



ROANE STATE COMMUNITY COLLEGE MASTER PLAN

Prepared by TSW / August 2017



ROANE STATE MASTER PLAN

// SPECIAL THANKS

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All of the Roane State Community
College administrators, staff, faculty,
and students who contributed to this
Master Plan

SSR Engineers who conducted the
facilities analysis

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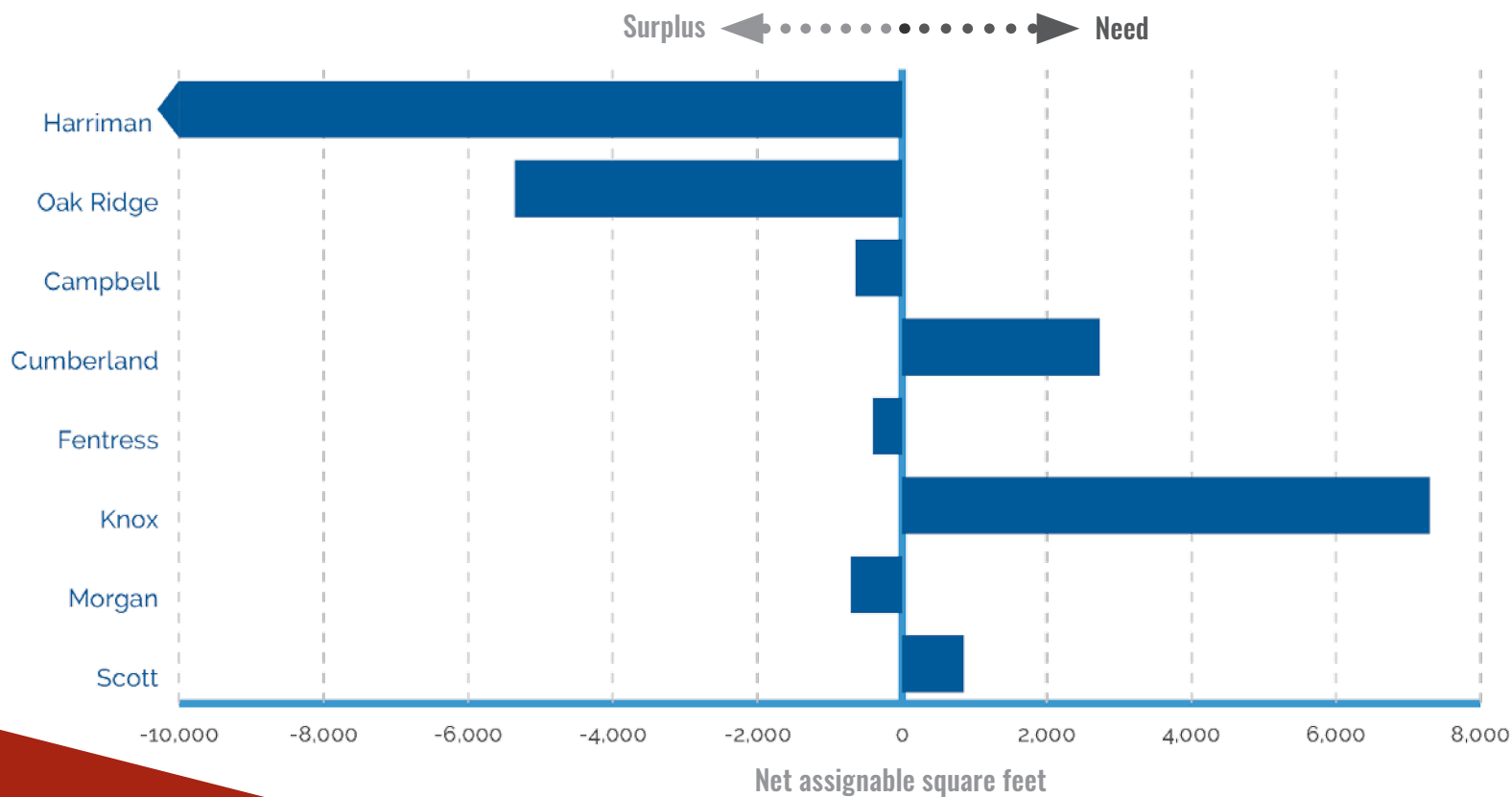
EXECUTIVE SUMMARY

Roane State Community College has a network of eight state-owned campuses, as well as other leased campuses. A number of these campuses were funded by county or

local sources, in what is a somewhat unique model for Tennessee community colleges, but allows Roane State to reach a high percentage of residents in its service area. Roane State also has a campus in Knox County, which is outside of the primary service area. This campus provides

only health care programs. This Master Plan recommends improvements on each state-owned campus, especially on the Main Campus in Harriman. No major site issues were identified on any campus.

FALL 2016 CLASSROOM AND LAB SPACE NEEDS (THEC).....



A detailed demographic and labor market analysis was conducted as part of this Master Plan and is summarized on pages 22-31. Key findings are as follows:

- Loudon, Cumberland, and Knox counties are projected to have the fastest growing population
- Participation rates are consistently high across the service area
- Most of the population is within a 30-minute of a Roane State campus
- Morgan, Fentress, Campbell, and Scott counties have highest adult population with no college degree

A detailed space analysis was also conducted for all state-owned campuses and is summarized on pages 52-61. The chart on the previous page summarizes the need for additional teaching space by campus according to the Tennessee Higher Education Commission space model.



INSTITUTIONAL VISION

Roane State's vision is to be a premier learning institution that transforms lives, strengthens community, and inspires individuals to excellence

HARRIMAN CAMPUS PROPOSED MAJOR IMPROVEMENTS

While no new buildings or facility expansions are envisioned on the Harriman Campus due to the lack of identified space needs, a number of other improvements have been identified as follows. See pages 64-70 for additional detail.

TECHNOLOGY BUILDING MAJOR RENOVATION

This aging building is in need of upgrades to be on-par with other facilities on campus. These include a new roof, electrical upgrades, and improvements to finishes, lighting, and furniture, especially in underutilized spaces.

BASEBALL/SOFTBALL FIELDS

The construction of a parking lot and the installation of outdoor lighting will make these fields more usable for visitors and in the evening. A small training, locker room, and coach office building will provide needed space.

EXPO CENTER

A number of upgrades are recommended to the existing Agricultural Exposition Center, as shown on page 64.

DUNBAR BUILDING RENOVATION

This building is the administrative, social, and academic center of campus, but should be modernized to provide a more welcoming feel and increase utilization. Renovations should focus on restrooms, labs, hallways, and the student center, where new lighting, furniture, and colors have the potential to transform the space.

MAIN PARKING LOT IMPROVEMENTS

The complete lack of landscaping creates an institutional feel that contrasts sharply with the interior of the campus. Trees, grass plantings, new curbs, and new pavement will create a better first impression.

FRONT LAWN IMPROVEMENTS

The eastern edge of campus, along Patton Lane, has a rural but unwelcoming feel. New tree and grass plantings could soften the view and help frame views of the O'Brien Building.

QUADRANGLE IMPROVEMENTS

The existing landscaping of the quad is complicated and costly to maintain, as well as lacking seating areas and shade. Strategic tree and grass plantings, combined with new furnishings, will enliven this space.

STUDENT CENTER PATIO IMPROVEMENTS

The addition of landscaping, planters, furniture, and building signage to this space will draw the existing energy from inside the student center outside onto this patio with attractive views.

O'BRIEN COURTYARD IMPROVEMENTS

This low-lying space should be re-envisioned with landscaping, trees, and potentially an outdoor classroom.

PROPOSED IMPROVEMENTS ON OTHER CAMPUSES

A number of improvements are also recommended for Roane State's other campuses, as follows. See pages 71-72 for additional detail.

OAK RIDGE CAMPUS IMPROVEMENTS

Landscaping updates, an investigation of settling in the library, flooding improvements, and repaving will improve the look and functionality of the campus.

CAMPBELL COUNTY ADDITION

A new science lab and two classrooms will allow more courses to be offered on this site.

KNOX COUNTY CAMPUS

There is a need for additional teaching space on this campus, but no adjacent land is available to expand and the existing location lacks visibility. A new location should be identified for a leased or state-owned campus in a more visible location.

CUMBERLAND COUNTY ADDITION

A chemistry lab will allow more courses to be offered on this site.

CLINTON FACILITY

Land should be acquired and a permanent state-owned structure should be constructed. This facility should house space to teach advanced manufacturing programs.

FACILITIES IMPROVEMENTS

A number of improvements have been identified for buildings on most campuses to address deferred maintenance issues and ensure all facilities are fully functional and modernized. These are detailed on page 73.





The background image shows a college campus scene. On the left, a large, leafy green tree stands next to a set of concrete stairs with a metal railing. In the center, a tall, dark tree trunk is visible. To the right, a modern building with a light-colored, vertically-ribbed facade is partially shown. A red banner hangs from the building, featuring the text 'Information' and 'Welcome to Roane' in white. In the foreground, a man and a woman are walking away from the camera on a paved path. The man is wearing a light-colored shirt and shorts, and the woman is wearing a dark jacket and light-colored pants. A low stone wall and a bed of red flowers are in the immediate foreground. A semi-transparent red triangle is overlaid on the left side of the image, containing the main title and a list of contents.

01 // HISTORY & OVERVIEW

>> QUICK FACTS

>> ROANE STATE CAMPUSES

>> COLLEGE HISTORY

>> PREVIOUS MASTER PLAN

>> DEGREE PROGRAMS OFFERED

QUICK FACTS

All facts are based on the 2014-2015 Tennessee Higher Education Fact book. All comparisons are based on TN Community Colleges.



\$4,131

annual tuition and fees

2ND Highest
STUDENT
SATISFACTION RATE



THIRD
HIGHEST %
OF PELL ELIGIBLE STUDENTS



67%

are FEMALE STUDENTS
> Highest percentage statewide

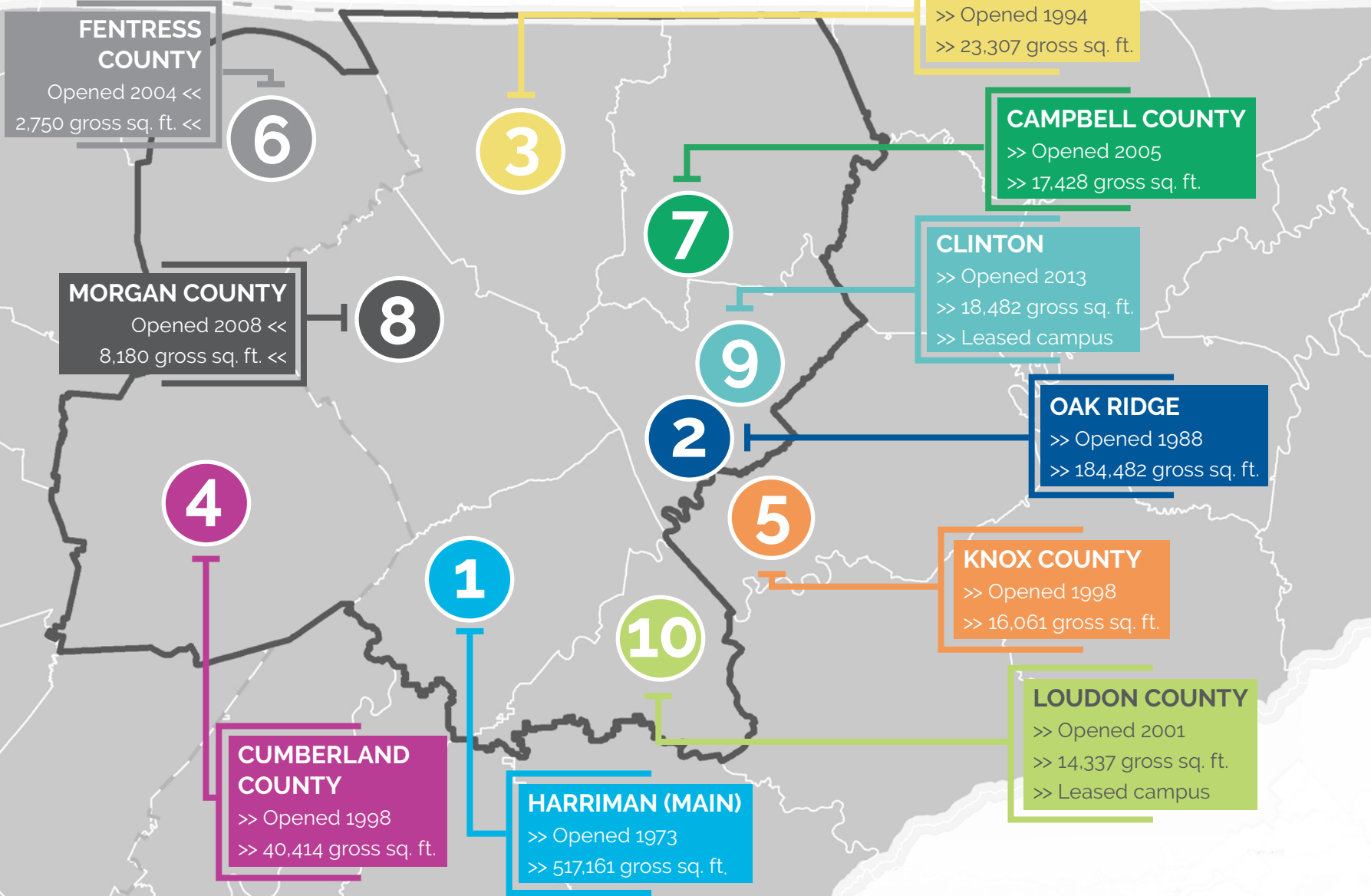


THIRD highest
RETENTION
RATE





ROANE STATE CAMPUSES



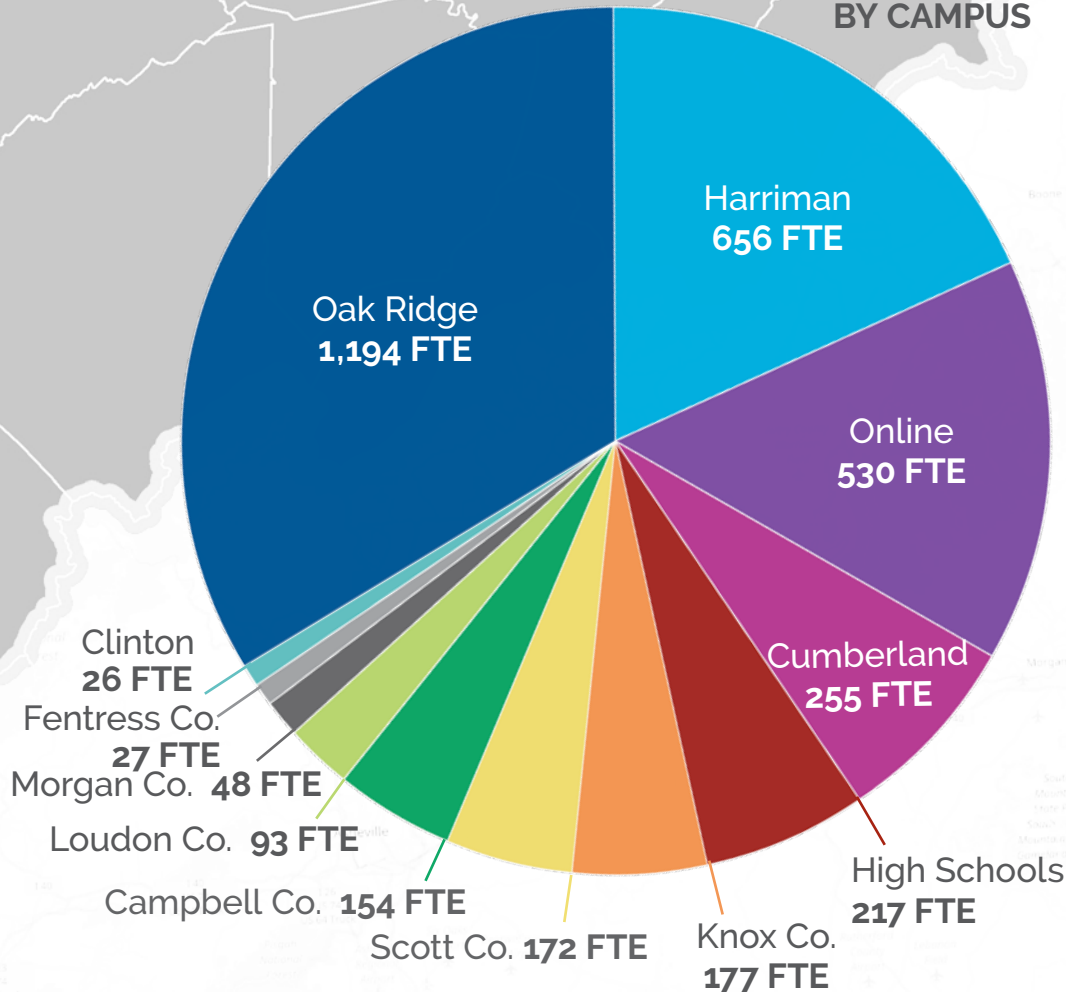
SATELLITE CAMPUSES: A UNIQUE MODEL

Roane State Community College has a more robust network of campuses than other community colleges in the Tennessee Board of Regents system.

This means that a campus is available within a short drive of every resident of the service area, an important factor in providing easy access to higher education for Tennesseans. This also contributes to Roane State's participation rate, which is the highest in the state among community colleges that do not serve a major metropolitan area.

Another unique factor in Roane State's model is that the construction of many smaller campuses has been funded by local governments and local donors. This model is commonplace outside of Tennessee and provides an additional source of funding as well as a strong link to the local community because of their financial investment.

>> FALL 2016
ENROLLMENT
BY CAMPUS



COLLEGE HISTORY

Roane State was authorized by the Tennessee General Assembly in 1969. The first classes were offered in the Fall of 1971 at the former Fairmont Elementary School in Harriman, and the Harriman Campus opened in the fall of 1973

In 1989, all faculty and staff offices were equipped with a personal computer or terminal. In 1992, Roane State installed the first distance learning classrooms in the Tennessee community college system.

The Oak Ridge campus opened in 1988, with other satellite campuses following in the next two decades.



Nearly 300 people attended the 1971 groundbreaking ceremony for Roane State's Harriman Campus



EXPO CENTER

The Henry/Stafford East Tennessee Agricultural Exposition Center opened in 1990 on Roane State's Harriman campus. It is named after Jim Henry and Benny Stafford, two members of the Tennessee General Assembly who played vital roles in the creation of the Expo Center.

The Expo Center includes the main enclosed arena, a covered outdoor arena, an outdoor warm-up pen, a 300 stall barn, and a campground. In fiscal year 2016, it booked approximately 126 days worth of events, including a wide variety of livestock and agricultural events. It remains an important part of the health of the local economy.

Between 2008 and 2013, the direct annual economic impact of the Expo Center generated more than four times the return on investment.

Source: An Analysis of the East TN Agricultural Exposition Center's Local Economic Impact 2008-2013



A bull riding event in the main arena. During fiscal year 2016, the Expo Center hosted a total of 76 events.

PREVIOUS MASTER PLAN PROGRESS MADE

The most recent master plan for Roane State was prepared in 2006 by Community Tectonics Architects. This plan put forth a 10-year vision for each Roane State Campus. The ambitious enrollment projections from the previous Master Plan are shown below and compared with historic and current numbers. Significant progress has been made in the decade since the previous Master Plan was completed, including the following initiatives.

- Upgraded fire alarm systems on multiple campuses
- Added security camera systems to all campuses
- Replaced roofs on Expo Center, Dunbar Building, Gymnasium, Cumberland County campus
- Upgraded HVAC systems in the Library, Dunbar Building, Gymnasium, and O'Brien Building
- Added air conditioning to Gymnasium
- Upgraded three science labs on the Harriman campus and added a lab on the Oak Ridge campus
- Upgraded the hoods/ventilation systems in the chemistry labs on the Harriman campus
- Added new bleachers to the gym
- Added seating in the Expo Center
- Added a covered walkway at the Expo Center
- Repaired the library building envelope
- Cleaned the façade of the Coffey/McNally Building
- Purchased the Knox County Campus
- Added the Goff Building on the Oak Ridge campus
- Constructed additional parking on the Oak Ridge Campus
- Constructed the Morgan County campus
- Added the Cumberland Business Incubator on the Crossville campus
- Relocated the Fentress campus and renovated the building
- Completed significant upgrades to IT security

PREVIOUS MASTER PLAN ENROLLMENT PROJECTIONS.....

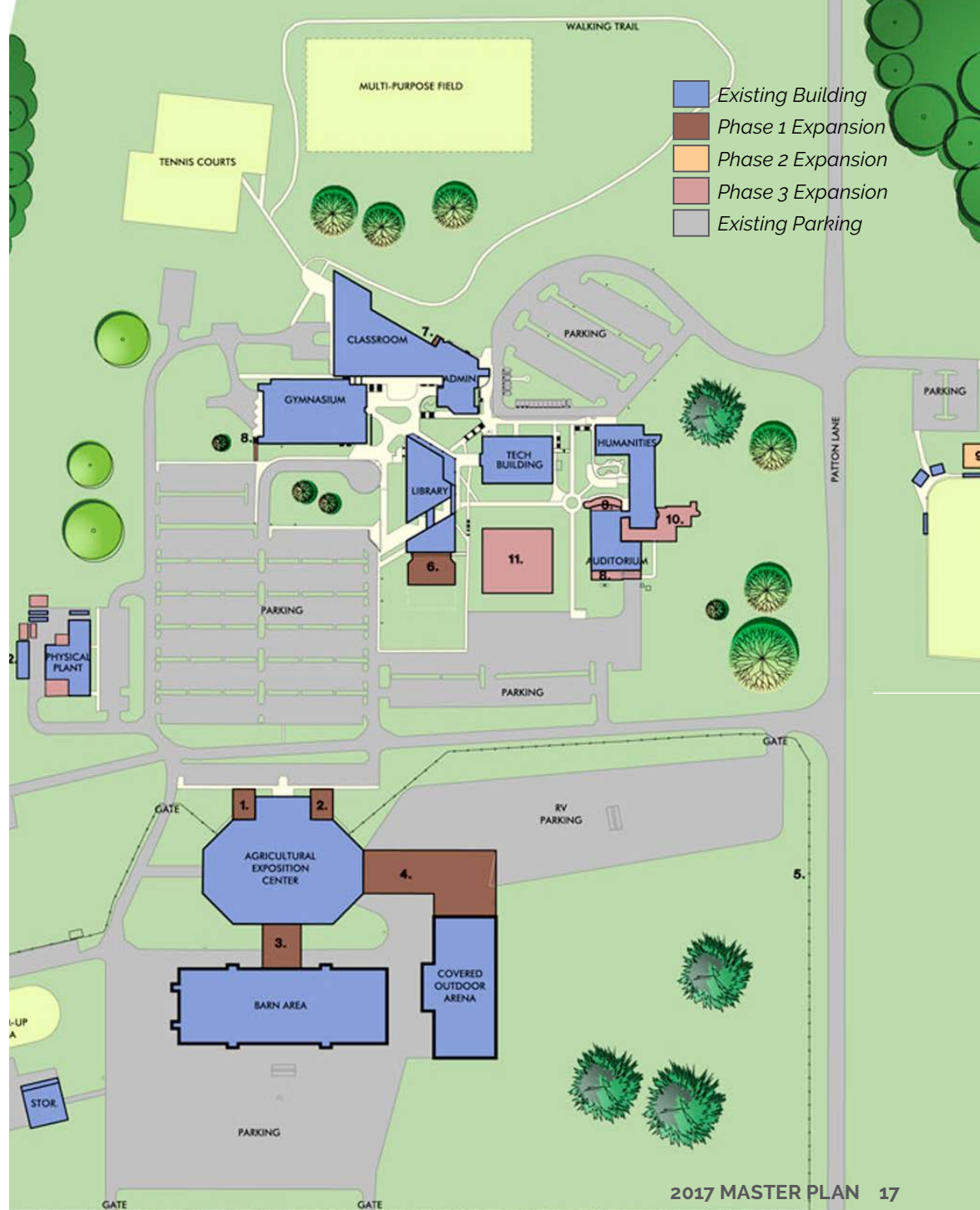
	FALL 2005	PHASE III (PROJECTED)	FALL 2016 (ACTUAL)
HARRIMAN	1,217*	2,200*	1,186*
OAK RIDGE	1,177	2,700	1,194*
CUMBERLAND	438	1,000	255
KNOX	254	500	177
CAMPBELL	190	500	154
SCOTT	163	500	172
FENTRESS	35	400	27
MORGAN	0	400	48

*includes online students

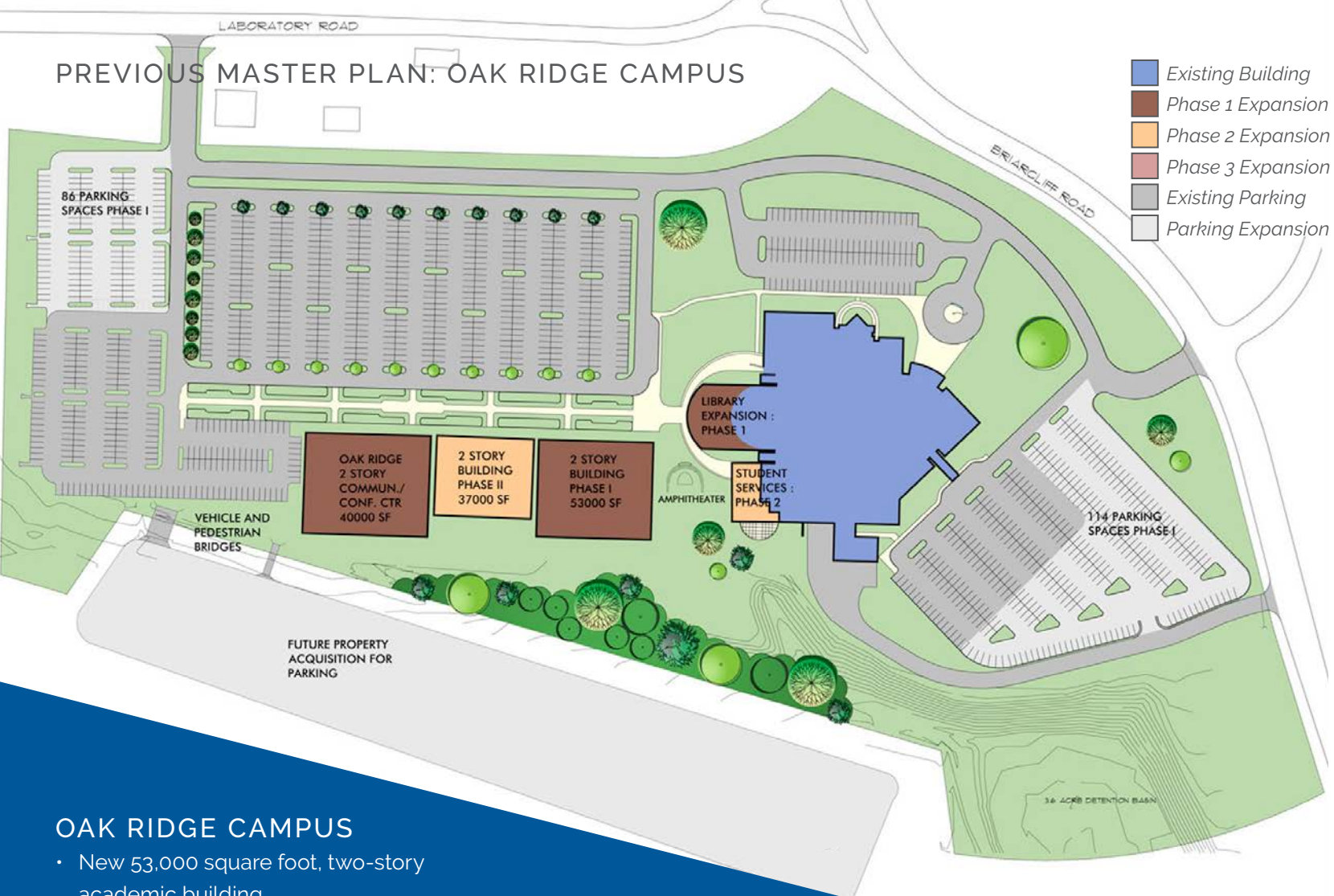
PREVIOUS MASTER PLAN: HARRIMAN CAMPUS

The following were the primary recommendations of the previous master plan for the Main (Harriman) Campus:

- Removal of certain non-library functions from library to provide expanded library/study space
- Library addition
- New elevator in Dunbar Building
- Technology Building renovations
- Expo center improvements
- New exterior stair from gym to student parking
- New baseball/softball facility
- Theater expansion
- New Workforce Career building
- Physical plant expansion



PREVIOUS MASTER PLAN: OAK RIDGE CAMPUS



OAK RIDGE CAMPUS

- New 53,000 square foot, two-story academic building
- New 37,000 square foot, two-story academic building
- Main building migrations/renovations
- Main building library and food services additions
- Outdoor classroom/amphitheater
- Parking lot expansion
- Potential conference/community center
- Future land acquisition

CUMBERLAND COUNTY CAMPUS

- Series of additions, to include a library, student services space, offices, and teaching spaces
- Various renovations/migrations
- New Business Incubator building
- Parking expansion

SCOTT COUNTY CENTER

- Additions to expand Student Success Center and student lounge space
- Additional student parking
- Two-story addition to house a large community/conference room, teaching and storage spaces, and offices

KNOX COUNTY CENTER

- Either relocate the campus to a location with more room for buildings and parking, or lease or purchase adjacent properties
- Future space should provide teaching spaces, offices, physical plant space, and lounge space

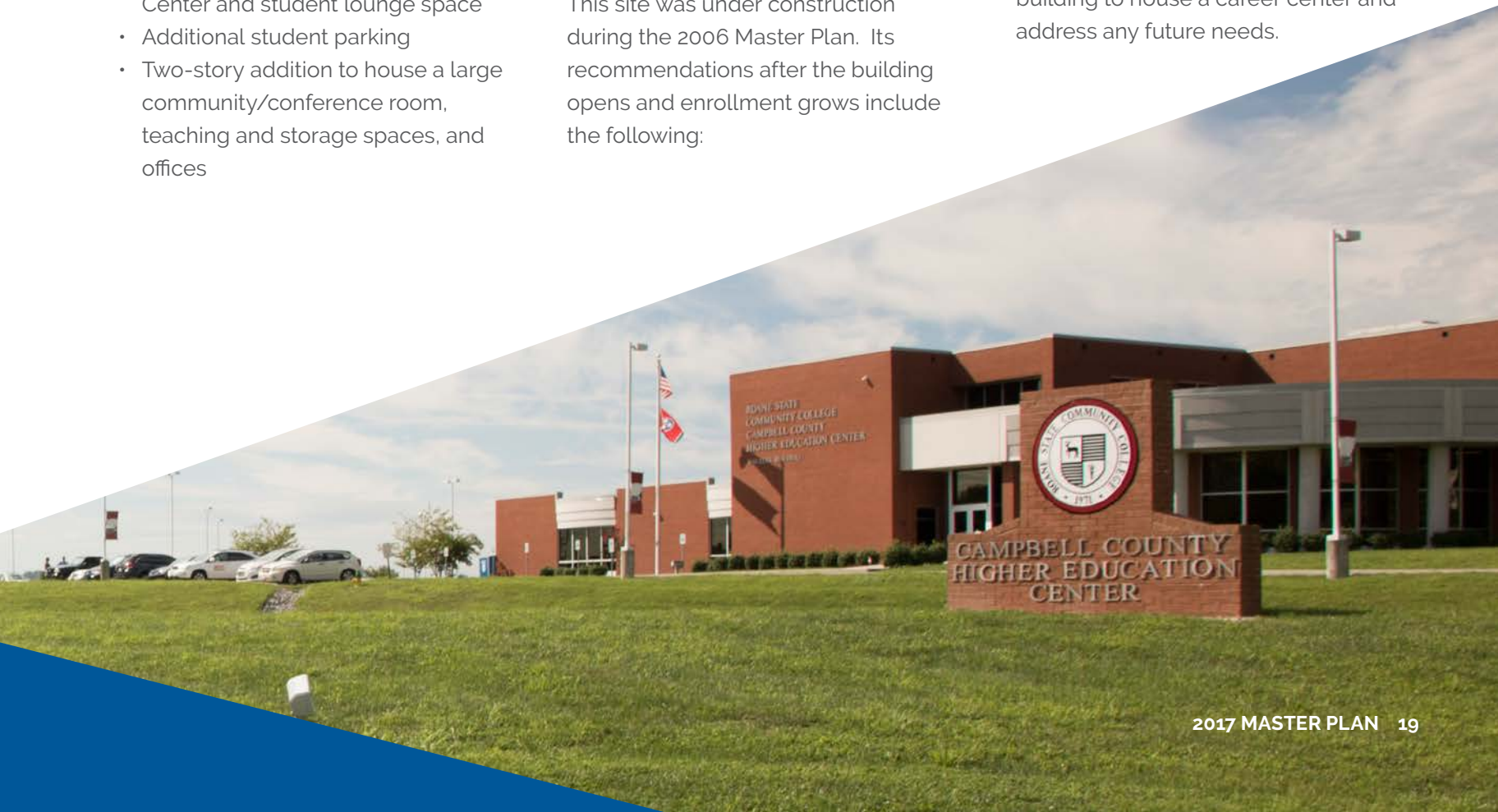
CAMPBELL COUNTY CENTER

This site was under construction during the 2006 Master Plan. Its recommendations after the building opens and enrollment grows include the following:

- Acquire land for additional parking
- Construct a two-story addition
- Completion of upper level shell space for a computer lab, classroom, and additional faculty and administrative offices

MORGAN COUNTY

This site was under construction during the 2006 Master Plan. It recommends a potential future addition to the building to house a career center and address any future needs.



DEGREE PROGRAMS OFFERED

TRANSFER PATHWAYS

Accounting
Art (Studio)
Biology
Business Administration
Chemistry
Civil Engineering
Computer Science
Criminal Justice
Economics
English
Exercise Science
Foreign Language
History
Information Systems
Kinesiology
Mass Communications
Mathematics
Mechanical Engineering
Physics
Political Science
Pre K-3 Early Childhood Education
Pre-Occupational Therapy
Pre-Physical Therapy
Pre-Health Professions
Psychology
Sociology
Theatre Arts

ASSOCIATE OF ARTS

Computer Art & Design
General Studies
Social Work

ASSOCIATE OF SCIENCE

Agriculture
Computer Art & Design
Forestry
General
Physical Science
Pre-Engineering
Pre-Law
Pre-Nursing
Secondary Education
Social Work
Special Education
Wildlife & Fisheries

ASSOCIATE OF FINE ART

Music

ASSOCIATE OF SCIENCE IN TEACHING

K-5 Elementary Education

ASSOCIATE OF APPLIED SCIENCE

Allied Health Sciences
Business (Accounting)
Business (Administration)
Business (Management)
Business (Computer Science)
Computer Information Technology
Contemporary Management
Criminal Justice
Dental Hygiene
Early Childhood Education
Environmental Health Technology
Financial Services
General Technology
Geographic Information Systems
Technology
Health Information Technology
Mechatronics
Medical Informatics
Nursing (RN)
Occupational Therapy Assistant
Opticianry
Paralegal Studies
Physical Therapist Assistant
Radiologic Technology
Respiratory Therapy Technology
Surgical Technology

CERTIFICATES

Adv. Emergency Medical Technician
Computer Information Technology
Diagnosis & Procedural Coding
Early Childhood Education
Emergency Medical Technician
Geographic Information Systems
Healthcare Documentation Specialist
Massage Therapy
Mechatronics
Paramedic
Pharmacy Technician
Polysomnography

DEMOGRAPHIC CONTEXT

Master Planning should not occur in isolation, but should be informed by an institution's regional context and demographic trends. First among these is the forecasted population growth in the service area.

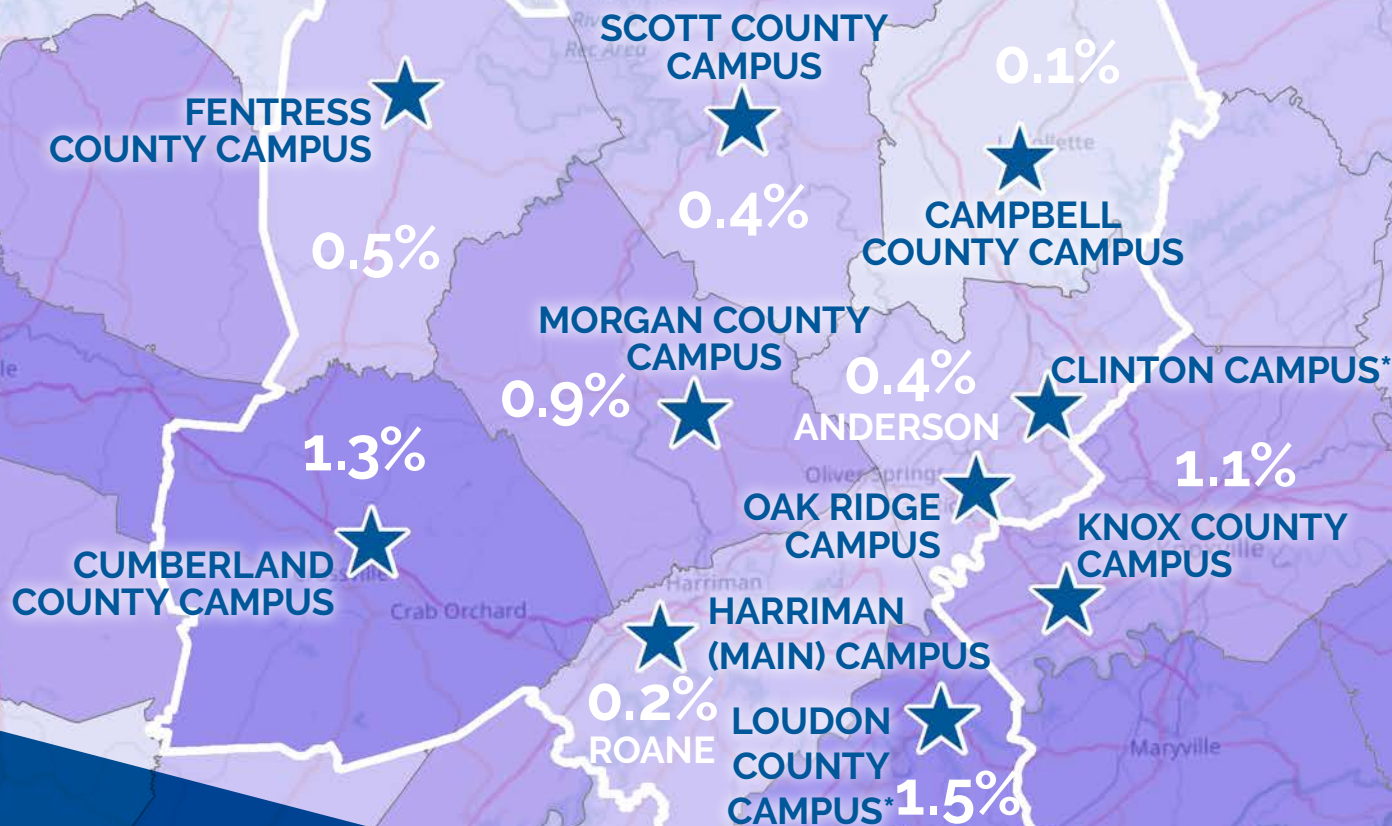
The map on the following page shows the projected population growth over the next decade by county in Roane State's service area. Growth is expected to be highest in Cumberland and Loudon County, as well as in Knox County (which is outside of the primary service area). Overall, Roane State's service area is expected to add more than 26,000 residents over the next decade.

POPULATION DISTRIBUTION

The dot map on page 24 shows existing concentrations of residents within the region. This population distribution, combined with projected population growth, suggests that Roane State's existing network of campuses is well located to serve existing population clusters, especially in county seats. Areas that are farther from existing campuses tend to be sparsely populated.



>> PROJECTED AVG. ANNUAL POPULATION GROWTH (2016 - 2026)



*Leased campus

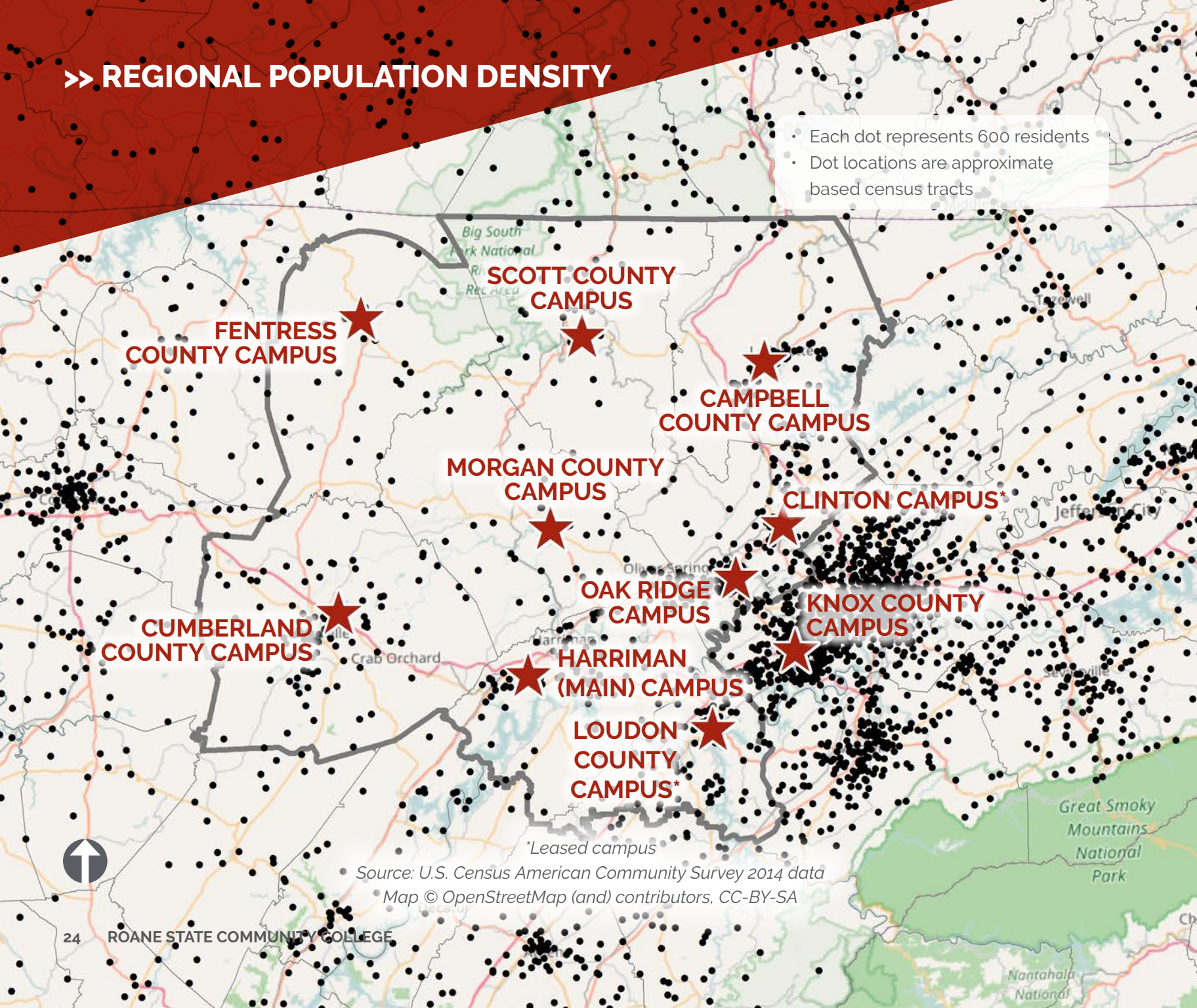
Map © OpenStreetMap (and) contributors, CC-BY-SA

Source: University of TN Center for Business & Economic Research



>> REGIONAL POPULATION DENSITY

- Each dot represents 600 residents
- Dot locations are approximate based census tracts



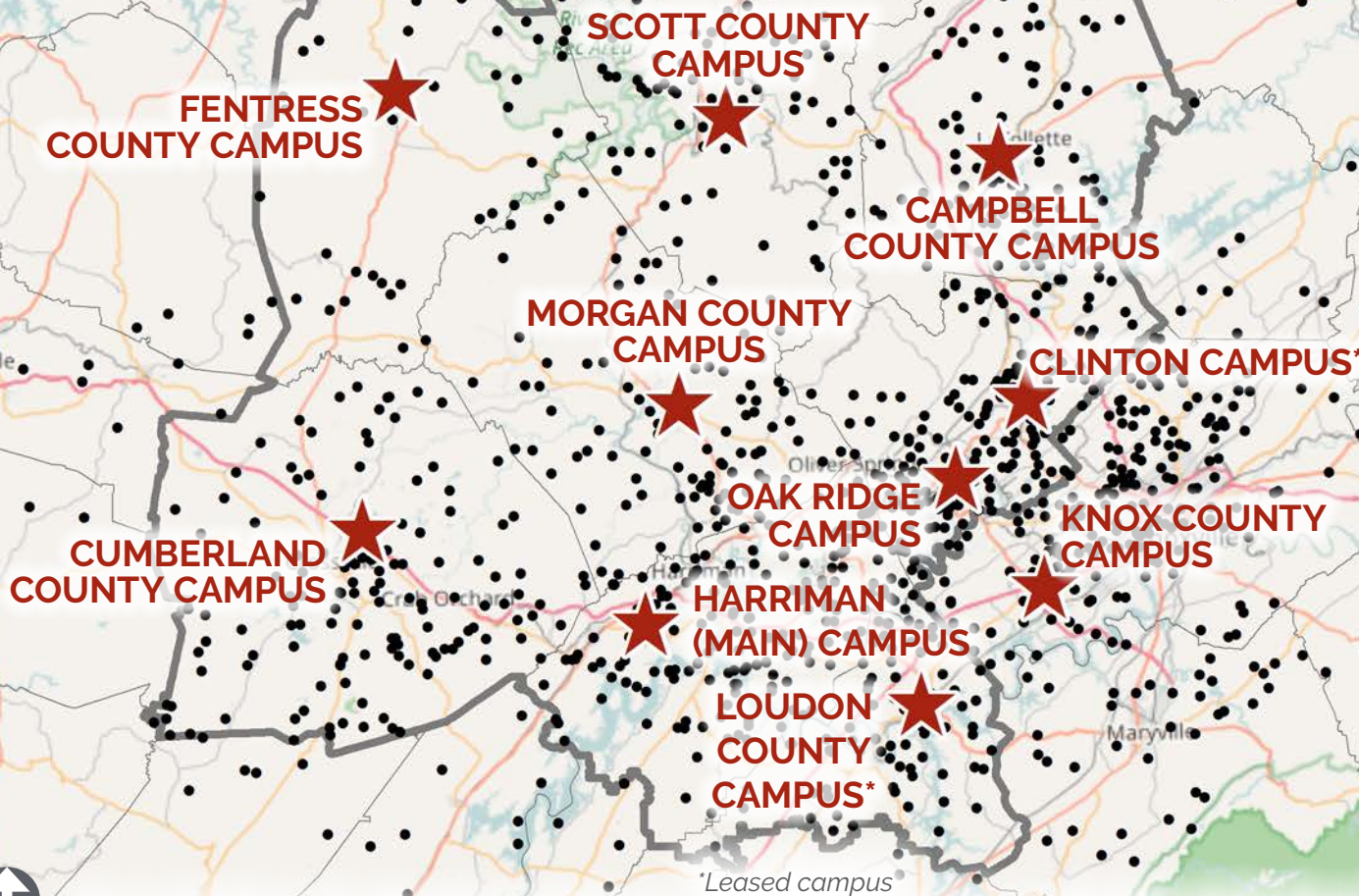
*Leased campus

Source: U.S. Census American Community Survey 2014 data

Map © OpenStreetMap (and) contributors, CC-BY-SA

>> FALL 2016 STUDENT DENSITY BY HOME ZIP CODE

- Each dot represents 5 students
- Dot locations are approximate based on ZIP codes



Source: U.S. Census American Community Survey 2013 data & Roane State Community College Fall 2016 enrollment data

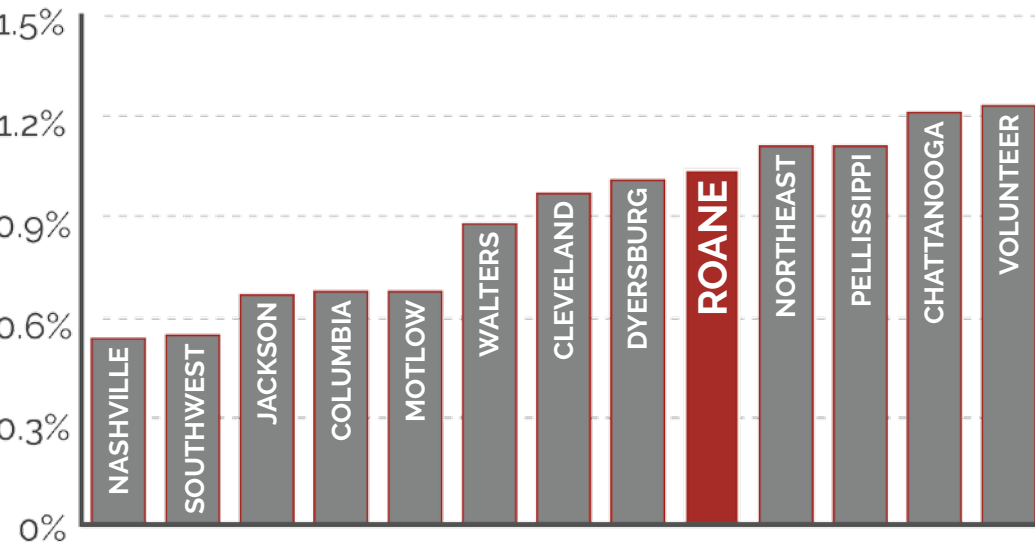
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PARTICIPATION RATE

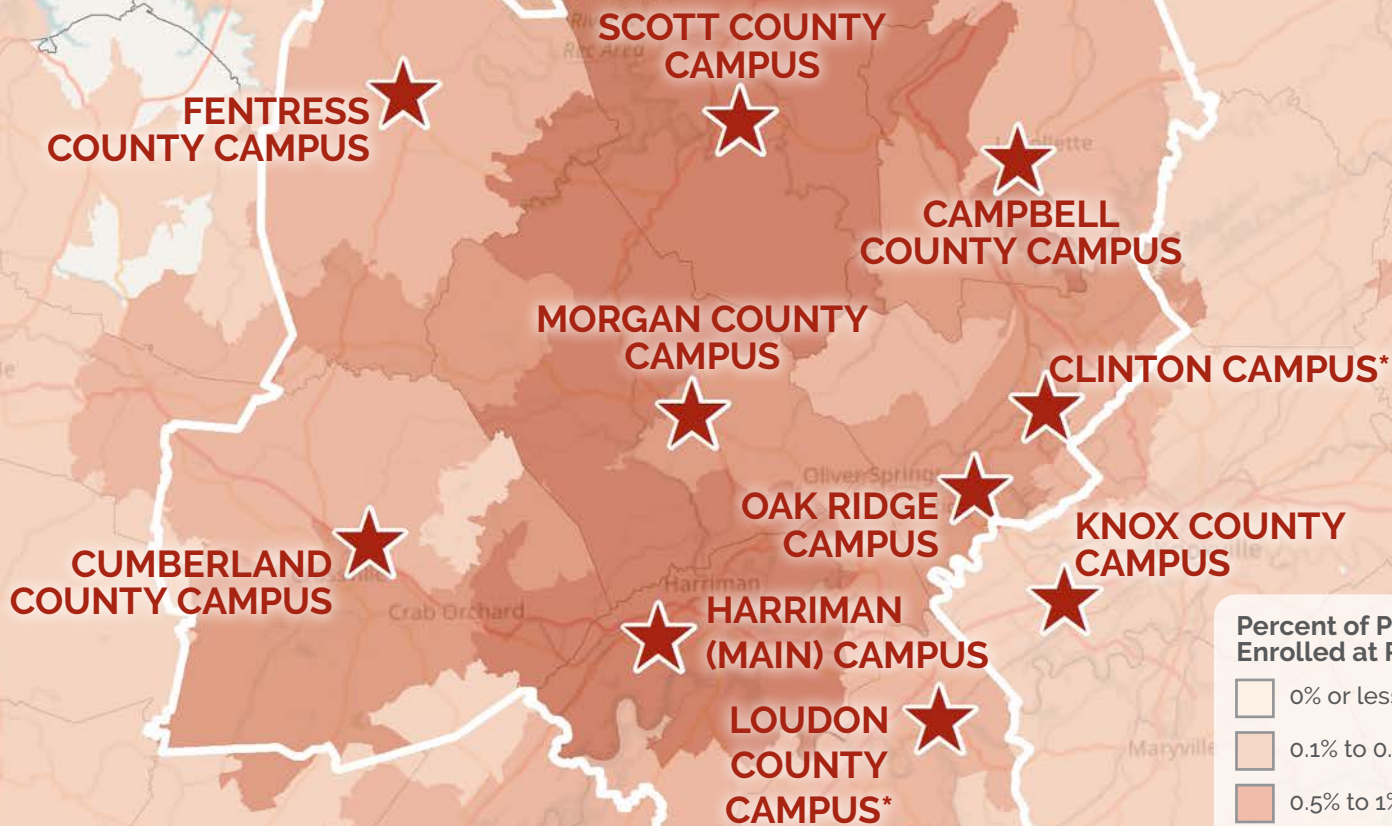
An institution's participation rate is a measure of its market penetration and is expressed as its total full-time equivalent enrollment divided by the total population in its service area. The actual number is less important than where the college stands in comparison to its peers, and how participation rate varies throughout the service area.

FALL 2016 PARTICIPATION RATE COMPARISON.....



Source: 2015 U.S. Census population estimates, Tennessee Board of Regents FTE enrollment

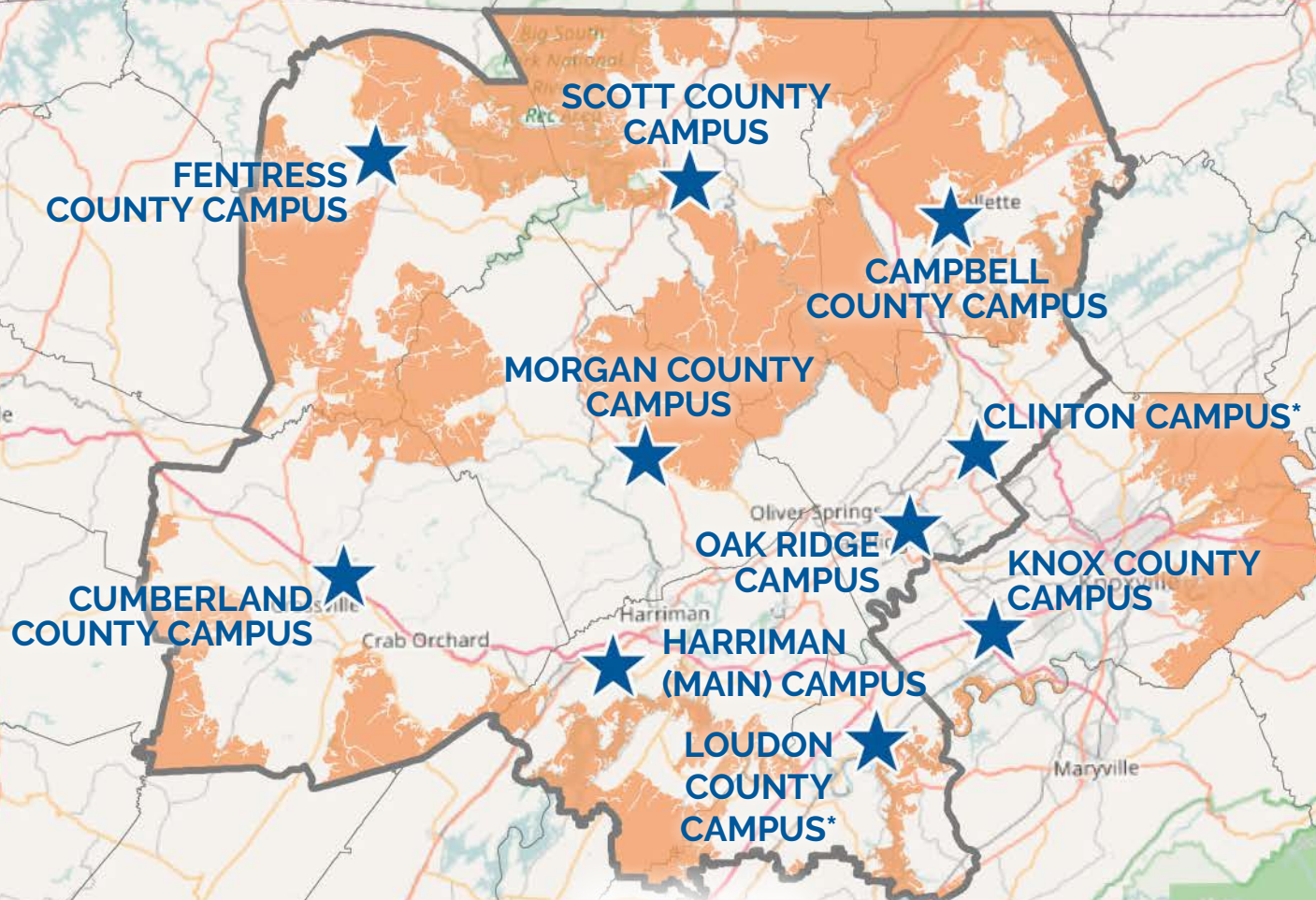
>> FALL 2016 PARTICIPATION RATE



Based on Fall 2016 enrollment data and 2012 population data

Map © OpenStreetMap (and) contributors, CC-BY-SA

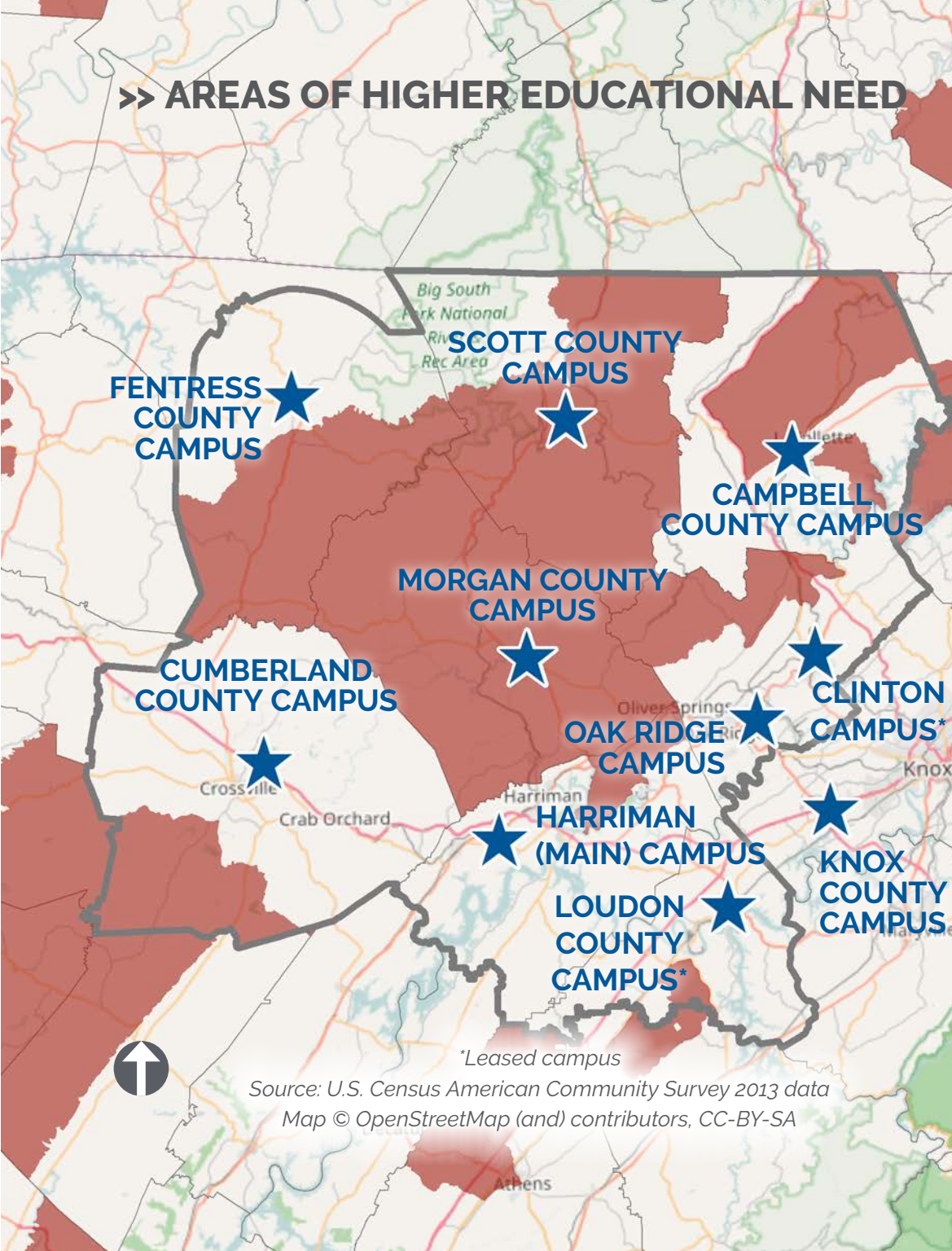
>> AREAS BEYOND A 30-MINUTE DRIVE FROM A CAMPUS



*Leased campus

Map © OpenStreetMap (and) contributors, CC-BY-SA

>> AREAS OF HIGHER EDUCATIONAL NEED



AREAS OF HIGHER EDUCATIONAL NEED

It is difficult to define or measure the "need" for postsecondary educational credentials in a given area. Diverse factors contribute to the need for higher education.

Perhaps the single best measure of need for higher education is the number of residents who have graduated high school, but have not yet started college. This map shows census tracts in which 45% or more of adult residents have a high school diploma or equivalent, but have not yet attended college.

Existing campuses are well located with regard to high need populations. Some of the most rural areas are not highlighted on this map, perhaps because adults in more rural areas are less likely to have completed high school and therefore would not be immediately eligible for college.

REGIONAL JOB PROJECTIONS

An important part of any college Master Plan is understanding the regional job market, particularly for community colleges, because a significant percentage of their students enter the workforce immediately after graduation.

Modern labor markets function at the regional scale. Roane State's service area overlaps significantly with Workforce Investment Area 4, so that data is shown on the following page. Data for WIA 7 and WIA 3 (which is outside the service area but includes the Knox County campus) were provided to the college.

REGIONAL LABOR DATA

The Tennessee Department of Labor provides job outlook grade levels for each Workforce Investment Area in the state. These are broken down by industry clusters, which consist of jobs in closely related fields. Data for some industry clusters is only available at the statewide level.

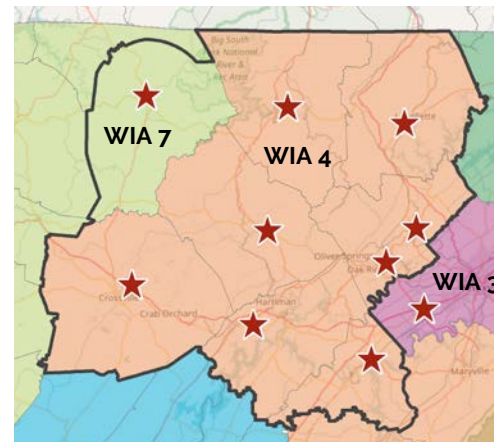
This Master Plan correlates these industry clusters with every non-transfer degree and certificate program currently taught by Roane State. The letter grade job outlook in all industry clusters takes into consideration the following factors:

- Growth rate in the industry cluster relative to the statewide growth rate for that industry cluster
- Number of annual job openings
- Supply demand ratio (the ratio of graduates of programs in all related higher education programs to the number of job openings)

While the regional job projections are based on solid data, it is important to note that they may not correspond exactly with the specific jobs that Roane State graduates pursue. This is because of how jobs are grouped, as well as the fact that some of the data on graduates and job openings may be related to four-year programs and not directly relate to the demand for those with certificates or Associate's degrees.

Furthermore, economies are constantly in flux, and localized data such as potential growth in specific industries or expansions of major employers may not be captured here. For this reason, the ultimate recommendations of this Master Plan are based on a larger picture of job outlook based on online surveys and interviews conducted with Roane State faculty and administrators.

WORKFORCE INVESTMENT AREAS



>> WIA 4 REGIONAL JOB OUTLOOK (2-YR DEGREES & CERTIFICATES)



Excellent

- Business (Accounting)
- Business (Computer Science)*
- Computer Information Technology*
- Financial Services
- Medical Informatics*
- Nursing (RN)
- Paralegal Studies
- Pharmacy Technician
- Polysomnography



Very Good

- Business (Administration)
- Diagnosis & Procedural Coding
- Early Childhood Education*
- Healthcare Documentation Specialist
- Health Information Technology



Favorable

- Dental Hygiene



Competitive

- Business (Management)*
- Contemporary Management*
- Criminal Justice*
- Geographic Information Systems Technology
- Mechatronics



Ungraded

- Adv. Emergency Medical Technician
- Emergency Medical Technician
- Environmental Health Technology
- Massage Therapy
- Occupational Therapy Assistant
- Opticianry
- Paramedic
- Physical Therapist Assistant
- Respiratory Therapy Technology
- Surgical Technology

Source: Tennessee Department of Labor & Workforce Development

Note: Ungraded workforce clusters have either a negative job growth rate, fewer than 11 annual job openings, or no related academic programs in the workforce investment area.

*All data for this workforce cluster is based on statewide projections, since regional data is not available.





02 // GOAL FORMULATION

>> INSTITUTIONAL MISSION & VISION

>> INPUT FROM THE CAMPUS COMMUNITY

INSTITUTIONAL MISSION & VISION

The following summarizes the vision, mission, and goals of the Roane State 2015-2025 Strategic Plan.

VISION

Roane State's vision is to be a premier learning institution that transforms lives, strengthens community, and inspires individuals to excellence.

MISSION

Roane State's mission is to improve the lives of individuals through the transformative power of education and to build thriving communities through partnerships for strengthening economic development. Just as Roane State expects its students to challenge themselves to engage in lifelong learning, the college accepts the challenge to sustain a culture of innovation and to continually explore new ways to provide an educational experience that meets the current and future needs of its service area communities.

COLLEGE GOALS

GOAL 1 // ACCESS

Roane State will broaden opportunities for residents of its service area to access educational programs and services that will enrich their lives and strengthen their communities.

Goal 1 Objectives

- Optimize recruitment and enrollment processes and services designed to remove barriers and personalize client interaction, facilitate timely and educationally appropriate registration, and maximize enrollment.
- Increase access to educational opportunities through the development and implementation of market-driven, flexibly-delivered courses and programs.
- Increase participation of priority student populations, including those that are under-represented and under-served.

GOAL 2 // STUDENT SUCCESS

Roane State will build pathways, design, and deliver learning environments, and provide supportive services that will advance students' accomplishment of their educational goals.

Goal 2 Objectives

- Increase student retention and persistence through targeted initiatives to enhance the first-year experience and academic advisement and improve scheduling and delivery options to facilitate timely completion.
- Improve the success of students with academic deficiencies or other factors that put them at risk for accomplishing their academic goals.
- Enhance student learning support services and curricular and co-curricular learning opportunities to increase student engagement and success.
- Build pathways into Roane State programs and articulated programs at other higher education institutions and facilitate the reverse transfer process for transferring students.

GOAL 3 // QUALITY

Roane State will demonstrate excellence and institutional effectiveness through a commitment to the identification and maintenance of high standards, ongoing assessment, and continuous improvement of programs, services, personnel, and student learning.

Goal 3 Objectives

- Demonstrate evidence of effectiveness and improvement of all credit and non-credit educational programs, administrative services, academic/institutional support services, and community services and partnerships.
- Meet or exceed established benchmarks for student engagement and achievement, including student learning outcomes.
- Maintain compliance with all federal, regional, state, and regulatory standards and seek new institutional and professional accreditation/certifications to demonstrate quality.
- Demonstrate evidence of institutional commitment to recruitment, retention, and development of highly qualified faculty and staff.

GOAL 4 // RESOURCEFULNESS & EFFICIENCY

Roane State will enhance the effectiveness and efficiency of the institution through competent management of resources, strategic pursuit of alternative sources of support, and active outreach for the establishment of collaborative and entrepreneurial partnerships and initiatives.

Goal 4 Objectives

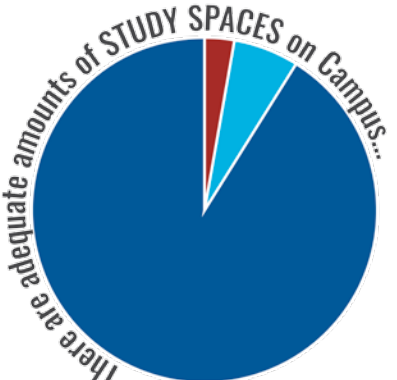
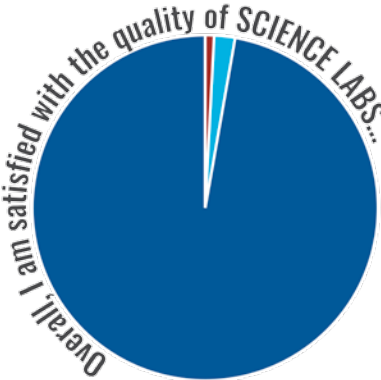
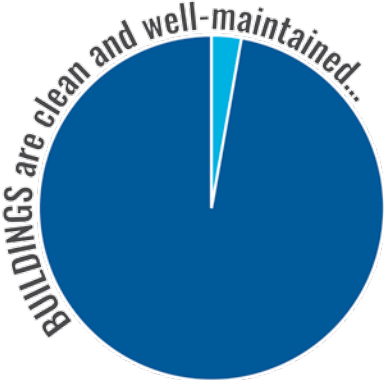
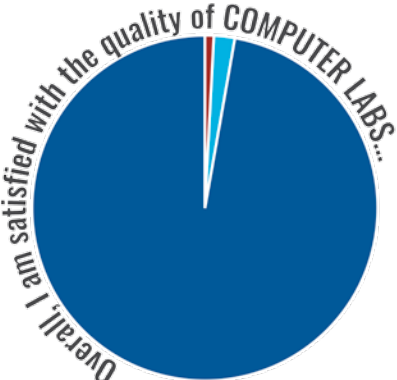
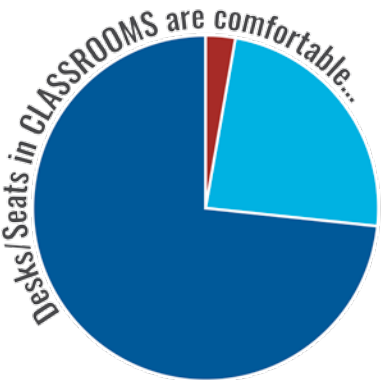
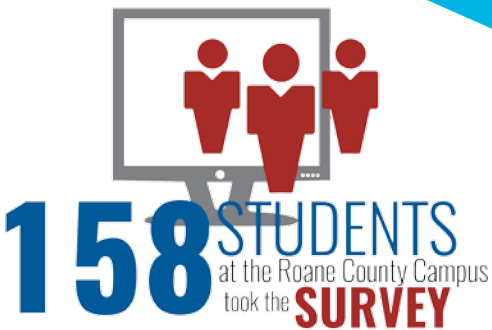
- Obtain alternative sources of financial support for institutional initiatives and student scholarships.
- Enhance institutional strategies in coordination with TBR business process model and community college centralization initiatives.
- Demonstrate efficient and effective use of resources to support short-term and long-range planning in support of the college's mission.

STUDENT SURVEY RESULTS: MAIN CAMPUS

A number of outreach efforts were conducted as a part of this Master Plan in order to ensure that the plan reflects the needs and desires of students, faculty, administrators, and staff. One-on-one interviews with faculty, staff, and administrators were supplemented with input from an online survey sent

out campus wide that allowed all students to share their input.

Results from students who mainly attend courses at the Roane County Campus are illustrated on the following pages.



- AGREE/STRONGLY AGREE
- DISAGREE/STRONGLY DISAGREE
- NOT APPLICABLE





94% Agree /
Strongly Agree
that they **FEEL SAFE**
at Roane State



88% Agree /
Strongly Agree
the number of available parking
SPACES IS **ADEQUATE**

STUDENT COMMENTS


- Smoking area improvements/relocations
- Lack of campus security personnel presence
- Uncomfortable and dated classroom furniture
- Parking lots and building facades need maintenance



FACULTY & STAFF SURVEY RESULTS

These images were chosen by faculty and staff as most appropriate for Roane State's Harriman Campus, compared to other similar images shown in the online survey.





62

FACULTY & STAFF
at the Roane County Campus
took the **SURVEY**

Q. WHAT ONE WORD WOULD YOU USE TO DESCRIBE THE PHYSICAL CAMPUS TODAY?



Q. WHAT ONE WORD WOULD YOU USE TO DESCRIBE WHAT THE CAMPUS COULD BECOME IN THE FUTURE?



FACULTY, ADMINISTRATOR, & STAFF COMMENTS

- Update furniture and look of teaching spaces
- Campus aesthetics (paint, facade improvements, “curb appeal”)
- More study and gathering spaces that foster student interaction
- Indoor and outdoor lighting improvements



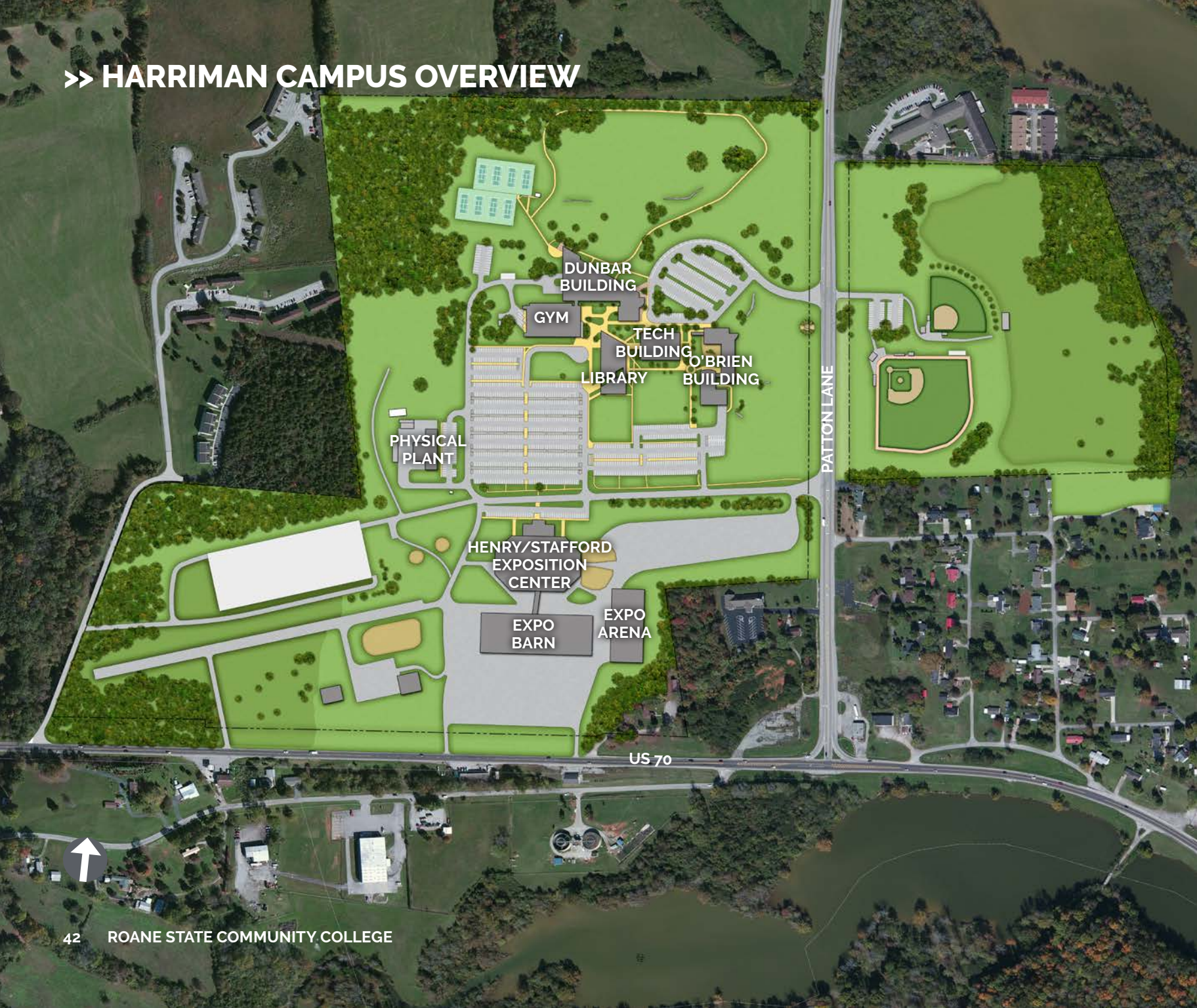


03 // EXISTING CONDITIONS

>> HARRIMAN CAMPUS

>> OAK RIDGE CAMPUS

>> HARRIMAN CAMPUS OVERVIEW



HARRIMAN CAMPUS

Roane State Community College's Main Campus is located approximately 6 miles southwest of Harriman, Tennessee, 3 miles south of I-40, and 40 miles west of Knoxville.

The campus is in a rural context, surrounded by undeveloped land, low density residential development, and other small scale activities. It is located approximately 800 feet above sea level and drains to the nearby Watts Bar Lake (part of the Tennessee River). No major drainage issues were noted on campus.

The campus is designed in classic fashion, with vehicular circulation to the exterior of a central pedestrian quadrangle. The maps on the following pages show existing vehicular and pedestrian circulation patterns. No major conflict points were identified, and the number of parking spaces is more than adequate. Building entrances face major pedestrian axes for the most part. One exception to this

is the Welcome Center, which is difficult to see from the quad and invisible from the visitor parking spaces. A walking trail provides an attractive amenity on the north side of the campus.

LANDSCAPING & AESTHETICS

A number of issues were identified with landscaping and aesthetics on the Harriman Campus, as shown on page 46. Improving these could simplify the landscape palette on campus, enhance the first impression of visitors and students, and improve retention.

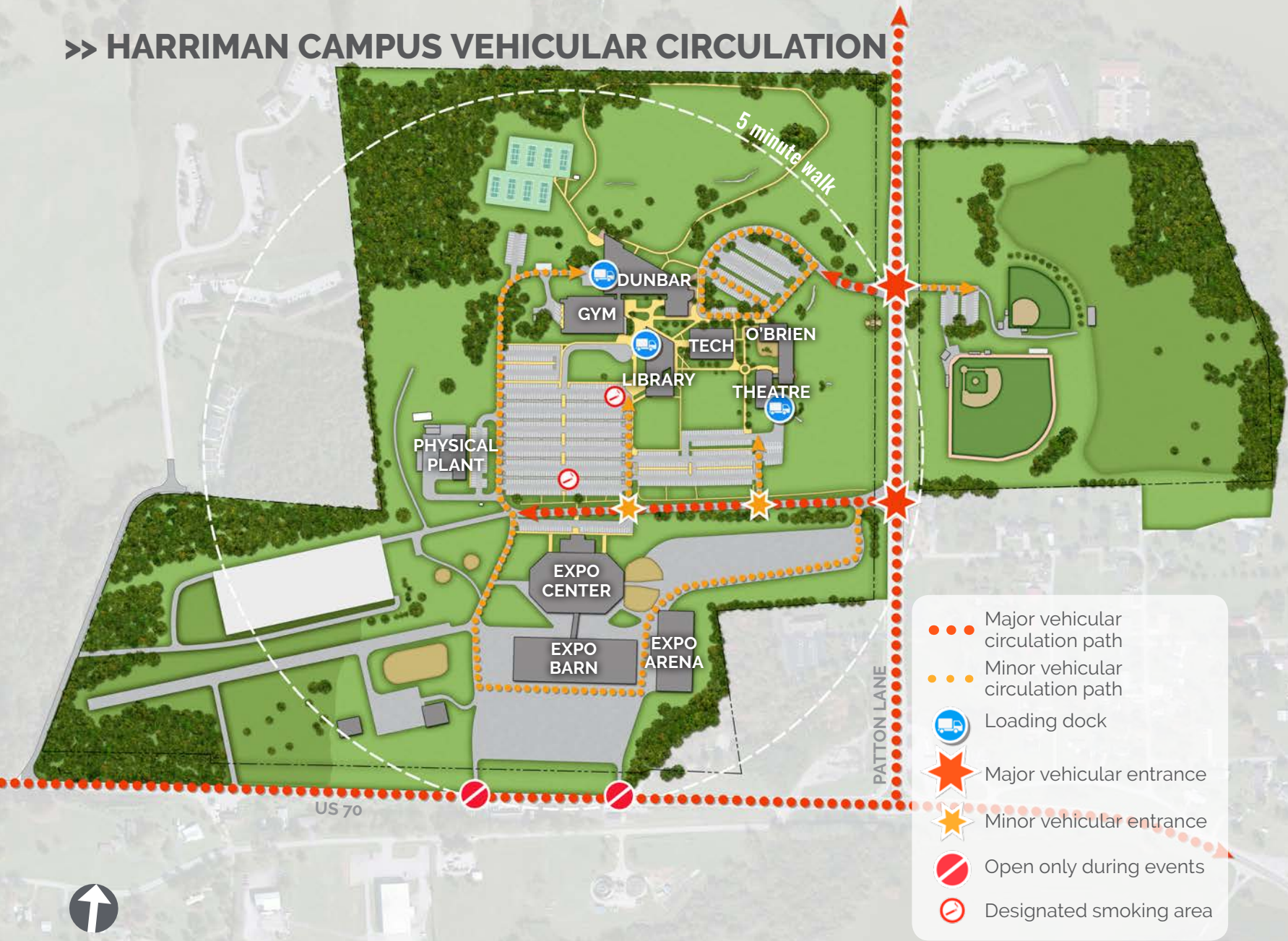
- The Main Quadrangle lacks shade and therefore is not frequently used by students except when travelling between classes. The picnic tables shaded by the library are the

exception, and students pause to study or socialize here.

- The lawn to the north of the Dunbar Building has great views, but is seldom used. The lack of trees and lack of furniture on the patio of the Student Center are contributing factors.
- The approach to campus from the east does not create a great first impression. This is due to the monolithic facade of the O'Brien Building and the lack of landscaping.
- The main parking lot on the south side of campus creates a negative first impression due to the total lack of landscaping and deteriorating pavement and curbs.



>> HARRIMAN CAMPUS VEHICULAR CIRCULATION



>> HARRIMAN CAMPUS PEDESTRIAN CIRCULATION



>> HARRIMAN CAMPUS LANDSCAPING & AESTHETICS



- Lack of shade
- Lack of seating
- Complicated landscaping



- Complete lack of landscaping
- Deteriorating curbs and pavement
- Poor first impression for students



- Lack of color
- Uninspired landscaping
- Outdated seating



- Great views
- Lack of shade and greenery
- Patio rarely used



- Monolithic building facade
- Limited landscaping
- Expensive to mow and maintain



>> OAK RIDGE CAMPUS ANALYSIS



- | | |
|--|--|
| ●●● Major vehicular circulation path | — Major pedestrian circulation path |
| ●●● Minor vehicular circulation path | — Minor pedestrian circulation path |
| Loading dock | Major entrance |
| Pedestrian crossing | Minor entrance |
| Major vehicular entrance | Flooding area |
| Minor vehicular entrance | |



OAK RIDGE CAMPUS

Enrollment on the Oak Ridge Campus is 37% higher than that on the Harriman Campus, although there are only two buildings. This campus is designed

simply in a modern fashion. No major issues were identified. A flooding issue occurs at the northern edge of campus. This is due to the excessive amount of stormwater runoff from the adjacent property.

The main pedestrian axis unites the two buildings and flanks the main parking lot with a beautiful double row of maple trees.

Fall 2016 surplus of

480 PARKING SPACES
at the **OAK RIDGE CAMPUS**





04 // FUTURE REQUIREMENTS

- >> ENROLLMENT GROWTH
- >> STATION OCCUPANCY
- >> ROOM UTILIZATION
- >> SPACE NEEDS
- >> HARRIMAN CAMPUS BUILDING USE



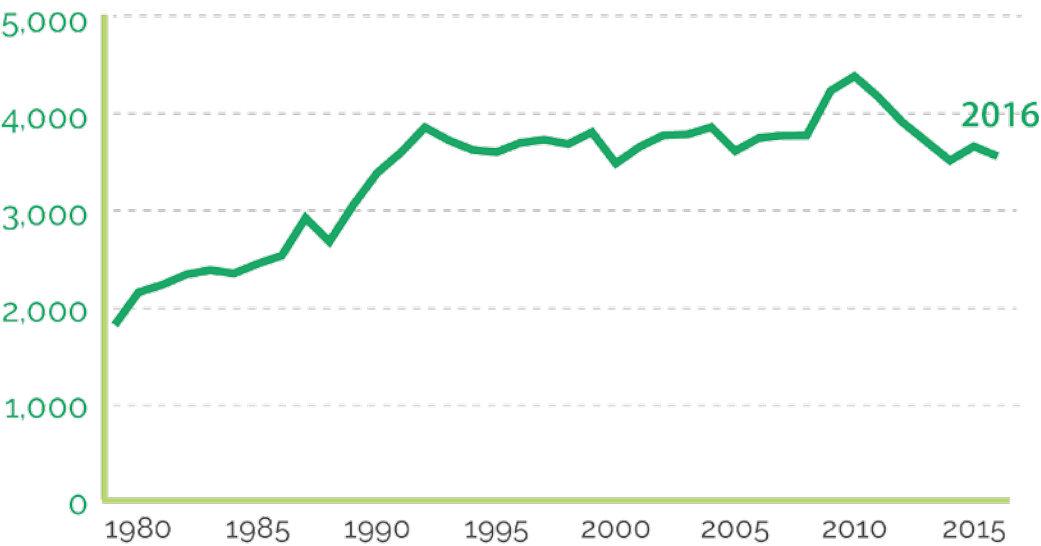
ENROLLMENT GROWTH

From 1979 to 2016, Roane State's institution wide enrollment grew by 2% annually on average. Enrollment has declined over the past decade and has not yet returned to its pre-Recession peak. Roane State is one of only three community colleges in Tennessee to have experienced an overall FTE

enrollment decline between Fall 2006 and Fall 2016.

Many factors can affect future enrollment growth, some of which (such as national economic trends) are difficult to project. Although recent years have seen a decline in enrollment, this Master Plan establishes a single future growth benchmark as a planning target

INSTITUTION WIDE ENROLLMENT GROWTH



and outlines the needs at that point regardless of the year in which it is achieved. A number of factors are expected to contribute to this enrollment growth, including Tennessee Reconnect, which will drive non-traditional students to Roane State. Most campuses are expected to experience moderate growth. Faculty and staff are expected to grow at the same rate as the student body, to preserve Roane State's small class sizes and intimate feel.

POTENTIAL ACADEMIC PROGRAMS

Enrollment growth will also be achieved by creating new academic programs that will serve the needs of potential students in the region, as well as employers in need of skilled workers. The following programs are under consideration:

HARRIMAN CAMPUS

- Culinary Arts (potentially in leased kitchen space)
- Aerospace

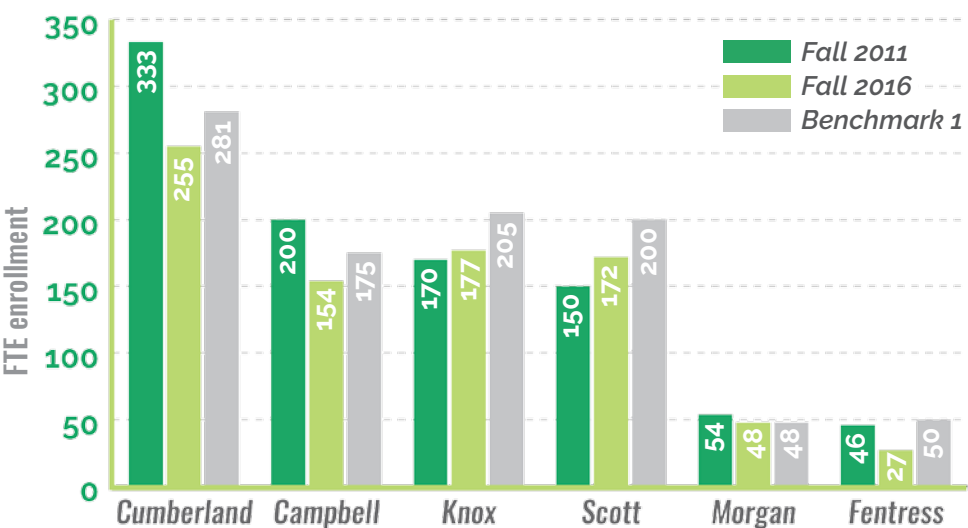
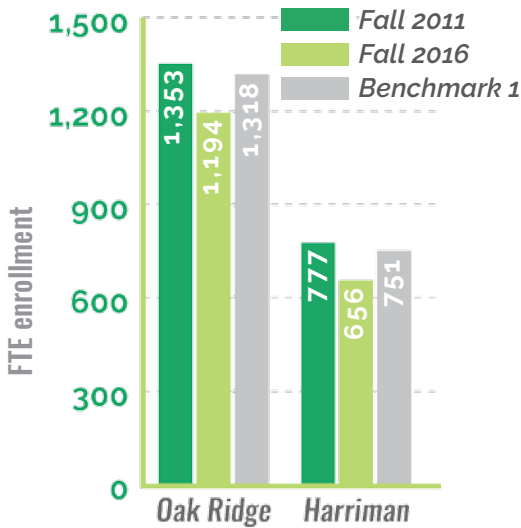
CUMBERLAND COUNTY

- Nursing
- Culinary Arts
- Agriculture
- Logistics

OAK RIDGE

- Medical Lab Technician

RECENT ENROLLMENT & FUTURE BENCHMARK



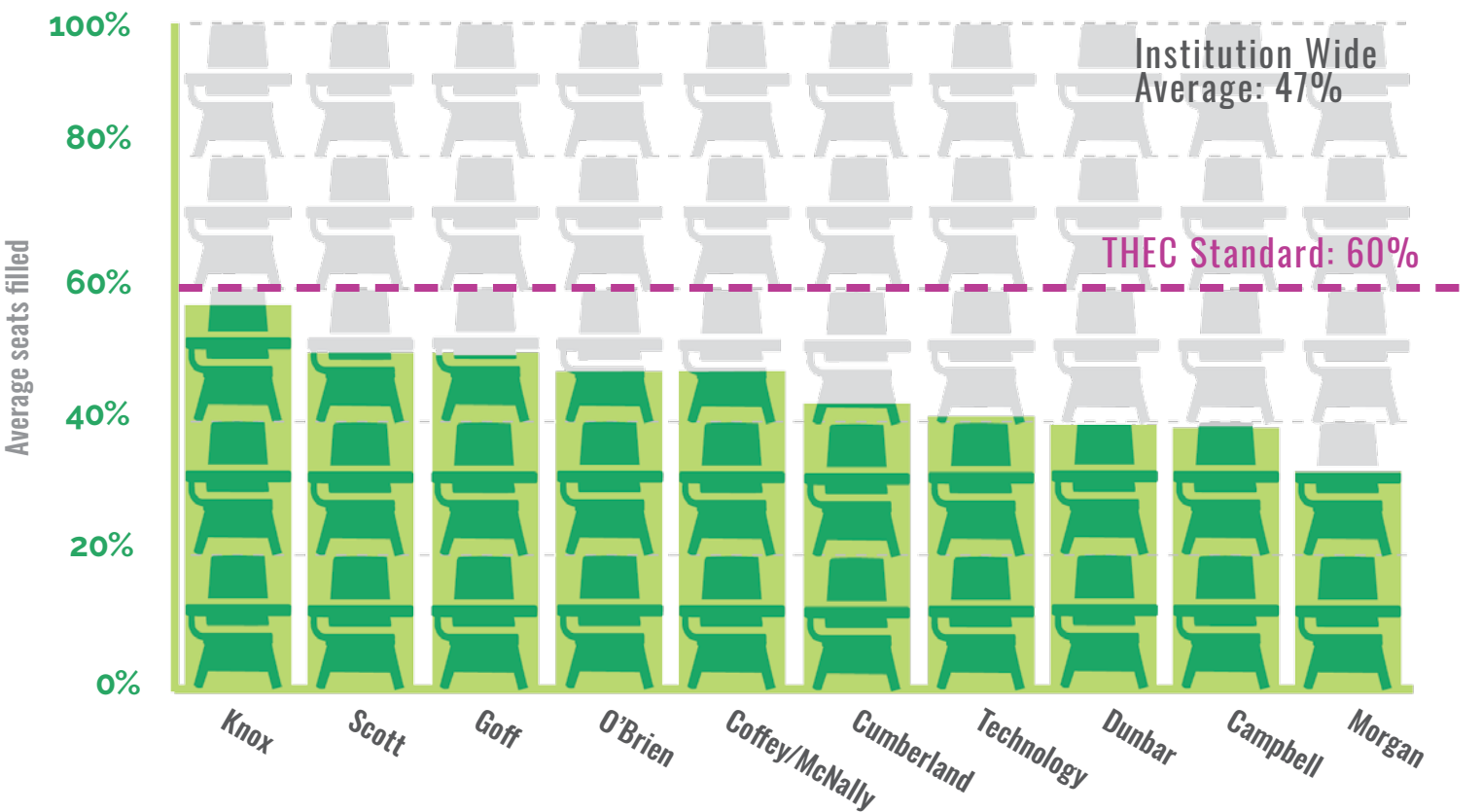
STATION OCCUPANCY

Station occupancy shows the percentage of seats or lab stations filled, based on Fall 2016 course data. Both classroom and lab occupancy falls below the THEC standards in all

buildings, with the exception of labs on the Knox County campus. This is likely due to low enrollment sections, a common situation on college campuses with small student bodies. One need identified by the college to address low occupancy was smaller ITV (distance learning) classrooms,

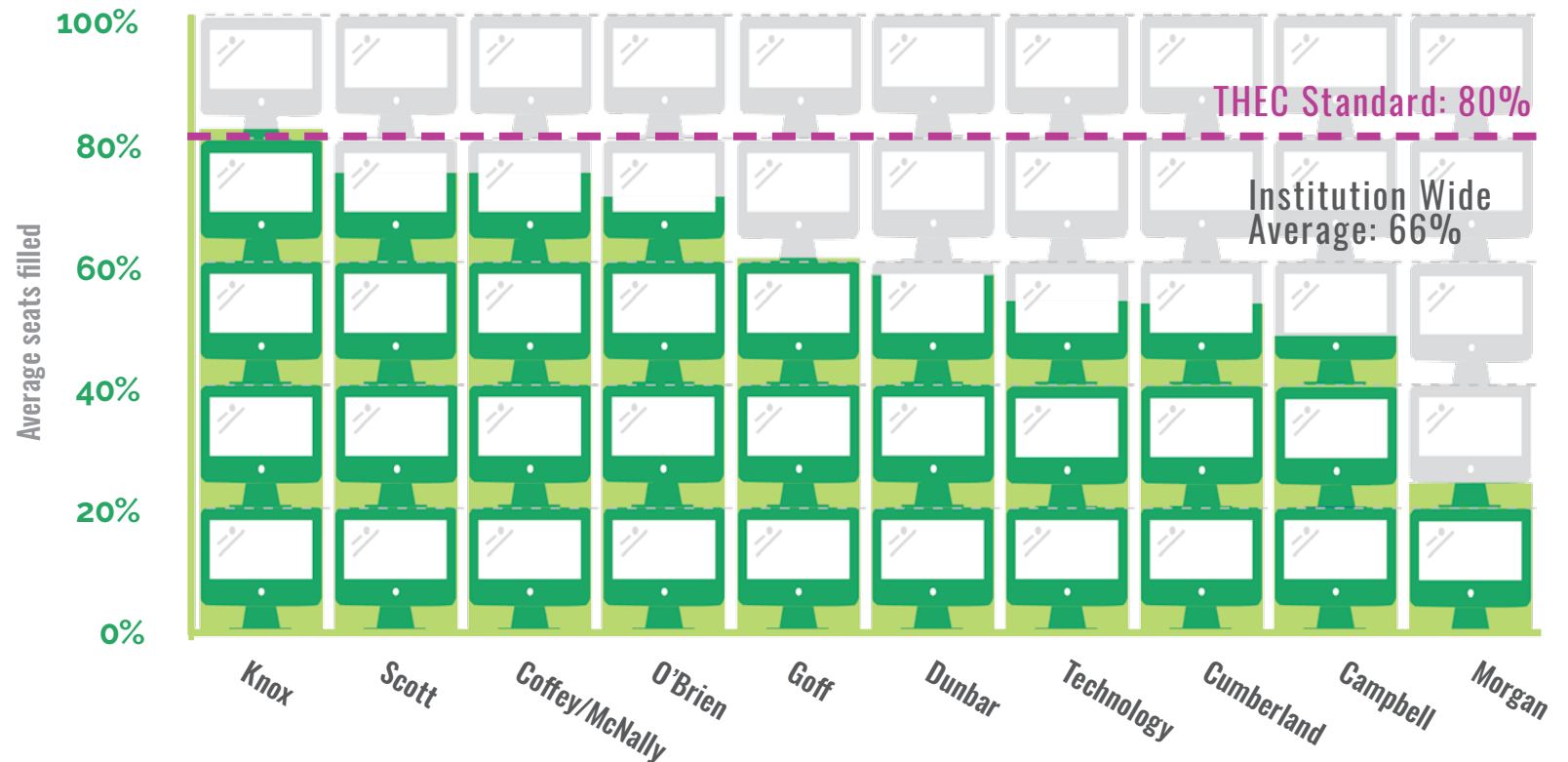
given small section sizes and the fact that large rooms are sometimes scheduled for small numbers of students.

CLASSROOM OCCUPANCY.....





CLASS LAB STATION OCCUPANCY.....

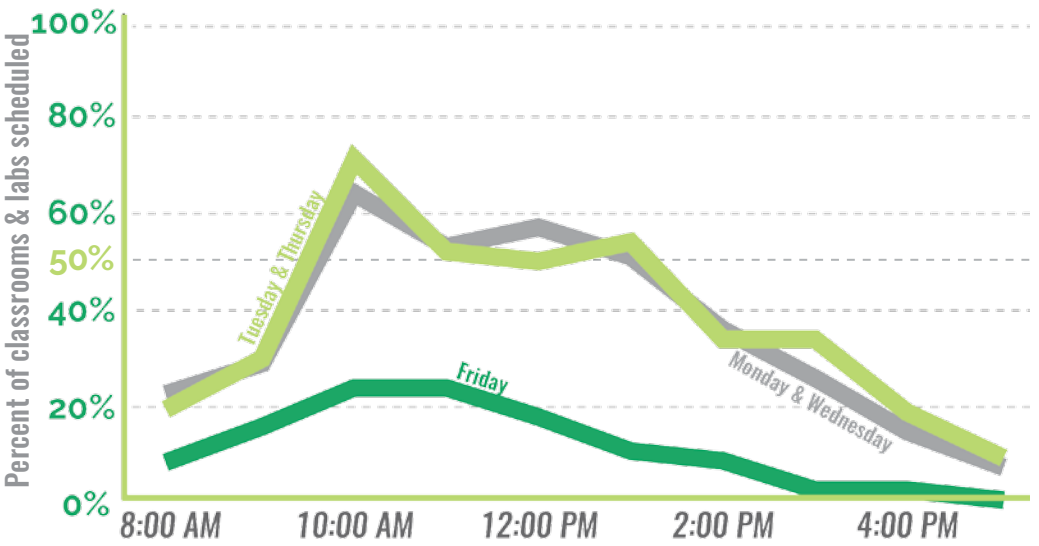


ROOM UTILIZATION

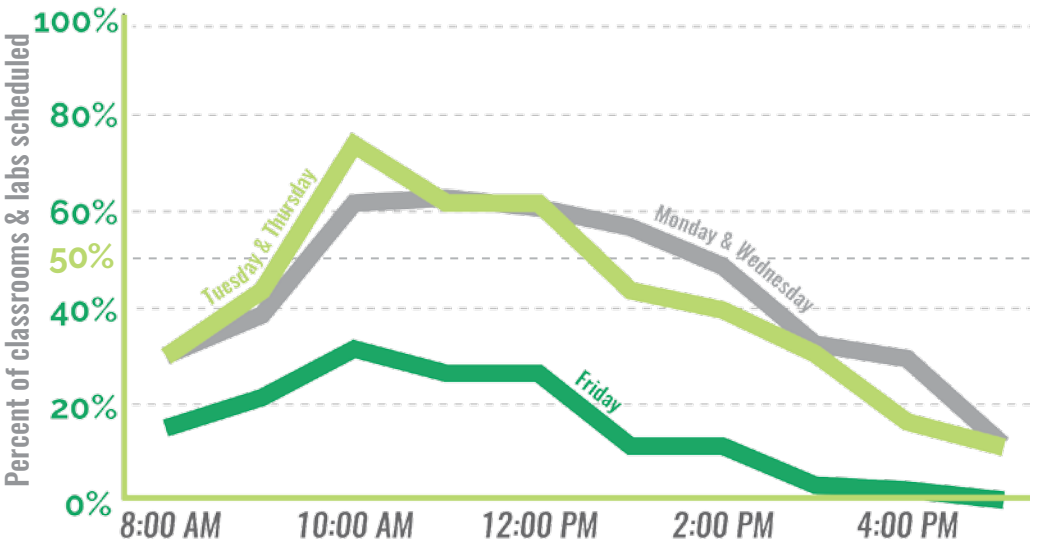
Daily and weekly utilization data shows that many rooms on the Harriman and Oak Ridge campuses are not heavily scheduled after 2:00 p.m. or on Fridays. Even at peak usage times, there are unscheduled rooms.

This is due in part to specialized labs that are difficult to fully schedule on small campuses with a limited number of sections, but overall these numbers reflect the potential to increase enrollment through tighter course scheduling rather than physical expansions.

FALL 2016 UTILIZATION BY TIME (HARRIMAN CAMPUS).....



FALL 2016 UTILIZATION BY TIME (OAK RIDGE CAMPUS).....



UTILIZATION BY BUILDING

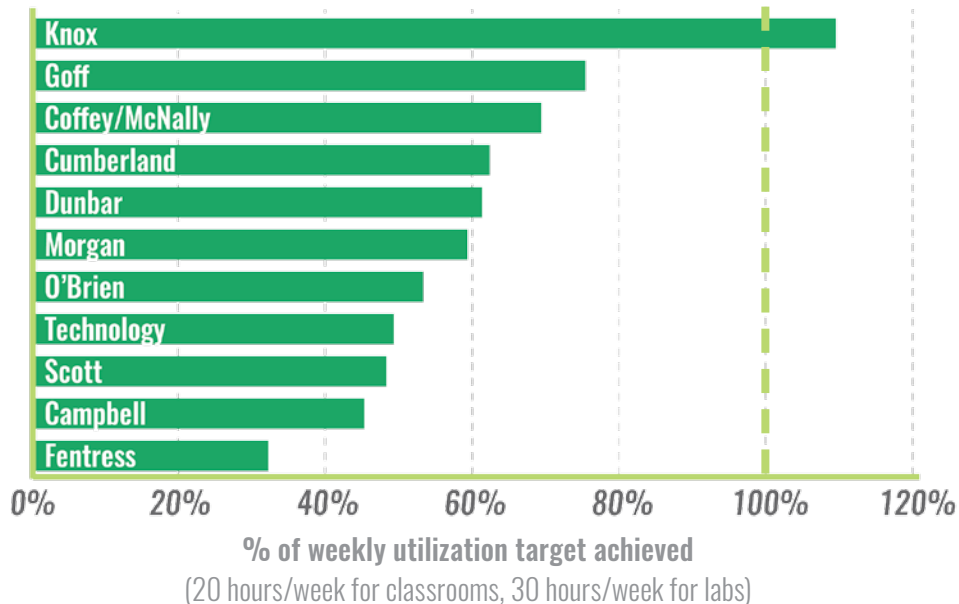
The THEC utilization standard is 20 hours per week for classrooms and 30 hours per week for labs (assuming that labs are specialized spaces that need to be more frequently utilized).

The chart below shows a hybrid utilization measure, based on the scheduling of each classroom and lab in a given building, and assuming either

20 or 30 hours per week as the target for each type of space.

Knox County is currently exceeding the THEC utilization standard, but all other campuses fall short of the standard. While this is not surprising on very small campuses such as Fentress, Campbell, and Scott Counties, it also indicates light scheduling of many spaces on the Harriman, Oak Ridge, and other campuses.

FALL 2016 UTILIZATION BY BUILDING.....



SPACE NEEDS

Any space model should be seen as a tool for understanding general space needs, not as a precise indicator of exact needs. In this Master Plan, results of the model are considered along with information provided during interviews with the campus community.

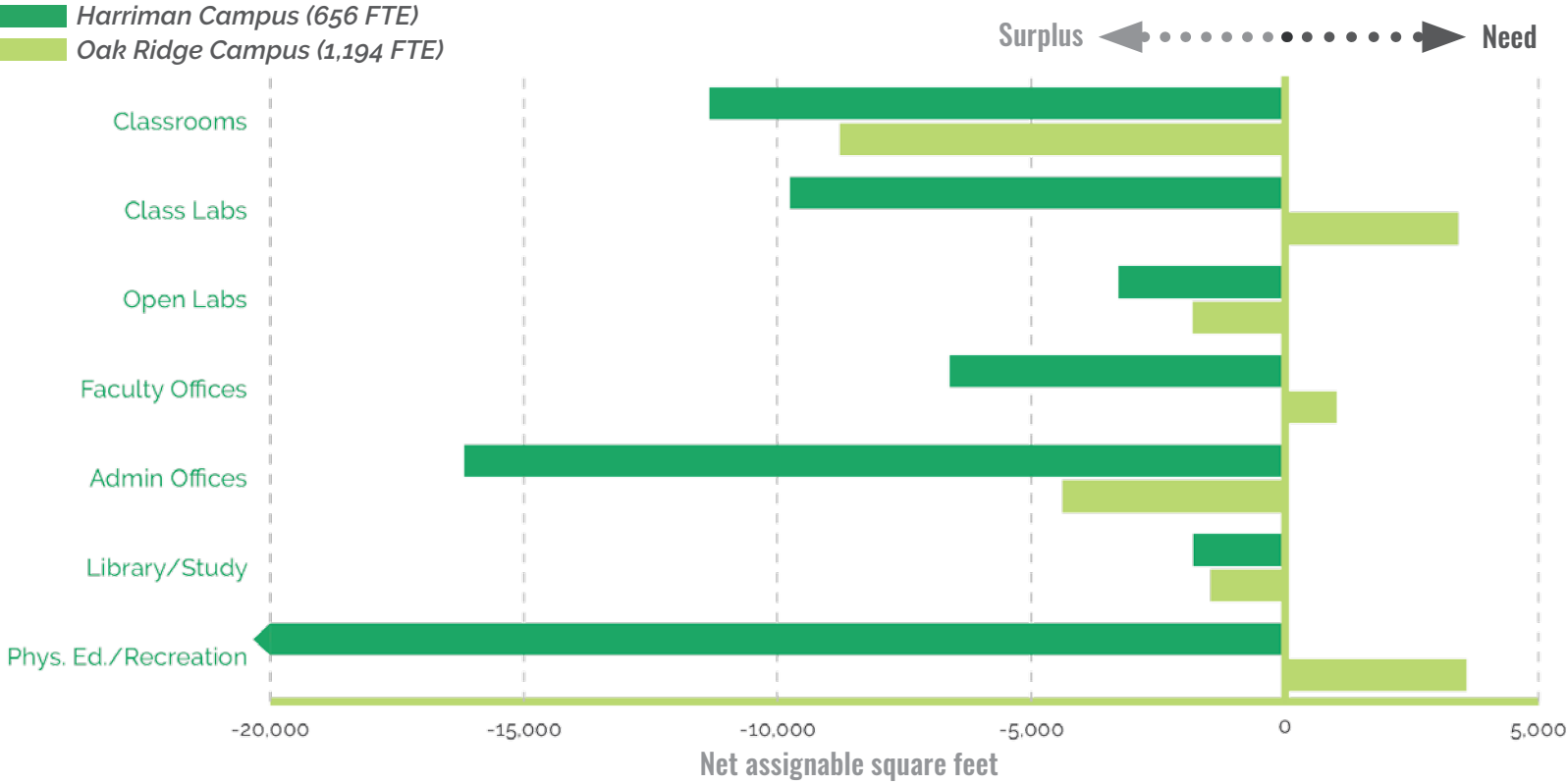
Needs are shown for Fall 2016 only, given the surplus of most space types on most campuses, although needs would increase once enrollment benchmark 1 is reached.

All areas shown on this page and the following pages are given in net assignable square feet, which does not

include spaces such as hallways and restrooms that are necessary to serve assignable spaces.

Existing and future space needs were calculated using data on courses, rooms, employee counts, and other information provided by Roane State. These needs are based on

FALL 2016 SPACE NEEDS (HARRIMAN & OAK RIDGE CAMPUSES).....



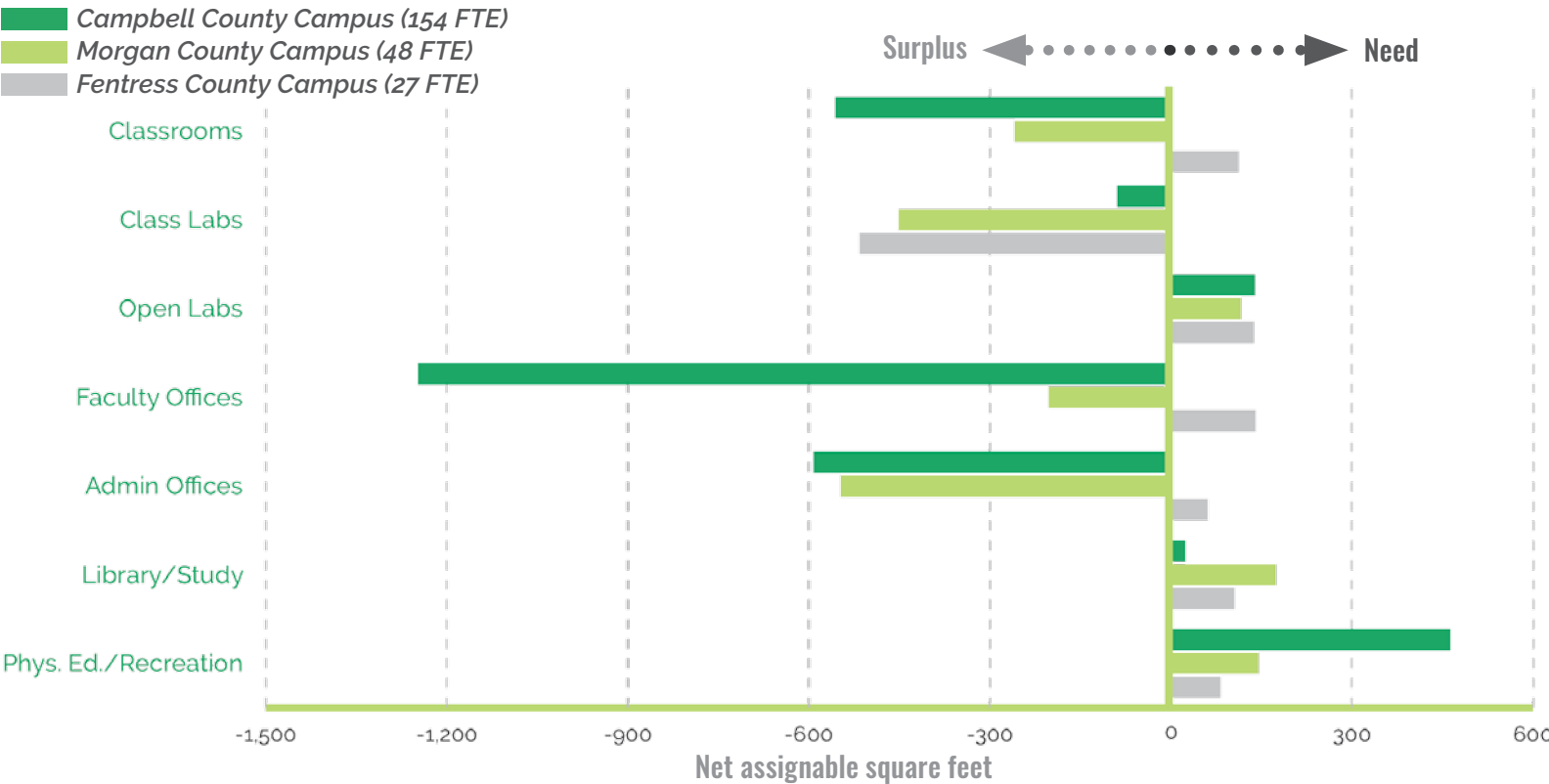
the Tennessee Higher Education Commission (THEC) space model.

As shown on the previous page, there is a surplus of most space types on Roane State's two largest campuses: those in Harriman and Oak Ridge. The model does, however, show a need for

additional lab and faculty office space in Oak Ridge.

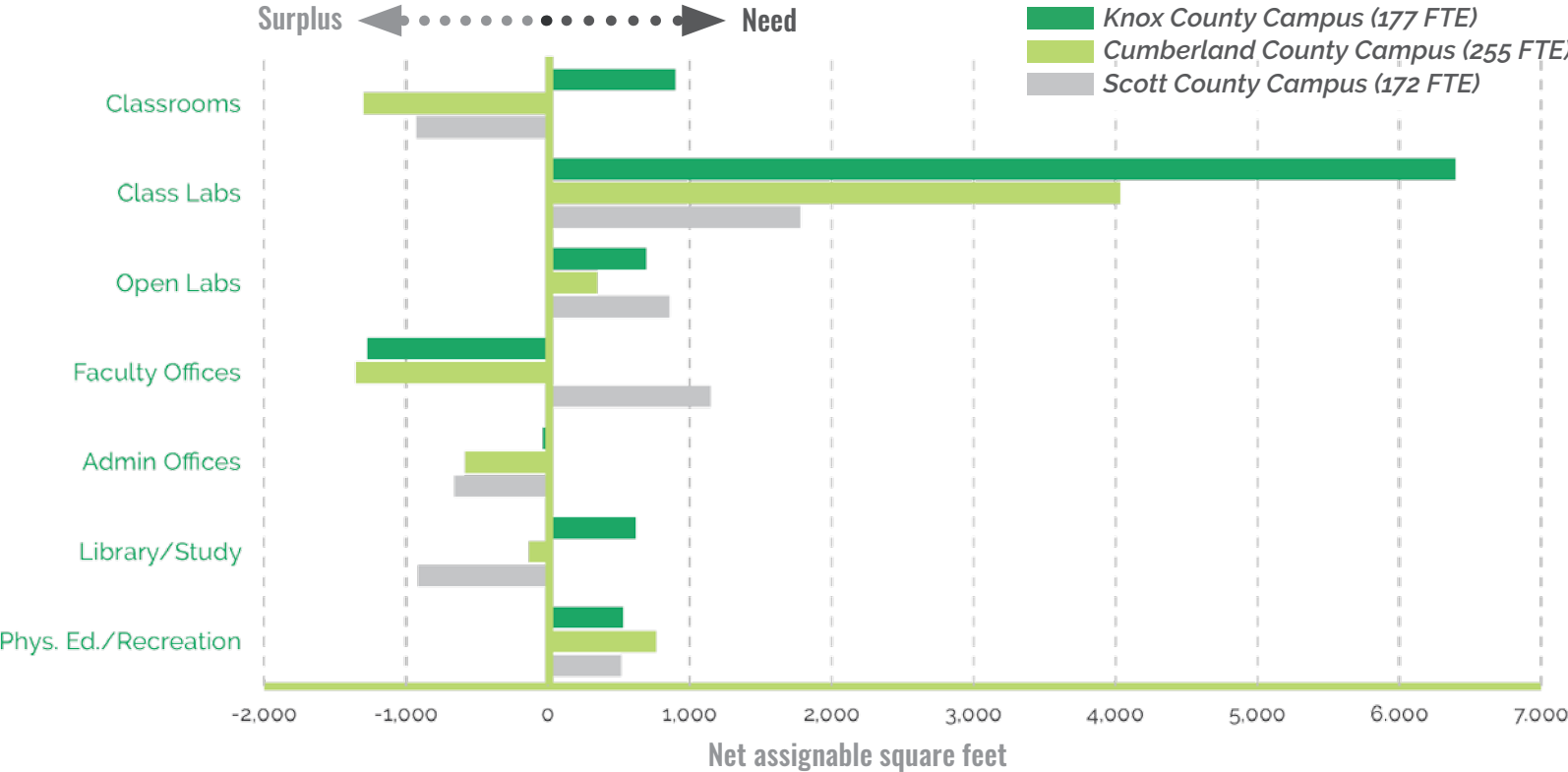
On the Campbell, Morgan, and Fentress County campuses, as shown below, only very minor needs are shown, indicating that existing space is adequate.

FALL 2016 SPACE NEEDS (CAMPBELL, MORGAN, & FENTRESS COUNTY CAMPUSES).....

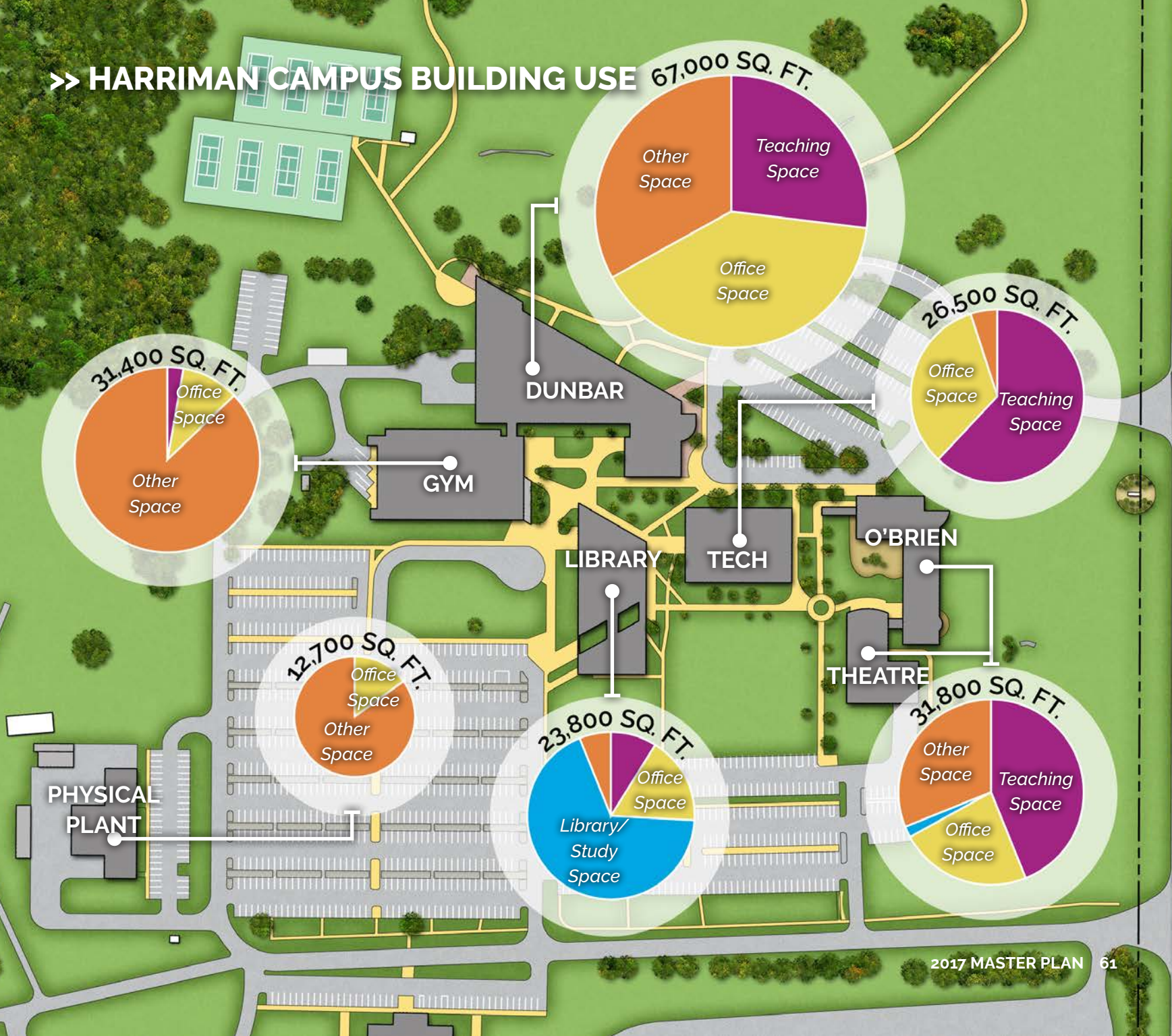


Needs on the Knox, Cumberland, and Scott County Campuses are shown below. There is a need for additional lab space on all three of these campuses, as well as more classroom space on the Knox County campus. Other small space needs were also identified.

FALL 2016 SPACE NEEDS (KNOX, CUMBERLAND, & SCOTT COUNTY CAMPUSES).....



>> HARRIMAN CAMPUS BUILDING USE



The image shows the exterior of a two-story brick building, identified as the Wheeler Building. The building has a red brick facade with large windows and a glass entrance. A tall flagpole with an American flag and a smaller red flag stands to the left. A tall white light pole is on the right. The foreground is a green lawn. The sky is blue with some clouds. A large red diagonal graphic element is on the left side of the image.

ROANE STATE
COMMUNITY COLLEGE
CAMPBELL COUNTY
HIGHER EDUCATION CENTER
WHEELER BUILDING



05 // MASTER PLAN

>> RECOMMENDED IMPROVEMENTS

>> FACILITIES IMPROVEMENTS

>> LAND ACQUISITION

HARRIMAN CAMPUS MAJOR IMPROVEMENTS

While no new buildings or facility expansions are envisioned on the Harriman Campus due to the lack of identified space needs, a significant number of other improvements have been identified that will help improve the student experience, enhance aesthetics and the usability of the campus, and meet needs identified during the walk through and interviews.

TECHNOLOGY BUILDING MAJOR RENOVATION

This aging building is in need of upgrades to bring it to an on-par situation with other facilities on campus.

- The roof is aging and in need of replacement
- Updates of finishes, lighting, paint, and furniture throughout the building will create a more modern and welcoming look
- The currently vacant lab in room 309 is no longer suitable for use and

should be renovated for teaching space for a future academic program

- Suite 102 (the former Purchasing office) is currently vacant and should be renovated to allow the campus police to relocate here to have more adequate and visible space
- Additional storage space should be identified for the Nursing program after existing renovations are complete
- Significant electrical upgrades are needed, including the replacement of the master panel and other panels to increase capacity

BASEBALL/SOFTBALL FIELDS

A new building should be constructed near the existing fields to house locker rooms, coach offices, and indoor practice facilities. Outdoor lighting should also be installed to allow for evening games. A parking lot should be created near the fields to formalize the existing parking.

EXPO CENTER

This facility is an important part of the campus and an economic driver for the local economy. The following improvements will allow the Expo Center to better serve the community.

- Additional concrete bleachers should be installed to expand seating
- A classroom should be created to provide meeting and academic space
- Existing cattle pens should be covered with a permanent, open air structure to provide protection from the elements
- Install high volume, low velocity fans in the arena to improve comfort in the warmer months
- A bathhouse should be constructed in the location of the former wash area to provide shower facilities for visitors
- A perimeter fence should be installed to prevent runaway animals

DUNBAR BUILDING RENOVATION

This building is the administrative, social, and academic center of campus in many ways, but retains much of its original elements that are no longer relevant. The following will modernize and invigorate this building.

- Some labs have been renovated, but the chemistry lab in room 129 retains its original features and should undergo a complete renovation
- Restrooms are no longer ADA compliant in some aspects and should be renovated
- Hallway lighting should be improved to compensate for dark flooring and create a more vibrant appearance
- The fallen concrete slab affecting rooms 101-107 should be raised
- A structural engineer should evaluate the settling that has occurred in the Raider Room
- The Student Center should undergo a complete face-lift, including new lighting, flexible modern furniture, charging stations, and color
- Underutilized classrooms should be considered for conversion to study/gathering rooms with updated furniture and finishes



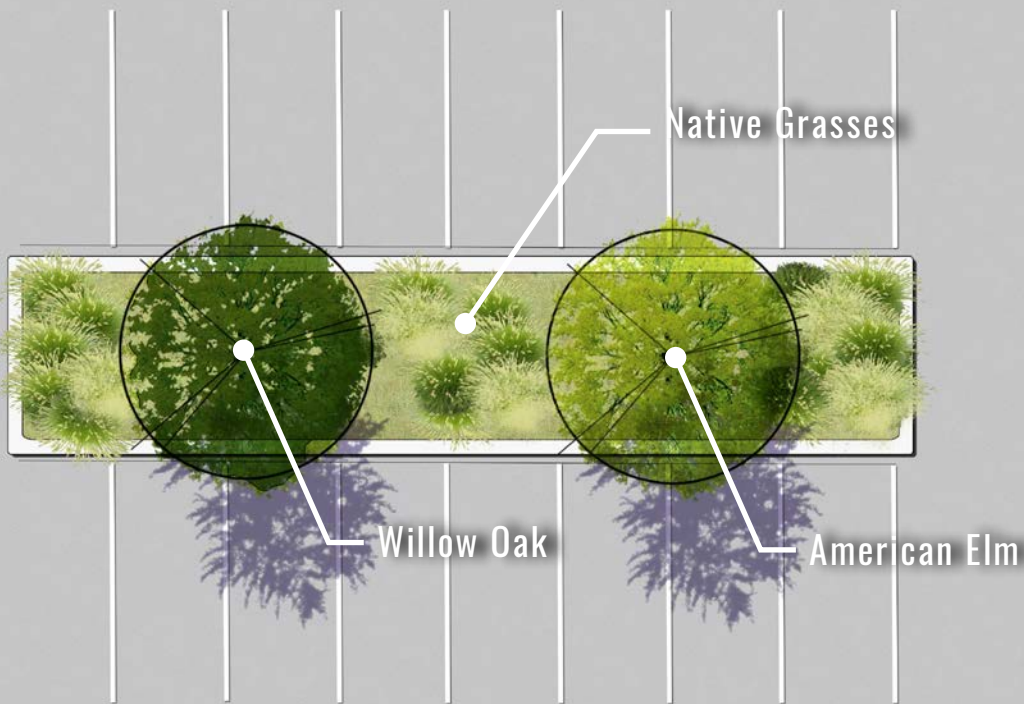
LAB RENOVATION



NEW CONCRETE BLEACHERS



STUDENT CENTER UPGRADES

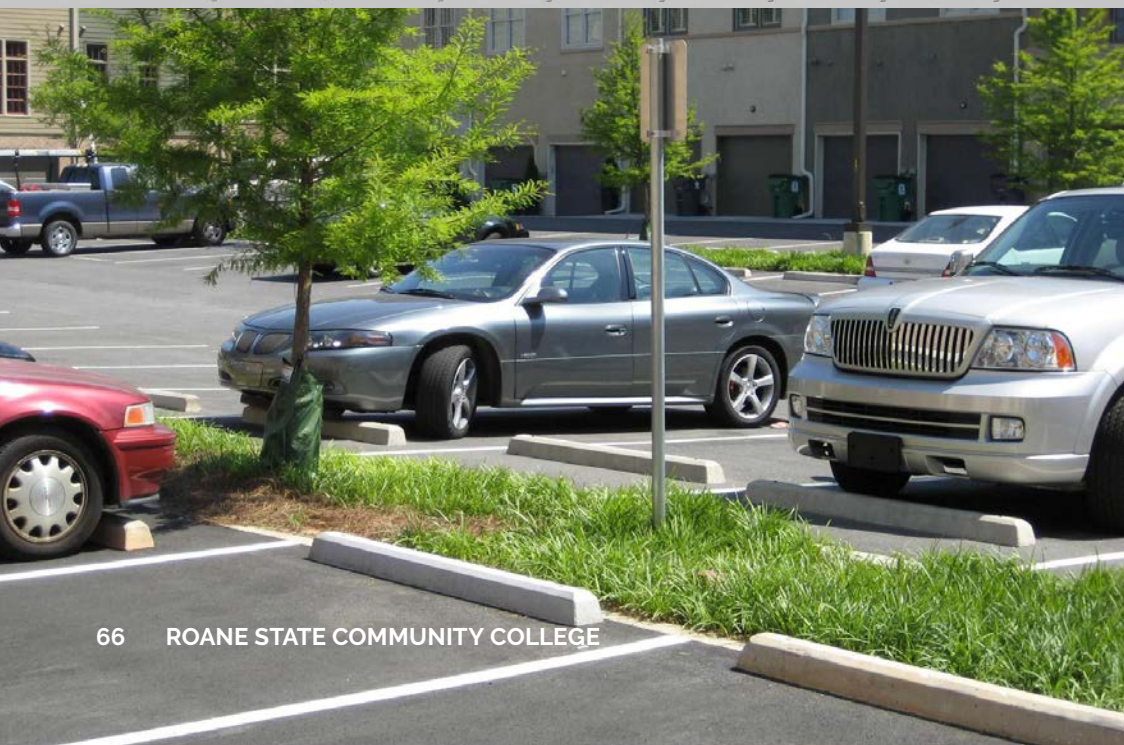


MAIN PARKING LOT

The complete lack of landscaping in the main parking lot creates an institutional feel that contrasts sharply with the landscaped interior of the campus. The fill stone and concrete should be removed and replaced with hardy landscaping that does not require deep soil, irrigation, or significant maintenance. This will help create a better first impression, enhance aesthetics, lower temperatures in summer, and improve environmental sustainability.

A few medians should be converted first, in a phased approach to ensure successful growth and integration of chosen plant materials. The following tree, shrub, and grass species are recommended:

- American Elm
- Willow Oak
- Fountain Grass (*Pennisetum Alopecuroides*)
- Switch Grass (*Panicum Virgatum*)
- Muhly Grass (*Muhlenbergia capillaris*)
- Monkey Grass (*Liriope spicata*)
- Winterberry Holly (*Ilex Verticillata*)
- Sedge (*Carex 'Everillo'*)



The existing front lawn emphasizes the rural setting of the campus, but has an institutional feel with isolated buildings and does not present a warm impression. It also requires costly mowing and maintenance.

- American Elm
- October Glory Red Maple
- Muhly Grass (*Muhlenbergia capillaris*)
- Monkey Grass (*Liriope spicata*)
- Daylilies



QUADRANGLE

The existing main quadrangle has a complicated palette of landscaping, materials, and furnishings that are costly to maintain and do not provide a unified appearance. The lack of furniture and shade mean that students seldom use this outdoor "room."

The improvements shown below will enhance this space. Landscaping should be simplified to a small number of easily maintained species that don't require irrigation, mowing, or seasonal replanting. One or two shade trees should be strategically planted to provide shade. Unified paving

materials such as attractive pavers or a similar hardscape materials will provide consistency. And commercial grade seating will provide places for students to gather and study.



STUDENT CENTER PATIO

This outdoor seating area is located at the hub of campus and has beautiful views, but is dominated by concrete and lacks shade and visual interest.

The rendering below shows the removal of strategic sections of the

concrete slabs adjacent to the existing ramp. These areas can then be planted with some of the following tree species:

- Lacebark Elm
- Trident Maple
- Serviceberry
- Sweetbay Magnolia

Low maintenance grasses such as Lilyturf and Carex will provide color and texture. Updated furniture and planters will also activate this space and allow it to become a gathering hub for students and others. The existing ramp should be upgraded for ADA access.



O'BRIEN COURTYARD

This courtyard space is nestled within the O'Brien Building in a low-lying area with steep slopes, making it difficult to maintain and use. The improvements shown below will transform this space

into a visually appealing garden that attracts students to the outdoors.

Recommendations include tree plantings and minor landscaping improvements, combined with

strategically placed furniture and artistic building signage. The creation of an outdoor classroom or small amphitheater should also be considered here, given the existing topography.



OAK RIDGE CAMPUS

This campus does not have significant needs for additional space, but the following improvements are necessary:

- A structural engineer should evaluate the settling that has occurred in the Library
- Landscaping should be refreshed in front of Goff Building, using easy to maintain species appropriate for a rain garden
- Piping should be installed to divert stormwater from the adjacent property through the campus
- Parking lots and internal roadways are in need of repaving

CAMPBELL COUNTY CAMPUS

An addition should be constructed to add a science lab and two classrooms to this campus. This campus should locate space to install cubicles to provide shared office spaces for adjunct faculty. A glass separation should also be installed at the front counter to improve security and provide sound insulation.

CLINTON FACILITY

The current facility in Clinton is leased. A new 30,000 gross square foot facility should be constructed on state owned land somewhere in Anderson County. This facility should house space to teach Mechatronics, Plastics Technology, Non-Destructive Testing, and Chemical Engineering Technology.

KNOX COUNTY CAMPUS

This growing campus has the most significant space needs of any Roane State campus. There are no opportunities for expansion on this site or adjacent properties, and the location suffers from poor visibility.

A new, more visible and accessible location should be found for a leased or state-owned campus within Knox County. Space in the new facility should be larger than what exists today in order to meet current and future needs. It should include a nursing simulator lab and mock hospital space, a dedicated EMT lab, and the additional lab space needed for existing programs.



CUMBERLAND COUNTY CAMPUS

This campus does not have significant needs for additional space, but several improvements are necessary to provide modern teaching facilities and needed offices.

- A small addition should be constructed to house a chemistry lab—this will allow for more complete degrees to be awarded on this campus without students travelling to the Harriman Campus.
- If additional office space is desired, rooms 112 and 145 could be converted to one or two offices each
- To provide additional teaching space, the existing ITV classroom should be relocated to a smaller room to better accommodate existing section sizes
- Classrooms 104 and 105, as well as 106 and 107, are very large and should both be split in half to provide teaching spaces that better match existing section sizes
- A storage shed may be necessary to provide more general storage space
- A perimeter walking trail should be constructed on this campus



NURSING SIMULATOR/MOCK HOSPITAL



CHEMISTRY LAB

FACILITIES IMPROVEMENTS

A number of upgrades to building systems are also recommended to buildings not covered by the major renovations and other projects above.

Fire sprinklers are recommended to be installed in several buildings. While these buildings are grandfathered in under older fire codes and sprinklers would not be mandatory without a major renovation, their installation would improve safety.

GENERATOR

An emergency generator should be installed on the Harriman campus to serve the Gymnasium and computer servers.

DUNBAR BUILDING (ADMINISTRATION WING)

VAV boxes in the HVAC system are original to the building and in need of replacement. A fire sprinkler system should also be installed. Significant electrical upgrades are needed, including the replacement of the master panel and other panels.

DUNBAR BUILDING (CLASSROOM WING)

Interior air handler units and coils need to be replaced as soon as practical. Mechanical cooling should be added to the main electrical transformer room and the kitchen.

GYMNASIUM

Existing air handlers need to be replaced. The main electrical panel and other panels lack capacity for expansion and are in need of replacement. A fire sprinkler system should also be installed.

BUILDING ENVELOPE IMPROVEMENTS

All aging concrete facades should be repaired, and painted or stained to improve the aesthetics of the campus and the integrity of the building envelopes. Murals or graphics could also modernize their look.

PEDESTRIAN/EQUESTRIAN TUNNEL

A pedestrian/equestrian tunnel should be constructed along with the widening of Highway 70, to provide a link to the local trail system and better access to campus.

REPAVING

The main parking lot and other driveways and parking lots are in significant need of repaving.

CUMBERLAND COUNTY CAMPUS (MAIN BUILDING)

The HVAC system is original to the campus and beginning to approach the end of its useful life. Replacement should be considered. The boiler should also be replaced with a more efficient model. HVAC concerns identified by faculty and staff should also be addressed.

OAK RIDGE COFFEE/MCNALLY BUILDING

The roof is in need of replacement. VAV boxes in the HVAC system are in need of replacement, as is the secondary water heater (currently out of service).

SCOTT COUNTY

The DX/gas fired units and associated outdoor condensing units are original to the building and have reached the end of their useful life. Recommend replacement as soon as practical.

LAND ACQUISITION

HARRIMAN CAMPUS

Roane State's Harriman Campus owns adequate land for its existing operations and those of the Expo Center. Additional land should be acquired to the west of the Expo Center to provide for any future expansions as well as providing a buffer and controlling frontage along Highway 70. Two small parcels along Patton Lane should also be acquired due to their high visibility and adjacency to the campus.

OAK RIDGE CAMPUS

This campus currently only has a small frontage on a public road and is otherwise surrounded by a number of small parcels with a mix of public and private ownership, many of which are vacant or underutilized. The acquisition of all of these parcels will allow adequate land for the construction of future buildings or parking lots, and will allow Roane State to control its frontages and approaches. Potential acquisition of the City of Oak Ridge park could allow for shared uses with Roane State athletics.

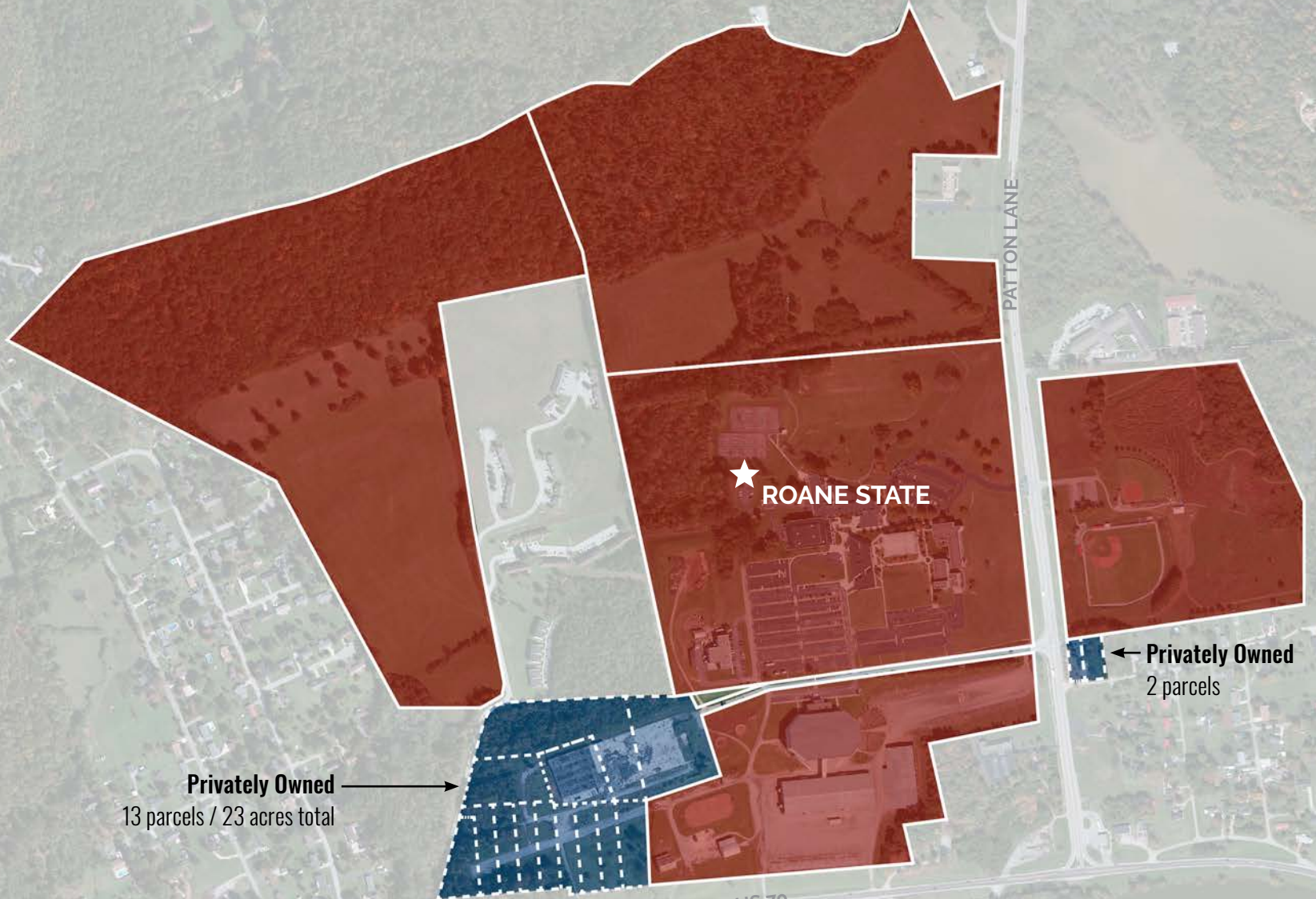
KNOX COUNTY

The existing campus in Knox County needs more space but has no room for expansion and there is no acquirable land nearby. Its location is also difficult to locate and lacks visibility. Land should be acquired at a yet-to-be-determined location for a new campus at a highly visible, accessible location in Knox County.

ANDERSON COUNTY

Land should also be acquired for a new, state owned campus in Clinton or Anderson County. The location of this land has yet to be determined but should provide space for adequate building and parking space as well as future expansions.

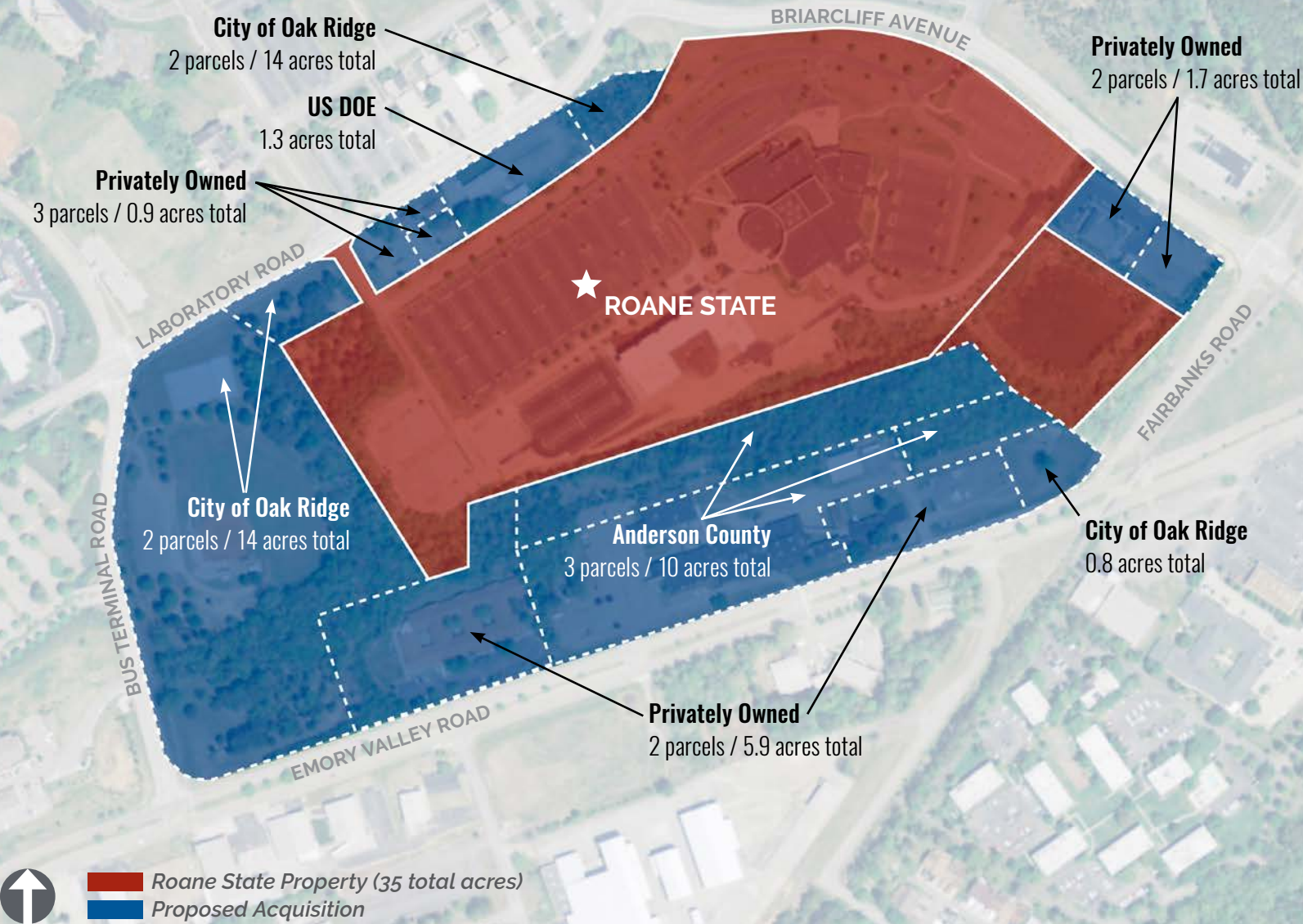
>> HARRIMAN CAMPUS PROPOSED LAND ACQUISITION



Roane State Property (286 total acres)

Proposed Acquisition

>> OAK RIDGE CAMPUS PROPOSED LAND ACQUISITION









06 // IMPLEMENTATION

>> IMPLEMENTATION CHECKLIST



CHECKLIST FOR IMPLEMENTATION

The implementation checklist provides cost estimates and a rough timeline for each of the recommendations described above. It is intended to serve as an overview of the capital improvements required at Roane State Community College.

Recommended projects are based on a long-term vision for the future of the college and were developed

through conversations with college administrators and the Tennessee Board of Regents, as well as input from students and faculty. Cost estimates are based on industry standards. Priorities and the details of implementation may change based on

future realities, as long as they remain within the general needs and plan outlined in this Master Plan.

IMPLEMENTATION CHECKLIST AND COST ESTIMATES

HARRIMAN CAMPUS	PRIORITY	ROUGH COST	
		ESTIMATE*	FUNDING SOURCE
Technology Building major renovation	Medium Term	\$4.7M	State Capital Maintenance, Roane State
Dunbar Building renovation	Medium Term	\$3.4M	State Capital Maintenance, Roane State
Main parking lot improvements	Short Term	\$710,000	State Capital Maintenance, Roane State
Quadrangle improvements	Medium Term	\$20,000	Roane State
Front lawn improvements	Medium Term	\$50,000	Roane State
Student Center patio improvements	Short Term	\$15,000	Roane State
O'Brien courtyard improvements	Long Term	\$13,500	Roane State
Practice/coaching/locker room building	Long Term	\$1M	Roane State
Baseball/softball fields outdoor lighting	Short Term	\$420,000	Roane State
Baseball/softball parking lot	Medium Term	\$36,000	Roane State
Land acquisition	Medium Term	Market Value	Roane State
Institution wide marketing study	Short Term	\$20,000	Roane State
New Generator	Medium Term	\$500,000	Roane State
Pedestrian/Equestrian tunnel	Medium Term	TBD	TDOT
Building envelope improvements	Medium Term	\$750,000	State Capital Maintenance, Roane State
Gymnasium	Long Term	\$1.4M	State Capital Maintenance, Roane State

*Rough total project cost based on 2017 dollars

IMPLEMENTATION CHECKLIST AND COST ESTIMATES (CONTINUED)

EXPO CENTER	PRIORITY	ROUGH COST	FUNDING SOURCE
		ESTIMATE*	
Concrete bleachers	Medium Term	TBD	Roane State, Local
New classroom	Medium Term	\$180,000	State Capital Outlay, Roane State, Local
Cattle pen roof	Long Term	\$2M	Roane State, Local
Arena fans	Short Term	\$20,000	Roane State
New bathhouse	Short Term	\$300,000	Roane State, Local
Perimeter fence	Medium Term	\$5,000	Roane State, Local
OTHER CAMPUSES	PRIORITY	ROUGH COST	FUNDING SOURCE
		ESTIMATE*	
Knox County land acquisition	Short Term	Market Value	Roane State
Knox County new facility	Medium Term	TBD	State Capital Outlay, Roane State
Cumberland County HVAC improvements	Medium Term	\$893,000	State Capital Maintenance, Roane State
Cumberland County Chemistry lab addition	Medium Term	\$500,000	State Capital Outlay, Roane State, Local
Cumberland County interior migrations/conversions	Short Term	\$50,000	Roane State
Cumberland County storage shed	Short Term	\$12,000	Roane State

*Rough total project cost based on 2017 dollars

IMPLEMENTATION CHECKLIST AND COST ESTIMATES (CONTINUED)

OTHER CAMPUSES (CONTINUED)	PRIORITY	ROUGH COST	
		ESTIMATE*	FUNDING SOURCE
Oak Ridge library structural investigation	Short Term	\$4,000	Roane State
Oak Ridge Coffee/McNally Building improvements	Medium Term	\$3.6M	State Capital Outlay, Roane State, Local
Oak Ridge Goff Building landscaping	Short Term	\$10,000	Roane State
Oak Ridge stormwater piping	Medium Term	TBD	State Capital Maintenance, Roane State, Private
Oak Ridge land acquisition	Medium Term	Market Value	Roane State
Campbell County addition & minor improvements	Short Term	\$1.1M	Roane State
Scott County HVAC improvements	Medium Term	\$460,000	State Capital Maintenance, Roane State
Anderson County land acquisition	Short Term	Market Value	Roane State
Anderson County new facility	Short Term	\$4.8M	State Capital Outlay, Roane State
Parking lot/roadway repaving (various campuses)	Medium Term	\$800,000	State Capital Maintenance, Roane State
Distance learning renovations (all campuses)	Long Term	\$1M	Roane State



A woman with curly brown hair, wearing a red zip-up jacket with a white Nike swoosh and a stylized 'R' logo, is smiling. Behind her, a man with blonde hair, wearing a blue t-shirt with the text '#PROCESS' and a stylized 'R' logo, is also smiling. They are standing in front of a building with large windows and green trees.

07 // APPENDIX

>> TSW SPACE MODEL RESULTS

>> THEC MODEL DETAILED RESULTS

>> DETAILED LABOR DATA

>> DETAILED FACILITIES AUDIT

TSW SPACE MODEL RESULTS

While the Tennessee Higher Education Commission (THEC) space model is considered the authority for the sake of this Master Plan, space needs were also calculated using a proprietary space model developed by master planning consultants TSW, in order to verify and provide an additional perspective on THEC model results.

The results of both models are generally consistent with each other

and confirm a surplus of most space types on the Harriman and Oak Ridge campuses. The TSW model shows a need for more library/study space on both campuses, perhaps indicating not the need for a larger library, but more informal study spaces scattered throughout campus. It also shows more need or less surplus of office space, and more surplus of open lab space, given the fact that many students today bring their own devices.

The TSW model uses FTE and contact hour data to generate needs

in most cases, while the THEC model calculates needs in terms of course sections. For this reason, there is a rounding effect in the THEC model that is particularly evident in needs calculations for smaller campuses.

Data for the proprietary model was provided by Roane State, and edited to remove evening and weekend classes, courses with an enrollment of only 1 or 2, and online classes.

TSW MODEL SPACE NEEDS (NET ASSIGNABLE SQUARE FEET).....

	CLASS- ROOMS	TEACHING LABS	OPEN LABS	FACULTY OFFICES	ADMIN. OFFICES	LIBRARY/ STUDY	PHYS. ED./REC.	GATHERING SPACES*	FACILITIES/ SUPPORT**
HARRIMAN									
Fall 2016 Space Needs	9,418	14,893	1,640	9,391	24,844	14,677	8,280	6,580	6,895
Fall 2016 Space Available	21,841	26,123	6,564	13,872	37,964	13,595	26,788	29,569	27,749
Net Space Needed: Fall 2016	-12,423	-11,230	-4,924	-4,481	-13,120	1,082	-18,580	-12,169	-20,854
OAK RIDGE									
Fall 2016 Space Needs	13,075	38,429	2,985	18,656	7,219	7,097	3,612	8,783	6,895
Fall 2016 Space Available	22,592	36,320	7,794	13,421	10,201	6,696	0	9,139	1,751
Net Space Needed: Fall 2016	-9,517	2,109	-4,810	5,235	-2,982	401	3,612	-356	5,144

*Gathering spaces include assembly space, food service space, student lounges, bookstore space, and meeting rooms

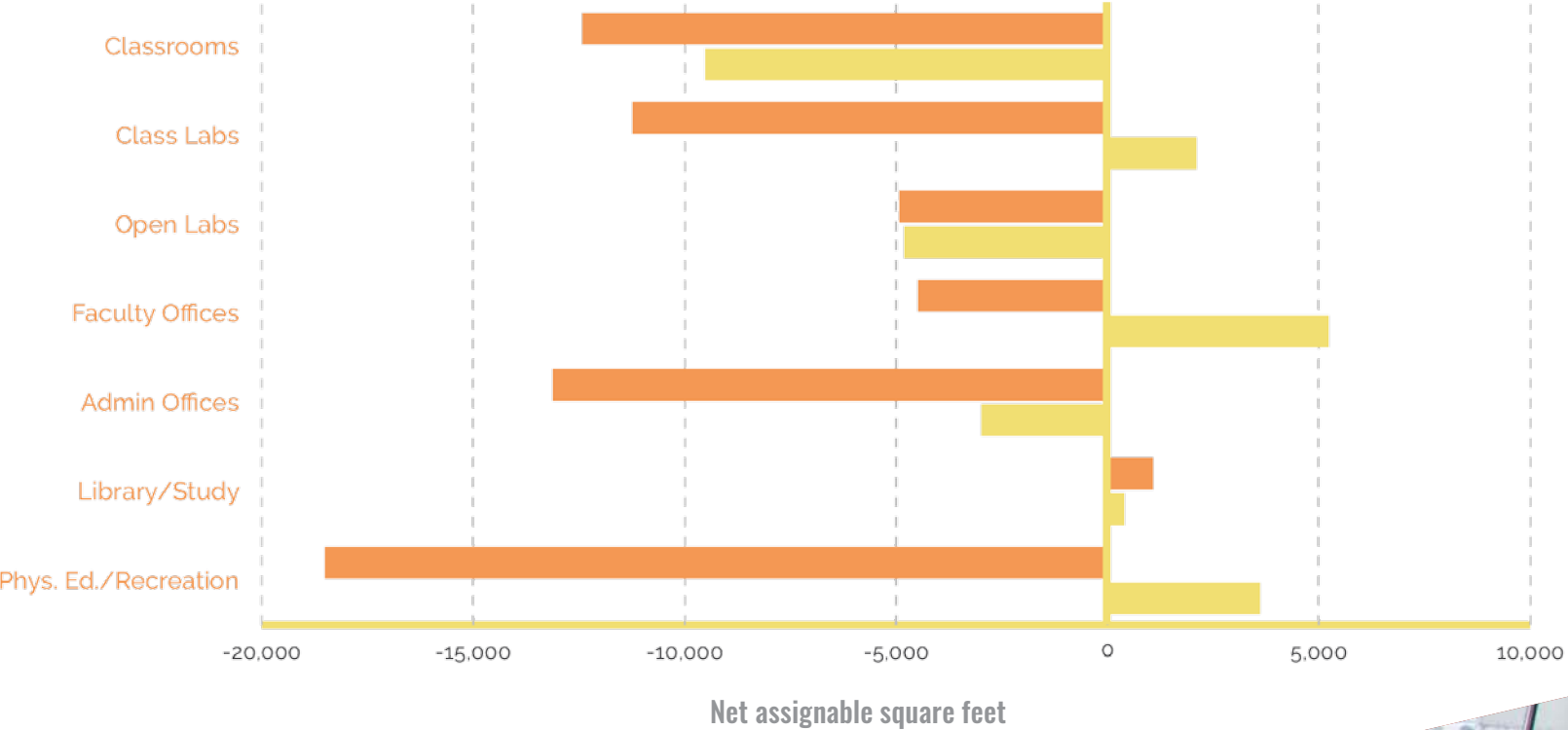
**Facilities/support space includes maintenance shop space, central storage areas, and vehicle garages



TSW MODEL SPACE NEEDS (HARRIMAN & OAK RIDGE CAMPUSES).....

■ *Harriman Campus (656 FTE)*
■ *Oak Ridge Campus (1,194 FTE)*

Surplus ← → Need



THEC MODEL DETAILED RESULTS

The tables on this and the following page show the detailed results of the THEC model, which are shown in graphic form on pages 58-60.

THEC MODEL SPACE NEEDS (NET ASSIGNABLE SQUARE FEET).....

	CLASS-ROOM	LAB / STUDIO	OPEN LAB	OFFICE	LIBRARY	PHYS. ED.
HARRIMAN						
Fall 2016 Space Needs	10,496	16,364	3,280	29,050	11,785	1,968
Fall 2016 Space Available	21,841	26,123	6,564	51,836	13,595	26,788
Net Space Needed: Fall 2016	-11,345	-9,759	-3,284	-22,786	-1,810	-24,820
OAK RIDGE						
Fall 2016 Space Needs	13,820	39,735	5,969	20,254	5,229	3,581
Fall 2016 Space Available	22,592	36,320	7,794	23,622	6,696	0
Net Space Needed: Fall 2016	-8,772	3,415	-1,825	-3,368	-1,467	3,581
CAMPBELL COUNTY						
Fall 2016 Space Needs	3,242	1,344	772	783	549	463
Fall 2016 Space Available	3,798	1,433	633	2,623	525	0
Net Space Needed: Fall 2016	-556	-89	139	-1,840	24	463

THEC MODEL SPACE NEEDS (NET ASSIGNABLE SQUARE FEET).....

	CLASS- ROOM	LAB / STUDIO	OPEN LAB	OFFICE	LIBRARY	PHYS. ED.
CUMBERLAND COUNTY						
Fall 2016 Space Needs	5,584	8,850	1,274	1,851	894	764
Fall 2016 Space Available	6,882	4,816	925	3,788	1,028	0
Net Space Needed: Fall 2016	-1,298	4,034	349	-1,937	-134	764
FENTRESS COUNTY						
Fall 2016 Space Needs	812	384	137	296	105	82
Fall 2016 Space Available	700	900	0	95	0	0
Net Space Needed: Fall 2016	112	-516	137	201	105	82
KNOX COUNTY						
Fall 2016 Space Needs	3,422	10,988	886	2,707	619	531
Fall 2016 Space Available	2,523	4,591	192	4,016	0	0
Net Space Needed: Fall 2016	899	6,397	694	-1,309	619	531
MORGAN COUNTY						
Fall 2016 Space Needs	2,162	384	242	478	174	145
Fall 2016 Space Available	2,421	835	126	1,228	0	0
Net Space Needed: Fall 2016	-259	-451	116	-750	174	145
SCOTT COUNTY						
Fall 2016 Space Needs	4,454	5,588	858	3,163	968	515
Fall 2016 Space Available	5,381	3,807	0	2,674	1,882	0
Net Space Needed: Fall 2016	-927	1,781	858	489	-914	515



DETAILED LABOR DATA

The tables on the following pages show detailed employment projection data, which is summarized above on pages 30-31.

Many workforce clusters include jobs that require more than an Associates degree and may reflect the larger job field beyond those jobs for which Roane State graduates are eligible.

Transfer degree programs are not included in this list because graduates go on to continue their education rather than immediately entering the workforce.

WORKFORCE INVESTMENT AREA 4: EMPLOYMENT PROJECTIONS (ASSOCIATE'S DEGREES).....

DEGREE PROGRAM	ASSOCIATED WORKFORCE CLUSTER	PROJECTED AVERAGE ANNUAL GROWTH RATE (2014 - 2022)**	PROJECTED SUPPLY/ DEMAND RATIO (RATIO OF GRADUATES TO JOBS)	JOB OUTLOOK
Allied Health Sciences	varies	varies	varies	varies
Business (Accounting)	Accounting Administrative Support	1.2%	n/a	A - Excellent
Business (Administration)	Administrative and Information Support	0.7%	0.32	B - Very Good
Business (Computer Science)	Web/Multimedia Management, Programming	2.8% [†]	0.84 [†]	A - Excellent [†]
Business (Management)	Business Management	1.8% [†]	2.28 [†]	D - Competitive [†]
Computer Information Technology	Web/Multimedia Management, Programming	2.8% [†]	0.84 [†]	A - Excellent [†]
Contemporary Management	Business Management	1.8% [†]	2.28 [†]	D - Competitive [†]
Criminal Justice	Law Enforcement	1.4% [†]	2.10 [†]	D - Competitive [†]
Dental Hygiene	Dental Hygiene	3.0%	1.27	C - Favorable
Early Childhood Education	Teacher Training Services: Pre-K Early Childhood Education	0.9% [†]	0.47 [†]	B - Very Good [†]
Environmental Health Technology	Engineering Technology	1.6%	n/a	U - Ungraded*
Financial Services	Accounting Administrative Support	1.2%	n/a	A - Excellent

Source: Tennessee Department of Labor & Workforce Development

*Ungraded workforce clusters have either a negative job growth rate, fewer than 11 annual job openings, or no related academic programs in the workforce investment area

**The statewide average annual growth rate for jobs in all sectors during this period is projected to be 1.1%

[†]All data for this workforce cluster is based on statewide projections, since regional data is not available

WORKFORCE INVESTMENT AREA 4: EMPLOYMENT PROJECTIONS (ASSOCIATE'S DEGREES).....

DEGREE PROGRAM	ASSOCIATED WORKFORCE CLUSTER	PROJECTED AVERAGE ANNUAL GROWTH RATE (2014 - 2022)**	PROJECTED SUPPLY/ DEMAND RATIO (RATIO OF GRADUATES TO JOBS)	JOB OUTLOOK
General Technology	varies	varies	varies	varies
Geographic Information Systems Technology	Surveying and Civil Technology	4.8%	1.80	D - Competitive
Health Information Technology	Administrative and Information Support	0.7%	0.32	B - Very Good
Mechatronics	Electrical, Electronic Equip. Repairers	3.6%	2.05	D - Competitive
Medical Informatics	Web/Multimedia Management, Programming	2.8%†	0.84†	A - Excellent†
Nursing (RN)	Nursing (RN)	1.9%	0.55	A - Excellent
Occupational Therapy Assistant	Occupational Therapy Assistant	2.1%	4.20	U - Ungraded*
Opticianry	Dispensing Optician	n/a	3.60	U - Ungraded*
Paralegal Studies	Legal Assisting	6.2%	0.40	A - Excellent
Physical Therapist Assistant	Physical Therapy Assistant	2.7%	1.90	U - Ungraded*
Radiologic Technology	Radiation Therapy	1.7%	5.60	U - Ungraded*
Respiratory Therapy Technology	Respiratory Therapy	2.6%	1.80	U - Ungraded*
Surgical Technology	Surgical Technologist	4.0%	1.80	U - Ungraded*

Source: Tennessee Department of Labor & Workforce Development

*Ungraded workforce clusters have either a negative job growth rate, fewer than 11 annual job openings, or no related academic programs in the workforce investment area

**The statewide average annual growth rate for jobs in all sectors during this period is projected to be 1.1%

†All data for this workforce cluster is based on statewide projections, since regional data is not available

WORKFORCE INVESTMENT AREA 4: EMPLOYMENT PROJECTIONS (TECHNICAL CERTIFICATES)...

DEGREE PROGRAM	ASSOCIATED WORKFORCE CLUSTER	PROJECTED AVERAGE ANNUAL GROWTH RATE (2014 - 2022)**	PROJECTED SUPPLY/ DEMAND RATIO (RATIO OF GRADUATES TO JOBS)	JOB OUTLOOK
Adv. Emergency Medical Technician	Emergency Medical Technician	1.2%	6.80	U - Ungraded*
Computer Information Technology	Web/Multimedia Management, Programming	2.8% [†]	0.84 [†]	A - Excellent [†]
Diagnosis & Procedural Coding	Administrative and Information Support	0.7%	0.32	B - Very Good
Early Childhood Education	Teacher Training Services: Pre-K Early Childhood Education	0.9% [†]	0.47 [†]	B - Very Good [†]
Emergency Medical Technician	Emergency Medical Technician	1.2%	6.80	U - Ungraded*
Geographic Information Systems Technology	Surveying and Civil Technology	4.8%	1.80	D - Competitive
Healthcare Documentation Specialist	Administrative and Information Support	0.7%	0.32	B - Very Good
Massage Therapy	Massage Therapy	n/a	n/a	U - Ungraded*
Mechatronics	Electrical, Electronic Equip. Repairers	3.6%	2.05	D - Competitive
Paramedic	Emergency Medical Technician	1.2%	6.80	U - Ungraded*
Pharmacy Technician	Pharmacy Assisting	3.0%	0.23	A - Excellent
Polysomnography	Medical Assistants	1.4%	n/a	A - Excellent

EMPLOYMENT BY INDUSTRY SECTOR (2014).....

	WIA 4	STATEWIDE
Agriculture, Forestry, Fishing and Hunting	0.8%	0.3%
Mining, Quarrying, and Oil and Gas Extraction	0.2%	0.1%
Utilities	0.8%	0.6%
Construction	5.0%	4.0%
Manufacturing	20.0%	12.0%
Wholesale Trade	2.4%	4.5%
Retail Trade	11.5%	11.9%
Transportation and Warehousing	3.0%	5.1%
Information	0.7%	1.6%
Finance and Insurance	3.0%	3.8%
Real Estate and Rental and Leasing	0.7%	1.3%
Professional, Scientific, and Technical Services	8.0%	4.4%
Management of Companies and Enterprises	1.0%	1.3%
Administration & Support, Waste Management and Remediation	5.5%	7.6%
Educational Services	8.6%	8.7%
Health Care and Social Assistance	12.6%	14.4
Arts, Entertainment, and Recreation	0.7%	1.2
Accommodation and Food Services	8.5%	9.5%
Other Services (excluding Public Administration)	2.3%	2.7%
Public Administration	4.6%	4.8%

Source: U.S. Census On The Map

DETAILED FACILITIES AUDIT

A detailed facilities walk-through and audit was conducted by SSR Engineers in the Fall of 2016. The results of this audit are summarized in the Master Plan above, but the following shows the detailed findings.

HARRIMAN CAMPUS

While several buildings were constructed in the early 1970s and 1980s, in general, the existing infrastructure for each building appears to be in fair to good condition based on the age of each building. There have been several equipment upgrades made over the last 15 years and the staff have done a very good job of maintaining each system. General site observations are as follows:

- Site lighting appears to be adequate in most locations.
- Site drainage appears to be acceptable with no noticeable deficiencies.
- For security, each building is equipped with one exterior card swipe and all other exterior doors are locked after hours.

- Recommend consideration of a campus wide retro-commissioning program to identify baseline energy consumption and recommendations for energy reductions and conservation measures.

DUNBAR BUILDING (ADMINISTRATION WING) 20,787 SQUARE FEET, CONSTRUCTED 1973

- Plumbing system appears to be adequate for the current use. Some fixtures have been replaced but some are original to the building.
- New modular indoor chilled water air handling units were installed in 2015 and are in excellent condition.
- Existing pneumatic controls have been upgraded to DDC and new control valves installed at existing VAV boxes. Existing VAV boxes are original to the building and have reached the end of their useful life. Recommend replacement of boxes as soon as practical.
- Building is not sprinklered but is provided with fire extinguishers.
- Electrical power distribution appears to be original to the building with a few upgrades in renovated

areas. The main service entrance panel is original and has reached its expected usefulness. The main distribution panel should be upgraded in the near future due to age and availability of parts. Lighting and receptacle panel boards have very limited or no future spaces available for additional circuits. College should consider upgrading panels as needed during any future renovation projects.

- Lighting is currently served by fluorescent lay-in fixtures and standard controls in each space, with some selected areas where recessed cans are used. Occupancy sensors and automatic lighting controls are very limited. College should consider upgrading lighting to LED and providing occupancy sensors and dimmers during future renovations to reduce energy consumption. In addition, consideration should be given to providing a building wide automatic lighting control system for increased energy savings. This would reduce energy requirements considerably.

- Fire alarm system is approximately 5 years old and appears to provide acceptable coverages. System provides audible and visual notification to the entire building. The systems appears to provide adequate coverages in all areas and would be easily upgradable during any future renovations.

**DUNBAR BUILDING
(CLASSROOM WING)
78,298 SQUARE FEET,
CONSTRUCTED 1973**

- Plumbing system appears to be adequate for the current use. Some fixtures have been replaced but some are original to the building.
- The domestic water heaters were replaced in 2015 and are in excellent condition.
- The HVAC system is four pipe fan coil units, both vertical and horizontal. The existing air handling units serving public spaces are located in corner mechanical rooms and each unit is very noisy either due to mechanical means or airflow. Each interior air handling unit and fan coil serving the main building has reached the end of its useful life and

is in need of replacement as soon as practical.

- The existing rooftop units were replaced in approximately 2004 and appear to be in good condition.
- Both centrifugal chillers utilize refrigerant 134a and appear to be in good condition.
- The original hot water boilers have been recently replaced with high efficiency condensing boilers.
- The existing chiller and gas fired boiler in a basement mechanical room are not separated by a two-hour fire wall. If/when future major renovations are contemplated, it is recommended this condition be discussed with the local authority having jurisdiction as to the requirements for separation.
- The main electrical/transformer room is naturally ventilated with outdoor air via louvers. It is recommended that mechanical cooling be provided in order to extend the life of the electrical equipment.
- The existing kitchen is not cooled and becomes uncomfortable during high use. Recommend the addition of mechanical cooling in this area.

- The existing kitchen range hood Ansul system has been recently refurbished.
- Electrical power distribution system appears to be adequate for the current use. The majority of the electrical panels appear to be original to the building and are nearing their life expectancy. Lighting and receptacle panels in the corridors are at capacity and there are very limited spaces available for any additional circuits with future renovations.
- Lighting is currently served by fluorescent lay-in fixtures and standard controls in each space; some occupancy sensors are installed. College should consider upgrading lighting to LED type and providing additional occupancy sensors and dimmers with future renovations to reduce energy consumption. A building wide automatic lighting control system would also increase energy savings. This would reduce energy requirements considerably.
- Fire alarm system is approximately five years old. The system provides audible and visual notification to

the entire building. The system appears to provide adequate coverage in all areas and would be easily upgradable during any future renovations.

- Building is not sprinkled, but fire extinguishers are provided.

GYMNASIUM

55,433 SQUARE FEET, CONSTRUCTED 1973

- Plumbing system appears to be adequate for the current use and is in good condition. Some fixtures have been replaced and some are original to the building.
- The HVAC system for the support spaces are four pipe fan coil units. Both vertical and horizontal and have new DDC controls. Existing air handling units and have reached the end of their useful lives and are in need of replacement as soon as practical.
- The Gymnasium is served by rooftop d/x, gas heating units installed in approximately 2008, which appear to be in good condition.
- Electrical system appears to be adequate for the current use. Main switchboard appears to be original

to the building and has no future expansion capabilities. Lighting and receptacle panel boards have limited spaces available for future renovations. College should consider replacement of the main panel in the near future due to age and availability of parts.

- Lighting is currently served by fluorescent lay-in fixtures and standard controls in each space. Gymnasium lighting is provided with metal halide fixtures and limited emergency lighting. College should consider upgrading lighting in offices, corridors, mechanical/electrical areas, and storage areas to LED and providing occupancy sensors and dimmers during future renovations to reduce energy consumption. A building wide automatic lighting control system would also increase energy savings. This would reduce energy requirements considerably.
- Fire alarm system is approximately five years old. The system provides audible and visual notification to the entire building. The system appears to provide adequate coverage in all areas and would be easily upgradable during any future renovations.

- Building is not sprinkled, fire extinguishers are provided.

LIBRARY

30,922 SQUARE FEET, CONSTRUCTED 1980

- Plumbing system appears to be adequate for the current use. Some fixtures have been replaced and some are original to the building.
- Rooftop HVAC units serving building are chilled water with hot water preheat and appear to be in good condition.
- The first floor main service entrance is mechanically ventilated but not cooled. Because this space houses electrical transformers, chilled water and hot water pumps, and an IT rack, it is recommended that this space be mechanically cooled to extend the life of the existing equipment.
- Electrical system appears to be adequate for the current use as upgrades have been made. However, there are limited spaces in the panels for future renovations. The college should consider upgrading panels as needed during future renovations.



- Lighting is provided by 2x4 lay-in fluorescent fixtures for all areas with the exception of some recessed cans and chandeliers at selected locations. College should consider changing fixtures to LED during any future renovations, as well as providing occupancy sensors and dimmers in offices, storage areas, and mechanical/electrical areas to reduce energy cost.
- Fire alarm system is approximately 5 years old. The system provides audible and visual notification to the entire building. The system appears to provide adequate coverage in all areas and would be easily upgradable during any future renovations.
- Building is sprinkled and provided with fire extinguishers.

TECHNOLOGY BUILDING **40,000 SQUARE FEET,** **CONSTRUCTED 1978**

- Plumbing system appears to be adequate for the current use but much of the system is original to the building. Some fixtures have been replaced.
- HVAC main air handling units were replaced in approximately 2006 and

appear to be in good condition and well maintained.

- Electrical system appears to be original to the building and has reached the end of its useful life. Recommend upgrade of entire system as soon as practical.
- Lighting is provided by 2x4 lay-in fluorescent fixtures for all areas with the exception of some recessed cans at selected locations. College should consider changing fixtures to LED during any future renovations, as well as providing occupancy sensors and dimmers in offices, storage areas, and mechanical/electrical areas to reduce energy cost. A building-wide automatic lighting control system would increase energy savings.
- Fire alarm system is approximately five years old. The system provides audible and visual notification to the entire building. The system appears to provide adequate coverage in all areas and would be easily upgradable during any future renovations.
- Building is sprinkled and provided with fire extinguishers.
- Elevator does not have ground floor access in an emergency situation.

O'BRIEN BUILDING
45,863 SQUARE FEET,
CONSTRUCTED 1997

- Plumbing system appears to be adequate for the current use.
- HVAC main air handling units are original to the building and appear to be in good condition and well maintained.
- Single centrifugal chiller utilizes refrigerant 134a and appears to be in good condition, as does the existing cooling tower.
- The original hot water boilers have been recently replaced with high efficiency condensing boilers.
- Additional cooling should be provided in room S-12 due to the addition of a data rack.
- Electrical system appears to be adequate for the current use, since upgrades have been made. However, there are limited spaces in the panels for future renovations. The college should consider upgrading panels as needed during future renovation projects.
- Lighting is provided by 2x4 lay-in fluorescent fixtures for all areas, with the exception of some recessed cans at selected locations. College should

consider changing fixtures to LED during any future renovations, as well as providing occupancy sensors and dimmers in offices, storage areas, and mechanical/electrical areas to reduce energy cost.

- Fire alarm system is approximately five years old. The system provides audible and visual notification to the entire building. The system appears to provide adequate coverage in all areas and will be easily upgradable during any future renovations.
- Building is sprinkled and provided with fire extinguishers.

OAK RIDGE CAMPUS

The Coffee/McNalley Building appears to be in good condition. The Goff Building appears to be in very good condition. General site observations are as follows:

- Site lighting appears to be adequate, but staff mentioned problems with existing wiring in the parking lot.
- Security system appears to be adequate.

- Site drainage is acceptable, but staff noted issues with stormwater run-off from the adjacent property, owned by the U.S. DOE.
- Recommend consideration of a follow up retro-commissioning program to verify baseline energy consumption as well as provide recommendations for additional energy reductions and conservation measures to maintain LEED certification.

COFFEE/MCNALLEY BUILDING
119,289 SQUARE FEET,
CONSTRUCTED 1999

- Plumbing system appears to be adequate for the current use and meet ADA.
- One of the two domestic hot water heaters has been offline for more than a year due to rust through of the storage tank. Recommend replacement of water heater as soon as possible. If the second water heater is offline, the building would be without hot water for an extended period of time.

- Overall, the HVAC system is original and appears to be adequate for the current use. Air handlers located in the third floor penthouse appear to be well maintained and in good condition. Balance of the existing equipment is showing its age. College should consider replacement of chillers, boilers, and associated pumps and devices.
- Several of the roof mounted lab exhaust fans were observed to have rusting on the external covering but the casings do not appear to be compromised.
- Staff noted that the existing fan powered VAV boxes are beginning to suffer failures of the fans and motors. Recommend replacement of equipment as soon as practical.
- The internal fill for the cooling is beginning to fail. Staff have begun obtaining pricing for replacement fill.
- Building is fully sprinklered.
- Electrical system appears to be adequate for the current use, since upgrades have been made. However, there are limited spaces in the panels for future renovations. The college should consider upgrading

panels as needed during future renovation projects.

- Lighting is provided by 2x4 lay-in fluorescent fixtures for all areas, along with some recessed cans. College should consider changing fixtures to LED during any future renovations, as well as providing occupancy sensors and dimmers in offices, storage areas, and mechanical/electrical areas to reduce energy cost.
- Fire alarm system is an addressable voice/evacuation system that provides visual and audible notification to all occupants and appears to provide adequate coverage in all areas.

GOFF BUILDING **65,193 SQUARE FEET,** **CONSTRUCTED 2014**

- All building systems observed appear to be adequate for the current use.
- Staff noted that the installation of piping in each mechanical room makes it very difficult to access each unit for repairs and service.

CUMBERLAND COUNTY **CAMPUS**

The existing building appears to be in good condition. General site observations are as follows:

- Site lighting appears to be adequate.
- Security system appears to be adequate. There is a mixture of exterior and interior security cameras.
- Site drainage appears to be acceptable.
- Recommend consideration of a retro-commissioning program to identify baseline energy consumption and recommendations for energy reductions and conservation measures.

STONE BUILDING **30,226 SQUARE FEET,** **CONSTRUCTED 1998**

- Plumbing system appears to be adequate for the current use and meet ADA standards.
- Reduced pressure backflow preventer was replaced in 2016.
- HVAC system includes vertical four-pipe fan coil units located in mechanical rooms and floor

mounted four-pipe fan coil units in classrooms. A 125-ton air cooled chiller is provided for cooling, and a gas fired Raypak boiler is provided for heating. Both systems are original to the building and, while well maintained, are beginning to reach their end of life. Staff stated that several chilled and hot water valves are beginning to fail.

- The air cooled chiller utilizes R-22 refrigerant. As the phase out of R-22 refrigerant continues, the college may want to consider replacement of the existing unit in the near future. Replacement refrigerants such as R410a or R-407 are available but these are not "drop in" replacements for R-22. The cost of R-22 recovery and upgrading of compressor seals and other devices, along with a reduction of total unit capacity makes this option less desirable.
- The existing gas fired boiler is a nominal 80% efficient (when manufactured). The college may want to consider replacement of the boiler with a more efficient condensing type boiler similar to that installed at the Harriman Campus.

- The HVAC system appears to be adequate for the current use. However, staff mentioned high humidity issues in the spring and summer. After conversations about the current operation of the mechanical system it appears that when the system goes into "un-occupied" mode after the building closes, all air handlers are shut down until morning "warm-up," but the exhaust fans continue to operate and therefore create a "negative" air pressure and draw unconditioned outdoor air into the building, contributing to increased humidity during early morning hours. Exhaust fans should be reprogrammed to shut down during "un-occupied" mode; outside air dampers should be closed as well. Selected air handling units could be programmed to energize on sensing increased humidity levels overnight in order to maintain a more comfortable environment upon "warm-up."
- An exhaust fan serving the communications closet (room 125) is controlled by a space thermostat. This closet should be provided with

a stand-alone cooling unit to prolong the life of the equipment.

- Electrical system appears to be adequate for the current use. There are more spare circuits available than normally observed at other facilities.
- Lighting is provided by 2x4 lay-in fluorescent fixtures for all areas, with the exception of recessed cans at selected locations. College should consider changing fixtures to LED during any future renovations. Occupancy sensors are provided for virtually every space.
- Fire alarm system is an addressable voice/evacuation fire alarm system that provides visual and audible notification to all occupants. It appears to provide adequate coverage in all areas. System is new as of May 2016.
- For security, the building is equipped with one exterior card swipe. All other exterior doors are locked after hours.
- Building is not sprinklered but is provided with fire extinguishers.

SCOTT COUNTY CAMPUS

The existing building appears to be in good overall condition. There have been multiple additions over the years with the latest approximately 2006. General site observations are as follows:

- Site lighting appears to be adequate
- Security system appears to be adequate. There is a mixture of exterior and interior security cameras.
- Site drainage appears to be acceptable, but at several locations the existing gutters are sagging away from the building. There are several washed out mulch beds, especially at roof valleys where rainwater has overflowed the gutter system.
- At the intersection of Office 111 and Lounge 114, the outside grade is not properly sloped away from the building and has created a location for standing water.
- Recommend consideration of a retro-commissioning program to identify baseline energy consumption and recommendations for energy reductions and conservation measures.

HIGHER EDUCATION CENTER 22,347 SQUARE FEET, CONSTRUCTED 1994-2006

- Plumbing system appears to be adequate for the current use and appears to meet ADA standards.
- Recommend addition of automatic flush valves and lavatory fixtures for water conservation.
- HVAC system appears to be adequate for the current use. It is comprised of several vertical dx cooling (R-22)/natural gas fired heating units serving the balance of classroom and administration functions. Several vertical dx/heat pump units are installed as well. The dx/gas fired units and associated outdoor condensing units are original to the building and have reached the end of their useful life. Recommend replacement as soon as practical.
- In locations where two classrooms are served by one air handler, the wall thermostat is located in the space with the larger load, resulting in overcooling in the adjacent space (rooms 103/105 and 104/106).
- Electrical system appears to be adequate for the current use since upgrades have been made, but

there is limited panel space for future renovations. The college should consider upgrading panels as needed during future renovations.

- Lighting is provided by 2x4 lay-in fluorescent fixtures for all areas, along with some recessed cans. College should consider changing fixtures to LED during any future renovations, as well as providing occupancy sensors and dimmers in offices, storage areas, and mechanical/electrical areas to reduce energy cost.
- Fire alarm system is an addressable voice/evacuation fire alarm system that provides visual and audible notification to all occupants and appears to provide adequate coverage in all areas.
- Building is not sprinklered and is provided with fire extinguishers.

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