston Pike, the former Mills Building on Henley Street that currently houses UT conferences and other administrative and academic offices; and a recently renovated dormitory on part of land acquired in 1948 for apartment housing. The outlying parcels are well used, but the foreseeable building and attendant land needs of the institution are significant.
UNIVERSITY OF TENNESSEE INSTITUTE OF AGRICULTURE CAMPUS

In 1869, the General Assembly enacted a Bill, as amended, introduced by T.A. Hamilton of Shelby County establishing Tennessee's agricultural college home economics knowledge. The purpose of the Agricultural Extension Service is to diffuse, among the people, practical and useful information on agriculture and home economics to improve the quality of life. Amendments followed which expanded this responsibility to include 4-H/Youth work and community resource development. The Smith-Lever Act provided an organizational framework for people in local communities to receive educational assistance from their land-grant institution and the United States Department of Agriculture.

The Tennessee Agricultural Extension Service has faculty located in all 95 Tennessee counties. The County Agricultural Extension Program is a three-way partnership between the federal, state, and local governments. Subject matter support for county faculties is provided by agricultural faculty located in Knoxville.

The College of Veterinary Medicine (CVM) was established by an act of the Tennessee Legislature in 1974. Land on the Agricultural campus was provided for the construction of appropriate facilities. In addition, the College of Veterinary Medicine was granted the use of approximately 40 acres of land north of the Memorial Research Hospital for the CVM Research Farm for research/teaching facilities.

The land, building and livestock facilities used to support the agricultural teaching program of the College of Agricultural Sciences and Natural Resources and College of Veterinary Medicine are operated by the Agricultural Experiment Station as one of eleven branch agricultural experiment stations used as field laboratories in the execution of the agricultural under the Federal Morrill Land-Grant Act of 1862. The Morrill Act prohibits the use of the land fund or the interest from it for “the purchase, erection, preservation, or repair of any building or buildings”. Before the institution would be eligible to receive the State bonds in which the land fund and interest were invested, East Tennessee University, as it had become in 1840, was required to have “provided suitable lands, not less in extent than two hundred acres” for the agricultural college. Less than a month after receipt of the certified Act of the Legislature establishing the State’s agricultural college as part of the institution, the Trustees purchased the James H. Armstrong tract of land of 262 acres for $30,000 which is the site of the Agricultural campus.

The action of the University in 1882 established the Tennessee Agricultural Experiment Station as one of the first five created in the country. Since Tennessee’s topography, soil resources and climate varied greatly from Bristol to Memphis, as did the nature of the agricultural enterprises, the early Experiment Station moved quickly to establish outlying or branch stations across the state. The first branch station established was the 1907 West Tennessee Station at Jackson. Between 1907 and 1965, nine additional stations were established: Middle Tennessee, Spring Hill; Highland Rim, Springfield; Plateau, Crossville; Dairy, Lewisburg; Tobacco, Greeneville; Ames, Grand Junction; Forestry, Oak Ridge; Milan; and Martin.

The Agricultural Extension Service, created by the Smith-Lever Act in 1914, was a natural outgrowth of the development of a body of tested agricultural and research programs. The land resources associated with the Knoxville Station include 1,884 acres owned by the University (located in six distinct tracts of land) and 1,289 acres of leased land.

The tracts adjacent to the core campuses are the Morgan Unit: The 75 acres of land (a portion of the original Armstrong tract) which lies north of the Fort Loudoun Lake adjacent to the Agricultural campus is commonly referred to as the Morgan Unit. The unit is divided into two sub-tracts (1) Morgan Hill, which is the triangle bounded by Kingston Pike, Neyland Drive and Alcoa Highway and (2) Morgan Bottom, the area along Neyland Drive and bordered on the East by Third Creek and Northwest by the Agricultural campus. The Morgan Hill is a major green space in the campus area and is the site of planting for various trees and shrubs which are used as specimens in the teaching program. The lower portion of the Morgan Bottom lies below the 820 ft. elevation level on which TVA restricts building as the area is subject to occasional flooding. However, a large part of Morgan Bottom lies below the 830 ft. elevation and is poorly suited for building sites. Both of these areas are utilized for the ornamental horticultural teaching and research programs.

Other experiment station units in the Knoxville area are: Plant Science, Small Grains, Holston, Blount, Alcoa and Profit. The last two are leased to the University. http://www.cherokeefarm.org/
Existing Campus

The UT Knoxville and UTIA campuses are located in Knoxville, Knox County, Tennessee. Adjacent Agricultural Experiment Station land is in both Knox and Blount Counties. The two campuses are located immediately west of the central business district, south of the Fort Sanders neighborhood, and north of Fort Loudoun Lake. On the north side of the river, the UT Knoxville campus and the adjacent Agricultural campus are generally bounded on the north by Cumberland Avenue/Kingston Pike and White Avenue; on the east by 11th Street and the Southern Railroad; on the south by Fort Loudoun Lake and the CSX Railroad yards; on the west by Fort Loudoun Lake and Neyland Drive. The two campuses are connected by a four-lane vehicular/pedestrian bridge on Joe Johnson Drive.

The UT Knoxville and the UT Institute of Agriculture campuses are located near the major regional highways. Two interstate routes are located north of the campuses: I-40 (east-west) and I-75/I-275 (north-south). There are three existing connections between the Interstate system and the campuses. These connections are Alcoa Highway (U.S. 129) which connects to Cumberland Avenue and Neyland Drive; Seventeenth Street to Cumberland Avenue; and the James White Parkway to Neyland Drive exit. Cumberland Avenue is the major east-west arterial street through the UT Knoxville campus, which provides connections from the central business district and the area west of the campus, as well as through-traffic movements. It is expected that this major connection will significantly be reduced in the coming years as the City of Knoxville moves forward with its road diet for this corridor. Neyland Drive and Cumberland Avenue are the principal points of connection to Alcoa Highway and to the streets connecting I-40/75, although Chapman Highway/Broadway also provides substantial secondary access. The sole direct external entry to the UT Agricultural campus is from Neyland Drive, a major arterial street along Fort Loudoun Lake on the south edge of both the UT Knoxville and UT Agricultural campuses. Alcoa Highway provides access to the campuses from both the north and the south. This is the principal route from the McGhee-Tyson Airport. Alcoa Highway provides access also to the Cherokee, Plant Sciences, and Blount Agriculture Experiment Station units.

Both campuses lie in an oxbow of the Tennessee River along Fort Loudoun Lake. Knoxville is at the headwaters of the inland waterway system and the Tennessee-Tombigbee Waterway. There is water access to both the agricultural lands and the campuses on the north side of the river, and boat docks presently exist along Neyland Drive. The UTIA and UT Knoxville campuses are additionally accessible by rail lines though no passenger service currently serves Knoxville or East Tennessee.
External Factors

A number of projects are either planned or are under construction adjacent to the University which may impact its environment, some of the known projects include:

CHEROKEE FARM

The 450 acres adjacent to the south shore of Fort Loudoun Lake was acquired in 1918 and is known at the Cherokee Unit. This tract is functionally three sub-tracts.

Cherokee West:
• 200 Acres, bounded by Alcoa Highway, Fort Loudoun Lake and the Naval Reserve Station. This tract was used for dairy farm research and education beginning in 1933. In 2009, the dairy research farm took on a new purpose as development began to construct the Cherokee Farm Campus. The new campus is the region’s only research park affiliated with both a major research university and a national research laboratory.
• The Mack & Jonnie Day Golf Practice Facility occupies 40 acres on the south end.
• The central portion of this tract, 77 acres in total, serves as a state-of-the-art science and technology research campus focused on solving problems of national significance.
• The land on the west edge of the tract which falls along the river has been deemed an archaeological zone. This 72 acre zone serves to provide a wide buffer on the river’s edge along with offering a range of passive educational and recreational opportunities.
• Lastly, the site has a 10 acre preserve between the research campus and the archaeological zone. This preserve was designed to protect the areas mature trees and steepest slopes.

Cherokee South:
• 165 Acres, land bounded by Cherokee Trail and Alcoa Highway. This land contains some very steep hillsides and is primarily forested.
• Used by the University of Tennessee Institute for Agriculture Department of Forestry, Wildlife, and Fisheries in teaching and field demonstration activities.
• Used by the University of Tennessee Knoxville Facilities Services Department to conduct composting operations.

Cherokee East:
• 75 Acres, land bounded Alcoa Highway and Fort Loudoun Lake
• Utilized by the UTIA College of Veterinary Medicine to support its teaching and research mission.
• Contains the East TN AgResearch and Education Center – Joseph E. Johnson Animal Research and Teaching Unit (JARTU). This unit provides land, equipment, livestock and support for faculty, staff, and students to conduct agricultural related research.
Figure 3.07 Cumberland Avenue Corridor Schematic Design (Image Source: City of Knoxville.)
**UNIVERSITY COMMONS**

University Commons is an urban, vertical retail structure. It is situated on the property of the former Fulton Bellows & Components plant, and is within walking distance of the UT campus. The development involved a new exit and entrance ramp on the bridge at Joe Johnson Drive. The retail center is home to two national grocery/retail brands with 20 year leases. Along with these long-term anchor leases, University Commons includes approximately 40,000 square feet of retail shops with shorter leases. The former brownfield site now serves as a connector between campus, Cumberland Avenue and Kingston Pike.

**ALCOA HIGHWAY WIDENING PLAN**

This project is currently in the environmental planning stage. The ultimate goal is to widen Alcoa Highway to 6-lane access control from the Buck Karnes Bridge to Alcoa. This improvement will provide better access to and from Blount County, especially during periods of high traffic volume.

The project is broken into three phases:

- **Preliminary Engineering Phase:** Alcoa Highway (SR 115) from North of Little River to North of Maloney Road
- **ROW Phase:** Alcoa Highway (SR 115) from North of Maloney Road to Woodson Drive
- **Preliminary Engineering Phase:** Alcoa Highway (SR 115) from Woodson Drive to Cherokee Trail Interchange

**KNOXVILLE SOUTH WATERFRONT**

The Knoxville South Waterfront Vision Plan, adopted in 2006, describes a long-term improvement strategy for an approximate 750-acre area fronting the 3-mile shoreline of the Tennessee River, directly south of downtown Knoxville and the University of Tennessee-Knoxville and is described in detail on the City’s website, www.knoxvilletn.gov. A proposed pedestrian bridge from the South Bank, along Clancy Avenue, to land relatively close to the Lake Loudoun Boulevard entrance is being discussed with the city. The current thought is for it to land on the Thompson-Boling Arena “west ramp” at the north entry plaza to achieve the required clearance over the railroad track. The South Waterfront Pedestrian Bridge has received TDOF/FHWA approval for Categorical Exclusion as part of the National Environmental Policy Act (NEPA) process. The City applied in May 2015 for the USDOT Tiger Grant and receive a letter of support from the University. Unfortunately, the City’s request of $24 million for construction was not selected as a recipient of the TIGER Grant of the pedestrian/bike bridge. The City’s goal is to reapply when the next round is announced in FY 2016.

**CUMBERLAND AVENUE CORRIDOR PROJECT**

The project goal is to create a more attractive, economically successful, vibrant and safe Cumberland Avenue. The City has adopted a form based zoning ordinance to guide private development in support of the project goals, see: https://www.municode.com/webcontent/knoxvilletn/42_cumberlandcorridordistrict.pdf. The City and KUB have started on the more than $20 million investment in infrastructure upgrades including new gas, water, sewer, storm water, and electric utilities, along with a streetscape project that will establish a furnishing zone (benches, bike racks, trash and recycle cans, street trees and pavers), a median, and directed left turn movements throughout the corridor. Phase I, from Alcoa Highway to 22nd Street was completed in December of 2015 and keeps in place the 5 lane street cross section. Phase II from 22nd Street to east of 17th Street, is scheduled to be completed August of 2017. The Phase II portion of work includes a “road diet” for Cumberland reducing the street from four lanes to three lanes, which has been taken into consideration in this Master Plan. For more information, visit www.cumberlandconnect.com.

**Figure 3.08 Axonometric view of Cumberland Ave & 19th St. (Image Source: City of Knoxville)**

**Figure 3.09 Schematic rendering of Cumberland Avenue Corridor streetscape. (Image Source: City of Knoxville.)**
Architectural Styles and Forms

The predominant campus style is Collegiate Gothic. The building material palette is Campus Blend Brick with contrasting limestone or precast concrete. While there are numerous interpretations of Collegiate Gothic, ours is referred to as “Tennessee Gothic”. Designs are intended to impart a sense of an institution having a tradition of excellence, stateliness, and stability. The hallmarks of this style on the Knoxville and UTIA campuses are the Gothic arch at portals and decorative features, window surrounds of limestone or precast concrete, limestone or precast concrete bases, and red clay tile roofs. Multi-paned windows are preferred.

All views of future projects on both the University of Tennessee, Knoxville and University of Tennessee Agricultural Institute campuses must conform to the campus architectural style. A review of existing buildings which can inform the design approach would include: Ayres Hall, Austin Peay, Jessie Harris, Haslam College of Business, the Law Complex, Claxton, Henson Hall, Morgan Hall, Student Union, Strong Hall and Mossman Building.
Figure 3.11 Roof Plaza at Student Union Phase I.

Figure 3.12 North side of Henson Hall.

Figure 3.13 Haslam College of Business portal on Volunteer Blvd.

Figure 3.14 College of Law rotunda and Cumberland Ave. entry.
Organizing Principles

The overarching spatial concept of this master plan is that campus buildings are definers of open space and not, with a few justifiable exceptions, isolated showpieces. So-called "foreground" and "background" buildings each have its place and are necessary for a campus that is pleasing in both building form and spatial ensembles. The pedestrian center of UTK’s main campus, at the intersection of Volunteer East and Andy Holt Boulevards should become the heart of the pedestrian and bicycle movement with all other traffic moved to a perimeter loop.

EXISTING LAND USE ZONES AND DISTRICTS

The existing form of the campuses reflects their age, development sequence, spatial organization and architectural styles. As a means of organization, areas within the campuses have been placed in the major categories of land use zones and spatial districts.

Land use zones are based on general uses and help determine character of the campuses, establish circulation patterns, illustrate possible expansion areas, and give an overall sense of order to the units. The major zones are academic, research, administration, student life, and athletic.

Districts are areas which have common spatial and visual characteristics. Rather than quantitative as with land use zones, the determination of districts is subjective in nature. They define the homogeneous character and visual image of the campuses. The University has a couple visually distinctive areas such as "The Hill" and the Agricultural Campus, as well as a number of recognizable landmarks. Districts were formed on the basis of a clear commonality, such as a common geographic or topographic feature, form, function or activity. The Districts will become part of public maps and directions so that they may become a ubiquitous part of campus culture over time. The district names are simple and linked to a feature of the district, memorable and mutually exclusive from one another and other campus locations to minimize confusion and ambiguous references.

Figure 3.15 Wayfinding Districts
PROPOSED EMPHASIS OF MAJOR AXIS AND OPEN SPACE NETWORK

During the early 20th Century the campus grew in what has been called a “suburban” model in which long straight streets are flanked by variegated buildings, each of these buildings surrounded by parking lots and lawn or other landscaping. There are two unfortunate consequences with this development pattern: the open space system on the campus was defined by vehicular movement, and the buildings and their placement were generally inadequate to define exterior open space that feels comfortable and complementary to pedestrians.

“The Hill” district, a grouping of some of UTK’s oldest buildings, affords perhaps the most cohesive example of how a grouping of buildings and the spaces between them, can define an open exterior space that is welcoming and conducive to both pedestrian movement and more structured activities. With few notable exceptions like Melrose Park and the Indian Mound, the remainder of both campuses affords little in the way of such outdoor rooms, those areas that create a distinctive sense of place for the buildings that inform them and the people who inhabit them. This master plan continues to push toward the creation of well-defined outdoor rooms throughout the acres of campus to serve as places for all types of outdoor activities ranging from casual pick-up games to place-to-place movement between other indoor activities.

In conjunction with the gradual removal of vehicular routes from the axial west-east pedestrian spine is the definition of a system of defined open spaces. While often familiarly called “quads” in reference to those iconic spaces found on many historic British and early American university campuses, such spaces need not and indeed should not be considered strictly rectangular or highly confined by contiguous building facades.

As an organizing principle for campus development, open space and the placement and massing of buildings must be executed in an integral way. That is, campus buildings cannot stand in isolation, but must shape campus spaces and form an ensemble that gives spatial and visual clarity to the campus. The principle will be increasingly important for the University of Tennessee, where the next generation of development will take place as infill sites and as additions to buildings. The space-defining characteristics of the building edges will be critical in framing and amplifying the open spaces and pedestrian passages necessary to tie the campus together in a unified manner. The higher densities resulting from future development will be balanced by the improved clarity and linkage of pedestrian open spaces. The sense of campus order is enhanced by greater consistency in building form and expression, and by conceiving of buildings as a backdrop to campus spaces as opposed to a series of attention-commanding set pieces.

The master plan proposes a variety of defined open space types which are desirably linked in ways that mix predictability with surprise. They include:

- Quads – as existing in the Hill, Circle Park, and the Clarence Brown theatre vicinity, and the proposed improvements in the Morgan Hall area.
- Malls – being elongated, well-defined spaces that provide linear cohesion, including an extension of the Andy Holt Joe Johnson Pedestrian Mall, the proposed Volunteer East Mall, and the UTIA Garden Mall Extension.
- Parkways – the notable example of this is the Cumberland Avenue area between 17th Street and 11th Street with its variegated and partially contiguous flanking shaded lawns which form the symbolic front door of the UTK’s main campus.
- Plazas – being the specially defined and largely paved spaces, as at Gates 21 and 10 of Neyland Stadium and the south face of the University Center.
- Many “pocket parks” or small squares, likewise well defined, which occur throughout the campus as at Mountcastle Park, providing often unexpected and shady respite on an urban campus.

Hand in glove with the issue of well-defined open space is the matter of the buildings which do the defining. As mentioned previously, “The Hill” is well known and respected for its tastefully interpreted examples of Collegiate Gothic architecture, as are portions of the Cumberland Avenue parkway and UTIA’s campus. It is widely agreed that this precedent of architectural historicism should be carefully respected, within reasonable interpretive bounds, specific to those areas of campus.

Adhering to the desire that the proposed network of open spaces requires good definition of built edges, present and future buildings will need to adjoin each other in relatively close proximity in order to achieve this goal. It is also intended that the open spaces form a hierarchy, with special landscape treatments highlighting key open spaces and junction points. The landscape, therefore, reinforces the organizing principle of unity with diversity. The guiding document for landscape and companion to the campus master plan is Campus Landscape Vision & Site Standards. The full document may be downloaded at: http://masterplan.utk.edu/landscape/
Transportation

The transportation component of the Master Plan encompasses all modes of travel relevant to the UT Knoxville campus including automobile, transit, bicyclists, and pedestrians. The overall concept of the Master Plan recommends moving parking to the perimeter; developing a comprehensive bicycle system; extending the Joe Johnson/John Ward Pedestrian Mall that services bikes and pedestrians; and providing an interconnected accessible transportation network utilizing various modes to connect campus buildings & facilities.

UTIA and UTK have a multi-modal transportation system that serves its students, employees, and visitors. This system is comprised of a street network for automobiles and bicycles, sidewalks and greenways for pedestrians, an internal transit system called the “T”, and a series of parking lots and garages to store vehicles. The primary street system within the campus is primarily owned and maintained by the University. The internal transit system is operated by First Transit and UTK has a Parking Services division that operates and maintains the parking facilities. Today, there is a well-developed and well utilized system for all modes of transportation except bicycles.

In addition to circulating within the UTK campus and between UTK and UTIA, it is also important to have adequate external transportation systems. People travel to and from the UTK campus by automobile, bikes, bus, and walking. At present, the vast majority of people arrive and depart the UTK campus via automobile. In the near term future this will not likely change significantly, but it is a worthy goal to realize a greater shift from cars to other modes of travel.

Relative to the internal transportation system, this UTK campus master plan is very purposeful in terms of enhancing alternate modes of travel—namely pedestrians, bicyclists, and transit. In fact the plan includes closing some of the campus streets, converting parking lots to green space or building sites, and moving primary streets and parking more to the perimeter of the campus. In the future, the UTK campus’s transportation system will look significantly different than it does today.

Streets

EXISTING

The UTK main campus is bounded by Neyland Drive on the west and south, Cumberland Avenue on the north and Second Creek on the east. A few main campus functions are located north of Cumberland Avenue primarily south of Clinch Avenue and east of Seventeenth Street.

EXTERNAL

Reasonably good access is offered by the Knoxville regional street network. From the west, motorists destined to UTK have the option of using I-40, Middlebrook Pike, Western Avenue, or Kingston Pike. I-275 and Broadway (US 441) are the primary arterials used by motorists oriented to the north. To and from the east, the principal routes include I-40, James White Parkway, and Magnolia Avenue, which becomes Asheville Highway near the I-40 interchange. From the south the majors routes used to access UTK are Chapman Highway (US 441) and Alcoa Highway (US 129).

Closer to the campus, the external street system presents challenges that impact the portals utilized and the internal circulation. Because of barriers like Second Creek and the terrain, the campus does not have immediate access to the east except via Cumberland Avenue and Neyland Drive. In general, Cumberland Avenue operates near capacity and Neyland Drive operates below capacity. For this reason, automobile traffic should be encouraged to use Neyland Drive to access the campus. In fact, a significant amount of the population in the Knoxville and Knox County area is located west and north of the UTK campus, and to a lesser extent, east of it. The first opportunity to access the campus is from Cumberland Avenue. In other words a significant amount of the population must bypass Cumberland Avenue to access the campus via Neyland Drive.

INTERNAL

Volunteer Boulevard accommodates the most daily traffic of all UTK internal streets. Following closely behind Volunteer Boulevard is Lake Loudon Boulevard and Phillip Fulmer Way. Most major intersections on the UTK campus operate with acceptable levels of service.

Future

EXTERNAL

Cumberland Avenue has received a substantial amount of attention recently due to MPC’s and the City of Knoxville’s desire to stimulate redevelopment. After several studies were conducted and significant public involvement undertaken, those agencies decided to revise its typical section from four travel lanes to three with wider sidewalks. Construction is now underway and is scheduled to be completed in Summer 2017. The road diet and streetscaping project limits are Volunteer Boulevard West to just east of Seventeenth Street. When this project is complete, it will result in more traffic congestion on Cumberland Avenue. Some traffic is predicted to divert to Neyland Drive and some to the Fort Sanders neighborhood. Likewise, it is reasonable to assume that the UTK Neyland Drive portals will become even more desirable than they are today.

Other external street projects that will have a less direct impact on the UTK campus are the proposed Inter-City Connector that would improve existing streets to provide better connectivity from Seventeenth Street to Baxter Avenue parallel to I-40 and I-275. Refurbishing the Henley Street Bridge is now underway, so access to the south is restricted to the James White Parkway Bridge, Gay Street Bridge, and to a lesser extent Cherokee Trail. Finally, TDO plans to widen Alcoa Highway to a six lane access controlled facility making it a safer and more convenient route to/from the UTK campus.

The City of Knoxville has retained a consulting team to examine the feasibility of constructing a pedestrian bridge across Lake Loudon to connect the South Knoxville waterfront with UTK and the Neyland Drive greenway. The bridge may touch down near Thompson-Boling Arena.

INTERNAL

Recently UTK has approached the City of Knoxville to transfer ownership of internal streets to the campus. The process is in-going; however, ultimately with the transfer of ownership the campus would have greater design flexibility.

A goal of this master plan is to provide a more pedestrian/bike friendly campus that is much more walkable and bikeable than it is today with considerably more green space. To do that, this master plan proposes closing some streets, reconfiguring others, and downsizing others. The proposed internal UTK street network features the following:

• Extend the pedestrian mall to the west to 20th Street. Close Pat Head Summit St. to the entrance to the parking lot at the Music Building.
• Long term closing Volunteer Boulevard at the Joe Johnson/John Ward Pedestrian Mall
• Long term studying widening Phillip Fulmer Way to 5 lanes or 4 lanes with a raised median and converting it to two-way operation between Andy Holt Avenue and Cumberland Avenue after adjacent projects have been complete and a traffic study can be completed.

The 2011 Master Plan proposed changes were significant, hence detailed traffic analyses was undertaken to assess the impact to automobile traffic and the ability to get to and circulate on the UTK campus. A traffic analysis was not included in the 2016 - 5 year update. It is recommended to be included in the 2017 - 10 year update. In general though, reshaping the campus to make it greener and more pedestrian/bike friendly requires moving parking facilities to the perimeter, thereby intercepting vehicular trips before they get to the heart of the campus. This results in fewer and shorter internal vehicular trips.

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Figure 3.18 Campus Streets
Parking

EXISTING

UTK has approximately 16,200 off-street parking spaces with approximately one-third being designated for commuter students, just over one-third for staff, about one-fourth for non-commuter students, and about seven percent for visitors and miscellaneous uses (see figure 3.20). In recent years as opportunities became available, UT has reconfigured reduced parking supply within the interior of the campus in favor of perimeter parking.

The UTK campus contains 1,060 on-street parking spaces with a significant number being located on Volunteer Boulevard. Most of those spaces were parking meters owned and maintained by the City of Knoxville. However, this master plan recommends converting the on-street parking into greenspace and bike lane or ‘sharrow’ as part of the Near Term Volunteer Blvd. Streetscape project. The loss of spaces will be offset by the opening of the parking garage on the former Stokely Athletics Site and the Lake Avenue Garage expansion. Combine the garages will contribute more than 2,000 spaces.

FUTURE

The goal for parking is to continue to provide enough supply to adequately meet the needs of students, facility, staff, and visitors, but to locate the supply on the perimeter so that the core area is greener and more pedestrian friendly. Not only will this goal result in more green space and a more pedestrian oriented campus, but it will also reduce the number and length of internal trips that occur. Many internal vehicular trips will be replaced by bicycle, transit, and pedestrian trips. There will remain a need to provide accessible parking for all buildings and parking for service vehicles. Therefore, the campus will need to maintain a street network to all buildings that will meet these needs.

The parking garage behind Circle Park is not efficient and is expensive to maintain, hence it should be replaced when it approaches a reasonable service life. An approximate 800 space parking garage is proposed that would continue to serve the needs of that campus zone. Major impact on campus operations which will require an effective plan.

The Ag campus experiences an existing parking deficiency because of its own needs and the fact that “main campus” students use their lots for convenience. Also proposed is an approximate 1,700 space parking garage along Volunteer Boulevard West one block south of Cumberland Avenue. This facility might be a mixture of commuter, non-commuter, and perhaps facility/staff. Its location meets the perimeter parking requirement and would intercept a significant number of trips coming from the west. One potential drawback of locating a large parking garage in this location is that access may be lessened because of the Cumberland Avenue road diet/complete street project.
Bicycles and Pedestrians

EXISTING

Bicycling suitability factors used to evaluate streets include:

- Daily vehicular traffic
- Number of through lanes
- Speed of motorized vehicles
- Outside lane widths
- Existence of bike lanes or paved shoulders
- Pavement factors like condition (i.e. rough or smooth), curb, storm drains and railroad tracks
- Location factors like parking, turn lanes, shoulders, grades, curves, access control, and land use

Most campus streets are rated as either poor or very poor relative to accommodating bicyclists. One campus street feature that is detrimental to bicyclists is on street parking. Parking maneuvers and car door openings can be dangerous to bicyclists.

Pedestrians, on the other hand are more than adequately accommodated on the UTK campus. Sidewalks are prevalent along most streets, and painted crosswalks exist mid-block where needed and at all major intersections. Pedestrian flow is heaviest east and west as students walk from their dorms to academic buildings on the Hill and along Volunteer Boulevard East. To accommodate this heavy flow, UTK opened the Joe Johnson and John Ward Pedestrian Mall, previously Andy Holt Avenue. At the east end of the Joe Johnson and John Ward Pedestrian Mall is Volunteer Boulevard East, which is signalized. This traffic signal contains a long all-pedestrian phase where pedestrians moving in all directions are protected from vehicles.

Bicyclists use the Joe Johnson and John Ward Pedestrian Mall even though it was never intended to accommodate them. This creates an unsafe condition between pedestrians and bicyclists that should be corrected. The pedestrian mall is used by bicyclists because demand is there and because there is no other viable alternative for bikes.

FUTURE

One of the most significant features of the transportation component of the master plan is the accommodation of bicycles. These include expanding the Joe Johnson and John Ward Pedestrian Mall and providing a bike path its entire length. The bike path would consist of a six foot lane in each direction on the outside of the mall. The bike path needs to be aesthetically pleasing, yet designed for the safety of pedestrians and bicyclists.

The Volunteer Blvd. Streetscape will include either a bike lane or ‘sharrow’. However, by removing on-street parking and adding traffic calming features such as speed tables the overall safety for cyclists should increase.

The bike path south of Neyland Stadium would connect the Neyland Drive and Second Creek Greenway with the heart of the campus and provide bicyclists a safer way onto campus than Lake Loudoun Boulevard. Lake Loudoun Boulevard cannot be widened to accommodate bicyclists, but sharrow pavement markings (a bicyclists symbol painted on the street when it is not wide enough to accommodate a bike lane) can be installed along with share-the-road signs to help protect bicyclists and provide motorists with a reminder to be on the lookout for them.

The Joe Johnson Avenue Bridge connecting the Ag and main campus has shoulders that are marked for bike lanes.
Transit

EXISTING

UTK campus transit is operated by First Transit and consists of The Hill Route, The Fort Route, Neyland Express, Late Nite, T:Link, T: Access and ORNL/PSCC Route. The Hill Route travels east-west through the core of campus. It primarily serves to take students living on campus to academic buildings. The Fort Route travels north-south, connecting the Fort Sanders neighborhood to campus. The Neyland Express utilizes Neyland Stadium Gate 21 as a hub and travels east-west on Neyland Drive to the UTIA campus and Sorority Village. The Lite Nite provides service east-west from Sorority Village, main campus and into the Fort Sanders neighborhood for the hours of 6:00 PM until 2:30 AM (Sunday-Thursday) or 3:30 AM (Friday - Saturday). The T:Link provides point-to-point service for students on an on-demand basis from 6:00 PM to 7:00 AM. The T:Access operates as an on-demand, point-to-point service for students registered through the Office of Disability Services and faculty and staff registered through the Office of Equity and Diversity. The ORNL/PSCC Route is limited to passengers with proper credentials. It runs three times a day from the University of Tennessee Knoxville campus to the Oak Ridge National Laboratory and Pellissippi State Community College.

Ridership on the T is exceptional and students have learned to depend on it to shorten walking trips from far-reaching locations on the campus. Advancements in technology, such as mobile applications and live bus tracking have increased the ease of use and lead to even greater popularity of the T system. This well-developed transit system has made perimeter parking possible and has helped reduce internal vehicular trips.

Additionally, the Knoxville Area Transit (KAT) has two fare-base routes and one free trolley route that engage campus. KAT 43 and KAT 44 provide weekday service from the Gate 21 transfer point to apartments in South Knoxville. The Vol Trolley Route travels east-west from Downtown Knoxville through main campus to the commercial development University Commons. The free trolley runs weekdays and Saturdays, except for holidays and UT home football games. Several private apartment complexes provide shuttle service for their residents and utilize the Gate 21 transfer station for service.

FUTURE

Extending the Joe Johnson and John Ward Pedestrian Mall, as is proposed in this master plan, will significantly enhance bike and pedestrian flow on the campus. However, transit routes will need to be adjusted and these will become slightly less convenient than exist today. By necessity, when the pedestrian mall is extended, more of the transit route will utilize Volunteer Boulevard.

When Phillip Fulmer Way is converted to two-way operation, north-south transit flow will be enhanced. T buses will not be able to use Volunteer Boulevard East because it will be closed, but traveling both directions on Phillip Fulmer Way should simplify the route for users.

As UTK continues to move parking to the perimeter of the campus, transit via the T will become even more important than it is today. Ideally, the T and bikes would accommodate the vast majority of long internal trips that cannot be conveniently made on foot. It is recommended that the basic Hill, Fort and Neyland Express routes be maintained as close as possible to what is now provided.

Obviously, when roads are closed on T routes, the routes will have to be modified. For example, the connector street between Circle Drive on the Hill and Phillip Fulmer Way will need to be eliminated because of its proximity to Cumberland Avenue. With Phillip Fulmer Way one way southbound, this connector street functions adequately, but when Phillip Fulmer Way is widened and converted to two-way operation, it will not. The Hill:T route may need to use Cumberland Avenue instead of the eliminated connector street. Likewise, closing Andy Holt Avenue between Phillip Fulmer Way and Volunteer Boulevard East will impact transit routes.

In addition to maintaining the existing T routes, UTK should make strategic investments in expanding on-campus transit including adding a route to serve the new intramural fields. Moreover, transit service should be provided on weekends and UTK breaks. It is also important to provide routes for new off-site student housing. Finally, it is extremely important to maintain the transit center on Phillip Fulmer Way near Gate 21 of Neyland Stadium.

SERVICE AND EMERGENCY ACCESS

All buildings and public spaces must provide service and emergency access as stipulated by code requirements. Service includes facilities for deliveries, equipment and furniture change out, maintenance vehicles, trash storage and access, etc. For all new construction and renovation projects, service areas are to be hidden from view by placement or screening.
Figure 3.24 The 'T' Routes. Snapshot taken from the live mobile application. Bus locations are 'live' for an improved rider experience.
In 2015, the university published the Utilities Master Plan as a companion to the Campus Master Plan. It supplements the vision of the Campus Master Plan with technical insight. The full document can be downloaded at: http://fs.utk.edu/Units/utilities/UtilitiesMasterPlan02-15.pdf. Below is a general description of utilities services used and maintained by the campus.

**STORM SEWER**

The University of Tennessee campus operates as a municipal separate storm sewer system (MS4). Campus has an internal stormwater program within Facilities Services governed by the State of TN National Pollutant Discharge Elimination System (NPDES) permit. This permit is required by the TN Department of Environment and Conservation under the authority of the TN Water Quality Control Act of 1977 and approved from the US EPA under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977. Future construction and densification of the campus will put a strain on the existing storm sewer system. Current and future construction projects are governed by the Run-off Reduction Policy and Illicit Discharge Policy (issued 2015). The University of Tennessee Best Management Practices Manual and other information regarding stormwater may be found at: stormwater.utk.edu
POTABLE WATER
The University maintains its own water lines in “The Hill” area and on the Agricultural campus. On the rest of the UT, Knoxville campus, water service to buildings is provided by the Knoxville Utilities Board. As in other utility systems on the campus, the age of some lines and the changing requirements for water services require that substantial maintenance and continuous upgrading of the systems be provided.

SANITARY SEWER
As in the case of water and natural gas, some sanitary service is provided by UT, Knoxville and some by the Knoxville Utilities Board. The Facilities Services Department provides maintenance and upgrading of these systems. The age of some sanitary sewer lines requires constant maintenance and upgrading of the system.

STEAM DISTRIBUTION
The steam distribution system is maintained and upgraded by the Facilities Services Department. The system is constantly updated to provide service to new and expanded facilities, and to repair or replace damaged equipment. UT decided to eliminate coal use in the Steam Plant and self-funded a $25 million project scheduled to be completed in 2016. The conversion will replace the three coal-fired boilers with three high-efficiency NG/fuel oil boilers. The conversion will decrease emissions by 43%, the equivalent of taking 3,300 homes ‘off-the-grid’ for a year.

REGIONAL CHILLER PLANTS
The university will continue to develop regional chiller plants throughout both campuses where practical. In some cases where a stand-alone plant is impractical, new buildings will include space for expansion to service future buildings identified in this master plan. In addition, the university desires that as regional chiller plants are renovated or constructed, the capacity to provide thermal storage be provided to allow moving electrical loads to off-peak periods. This will have implication on project cost and programmatic space requirements.

ELECTRICAL DISTRIBUTION
The University of Tennessee purchases power directly from the Knoxville Utilities Board at 13,200-volts and distributes power to University buildings. The University owns and maintains all components of the on-campus distribution system, including protective equipment, underground conductors, transformers, and switchgear. Facilities Services oversees construction and renovation and performs maintenance on this system, including repair and replacement of overhead and underground distribution lines, repair and replacement of transformers and switchgear, rerouting power as necessary during emergencies, and repair of a building electrical system.

UTK Campus
The Main Campus has major distribution at 13,200-volts. Power is distributed from two central substations utilizing nominal 400-amp, 13,200-volt circuits. The main substation, located on the south side of campus, is an open substation utilizing vacuum circuit reclosing circuit breakers which beginning in 2015 are scheduled to be replaced by state-of-the-art gas insulated switchgear which will provide increased reliability, safety and reduced maintenance. Power is provided from an immediately adjacent KUB substation.

Due to continuing campus growth, an additional substation has been constructed at the corner of Sixteenth Street and Laurel Avenue, which provides eight additional 400-amp, 13,200-volt circuits. The substation is housed within a structure designed to blend in with the neighborhood. From this substation, new underground circuits are extended onto the main campus. One circuit services critical buildings on The Hill. One will be extended to the heart of the campus at Middle Drive and Phil Fulmer Way. Two circuits will serve the north side of Cumberland Avenue and others will extend to a central point on campus, along Andy Holt Drive to serve future buildings in that area such as the West Campus Housing development.

Older lines insulated with cross-linked polyethylene are reaching the end of their useful lives and undergoing replacement. In addition, new sectionizing switchgear are being installed throughout campus to enhance reliability of the system and minimize the duration of power outages by allowing rerouting of feeds for service and repair. Other 13,200-volt work required is the replacement of older inefficient distribution transformers with new modern transformers with higher efficiencies, resulting in lower operating costs. This work is ongoing. Existing SCADA systems which have been begun on campus should be expanded and fully implemented to allow remote control and monitoring of new and recently installed sectionizing switchgear as well as system configuration and status.

UTIA
With the exception of a minor amount of overhead lines serving some of the older greenhouses, all power distribution on the Agricultural Campus is underground, utilizing the 13,200-volt system served from the Main Campus. There are two circuits providing power to this campus which were recently converted from overhead distribution to underground for increased reliability.

Some of the conductors on the Agricultural Campus are of older cross-linked polyethylene-insulated construction. These older lines are currently scheduled for replacement with new conductors utilizing EPR insulation.

NATURAL GAS
The University maintains its own natural gas distribution system in “The Hill” area. On the rest of the UT, Knoxville campus, the Knoxville Utilities Board brings the service to a meter located adjacent to the building. The Facilities Services Department maintains the University’s gas distribution system and all gas lines within buildings.

COMMUNICATION
UT, Knoxville owns its own switch and cable plant, both exterior cabling and interior wiring. In addition to providing telephone service within University buildings, the Department of Telephone Services maintains a campus “blue light system” through which emergency calls are routed directly to the E-911 system.

SECURITY SYSTEMS
The campus security system is administered by UT Police Department, which maintains a central receiving station 24 hours a day for receipt of emergency calls, and then responds to them. A sophisticated emergency blue phone system and exterior cameras are in place. The security system is maintained by Facilities Services. The blue phone system is jointly maintained by Telephone Services and Facilities Services.

INFORMATION TECHNOLOGY
Information technology will continue the trend towards improved wireless service on both campuses. An emerging trend is recent years is the expectation by students of strong Wi-Fi service is outdoor spaces. The university has provided such service on new construction projects such as Circle Park and the Engineering Quad. Hardwiring distribution will continue to be required throughout the campuses and in buildings to satisfy the data transfer demands.
Supplemental Plans

CAMPUS LANDSCAPE VISION & SITE STANDARDS
http://masterplan.utk.edu/landscape/

CHEROKEE FARM DEVELOPMENT GUIDELINES
http://www.cherokeefarm.org/project/development-guidelines/

CUMBERLAND AVENUE CORRIDOR
http://www.knoxvilletn.gov/government/city_departments_offices/redevelopment/cumberland_avenue_corridor_project

STORMWATER PROGRAM AND BEST MANAGEMENT PRACTICE MANUAL
http://fs.utk.edu/stormwater/default.htm

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