



2016

Leaders in Stewardship



Operations
University of Missouri



Reflecting on the Past, Moving Forward.

2016



Introduction

MU Operations, like most divisions across campus, saw substantial budget cuts again in Fiscal Year 2016. In the past two years, our division lost 88 employees requiring everyone else to take on additional duties to accomplish an ever-growing list of projects. While we stress being environmental and financial stewards of Mizzou's resources, we have taken that concept to the next level, finding ways to accomplish more with less.

Faculty and staff helped soften the blow by working with Campus Facilities - Facility Operations to empty their office trash and recyclables, freeing up custodians' time to handle Mizzou's recycling, formerly a volunteer effort. We strive to provide a favorable return on investment across campus, whether it be maintaining the beautiful landscape that helps attract prospective students to providing a safe campus, which many of our departments contribute to including MU Police, Environmental Health & Safety and Campus Facilities.

We also offer leisure activities for the community-at-large with world-class artists performing at Missouri Theatre and Jesse Auditorium; culinary delights at the University Club and Catering; and 18 holes on the beautifully maintained A.L. Gustin Golf Course, the nation's first Audubon Certified university course. These self-funded departments are looking for new ways to reach their audiences and will continue to do so in the coming months.

While we have always had a large student staff, we work hard nowadays to not only provide a paycheck but also experiential learning opportunities for MU students, and we further the academic mission of the university by providing research opportunities and internships. You will see stories about these opportunities throughout this publication.

This year, you will find the length of our annual report has increased. The last section of the annual report includes what formerly was a separate document - the MU Master Plan and Climate Action Plan. We have combined the documents in order to cut costs and bring the master plan and climate action plan to a broader audience. It is important to note that this is the university's plan, and under the direction of shared governance (Campus Facilities Planning Committee, Campus Space Utilization Committee and Environmental Affairs & Sustainability Committee), though MU Operations staff help implement it.

I am honored to lead MU Operations and hope you enjoy learning about our division's accomplishments over the past year. Most of our employees work behind the scenes to provide services that make it possible for faculty, students and staff to succeed in their roles at Mizzou, and we thank you for supporting us through some difficult budgetary times.

As always, I welcome your questions or suggestions at wardga@missouri.edu.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary L. Ward", written over a light gray horizontal line.

Gary L. Ward
Vice Chancellor for Operations
Chief Operating Officer

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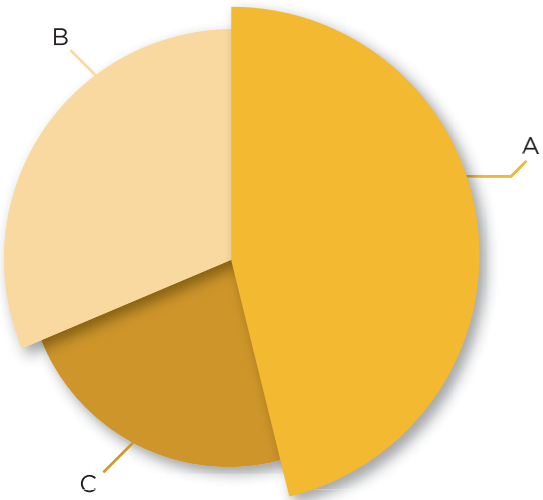
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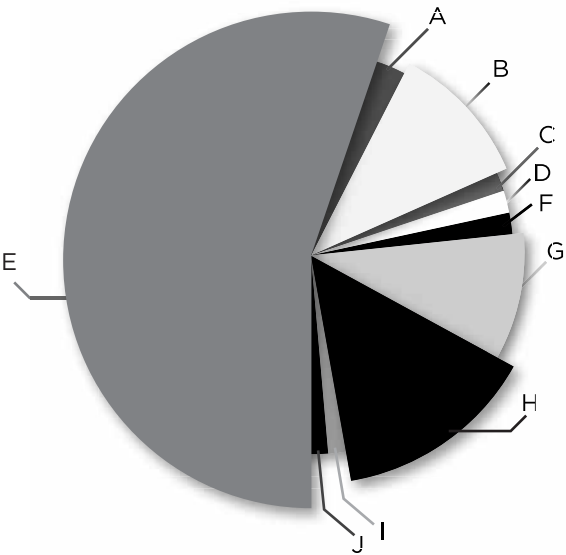
ENVIRONMENTAL STATEMENT				
The University of Missouri saved these valuable resources by using recycled paper that contains a minimum of 30 percent post-consumer waste, was manufactured with electricity in the form of renewable energy (wind, hydro, biogas) and was processed chlorine-free.				
TREES 6 fully grown	WATER 2,239 gallons	ENERGY 3 million BTU	SOLID WASTE 177 pounds	GREENHOUSE GASES 444 pounds of CO ₂

Calculations based on research by Environmental Defense and other members of the Paper Task Force

Financial Statement



REVENUE	
A. Revenue/other	\$137,064,220
B. Transfers from Departments*	\$88,729,099
C. General Revenue Allocation	\$73,315,042
Total Revenue	\$299,108,361



EXPENSE	
A. Cost of Goods Sold	\$16,200,205
B. Salary & Wages	\$41,098,934
C. Benefits	\$13,301,851
D. Operating Expenses	\$17,100,930
E. Facilities & Equipment	\$171,872,399
F. Debt Service	\$15,214,367
G. Investment in Plant/Bond Capitalized Interest	\$41,916,104
H. Transfers to Departments	\$50,904,517
I. Institutional Support	\$1,039,085
J. Gain/Loss on Disposal of Assets	\$414,319
Total Expense	\$284,401,864

Excess of Revenue Over Expense **\$14,706,497**

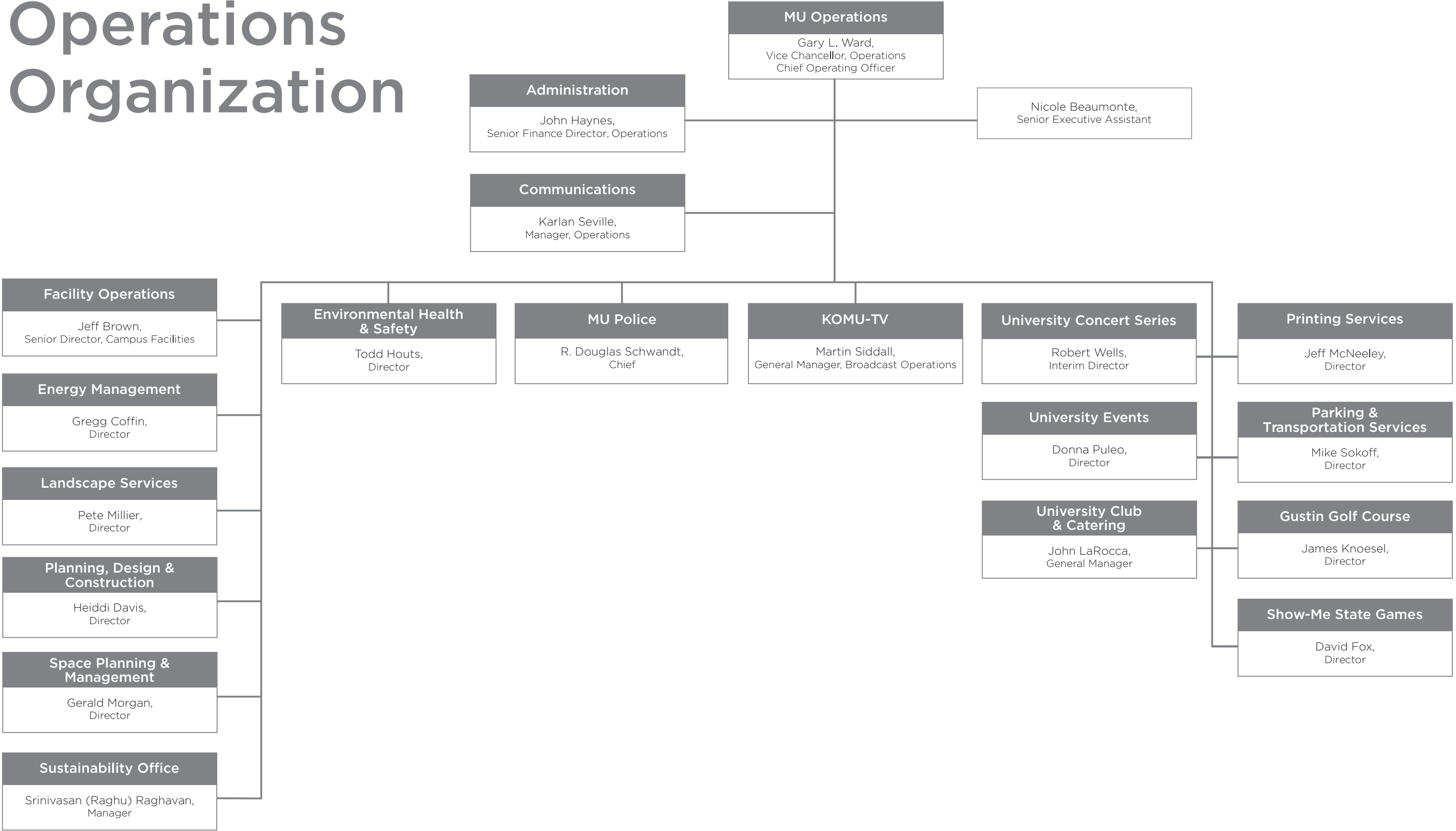
Beginning Balance, 7/1/15 **\$30,087,206**

Ending Balance, 6/30/16** **\$44,793,703**

*Transfers are funds to/from other departments related to construction activity, services provided, or reserve funds.

**Construction in Progress \$23 million; Reserves and Endowments \$22 million. Excludes MU Renewable Energy LLC activity \$47 million.

Operations Organization



RESPECTFUL WORKPLACE POLICY

MU Operations updated its Operations Respectful Workplace Policy, previously known as the Zero Tolerance Policy, in November.

The policy states that all Operations employees and those with whom they interact will be treated with dignity and respect regardless of race, culture, gender, age, disability, sexual orientation or any other personal characteristic or protected category under federal regulations and university policy.

To enforce this policy, Operations will demonstrate zero tolerance for derogatory personal comments or actions related to any of these characteristics, or for any act of violence in the workplace. Employees confirmed to have made such comments or actions to or about a fellow employee, someone in the university community or to the general public will be subject to disciplinary action up to and including termination.

“THE UNIVERSITY HAS STRUGGLED FOR ITS 177-YEAR HISTORY WITH THE ISSUE OF RACE RELATIONS. SO HAS MISSOURI, OUR NATION AND OUR WORLD.”

<https://vimeo.com/143048173>



THE RACE RELATIONS COMMITTEE

The Race Relations Committee of the Faculty Council was formed as a response to the racial tensions that erupted in Nov. 2015. The committee, made up of nine faculty members, two students and a staff member with diverse backgrounds and ethnic identities as well as political, spiritual and philosophical viewpoints, is chaired by Berkley Hudson (1), an associate professor at the School of Journalism.

After hearing Hudson give a presentation called “White to White” to the chancellor’s staff last summer, Vice Chancellor for Operations Gary Ward asked Hudson to give the presentation again during the MU Operations Leadership Forum on Sept. 15.

“Knowing the impact it could have, it was an experience that I wanted to share with the MU Operations leadership team,” Ward said.

In his committee member insights, Hudson noted that such conversations are crucial to moving forward as a diverse community.

“The university has struggled for its 177-year history with the issue of race relations. So has Missouri, our nation and our world. This is an intractable problem. But we have no other choice except to engage in the uncomfortable and essential work of gaining a better understanding of how to answer the question that Rodney King in Los Angeles raised. In response to widespread rioting after police officers had been acquitted of brutality charges related to King’s 1991 arrest, he asked: ‘Can we all get along?’” Hudson wrote.

Campus Committees

Ad Hoc Joint Committee on Protests, Public Spaces, Free Speech and the Press

Todd Houts
Doug Schwandt
Gary Ward

Art-I-Fact

Pete Millier
Madeline Stanley

Campus Facilities Planning Committee

Gary Ward
Eric M. Henley

Campus Parking and Transportation Committee

Jim Heckemeyer
Michael Sokoff
Doug Schwandt
Linda Turner
Mark Yount

Campus Review Committee

Gary Ward, Chair

Campus Safety Committee Members

Jeffery Brown
Dennis Elmore
Eric Evans
Todd Houts
Russell Hanson

Campus Space Utilization Committee Members

Joey Riley

Concerts Committee

Robert Wells

Digital Accessibility Working Group

Karlan Seville

Environmental Affairs and Sustainability Committee

Todd Houts
Bonnie Hansen
Paul Coleman
Matt Maher
Chris Wilson
Srviniran Raghavan

Family Friendly Campus Committee

Heiddi Davis

Identity Standards Advisory Group

Karlan Seville

Intercollegiate Athletics Committee

Gary Ward

Institutional Biosafety

Todd Houts
Steve Hynes
Sunny Hoffman
Jamila Peña Crespo

Laboratory Safety

Todd Houts
Dennis Elmore
Sunny Hoffman
Jamila Peña Crespo

Materials Culture Committee

Karlan Seville

Minority Affairs Committee

Brian Weimer

Missouri Unions Committee

Robin Whiteley

Mizzou Botanic Garden

Pete Millier
Karlan Seville
Donna Puleo
Jenna Rozum

Mizzou Marketing and Communications

Karlan Seville
Joanne Rotert

Persons with Disabilities Committee

Gerald Morgan

Radiation Safety

Todd Houts
Felicity Beckfield
Gary Ward
Eskil Hudson
Bryan Higgins

Safe Mizzou Coalition

Karlan Seville
Eric Evans
Rebecca Bergfield
David Dorth
James Young

Student Fee Capital Improvements Committee

Mark Hoerstkamp

Traffic Appeals Committee

Linda Turner
Michael Sokoff

Veterans Affairs

Pete Millier

Web Development Group

Mark Yount

Staff Advisory Council



HOKE EICHELBERGER

Hoke Eichelberger, a carpenter in Campus Facilities - Planning, Design & Construction, received the Chancellor’s Outstanding Staff Award in the Crafts/Maintenance category.

Eichelberger, who has been with MU since 1994, is known for his fine wood-working skills including the Thomas Jefferson monument, the MU cornerstone displays in Jesse Hall and the display cases in Anheuser Busch-Natural Resources.

“I’ve been fortunate to work on some historical projects that have been on campus long before I came and will be here long after I’m gone,” Eichelberger said.



BRIAN WEIMER

MU Police Maj. Brian Weimer received the Barbara S. Uehling Award for Administrative Excellence.

Weimer, second in command at MUPD, oversees policies and procedures; handles recruitment, hiring and training; supervises patrol/Investigative/crime prevention staff; and serves as public information officer, among other duties.

“I might take reporter’s phone calls, but our officers are who do the work day-in and day-out to keep our campus a safe place to learn, work and play,” Weimer said. “MUPD has a great team of officers and staff.”

MU OPERATIONS AWARD WINNERS

SERVICE CHAMPION:

- May - Zachary Chinae (MU Police)

SAC SALUTES:

- Winter - Campus Facilities - Boiler Replacement Team (Planning Design & Construction)

COLLEGE COLORS DAYS:

- Best Dressed: First Place - Kenneth Jacquin (Planning Design, & Construction)

MU OPERATIONS STAFF ADVISORY COUNCIL MEMBERS

Tim Sallee, *Facility Operations*
Rebecca Bergfield, *Environmental Health & Safety*
Eric Henley, *Campus Facilities - Facility Operations*
Alissa Petty, *Staff Advisory Council*

2016 STAFF DEVELOPMENT AWARD WINNERS:

- Jeffrey Bryson (Energy Management)
Advanced welding course at Columbia Area Career Center in Columbia, Missouri
- Leslie Diehl and Kevin Wooden (Energy Management)
International District Energy Association - Utility Distribution Workshop in Austin, Texas
- James Heckemeyer (Planning Design & Construction)
Construction Owners Association of America - Spring Leadership Conference in Dallas, Texas
- Michael Van Beek and Paul Douglas (Landscape Services)
Cultivate 2016 - “An American Horticulture Experience” Conference & Trade Show in Columbus, Ohio
- Jeff Liptak, Eric Buckman, Randal Timmerman and Steve Winkelman (Energy Management)
Midwest AutoCad Drawing Course with emphasis on industrial process controls in Lee Summit, Missouri
- Joanne F. Rotert (Print & Mail Services)
Direct Marketing Institute Seminar in New York City, New York

IN THEIR OWN WORDS

Staff Development Award Winners Reflect on Experiences



Christopher Wilson
(Planning Design & Construction)

The 2016 Greenbuild Conference in Los Angeles, California

My position is unique within Campus Facilities, and opportunities to personally meet with, and hear from other sustainability professionals are infrequent. But gatherings like Greenbuild provide an opportunity for individuals from around the globe to meet and discuss issues that affect our campus.

Patty Gash
(Print & Mail Services)

2016 Central Mo Pcc Mailer’s Conference - Tan-Tar-A Resort Osage Beach, Missouri

Having the opportunity to attend this conference allowed me to meet and put faces with names of contacts at our local post office. I was able to consult other managers from mailing operations all over the state, too.

Curtis Flatt, Chad Heckman, James Smith, Todd Gentry, Steven Burry, Kevin Strawn, John Mckenzie, Darrell Dillon, Tim Rippeto, Michael Bopp, and Allen James
(Energy Management)

NFPA 70E Electrical Safety for High Voltage Electricians - Columbia, Missouri

The high voltage electrical safety training was very informative and relevant to our crew’s responsibility of operating and maintaining the campus electrical system. This course validated our daily work practices and increased our knowledge of electrical safety.

HEADING SOUTH

Mizzou Botanic Garden (MUBG) serves faculty, staff and students daily with opportunities for everything from research to recreation, but some visitors to campus come strictly for its beauty. Building on MUBG’s efforts to make Mizzou a destination for both professional and hobby gardeners, a group of MU Operations staff used a Staff Development Award to tour successful gardens to our south.

The group visited garden expert P. Allen Smith’s Moss Mountain Farm in Roland, Ark. (1), and the University of Arkansas’ Garvan Woodland Gardens in Hot Springs National Park, Ark (2). The visit to P. Allen Smith’s farm was especially meaningful because Smith was the keynote speaker at MUBG’s celebration of Thomas Jefferson’s birthday in 2014.

Senior Communications Assistant Madeline Stanley recalls it was a foggy, rainy March morning, and that they had the place mostly to themselves.

“Smith’s farm was completely open for us to explore and draw inspiration from,” Stanley said. “Visitors tour his home as well as the many

gardens that overlook the Arkansas River. And a professional chef prepares a gourmet lunch with recipes from Allen’s cookbooks, they make every guest feel special.”

Garvan Gardens was in full bloom with thousands of tulips and daffodils along a trail leading to a recently installed overlook of Lake Hamilton. A fairy garden and interactive climbing area offered experiential opportunities for younger visitors. Intuitive signage and additional marketing materials inspired the group.

“Both locations brought us limitless ideas on how to cultivate amazing gardens and spaces that people can enjoy at Mizzou Botanic Garden,” MUBG Director Pete Millier said.

Besides tours, Smith’s farm and Garvan Gardens offer special events and weddings at their venues, something that MUBG might expand upon.

Awardees were: Millier, Stanley, Donna Puleo, Ashley Schwab, Karlan Seville, Leslie Touzeau and Mark Yount.



Administration & Communications

MU Operations Administration & Communications supports all Operations units, providing human resource services, finance, system development, training and communications expertise.

FY16's biggest undertaking was a partnership with Computer Science and IT department chair Dong Xi and a team of 21 students working with Systems Development and the Communications team to build new websites for 18 Operations departments as well as a web application for Print & Mail Services (1).

The website project resulted in a cohesive visual identity for all Operations websites, ensured information was current and streamlined content. The partnership continues on a smaller scale.

"After we finished the project, the total number of pages for MU Operations websites has been reduced from 2,332 pages to 1,001 pages," said Systems Development manager Hao Mu.

“

TO: COMMUNICATIONS STAFF

While my future remains uncertain, I would be nowhere near as skilled, confident and capable as I feel now if I hadn't had this opportunity. The support and confidence you all had in me made it so easy to develop as a designer and I feel I've come leaps and bounds since I started. The level of care and understanding you all have demonstrated has truly made me a more patient and understanding person myself. I'm so fortunate to have been able to grow as a designer, a professional, and a human being.

”

ROBERT VIERLING
Graphic Design Intern
2014 - 2016



SENIOR DIRECTOR:
JOHN HAYNES

**COMMUNICATIONS
MANAGER:**
KARLAN SEVILLE

15.5
FULL-TIME STAFF

10
STUDENT STAFF

OTHER NOTABLE PROJECTS:

- Coordinating the active shooter video, including script writing and hiring and paying more than 50 students as extras. See page 20.
- Transitioning Systems Development to DoIT's reporting structure, though they still support Operations.
- Coordinating Energy Management's district energy video with a Documentary Journalism student. See page 31.
- Reorganizing all fiscal employees under John Haynes and his management team.
- Providing all marketing and communications for University Concert Series. See page 28.

Environmental Health & Safety

SAFETY FIRST

Accident prevention is Environmental Health & Safety Director Todd Houts' raison d'être.

"Most of what we do is have things not happen," Houts said.

To that end, Houts and his staff devote much of their time to researching ways to educate others on such topics as biological safety, chemical safety, environmental matters, fire safety, food safety, safe handling of hazardous materials, laboratory safety, personal protection, radiation safety and general workplace safety.

An example of these efforts is a lab safety pop-up banner, which shows a life-size photograph of a man dressed appropriately for working in a lab: goggles, gloves, lab coat, long pants and short hair. Hair pulled back would also be appropriate (photo 2, right). The two copies of these easily transportable displays can be moved and displayed as necessary outside teaching and research labs as a vibrant reminder of basic safety attire.

EHS also hosts lab safety training for anyone on campus including graduate and medical students. Houts said these classes not only teach students to think of their own safety, but teach safe procedures to others.

"Those grad students become TAs who influence undergrads. We instill in them an idea that they are shepherds of actively promoting safety," Houts said.

To ensure more students are able to attend these trainings, EHS is expanding its offerings to include more after-hours classes in additional locations across campus.

GET WITH THE PROGRAM

It's said that one man's trash is another man's treasure. It stands to reason, then, that leftover chemicals unwanted by one department might be of use to another. With this in mind, EHS developed a chemical redistribution program.

When a department contacts EHS to remove usable chemicals still in their original containers, EHS determines whether they are suitable for continued use. If so EHS puts them in a safe storage area and lists them securely online, making them available to anyone trained and registered to use chemicals.

Not only does this program save departments money on acquiring new materials, but it also eliminates corresponding disposal fees. In FY16, the program saved MU \$225,000 in avoided purchase costs alone. EHS Director Todd Houts is considering the feasibility of allowing other schools in the UM System to participate in the program to cut back on some of their own chemical expenditures.

EHS'S CHEMICAL REDISTRIBUTION PROGRAM SAVED MU
\$225,000
IN FY2016

“ **THOSE GRAD STUDENTS BECOME TA'S WHO INFLUENCE UNDERGRADS. WE INSTILL IN THEM AN IDEA THAT THEY ARE SHEPHERDS OF ACTIVELY PROMOTING SAFETY.** ”

TAMING TROUBLED WATERS

First established in 1972, the Clean Water Act was written to establish a structure for regulating the discharge of pollutants into waters of the U.S. As originally written, the EPA could regulate pollutant point sources such as pipes or discrete water discharge points from industries. But even after point sources were regulated, water pollution still was persistently problematic, so the EPA later added general stormwater runoff to its list of point sources. In 2003, MU, Boone County and the city of Columbia applied for a joint permit for stormwater management under this new regulation. Through this collaborative effort, EHS, Boone County and the city optimize the use of resources on approaches such as public education projects.

"We have this incredible working relationship," Houts said. "And our efforts seem to be paying off to improve the water quality of Hinkson Creek."

FIRE

In January 2016, EHS and City of Columbia hired the latest Assistant Fire Marshall for MU, Joel Pauley. While technically an employee of the City of Columbia, his salary is split by both entities and Pauley spends 50% of his time to provide services to campus. At MU, part of Pauley's duties include making sure the university is in compliance with fire code. MU has co-funded an assistant fire marshal since January 2001.



DIRECTOR:
TODD HOUTS

36
FULL-TIME STAFF

1
STUDENT STAFF

@EHSchemicals
ehs.missouri.edu

Partners in Education

MU OPERATIONS COMMITTEE MEMBERS:

REBECCA BERGFELD
MARY MAXWELL
JEFF MCNEELEY
KARLAN SEVILLE

MU Operations is the Partner in Education with the Columbia Area Career Center. Operations staff provide experiential learning opportunities for the students each year and sponsor the I Can Award and Outstanding Student events on the MU Campus. Student opportunities this past year were:

- Build A House for the House, page 26
- Float Your Boat, page 38
- Planting Kindness Trees at schools in Boone County
- Designing floral displays to compliment art work at the Chancellor's Arts Showcase

PIE SCHOLAR

“Beginning in the fall, I will start my studies in Agribusiness Management with hopes to also attain a minor in Agriculture Systems Management. I plan to pursue a career within the ag world as well as run and own a large farm operation with one goal in mind: bring fresh food to the market at an affordable price while maintaining a humane and environmentally friendly atmosphere. With your financial assistance, I am able to worry less about my educational expenses and therefore focus more of my time studying and getting one step closer to my goal.”

- NOAH MEFRAKIS, MU OPERATIONS
SCHOLARSHIP RECIPIENT

Chamber & REDI

CHAMBER OF COMMERCE

Mizzou's membership in the Columbia Chamber of Commerce has grown into a partnership that is vital to both entities. MU Operations helped to sponsor 2016's annual Leadership Visit to Fort Collins, Colo. (1), where community leaders learn from each other while visiting a similar size city with similar characteristics - a university town, thriving arts and culture, business friendly and other aspects that make Columbia a great place to live and work. Matt Garrett, director of audience development at KOMU, and Karlan Seville, communications manager, attended the trip.

Garrett is the tri-chair of media day for the Leadership Columbia 2017 class, which will be held at the School of Journalism. KOMU and MU Operations were co-sponsors of the Republican Gubernatorial Debate. See story on page 23.

Seville is the co-chair of Junior Leadership Columbia, a program for select Columbia high school juniors. MU Operations is a co-sponsor of JLC. On Jan. 9, students met at MU to learn about applying to college and writing a resume. The evening included speed networking with the Leadership Columbia 2017 class (2).

REDI

MU, a member of Regional Economic Development Inc., or REDI, works with area leaders to attract business opportunities in Columbia and Boone County. REDI coordinates economic development in an effort to enhance the economic base while preserving quality of life. Vice Chancellor for Operations Gary Ward serves as an ex-officio board member.

Print & Mail Services

PRINTING AND MAIL MERGE

The Printing and Mail departments combined in June to form a unified Print & Mail Services, now housed under one roof at 2800 Maguire Blvd. This consolidation has resulted in some cost savings — by identifying synergistic possibilities and cross-training employees to streamline processes, the department can reduce the need for temporary staffing during peak seasons, for instance — as well as an improvement in customer service. Clients work with the same customer service representative for both printing and mailing needs. Expanded office hours — 7:30 a.m. to 4 p.m. Monday through Friday — improve convenience for clients. To make electronic letterhead accessible for users who are visually impaired, Print & Mail Services has included tags that can be detected and interpreted by screen readers. Additionally, Print & Mail Services offers free on-campus delivery for orders.

A NEW DEPARTMENT, A NEW DIRECTOR

Following the announcement that the Printing and Mail departments would combine, Jeff McNeeley was named Print & Mail Services director (3). McNeeley, who served as customer service supervisor in Printing since 2011, said providing clients efficient, dependable services remains his top priority.

“We want to keep that climate of customer focus,” McNeeley said.

Gaining an understanding of the Mail department's processes and looking for ways to make Print and Mail functions serve as complements to one another will ultimately help in this goal.

“There's a natural progression from print to mail,” McNeeley said.

EQUIPMENT UPGRADE AND NEW TECHNOLOGIES

For Print & Mail Services, upgrading equipment and technologies is a must. A new Xerox iGen4 digital press promises improved color quality in graphics and documents for quick-print customers.

Additionally, new meter machines that evaluate how much postage to use will increase efficiency in the mailroom.

One pending improvement is a website interface that will generate a printable code after the customer types the parcel's destination. The customer affixes the code to his or her package, and then mailroom staff scan the code to generate a shipping label that is attached to a MoCode when applicable and sends an email notification with tracking information to the customer. This system would not only improve mailroom efficiency but eliminate the introduction of address-label errors. To incentivize this interface, McNeeley said Print & Mail Services would charge 10% less per UPS parcel using this process.

COMPLIANCE

Joanne Rotert, a strategic communications associate with Print & Mail Services, has been working with Marketing and Communication and the University of Missouri Licensing Office to identify and enforce branding standards. All materials produced at Print & Mail Services are guaranteed to be in compliance with branding standards.

“We're the gatekeepers of branding,” Print & Mail Services Director Jeff McNeeley said. “When we receive a job, we check for branding compliance. If there is an issue we work with the client to meet MU's standards.”

3

DIRECTOR:
JEFF MCNEELEY

59
FULL-TIME STAFF

7
STUDENT STAFF

“WE'RE THE
GATEKEEPERS
OF BRANDING”



A.L. Gustin Golf Course

PGA HEAD GOLF PROFESSIONAL:
JIM KNOESEL

5
FULL-TIME STAFF

19
STUDENT STAFF

@GustinGC
gustingolfcourse.com

- 80 bird species sited at Gustin.
- A.L. Gustin was the first Audubon International-certified college golf course in the United States.
- Plans are in place to install and establish honeybee hives.

LESSONS ON THE FAIRWAY

The golf course presents a robust array of opportunities for learning.

It's no secret that business deals often take place on the golf course. Linda Sowers, an instructor of agricultural journalism and agriculture and applied economics, teaches an Ag Econ Business Golf Etiquette class. The course teaches novice and experienced golfers alike the principles and practices of behavior surrounding business golf. Students who take the

class become familiar with basic rules, equipment and etiquette so they can one day represent employers.

Meanwhile, researchers in the Division of Plant Sciences are conducting a study on ways to control the hunting billbug in the zoysia fairway on Hole #11. The hunting billbug is a destructive weevil that resides in warm-season grasses such as zoysia, a grass common on golf courses.

22,691
Rounds of golf in 2016

20
High school golf teams compete at the Columbia Classic

17
MU Student philanthropy tournaments

1,500
Youth participated in the Columbia Golf Foundation's Youth Golf Camps

Gustin hosts one of the largest high school tournaments in the state



University Events

FIRST IMPRESSIONS

University Events works with the Office of the Chancellor throughout the year to plan and execute a number of high-profile events, such as a private reception for UM System President-designate Mun Choi (1), held Nov. 30, 2016, at the Chancellor's Residence on Francis Quadrangle.

University Events staff also planned receptions for incoming MU Athletic Director Jim Sterk, Vice Chancellor for Human Resources Patty Haberberger and Vice Chancellor of Extension and Engagement Marshall Stewart.

A GRAND SURPRISE

For 25 years, the William T. Kemper Foundation has honored outstanding MU faculty by presenting them with \$10,000 to spend as they wish. Each spring, the MU chancellor and executives from Commerce Bank, the trustee for the Kemper Foundation, interrupt the honorees as they are teaching class to announce the award. University Events orchestrates these surprises and also plans a reception and awards ceremony (2).

HOME FOR THE HOLIDAYS

University Events collaborated with the Women's Symphony League by opening up the Chancellor's Residence on Francis Quadrangle to WSL's 33rd annual Holiday Home Tour (3). Mizzou Botanic Garden Horticulture Manager Jenna Rozum decorated the historic home with vintage ornaments from the Residence's collection and greenery and other plant material sourced from the campus landscape.

ENRICHMENT

University Events worked with the State Historical Society of Missouri and the Division of Inclusion, Diversity and Equity to plan the African-American Experience in Missouri lecture series. University Events staff identified and booked appropriate venues, secured necessary audio-visual contacts to produce an accessible lecture experience with live-captioning, and planned additional events such as receptions and book signings for the lecture series.

OTHER NOTABLE EVENTS INCLUDE:

- MU Remembers
- Top Faculty Achievers Reception
- Retirees Luncheon
- Board of Curators Reception and Dinner
- Honorary Degree Luncheon
- Mid-Missouri Innovation Week
- State of the University Address
- Mizzou Botanic Garden Native Pollinators Dinner

DIRECTOR:
DONNA PULEO

3
FULL-TIME STAFF

1
PART-TIME STAFF

universityevents.missouri.edu



Parking & Transportation

DIRECTOR:
MIKE SOKOFF

8
FULL-TIME STAFF

27
STUDENT STAFF

@MizzouPTS
parking.missouri.edu

THAT’S (NOT) THE TICKET

MU Parking & Transportation rolled out its new parking management system, Tiger Park, in July. The new system streamlines the parking-enforcement process, by eliminating tag permits and paper tickets and implementing License Plate Recognition, or LPR, technology.

Director Mike Sokoff said in the long run, this system will allow the parking office to be more customer-focused rather than caught up in so many manual tasks.

Parking enforcement now is performed in one of two ways. For large garages and parking lots, a two-student team drives through in one of the parking department’s vehicles. These vehicles are outfitted with cameras on the roof, which scan license plates and check them against the database. A tablet computer in the vehicle sounds an alarm when the scanner detects a vehicle that doesn’t have permission to be in the garage or lot. The student then will perform a physical check of the vehicle and its license plate to make certain it is a legitimate citation, then the citation is reviewed electronically by full-time staff and sent to the employee or student via his or her MU email account within 24 hours.

LEADERS IN PROFESSIONAL, CIVIC ORGANIZATIONS

- Parking & Transportation Director Mike Sokoff
- City of Columbia Public Transportation Advisory Committee
 - City of Columbia Parking and Traffic Management Task Force
- Business Administration Manager Linda Turner
- Vice President of the National Campus Parking and Transportation Association

For smaller parking lots, a parking-enforcement officer will be on foot to check plates using one of the tablets.

“What we’ve attempted to do is bring the technology into the 21st century,” Sokoff said.

By streamlining the parking-enforcement process, Parking & Transportation has been able to save money by scaling back the size of its parking-enforcement team. Additionally, switching from paper tags and tickets to digital permissions and citations will save the department about \$50,000 a year in paper costs, Sokoff said.

And because MU Police Department and MU Health Care also use the system, there is a sense of cohesion in terms of enforcement throughout campus.

Parking & Transportation’s next task is to convert parking meters on campus to pay stations that use license plates as receipts. Sokoff said he also hopes to have a mobile app in place soon, which will text customers when they are almost out of time at their parking spots and allow them to pay for more time electronically.

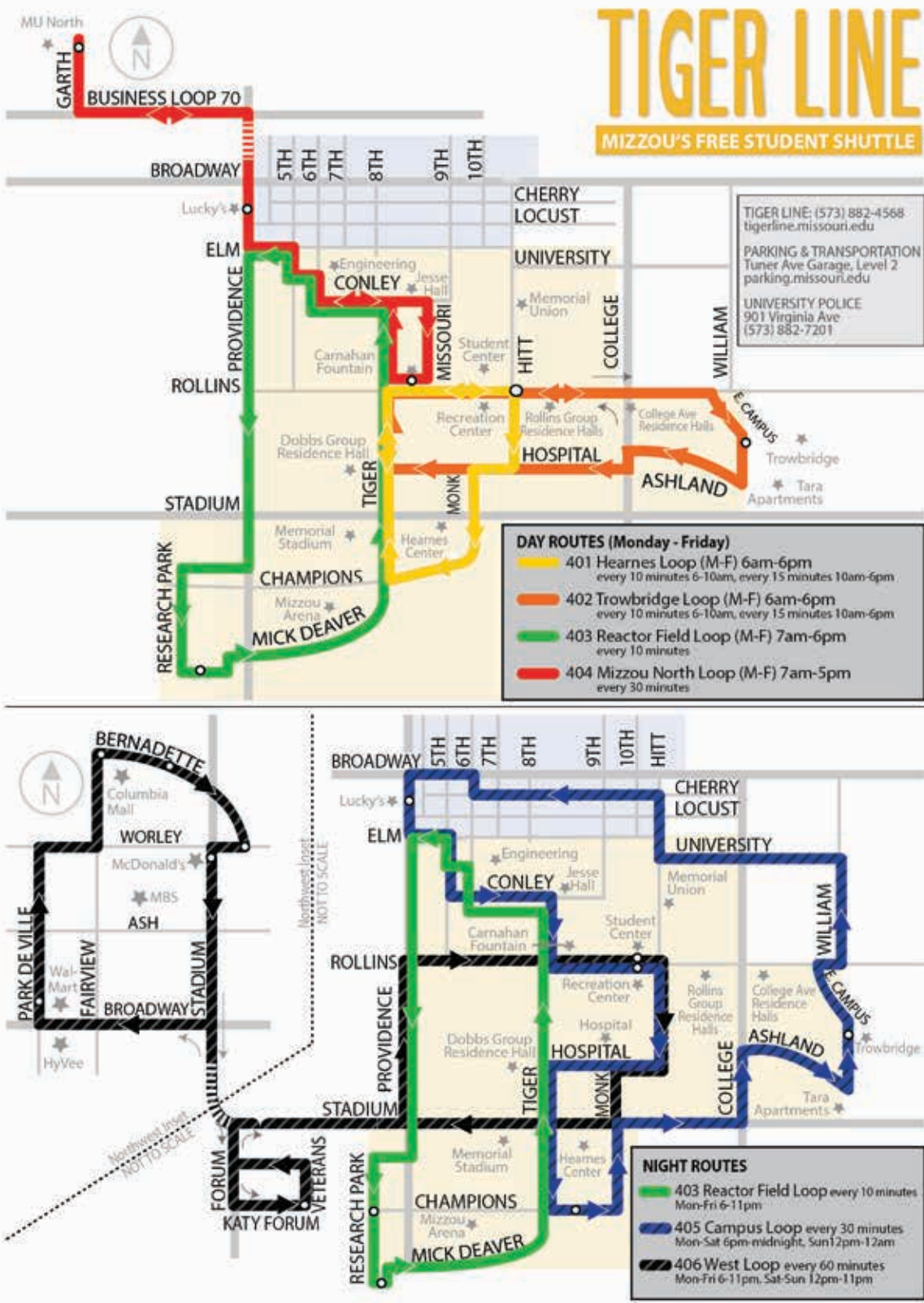
PARKING & TRANSPORTATION MASTER PLAN WRAPS UP

JANUARY

30

ANTICIPATED COMPLETION DATE, 2017

MU’s Parking & Transportation Committee will study suggested parking improvements this spring.



NUMBER OF PASSENGERS LAST YEAR PER ROUTE

CAMPUS LOOP (405)
15,484

WEST LOOP (406)
7,412

HEARNES/
THROWBRIDGE
(401/402)
456,518

REACTOR (403)
45,844

MIZZOU NORTH (404)
45,844

PARKING
PERMISSIONS SOLD
27,595

RIDE THE TIGER

MU’s shuttle service, Tiger Line, saw the addition of two new routes: the 404 Mizzou North Loop, which takes passengers to and from Mizzou North and Lucky’s Market, and the 406 West Loop, which takes passengers to and from the Forum Boulevard and Columbia Mall shopping areas.



Watch videos at <http://bit.ly/2i7NkFi>

Watch video at <http://bit.ly/2iwO7mf>

MU Police

CHIEF:
R. DOUGLAS SCHWANDT

63
FULL-TIME STAFF

35
PART-TIME STAFF

3
INTERNS

WORKING WITH STUDENTS

MUPD introduced an internship program in 2016.

- Two students worked with Emergency Management Coordinator Eric Evans to make safety videos (1).
- One worked with the Smart911 system on “all campus” addresses with Lt. April Colbrecht.

[@MUPDpolice](#)
mupolice.missouri.edu

ALL TOGETHER NOW

Home football games are a major event in Columbia, and making sure they go without a hitch takes cooperation from a number of public safety entities. MU Police Chief Doug Schwandt said staff from the FBI’s Joint Terrorism Task Force, Missouri State Highway Patrol, Joint Communications (911 call center), Boone County Sheriff Department, Columbia Police Department, Columbia Fire Department, MU Ambulance Service and Campus Facilities collaborate on each game and other major events such as MU Homecoming to assure order and safety.

“Everyone works together to host that size of an event. It gives us an opportunity to work together in a unified way,” Schwandt said.

“These collaborations are important so that if an unexpected, serious issue arises, such as the identification of a suspicious device, we are already familiar with each other,” Schwandt said.

STRAIGHT TO VIDEO

MU Operations commissioned the Academic Support Center’s Mizzou Video Production team to create a video providing students, faculty and staff a guide for surviving if an active shooter were on campus (2). The five-minute video begins with an address from MU Police Chief Doug Schwandt, then dramatized footage shot at Jesse Hall and the MU Student Center is spliced with instructions from MU Police Maj. Brian Weimer and Lt. April Colbrecht. The video received a bronze Telly award in the non-broadcast category. It was inspired by similar videos produced by The Ohio State University and the U.S. Department of Homeland Security. Missouri S&T is using Mizzou’s model to make a video for their campus.

ACTIVE SHOOTER VIDEO STATS

8,502 VIEWS

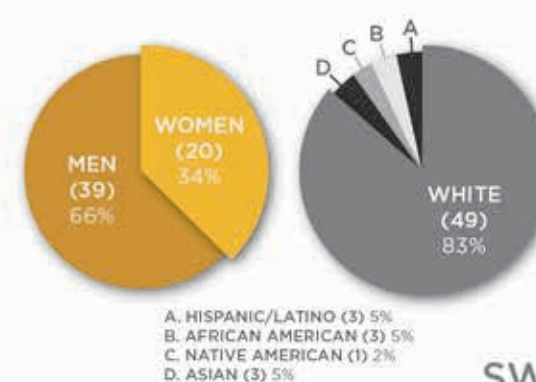
101 LIKES

97 SHARES

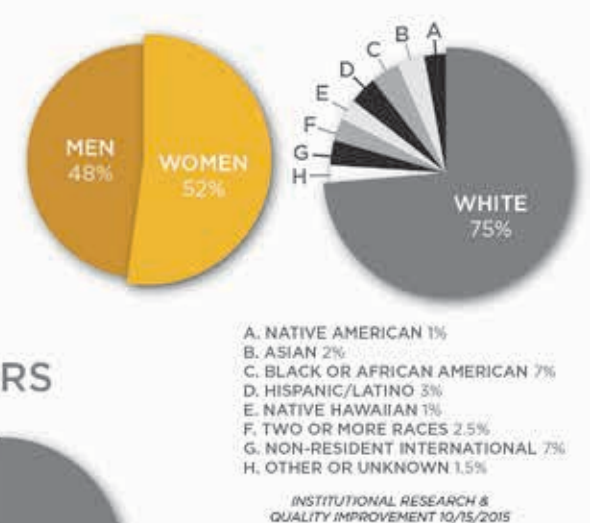
13 SUBSCRIPTIONS DRIVEN

YouTube©

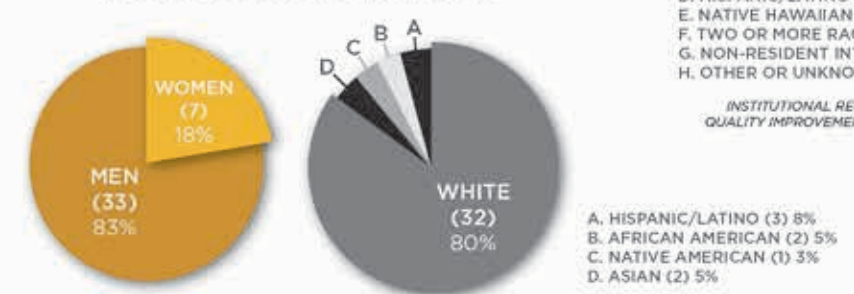
DEPARTMENT



MU STUDENTS



SWORN OFFICERS



A PORTRAIT OF DIVERSITY

To best serve the university, it’s important that MUPD’s diversity mirrors that of the campus community.

HAVE A SLICE

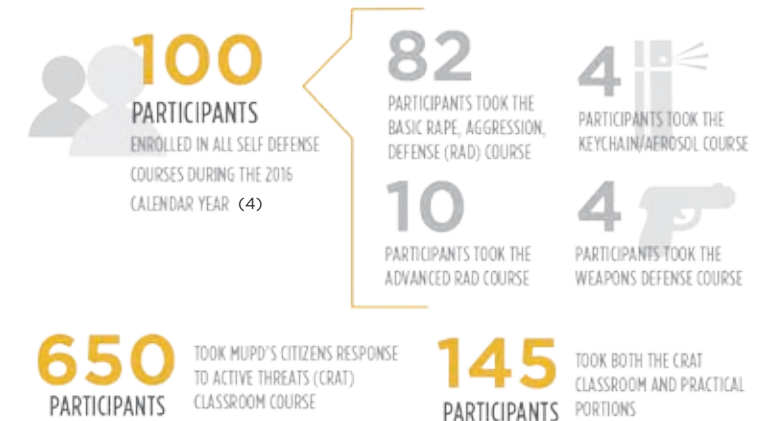
In an effort to form relationships with university students, MUPD started hosting Pizza with Police events (3). Modeled after Coffee with a Cop, a program that encourages police officers to meet with citizens for friendly interaction over coffee, Pizza with Police is an informal opportunity for students and MUPD officers to chat and share slices of pizza.

MU Police Chief Doug Schwandt said Student Life supplies the pizza and the officers set up at a central location such as Ninth and Elm Streets.

“They get to see us in a softer light,” MU Police Maj. Brian Weimer said.

TRAINING FOR MU COMMUNITY

<http://mupolice.missouri.edu/mupd/training>



KOMU-TV

GENERAL MANAGER,
BROADCAST OPERATIONS:
MARTIN SIDDALL

53
FULL-TIME STAFF

104
STUDENT STAFF

@KOMUnews

@komu8

komu.com

REFLECTING THE COMMUNITY

To best inform a community, a newsroom's staff and stories must also be a reflection of the community.

"It's not just what people see on air, but having a diverse population that creates content. Our diversity needs to be visually expressed to the audience, but the content must also do that," KOMU 8 General Manager Marty Siddall said.

To help foster this diversity, KOMU 8 and KBIA co-sponsor a scholarship at the Missouri School of Journalism, which they award to a senior-level minority student studying broadcast journalism.

Having a diverse newsroom also leads to open dialogue in how best to cover challenging stories. For example, during the Concerned Student 1950 protests last November, African-American students at the station excused themselves from covering the events to assure the objectivity of the reporting. KOMU 8 won the Kansas City Press Club Silver Award for Breaking News for the stories that resulted from this reporting.

“OUR PHILOSOPHY IS THE BETTER WE PERFORM AS A COMMUNITY ENTERPRISE, THE BETTER THE LAB IS FOR THE JOURNALISM STUDENTS.”

A NEW LOOK FOR THE NEWSROOM

KOMU 8 is in the development stage of a newsroom remodel, which will allow for multi-platform publishing and a better integration of new technologies. Siddall said the newsroom will become a visible part of the station. Future broadcasts will take the viewer back and forth between the studio and newsroom as well as location shots.

WINNER, WINNER

KOMU 8 won sweeps in every evening newscast in May (1), meaning it had the most viewers in its target demographic during its time slot. These wins not only reflect the value viewers place on KOMU 8, but also led to additional advertising revenues.

Siddall said these revenues allow the station to reinvest in its resources.

"Our philosophy is the better we perform as a community enterprise, the better the lab is for the journalism students. They get to put on their resume that they have experience in reporting, anchoring, weathercasting, and also get to show affiliation with a professional, well-run newsroom," he said (3).

Three **1st**
Place Honors
FROM MISSOURI BROADCASTERS

- Best Local Website for www.KOMU.com
- Best Weathercast for weather forecaster Kenton Gewecke
- Best Documentary/Public Affairs for "Inside Infertility," a KOMU 8 News special produced by news anchor Brittany Pieper



UP FOR DEBATE

KOMU 8 collaborated with the Columbia Chamber of Commerce, the Missouri School of Journalism, the Truman School of Public Affairs and MU Operations to host a debate between Republican gubernatorial candidates Catherine Hanaway, Peter Kinder, Eric Greitens, and John Brunner (2).

Candidates fielded questions from KOMU 8 moderators as well as viewers on such topics as Missouri jobs, state highways, race relations, UM System funding, term limits and campaign reform.

KOMU RENEWALS UP TO DATE

KOMU 8 renewed its license with the FCC, which allows the station to use the public airwaves but mandates that it operate in the "public interest, convenience and necessity." To remain in compliance, KOMU 8 must release quarterly reports identifying local issues and concerns with examples of how it has addressed them.

Additionally, KOMU 8 renewed its contract with NBC, for whom it has been an affiliate station since 1953. It also expanded its weekend morning broadcast by three hours each week, meaning more in-depth news for members of the community and more hand-on experience for broadcast journalism students.

KOMU 8 BROADCASTS TO
185,000
HOUSEHOLDS
IN **14** COUNTIES

186
STUDENTS HAD LABS IN THE
KOMU 8 NEWSROOM IN 2016

ADVERTISING REVENUES
ARE MADE UP OF **20%** NATIONAL SALES
& **80%** LOCAL SALES

1 Anchors Brittany Pieper and Jim Riek






Show-Me STATE GAMES

EXECUTIVE DIRECTOR:
DAVID FOX

6
FULL-TIME STAFF

5
STUDENT STAFF

 @showmegames
 @showmestategames
 smsg.org

ECONOMIC IMPACT


Since its 1985 inception, the Show-Me STATE GAMES has had 937,523 athletes participate. The organization's goal is to reach 1 million athletes by 2018.

In 2016, 30,723 athletes participated in the 32nd annual Show-Me STATE GAMES. Each participant brings an average of one spectator, and together spend an average of \$71.89 in Columbia each day. When you factor in the U.S. Department of Commerce's direct and extended economic impact multipliers, the economic impact of the 2016 Show-Me STATE GAMES was almost \$21 million.

OLD AND NEW FAVORITES



are the fastest growing team sports

 this indicates an increase in participation among women (2)

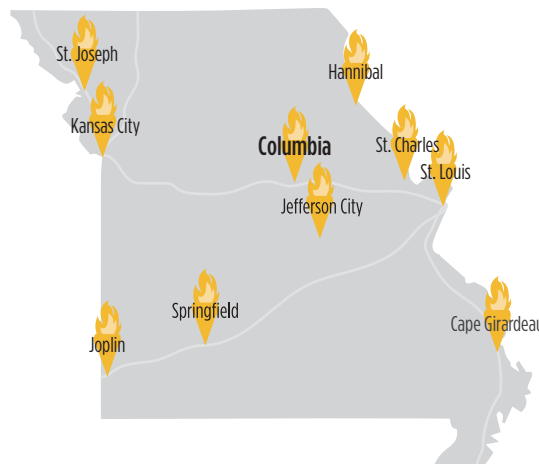
SHOW-ME STATE GAMES ARE THE
LARGEST STATE GAMES
IN THE NATION

HONORING ATHLETES

The Show-Me STATE GAMES honored its Athletes of the Year Oct. 29 on Faurot Field during the Missouri-Kentucky football game. Honorees included female athlete of the year, 10-year-old swimmer Lindsey Hervey; male athlete of the year, 75-year-old golfer Louis Vittuci; female sportsperson of the year, powerlifter Shelly Frazier; and male sportsperson of the year, basketball player Ben Stutler.

THE OLYMPIC SPIRIT

To generate exposure and enthusiasm for the Games — as well as to emphasize the Olympic spirit and statewide reach — the Show-Me STATE GAMES holds torch runs in several cities throughout Missouri (3), culminating in the lighting of the Show-Me STATE GAMES cauldron at Mizzou Arena. This year, Tom Shulz, a soccer player in the 1952 Summer Olympics, and Larry Young, a race walker in the 1968 and 1972 Summer Olympics, lit the cauldron at the Audrey Walton Opening Ceremonies (4).



CULTIVATING LEADERSHIP

The Audrey Walton Youth Leadership Conference, developed by the Show-Me STATE GAMES and the University of Missouri, has been cultivating future leaders since 1995. Show-Me STATE GAMES Executive Director David Fox said about 100 high-school juniors and seniors from around the state apply each year, and 60 are selected to participate in the three-day conference, which includes leadership workshops, team building activities, fitness, college preparation and a tour of the MU campus. The conference is sponsored by Audrey Walton, and is completely free of charge to the students.

ON THE RUN

Held in partnership with Children's Hospital, the Show-Me STATE GAMES' annual Pumpkin Fun Run was held Oct. 1 at Perry Phillips Park (1). The event encourages health, fitness, family and fun for Boone County students grades K-5. The three area schools with the most students participating each receive \$500 toward their Physical Education programs. This year's winners were Two Mile Prairie Elementary, Our Lady of Lourdes Interparish School and Paxton Keeley Elementary School.

4



3



1



2



University Club & Catering

GENERAL MANAGER:
JOHN LARocca

24
FULL-TIME STAFF

150
STUDENT STAFF

@uclubmu
 @uclubmu
 uclub.missouri.edu

UNIVERSITY CLUB & CATERING LEADERSHIP SERVE IN PROFESSIONAL, CIVIC ORGANIZATIONS

General Manager John LaRocca
State President: Missouri Restaurant Association
Past President: Association of College and University Clubs
Board Member: Voluntary Action Center
Board Member: Columbia Convention and Visitors Bureau
Instructor: University of Missouri Hospitality Management School

Executive Chef Daniel Pliska
President: American Culinary Institute
Guest Instructor: Columbia Area Career Center

Assistant Manager of Hospitality Services Patrick Clemens
Director: Association of College and University Clubs

BUILD A HOUSE FOR THE HOUSE

University Club & Catering Executive Chef Daniel Pliska worked with culinary arts students (3) from the Columbia Area Career Center to build and decorate gingerbread houses for Build a House for the House, held Nov. 12 at Stoney Creek Inn.

The contest saw professionals and hobbyists enter fanciful yet wholly edible structures in a fundraising event benefiting the Ronald McDonald House.

“Over the course of the time working on my house, I was able to learn a lot about myself, and also a new aspect of baking that I had never been able to explore previously,” CACC student Chloe Sage said. “After high school, I will not be going to culinary school, but rather for food science. Because of this, every baking experience I get now is very special and important to me.”

UNIVERSITY CLUB & CATERING CULINARY TRAINING PROGRAM OFFERS ADVANTAGES TO INTERNATIONAL STUDENTS

For young cooks like Phare Mu (1), 18, and Oo Meh (2), 19, the University Club kitchen is a stepping stone to pursuing their dreams.

Born in Myanmar and raised in Thailand before moving to the United States, the sisters graduated in 2015 from Douglass High School in Columbia. A teacher there suggested to them that they apply to work at the University Club & Catering, where they could continue to improve their English while also learning marketable skills.

The University Club has been a good fit for them. Oo Meh said the two have always been interested in the culinary arts.

“I like learning new things,” she said.

And they are. At the University Club, the two develop their skills as well as palates.

“It’s all good,” Phare Mu said when asked if there was a particular U Club dish she liked the most. Oo Meh paused, then smiled as she decided on a favorite.

“Fried chicken,” she said. “It tastes better than McDonald’s.”

Executive Chef Daniel Pliska said the University Club employs a number of international staff members, who earn a training wage while working their way through a regimen that starts with simple tasks and builds up to

more complicated processes. In a few years, these employees will have the skills necessary to work in almost any restaurant.

“Some don’t have high-school degrees. Often there are language barriers. But working in the kitchen, they learn the language and they learn to work together,” Pliska said.

It helps that one doesn’t always need words to teach a cooking technique.

“A lot of it is visual. I can take this bag of potatoes and show you how to peel it. I can show you how to dice an onion, peel carrots,” Pliska said.

Oo Meh and Phare Mu don’t necessarily see themselves working in kitchens long-term.

“We plan to go to college,” Oo Meh said.

“I want to be a nurse,” Phare Mu said.

Still, Pliska pointed out that even if they won’t always need to know how to julienne a carrot, other skills honed in the kitchen such as critical thinking and problem solving will come in handy wherever they go.

“We are teaching them the culture and work ethic for organized environment,” he said.

But for now, the sisters have goals in mind.

“To cook good,” Phare Mu said.

“To cook better,” Oo Meh added.

TASTY TARTS

University Club and Catering Executive Chef Daniel Pliska penned an article about tarts, which included recipes for both sweet and savory dishes, for the September issue of the National Culinary Review.



University Concert Series

INTERIM DIRECTOR:
ROBERT WELLS

10
FULL-TIME STAFF

50
STUDENT STAFF

- @UConcertSeries
- @ConcertSeries
- concertseries.missouri.edu

BEYOND ENTERTAINMENT

With names like John Mellencamp (1) and Kristin Chenoweth, the University Concert Series certainly can boast a star-studded lineup. But entertainment is only part of the story. Many of the shows included in this year's Concert Series were selected for their enrichment value as well, and some offered unique opportunities for reflection and conversation.

For example, when playwright Karen Jones Meadows (photo right, 3) came to perform her one-woman show "Harriet's Return: Based Upon the Legendary Life of Harriet Tubman," she spent a week in Columbia, during which time she facilitated community-building workshops and traveled with MU students to the Rose M. Nolen Black History Library in Sedalia, where the group toured a controversial replica slave cabin.

Jones Meadows also performed a condensed-version of her play for Mid-Missouri elementary

and secondary education students. The University Concert Series scheduled four school shows this season. Admission to school shows is free for children and introduces youth to the arts.

And although national acts such as "Once" and Rudolph the Red-Nosed Reindeer certainly bring with them an air of excitement, it's important to note the relationships University Concert Series has built with local arts entities. Missouri Contemporary Ballet has become a company in residence for University Concert Series, and University Concert Series also has collaborated with Missouri Symphony Society on a number of shows, including Ben Vereen. Additionally, University Concert Series works with the University of Missouri Department of Theatre and School of Music to stage and promote their shows.

WITH JESSE AUDITORIUM BACK ONLINE, UNIVERSITY CONCERT SERIES BRINGS BIGGER SHOWS

It's an adage often repeated in show business: The show must go on. And for the University Concert Series (UCS), the shows are finally going on at Jesse Auditorium.

For the past two years, Jesse Auditorium was unavailable to UCS because construction equipment used for a project at nearby Swallow Hall obstructed the auditorium's loading zone, meaning touring acts couldn't load and unload their sets. The Swallow Hall project wrapped up last spring, and Jesse Auditorium is back online.

UCS has two main venues: Jesse Auditorium and Missouri Theatre, which also serves as the UCS box office. Jesse Auditorium boasts a larger seating capacity than Missouri Theatre — an advantage when booking acts like the Moscow Ballet's "Nutcracker" and Mannheim Steamroller, which played to sold-out crowds — but UCS Interim Director Robert Wells said it's really the stage size that makes a difference in a venue's ability to accommodate certain shows.

The stage in Jesse Auditorium is 52 feet and 10 inches wide and has a height of 20 feet. The stage in Missouri Theatre, by comparison, is 35 feet and 8 inches with a height of 23 feet and 1 inch. Missouri Theatre's comparatively small size meant full-scale Broadway productions weren't going to work, so UCS focused on booking smaller, more intimate shows during that period of time.

In some instances, a production with a full orchestra

or large cast simply won't fit on a smaller stage. But many times, it's the set itself that proves problematic. Many touring shows use super structures comprising not only the sets but also pre-configured lighting and amplification. These structures save the crew a considerable amount of time on set-up and tear-down, but they demand ample space.

"Something like 'Once' is pretty much self-contained. We fully strip the stage and they come in as if the building had nothing," Wells said.

"Once" was the first Broadway musical staged in Jesse Auditorium since it became available to UCS. Other shows to make use of Jesse Auditorium's larger stage were the Shanghai Acrobats of the People's Republic of China, Argentine tango outfit Estampas Portenas and the interactive stage show The Price is Right LIVE! (2).

Wells points out that Jesse Auditorium still is small compared with some other venues. Some acts are able to alter their sets and the number of performers involved to make it work. For example, the Blue Man Group was able to scale back during its 2013 stop in Columbia, which was part of an arena tour. Wells said this isn't uncommon and adds that if you were to see a show in Jesse Auditorium and then follow it to Kansas City's Kauffman Center for the Performing Arts, it's possible you'd see a very different show.

As for the shows you'll see in Columbia, Wells said the variety afforded by having two venues is a boon to the community. "I want each experience at the Concert Series to be a memory that lasts a lifetime," Wells said.

THE COMMUNITY'S CONCERT SERIES

University Concert Series long has had a reputation for bringing to the campus a calendar's worth of edifying entertainment. But new relationships with the community at large have resulted in a program that brings together the town and gown.

Previously a sister department of KBIA, UCS became a standalone entity after KBIA was reorganized into the School of Journalism. As such, Concert Series staff have worked to make it a mission-based organization, said Concert Series Interim Director Robert Wells.

That mission includes combining education, enrichment and the pursuit of lifelong learning.

To achieve this, programming consists of popular national touring acts such as Kris Kristofferson and the Broadway musical "Annie" as well as shows such as "Raisin' Cane: A Harlem Renaissance Odyssey" and "Kannapolis: A Moving Portrait," which offer amplification to voices that often go unheard.

Additionally, UCS sets the stage for locally grown talent.

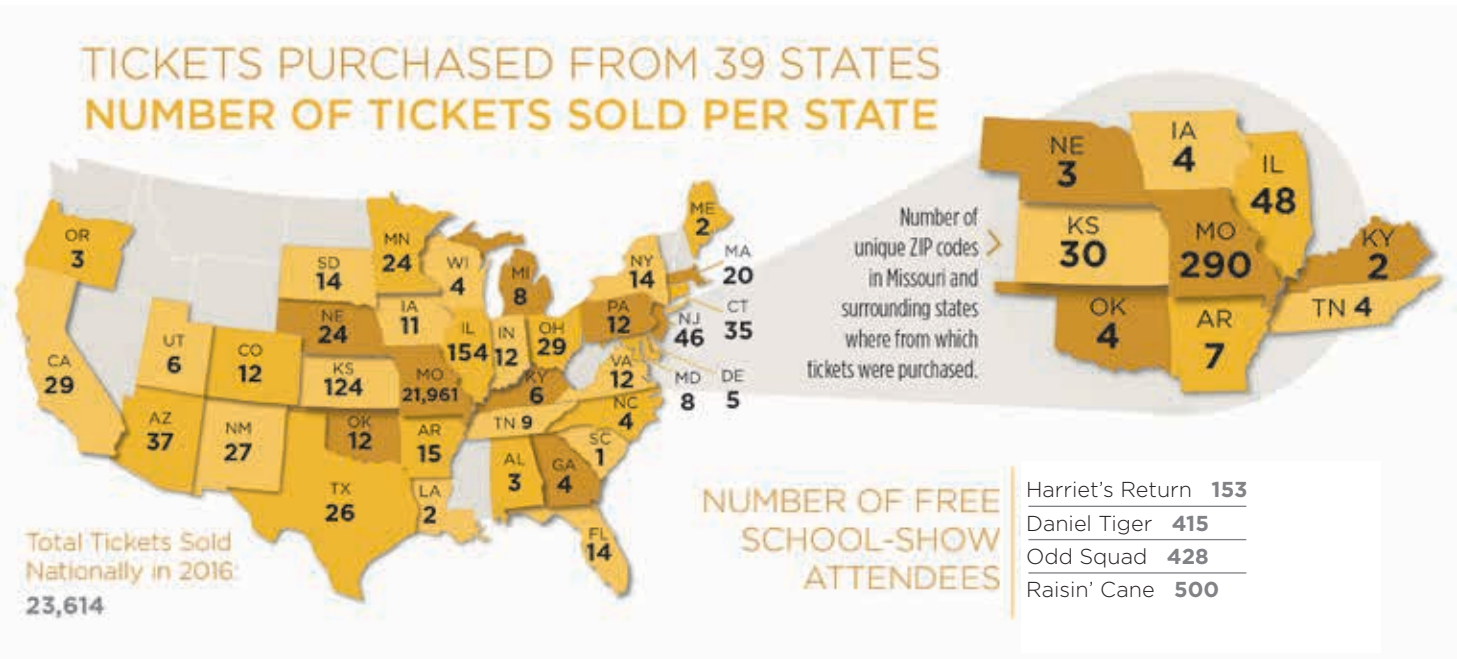
"We continue to partner with academic departments — the School of Music (4), the Department of Theatre, the Art Department — and collaborate with civic organizations like the Missouri Symphony Society, too," Wells said.

These relationships not only provide these organizations larger stages and larger audiences, but also can result in some once-in-a-lifetime opportunities.

For example, Missouri Symphony Society musicians played with holiday hit-makers Mannheim Steamroller for a sold-out show in December.

And in May, some 50 local children will rehearse with Missoula Children's Theatre, a world-renowned children's theater company, for a production of "Peter & Wendy."

Financial support from local donors and sponsors shows that the community values UCS' efforts in making a truly collaborative artistic environment.



Energy Management

DIRECTOR:
GREGG COFFIN

127
FULL-TIME STAFF

11
STUDENT STAFF

A FOCUS ON RENEWABLE ENERGY

University of Missouri Energy Management has made great strides in reducing energy use and greenhouse gas emissions. In 2008, fuel mix at MU was 95 percent coal, 2 percent natural gas, 2 percent tire-derived fuel and 1 percent biomass. After implementing new renewable energy initiatives, today's fuel mix is 39 percent natural gas, 31 percent biomass and 30 percent coal. Currently, MU is fourth on the Top 30 On-Site Generation List, behind Walmart, Apple and the U.S. Department of Energy, in the EPA's Green Power Partnership. MU also is ranked No. 11 for green users among higher-education institutions.

MU's renewable energy portfolio includes biomass combined heat and power, and purchased wind power and solar energy. For additional information on Energy Management's accomplishments, see page 50.

BOOSTING MISSOURI'S ECONOMY

The MU Power Plant works with Foster Brothers Wood Products in Auxvasse to source biomass from sawmills, stave mills, tree-care companies and other businesses within Missouri's forestry industry. Most of the biomass is sourced from suppliers within a 120-mile radius of MU. These include Cardwell Lumber in Jefferson City and New London, Independent Stave in Columbia and Lebanon, Current River Pole in Licking as well as various Amish mills located in Missouri.



THE UNIVERSITY OF MISSOURI IS

4th ON THE TOP 30 ON-SITE
GENERATION LIST

11th TOP 30 COLLEGE &
UNIVERSITY LIST



VIDEO RECORDING

EM staff worked with MU Operation's creative team and journalism student Suzanne Le Bel to write a script and shoot a video for the International District Energy Association's annual Campus Energy Student Video Contest. The video highlights the ways in which EM's guiding principles — reliability, efficiency and sustainability — shape its actions.

You can see the video online at:
<http://bit.ly/2k4YmeL>



915 
NUMBER OF VISITORS WHO TOOK
ENERGY FACILITY TOURS IN FY2016

SHOW AND TELL

EM staff give tours year round to students (1) and other groups interested in learning about sustainable energy and combined cooling heat and power. VIP tours for FY2016 included:

- Capital Region Medical Center (Director of Facilities) - July 2015
- MU Capital Review Committee (CRC) - October 2015
- Missouri Department of Economic Development - November 2015
- College of Engineering Dean and Chairs - May 2016

The plant's biomass Combined Cooling Heat and Power (CCHP) facility has been especially interesting to international university delegations, who requested tours. This year, EM facilitated tours for visiting professors and students from Iraq, West Africa, South Korea, Italy, Vietnam, Nigeria (2) and Kenya.

“ I WANT TO EXPRESS OUR APPRECIATION FOR THE OUTSTANDING JOB YOU DID BY BRINGING TOGETHER KEY MEMBERS OF THE MU'S BIOMASS CHP SUSTAINABLE PLANT TO SHARE THEIR WEALTH OF EXPERIENCES AND PRACTICAL SOLUTIONS TO ENERGY MANAGEMENT CHALLENGES. TEAM MEMBERS WILL CONTINUE THE DIALOGUE ONLINE WITH THESE LEADING EXPERTS, AND YOU WILL BE HEARING FROM ME FROM TIME TO TIME AS WE PLAN AND RAISE FUNDS FOR OUR FIRST PROJECT. ”

Tavershima Adyorrough, MU 1984
*Principal Special Assistant to the Governor
on Knowledge Economy & Investments
Benue State Government of Nigeria*



Facility Operations



SENIOR DIRECTOR:
JEFF BROWN

265
FULL-TIME STAFF

5
STUDENT STAFF

REDUCING COSTS BY BOOSTING RECYCLING RATE

Following budget cuts at the University of Missouri, Campus Facilities implemented the Low Waste initiative in early July. The initiative has reduced MU's landfill costs by increasing the university's recycling rate.

Facility Operations staff removed all wastebaskets from cubicles and private offices in every building on campus and replaced them with desk-side blue recycling bins with smaller black saddle bins that attach to the edge of the recycling bins (3).

They also placed groupings of larger bins — with bins for plastics, aluminum and glass, paper, and trash — in central locations in each building. Faculty and staff now are responsible for sorting their own recyclables and emptying their trash into the appropriate bins, which frees up custo-

dians (2) to empty larger recycling bins, a task previously handled by volunteers.

Studies show that this initiative could decrease the amount of trash that ends up in the landfill. MU's landfill costs reached almost \$600,000 in FY16, while an audit found that almost one-third of the "trash" thrown away on campus is recyclable. Reducing waste will lower landfill costs.

Meanwhile, MU's pre-Low Waste recycling rate was only 28 percent. The national rate is 34 percent. Campus Facilities' goal is to achieve a recycling rate of 40 to 50 percent campuswide.

Numerous universities across the country, including MU's sister campus in Kansas City, already have a similar system in place, and it's not entirely new to MU. The General Services Building has been using centrally located recycling and waste stations for more than five years. Gwynn and Stanley halls have been doing so for almost two years.

STEWARDSHIP PROJECTS

Following guidelines outlined in the Mizzou Stewardship Model, which seeks to maintain the historic character of campus buildings while bringing them up to date, Campus Facilities oversaw renovation projects at three education and general, or E&G, buildings: Swallow, Lafferre and Stewart halls. Facility Operations maintains E&G buildings and serves as their "owners".

The Swallow Hall project, completed in August, saw an increase of more than 8,300 square feet of usable space, including a 100-seat lecture auditorium. Additional stairways were added to meet safety codes. Active learning classrooms replace what was once a cellar-like basement with low ceilings and dirt floors. An inaccessible attic now is a spacious wing housing offices, study space and research laboratories.

The Lafferre (1) and Stewart projects, will see the addition of 412 classroom seats, 232 STEM class lab stations, almost 40,000 gross square feet of additional space and improved student collaboration areas. This will be achieved by repurposing space, including previously unusable spaces.

These projects offer more than a facelift. Renovation projects since 2009 total more than \$56.75 million in deferred maintenance.

\$2.5 BILLION CURRENT REPLACEMENT VALUE (CRV) OF MIZZOU'S PHYSICAL ASSETS

\$748 MILLION TOTAL DEFERRED MAINTENANCE

\$35 MILLION ANNUAL DEFERRED MAINTENANCE GROWTH RATE

0.68% X CRV = MU'S ANNUAL MAINTENANCE FUNDING
BUT INDUSTRY STANDARD IS 1.5% - 3% X CRV



CUSTOMER SERVICE REQUESTS

15,196 CALLS
275 AFTER-HOURS CALLS
21,084 WEB REQUESTS



NUMBER OF REPAIRS BY MAINTENANCE

30,404 PREVENTATIVE MAINTENANCE
19,100 REPAIRS
362 EMERGENCY REQUESTS
12,687 ROUTINE MAINTENANCE
6,051 SAME-DAY SERVICE REQUEST



LABOR HOURS SPENT ON EACH SERVICE

30,844 PREVENTATIVE MAINTENANCE
76,932 REPAIRS
1,003 EMERGENCY REQUESTS
57,337 ROUTINE MAINTENANCE
18,591 SAME-DAY SERVICE REQUEST



(2) Desk-side blue recycling bins replaced personal wastebaskets in offices and cubicles as part of the Low Waste Initiative.



Landscape Services

DIRECTOR:
PETE MILLIER

36
FULL-TIME STAFF

4
STUDENT STAFF

RESTRUCTURING AT LANDSCAPE SERVICES

Following budget cuts and a loss of five staff members in March, Landscape Services restructured its work force to streamline its processes. Previously, Landscape Services staff had been assigned to small work units divided by location. The departmental restructure saw the creation of two units: Operations, which oversees tasks such as mowing, spraying, irrigation and large-scale leaf pick-up, and Horticulture, which oversees bed, shrubbery and tree maintenance.

"This allows us to get our activities down to the basics and take a more organized approach," said Landscape Services Director Pete Millier.

Landscape Services Operations manager is Scott Keith and Horticulture manager is Jenna Rozum.

FOSTERING A LEARNING ENVIRONMENT

Landscape Services worked with Dr. Xi Xiong, an associate professor in the Division of Plant Sciences, to provide outdoor lab sites for horticulture and landscape design students to study fertilizer, seed and pesticide applications. Landscape Services also facilitated turf equipment demonstrations for these students (1).

"This is applied science," Dr. Xiong said. "We always want students to get hands-on experience."

ON MU'S TURF

University of Missouri Landscape Services hosted the 2016 Midwest Landscape Architects and Grounds Managers Conference June 21-24 (2). About 50 landscape professionals from peer institutions such as the University of Iowa, the University of Nebraska and Purdue University visited MU, where Landscape Services staff led campus tours, gave operational demonstrations and discussed its reorganization efforts. The highlight of the event was showing Mizzou Botanic Garden as an example of engaging the campus and community, and furthering MU's academic mission.

LANDSCAPE MASTER PLAN

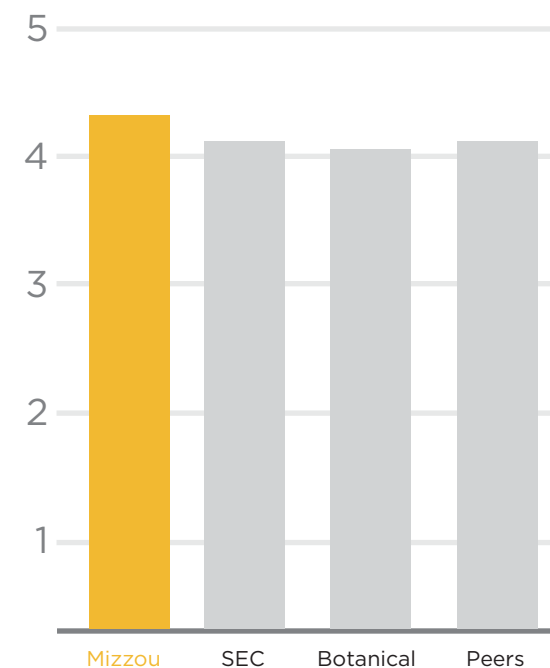


MU's first Landscape Master Plan has been a two-year undertaking led by Director Pete Millier and MU Master Planner Linda Eastley. It will be completed in the spring and implemented over time.

See feature, page 49.

GROUND'S INSPECTION SCORE

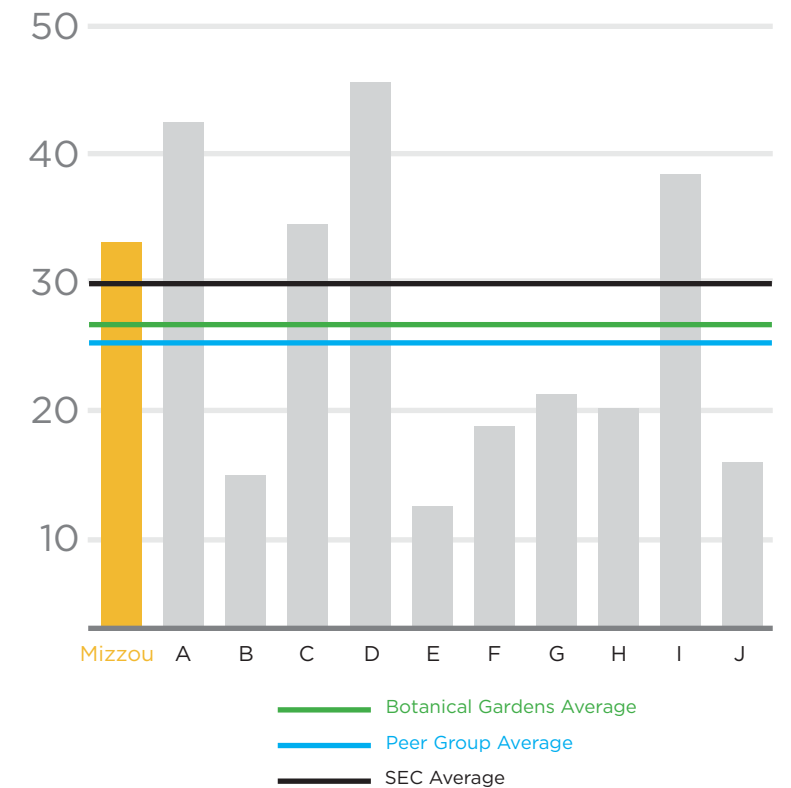
On average, Mizzou has the best grounds score among various peer groups.



© Sightlines

GROUND'S COVERAGE (ACRES/FTE)

Mizzou exceeds the SEC, Peer Group and Botanical Gardens averages.



"I'm not a graduate of your university, nor am I from Missouri, but one emotion I felt as I walked around your campus for the first time with my nephews was pride — pride in knowing that your Landscape Services department understands who is responsible for the first and last impressions people have of your university, and not just academia itself. Their attention to detail — the cut of the grass, the mulch within the beds, the proper placements of boulders, trees, shrubs, perennials and annuals — radiated throughout my walk last Sunday, Oct. 16. While walking, I shared my thoughts and observations with my nephews. I asked them to appreciate and respect the beauty of this campus, because now it was their campus."

Michael Martin,
Kirkwood Community College
Grounds Manager

Mizzou Botanic Garden



CONSERVING POLLINATOR POPULATIONS

In recognition of National Pollinator Week, Mizzou Botanic Garden held a number of events to educate the community about the importance of pollinators to our natural environment and food system, as well as outline ways groups and individuals can contribute to efforts to conserve pollinator populations.

A Native Pollinators Dinner held June 19 at the University Club featured a pollinator-inspired meal and address by keynote speaker Gary Nabhan, an agricultural ecologist, ethnobotanist and writer from the University of Arizona. The Native Pollinators Dinner served as a fundraiser for the Mizzou Botanic Garden's first Pollinator Day Camp. The inaugural camp saw about 40 middle-school students enrolled in Boys & Girls Club of the Columbia Area explore habitats on the MU campus such as Jefferson Farm, A.L. Gustin Golf Course and the butterfly garden at Eckles Hall to get up close and personal with bees, birds, bats and butterflies (1).

This Pollinator Day Camp was so well-received that Columbia Public Schools requested two additional day camps — one for middle and high-school members of the CPS Environmental

Leadership Academy and one for CPS science teachers, who attended the camp during their professional development day.

Additionally, the Native Pollinator booklet, which the MU Operations creative team wrote and designed specifically for the day camp, will be distributed to CPS middle-school students and has served as a model for other organizations such as Missouri Botanical Garden in St. Louis.

Meanwhile, the Native Pollinator Symposium, held June 23 at the Bond Life Sciences Center, brought together nationally known speakers — including Doug Tallamy, professor and chair of Entomology and Wildlife Ecology at the University of Delaware; Roy Diblik, principal at Northwind Perennial Farm; and Christine Nye, horticulture manager at Chicago's Shedd Aquarium — as well as local experts such as the Missouri Department of Conservation's Mike Arduser and A.L. Gustin Golf Course's Isaac Breuer. The lectures and round-table discussions were well-attended, with some drawing standing room-only crowds to Monsanto Auditorium.

These events are prime examples of Mizzou Botanic Garden using its resources to advance the university's academic mission, as well as engaging the campus and local communities.



“The garden’s Eye Spy encourages visitors to explore the galleries and study the artwork. This year we had more than 175 people in attendance, higher than we expected.”

Cathy Callaway, PhD.
Museum Educator

MUSEUM DAY

Along with MU's Museum of Art and Archaeology, Museum of Anthropology and other campus collections, Mizzou Botanic Garden participated in National Museum Day, an effort spearheaded by the Smithsonian Institution to encourage families to explore museums and galleries. Mizzou Botanic Garden's contribution was an Eye Spy worksheet, which illustrates the connection between MU's Museum of Art and Archaeology by pairing artwork and plants found in Mizzou Botanic Garden.

MAKE WAY FOR BUTTERFLIES

Established in 2015, Missourians for Monarchs is a statewide collaborative of federal and state agencies, non-governmental organizations, businesses and landowners dedicated to sustaining and increasing monarch butterfly populations — as well as those of other pollinators such as honey and native bees, birds and bats — by engaging, educating and encouraging citizens and communities.

Monarch butterfly (*Danaus plexippus*) populations have declined significantly over the past 20 years due to a variety of factors including habitat loss, climate change and, perhaps most significantly, a lack of milkweed plants. Milkweeds are the only plants on which the monarch lays eggs, and the only plant monarch caterpillars eat. Missouri is a particularly important state for monarchs because it lies within the spring and fall migratory path and is a major breeding area during the spring. With combined efforts from Missourians, the region could provide enhanced habitat for these insects.

The Missouri Monarch and Pollinator Conservation Plan outlines strategies and goals for sectors including agriculture, business, nonprofit, education, land management, agencies, conservation, landownership and volunteers, with the goal of replenishing populations over the next 20 years.

As a founding member of Missourians for Monarchs, Mizzou Botanic Garden (2) played an active role in 2016 in drafting the conservation plan, creating a media kit and website for the organization and overseeing social media activity on behalf of the organization.

SOWING THE SEEDS FOR COMMUNITY EFFORTS

MUBG hosted a group of gardening enthusiasts from St. Louis on a Sept. 20 urban garden tour in Columbia and Ashland (3). Also present for the tour was LaManda Joy, founder of Chicago's Peterson Garden Project and author of “Start a Community Food Garden: The Essential Handbook,” who had spoken and held a book signing at Daniel Boone Regional Library the night before (4). Inspired by the massive World War II Victory Garden movement, the Peterson Garden Project includes a network of organic food gardens and a home-cooking school.

Later that day, Joy was the keynote speaker at the Friends of Mizzou Botanic Garden annual meeting. Her talk, “How Community Gardens Can Save America,” outlined the Peterson Garden Project's growth over the past seven years and how efforts that start small eventually can change the lives of thousands of people.



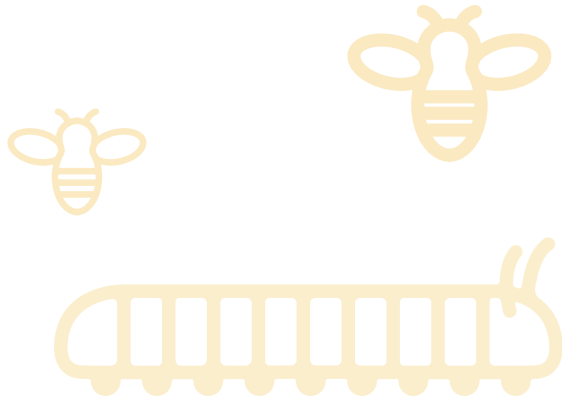
6 KINDNESS TREES PLANTED IN BOONE COUNTY WITH CHILDREN'S GROVE.

4th ANNUAL LIFE OF A GARDEN TOUR WITH CANDACE GALEN'S SENIOR CAPSTONE CLASS.

@MizzouBotanic
@MizzouBotanicGarden
garden.missouri.edu

2 TREES DEDICATED

8 BENCHES DEDICATED



Planning, Design & Construction

DIRECTOR:
HEIDDI DAVIS

103
FULL-TIME STAFF
16
STUDENT STAFF

PLANNING, DESIGN & CONSTRUCTION PROJECTS UNDERWAY

Planning, Design & Construction (PDC) worked on a number of notable projects in 2016, including:

- A new softball stadium east of the Hearnese Center which will be ready for the spring softball season
- A renovation and addition at Missouri Orthopaedic Institute
- Wrapping up Phase I of the Dobbs Replacement Project, which ultimately will see the construction of two new residence halls and dining facility in the southwest area of campus.

SEC CAMPUS WATER MATTERS CHALLENGE

A group of engineering and sustainability students will enter the SEC Campus Water Matters Challenge, which will be part of the SEC Academic Conference in March. Working with Campus Facilities and Environmental Engineering Assistant Professor Enos Inniss, the students chose to focus on stormwater at Lowry Mall and created a proposal for managing campus stormwater issues.


\$62,618
RAISED BY FLOAT YOUR BOAT

Watch MU Operation's video of the event at https://youtu.be/LaZn1e_2Yfk

SUPPLIER DIVERSITY

In February, PDC was recognized for excellence in implementing goals for diverse supplier spending. The University of Missouri System, which includes the University of Missouri-St. Louis, Missouri University of Science & Technology, University of Missouri-Kansas City as well as MU, achieved an 8 percent level of diverse-supplier spending across the entire enterprise. Design and construction supplier diversity spending was outstanding at \$36 million; equating approximately 22 percent of spending related to design and construction efforts. MU design and construction spending with diverse firms was \$20 million, representing 19 percent. Diverse suppliers include businesses certified as Minority Business Enterprises, Women Business Enterprises, Veteran Owned Business Enterprises, Disadvantaged Business Enterprises and Service Disabled Veteran Enterprises.

FLOAT YOUR BOAT

As part of its Partners in Education efforts, PDC worked with students enrolled in the Columbia Area Career Center to build a cardboard boat for the Float Your Boat competition, which benefits The Food Bank for Central & Northeast Missouri.

The goal was to create a boat seaworthy enough to make it across Bass Pro Shops Lake. "The Pond Queen", as the cabinet-like craft was named, capsized once, but the crew of two persevered, making it from one side of the lake to the other.

"We didn't sink, but we did not float the whole time," said Campus Facilities Director of Planning, Design and Construction Heiddi Davis, who paddled with Natalia Hardesty, a CACC student and daughter of Becky Hardesty in Campus Facilities Systems Development. The two wore prom dresses in honor of Natalia's high-school prom which was held later that day.

The two might have taken a swim, but it was well worth it. Forty-six teams competed, raising a total of \$62,618.



1 BEFORE



2 DURING CONSTRUCTION



3 AFTER

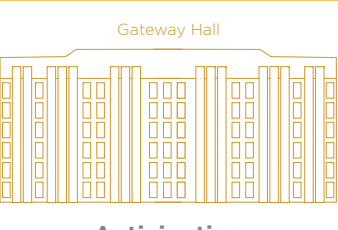
LAFFERRE STAGES OF RENOVATION

LEED



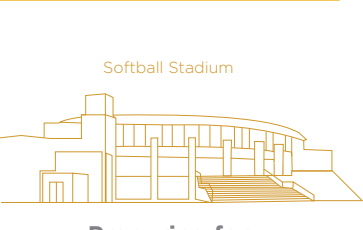
LEED Certified

- Gwynn Hall (Gold)
- University Hospital Patient Care Tower (Gold)
- Swallow Hall Renovation (Gold)
- Women's and Children's Hospital South Pavilion (Silver)
- Missouri Orthopaedic Institute
- Animal Resources Center



Anticipating LEED Certification

- Gateway Hall
- Johnston & Wolpers Hall Renovation
- School of Medicine Patient - Centered Care Learning Center
- Missouri Orthopaedic Institute - Addition & Renovation
- Dobbs Group - Phase 1



Preparing for LEED Certification

- Softball Stadium
- East Campus Plant Growth Facilities Complex - Phase 1
- School of Music
- State Historical Society - Center for Missouri Studies

CONSTRUCTION AND ECONOMIC IMPACT FY16

Project	Total Expenditures	Economic Impact	Earnings Generated	Jobs Generated*
Dobbs Group Phase 1	\$26,907,695	\$57,563,631.91	\$17,541,126.37	415
Swallow Hall Renovation	\$8,582,344	\$18,360,208.52	\$5,594,830.05	132
Lafferre Hall Renovation & Repair (photo 1 - 3)	\$20,637,597	\$44,150,011.26	\$13,453,649.48	318
Softball Stadium	\$4,638,223	\$9,922,550.46	\$3,023,657.57	72
Missouri Orthopaedic Institution Addition	\$2,573,726	\$5,505,972.03	\$1,677,811.98	40
South Chimney Platform Replacement & Cleaning	\$384,742	\$823,078.56	\$250,813.31	6
All Projects	\$138,949,044	\$297,253,689.83	\$90,580,881.78	2,144

* Provided by the NAIOP Commercial Real Estate Development Economic Impact Multipliers.

Space Planning & Management

DIRECTOR:
GERALD MORGAN

7
FULL-TIME STAFF

4
STUDENT STAFF

1
PART-TIME STAFF

MAXIMIZING EXISTING RESOURCES

As MU grows and technology continually advances, our academic and administrative buildings require additional and/or updated space. However, space is a finite resource, so Space Planning & Management (SPM) works with deans and University leadership to assess program expansion or reorganization needs, while considering the “big picture” of the campus as a whole.

In 2016, SPM provided new building programming studies for the College of Education and the Sinclair School of Nursing, launched an in-depth space utilization study for the College of Engineering and updated the new building program for the School of Music.

SPM Director Gerald Morgan stated that before new buildings or renovations are approved, SPM studies the utilization and efficiencies of the existing working, learning and research spaces within a school, college or department. “Where are they in the building? Do they have enough space? What will the future needs entail? We also examine what comparable institutions are doing,” Morgan said.

“Space Planning & Management helps the client to discern present and future space needs and to develop conceptual plans for moving forward,” Morgan said. A new building is not always necessary. An exceptional example: prior to the Swallow Hall renovation project, SPM identified potential space in the unfinished basement and the third floor attic of the existing building. Interior reconstruction allowed for the addition of 8,300 square feet of usable space while avoiding the loss of a historic campus icon.

MORE THAN A PRETTY PICTURE

Because aesthetic cohesion is important to new building projects, SPM and Planning, Design & Construction (PDC) work with master planner Linda Eastley to determine the location/site for a new building, the ideal footprint and orientation of the building, and the potential building height. Consideration is also given to the materials and architecture used in surrounding buildings and structures.

“We want the new building to be unique, but we also want it to integrate and complement what’s already in the neighborhood,” Morgan said.

From there, PDC’S Ken Jacquin creates conceptual 3D renderings of new building projects (1). “This visualization can be used by the client to excite potential donors,” Morgan said. “Ken does amazing work. We’re really lucky to have him in this organization.”

WHAT’S OLD IS NEW

When faculty and staff relocate to different parts of campus, Space Planning & Management collects furniture and cubicle components that no longer are needed but are still usable. These are inventoried and stored and made available at no cost to other faculty and staff who might need them.

Joey Riley, assistant director of Space Planning & Management, said reusing furniture can save a substantial amount of money.

“We saved almost \$10,000 just on filing cabinets for the Department of Anthropology when they moved into Swallow Hall,” Riley said. “It makes a difference.”



ABOVE AND BEYOND

When Amber Cheek, disability inclusion and ADA-compliance manager for the MU Office for Civil Rights and Title IX, received funding from the Student Fee Capital Improvement Committee to update accessibility signage, she reached out to J.R. Richardson, a geographical information system technician with SPM (3).

Cheek’s project involved installing ADA compliant signage campus-wide to assist all campus students, faculty, staff and visitors with or without disabilities in easily locating the accessible entrances to campus buildings.

To start the project, Cheek needed an accurate picture of existing signage, so a team of student workers under Richardson’s guidance trekked around the campus and photographed every door and its existing signage.

“But J.R., being J.R., didn’t just stop there,” said Gerald Morgan, director of Space Planning & Management. “He created an interactive map (2). Each entrance is keyed so that you click and get a photograph of that door.”

Although the map is not currently online, Cheek is able to use this map to show students quick and accessible routes to get to and from class. Cheek was so pleased with the map that she nominated Richardson for the Lee Henson Access Mizzou Award, which recognizes members of the MU community who have improved accessibility for people with disabilities on campus.

FILLING THE PANTRY

To be sure, abundance is a blessing for organizations such as Tiger Pantry, which serves as an auxiliary of the Central and Northeast Missouri Food Bank and provides food assistance to anyone affiliated with the university — including students, faculty and staff — and educates the campus on food insecurity and hunger. But over-abundance can be a problem as well, and proper storage is crucial to keep food from spoiling before it is given to someone.

When Tiger Pantry, located at the Rock Quarry Facility, encountered this problem, SPM worked with John LaRocca, general manager of University Club and Catering, to locate additional food-safe storage for bulk foods at Mizzou North.



Aluminum cans collected and sorted during a waste audit.

Sustainability Office

MANAGER:
SRINIVASAN (RAGHU) RAGHAVAN

2
FULL-TIME STAFF

2
STUDENT STAFF

 @MUSustainabilityOffice

 @MUSustainabilityOffice

 sustainability.cf.missouri.edu

MU'S SUSTAINABILITY OFFICE 2016 WRAP-UP:

- Sustainability Manager Srinivasan (Raghu) Raghavan met with department heads and deans. Notes from these meetings will be used by Raghavan to develop a Sustainability Roadmap for MU, which will function as a strategic plan.
- Raghu was elected to the Association for the Advancement of Sustainability in Higher Education, or AASHE, Advisory Council and is a member of several AASHE committees.
- Raghu was selected to judge the 2016 AASHE Sustainability Awards. He judged the Campus Sustainability Research category.
- Raghu and MU Director of Agroforestry Shibu Jose presented on "Sustainable Energy: Research and Innovation to Commercialization at the University of Missouri" at the AASHE conference in Baltimore.
- At the annual Association for Environmental Studies and Sciences Conference in June, Raghu was among panelists discussing "Sustainability Across the Curriculum in Higher Education."
- Raghu serves on the Midwestern Higher Education Compact Sustainability Committee, or MHEC. This committee aims to further regional access to, research in and choice of higher education for the citizens residing in Midwest states that are parties to the compact.
- Data collection for submission to the Sustainability Tracking and Rating System, or STARS, has begun, and MU will resubmit in 2018.

SUSTAINAPALOOZA ROCKS ON

The Sustainability Office held its fifth annual Sustainapalooza in September at Kuhlman Court. This event provides university students, faculty and staff a fun and educational opportunity to learn about sustainability.

Topics represented included research, food and water, transportation, waste, engagement and well-being. Twenty-eight organizations and local businesses participated, each representing a different aspect of sustainability. For example, Clover's Natural Market provided organic snack samples, Campus Facilities invited participants to sort recyclable and non-recyclable items, and volunteers encouraged people to ride a bicycle retrofitted to operate a smoothie blender (2).

About 150 people visited booths and entered in a raffle to win a bicycle.

Participants indicated they learned a variety of new information from the event in the post-event survey, including how to recycle, that 5 percent of Campus Dining food is lost to waste before it's even served to students, and how to go online to find apartment utility costs.

BUILDING WASTE AUDITS

Before Campus Facilities implemented its Low Waste program, the Sustainability Office and students from the Office of Service Learning conducted waste audits at six buildings on campus to capture a representative sample of classrooms, offices and laboratories (1). During each audit, waste was collected and sorted into recycling, compost and trash piles, then weighed. The audits captured data on all days of the week at each participating building. Hannah Peterson, Sustainability Assistant, led the students in conducting these waste audits.

Post-audit analysis found that 30 percent of all waste from campus buildings could be recycled but ends up thrown into the trash.

Compostable materials, meanwhile, made up about 40 percent of the waste stream. Although there is no current process for compost collection in MU buildings, it is an important waste-recovery process that should be investigated in the future.

After the Low Waste program has been fully implemented and integrated into daily routines, additional waste audits will be performed to assess progress. Staff predict a decrease in the percentage of recyclable material found in the waste stream.



LEVELING UP
 **#34**

PREVIOUSLY AT #47

The Sierra Club ranks qualified schools based off campus sustainability efforts. Mizzou, has jumped 13 positions in the past year.

TIGER TREASURES

In collaboration with the University YMCA, city of Columbia, MU Landscaping and Lindsey Rentals, the Sustainability Office held its 10th annual Tiger Treasures, a rummage sale designed to keep out of the landfill unwanted items donated by students leaving campus for the summer (3). This year's event saw 20 tons of donations and raised about \$14,000. Money raised during the rummage sale provides financial assistance to low-income children to attend the University YMCA's Camp Mudd, an outdoor camp.

"This project really helps with scholarships that send several kids to camp, and also keeps it affordable for families across the board. If we can keep camp fees down, then it really is open to all kids in Columbia," said University YMCA Executive Director Julie Alexander.

Watch 2016's Tiger Treasures video on MU Operation's YouTube page at <https://youtu.be/7ws-cAxIHZKs>.



The Sustainapalooza sign was made from recycled cereal boxes and black poster board by student worker Kathryn Kidd.

Master Plan and Climate Action Plan

Mizzou's Campus Master Plan and Climate Action Plan are updated annually, allowing for flexibility to better address the needs of an ever-changing campus.

From its first Master Plan in 1982, MU blazed its own path, choosing an annual update as opposed to other universities that plan every five-or-more years. The campus has grown in acreage by purchasing adjoining properties and redefining boundaries. Homes and parking lots have been replaced with additional residence halls, athletic facilities and classroom buildings with recreation and green space in between. Over time, while the master planner has changed, the vision hasn't.

Additional planners work specifically with Intercollegiate Athletics, stormwater, utilities, parking, and other functions on campus, but always in conjunction with the master planner.

This year's plan continues to focus on fiscal and environmental stewardship. Because the MU Operations annual report and MU Master Plan and Climate Action Plan overlapped, the documents have been combined, saving time and resources.

Features about education and general buildings can be found on the Facility Operations page 32; auxiliary building projects on the Planning, Design & Construction page 38, design principles can be found on page 48 and the Landscape Master Plan can be found on page 49.

While Energy Management's pages 30-31 feature students, tours and conservation efforts, the Climate Action Plan pages 50-51 provide greenhouse gas emissions and energy conservation data. MU's impressive push toward carbon neutrality in 2050 continues to exceed goals each year since 2009, and this year is no exception. We are more than half way there, reaching 51 percent in Fiscal Year 2016, whereas our goal was 30 percent.

Your input is vital. Please do not hesitate to contact committee chairs:

- Campus Space Utilization Committee:
Michael Goldschmidt, chair; goldschmidt@missouri.edu
- Campus Facilities Planning Committee:
Bill Wiebold, chair; wieboldw@missouri.edu
- Environmental Affairs and Sustainability Committee:
David Beversdorf, chair; beversdorfd@health.missouri.edu



MIZZOU BY THE NUMBERS

TIGER TREASURES RAISED

\$14,000

FOR LOCAL YOUTH WHILE DIVERTING
MATERIALS FROM LANDFILLS

357 BUILDINGS
ON **1,262** ACRES

31% OF MU POWER PLANT
FUEL IS RENEWABLE

2,478 BIKE SHARE
CHECKOUTS

650 TONS OF
MATERIALS
RECYCLED

63% OF MU'S PURCHASED
ELECTRIC POWER
IS FROM WIND

\$297 MILLION ECONOMIC
IMPACT
FROM PLANNING, DESIGN & CONSTRUCTION'S FY 2016 PROJECTS

6 LEED
CERTIFIED BUILDINGS WITH 9
MORE ANTICIPATING
CERTIFICATION

\$78.1 MILLION IN COST AVOIDANCE
DUE TO ENERGY
CONSERVATION
SINCE 1990

LED LIGHT FIXTURES IN
GARAGES ARE REDUCING
ENERGY UP TO **70%**



CAMPUS MASTER PLAN

PROJECTS RECENTLY COMPLETED

- 1: Swallow Hall Renovation & Reconstruction
- 2: Lafferre Hall Renovation (1935/1944 Additions)
- 3: Veterinary Ambulatory Teaching Facility

IN DESIGN OR CONSTRUCTION

- 4: Dobbs Group Replacement
- 5: Missouri Orthopaedic Institute Addition & Renovation
- 6: Patient-Centered Care Learning Center
- 7: Stewart Hall Renovation
- 8: Softball Stadium
- 9: State Historical Society – Center for Missouri Studies
- 10: Memorial Union Facility Repairs & Improvements
- 11: Trulaske College of Business Applied Learning Center
- 12: East Campus Plant Growth Facilities Phase 1
- 13: Lowry Mall Steam Tunnel Repair & Upgrades
- 14: University Hospital West Wing Addition
- 15: School of Music Building

IN PLANNING

- 16: Veterinary Medicine Addition
- 17: Dalton Cardiovascular Research Center Addition
- 18: Center for Translational Plant Sciences
- 19: Teaching & Research Winery Addition
- 20: Meats Education & Training Center
- 21: Institute for Educational Innovation
- 22: Fine Arts Building
- 23: School of Nursing
- 24: Translational Precision Medicine Complex
- 25: Football Facility and Memorial Stadium South Expansion
- 26: Indoor Practice Facility

EDUCATION & GENERAL BUILDINGS REQUIRING RENOVATION, REMOVAL OR REPLACEMENT

- | | |
|-----------------------------------|--|
| A: 1110 S. College | T: Middlebush Hall |
| B: Agriculture Laboratory | U: Mizzou North (Old Ellis Fischel) |
| C: Allton Building | V: Mumford Hall |
| D: Arvarh E. Strickland Hall | W: Neff Hall |
| E: Chemistry | X: Neff Hall Addition |
| F: Columbia Professional Building | Y: Noyes Hall |
| G: Curtis Hall | Z: Old Student Health Center |
| H: Eckles Hall | AA: Parker Hall |
| I: Ellis Library | AB: Physics Building |
| J: Gannett Hall | AC: Pickard Hall |
| K: Heinkel Building | AD: Read Hall |
| L: Laboratory Animal Center | AE: Research Park Development Building |
| M: Lefevre Hall | AF: Schlundt Hall Annex |
| N: Lewis Hall | AG: Stanley Hall And Addition |
| O: Loeb Hall | AH: Veterinary Diagnostics |
| P: London Hall | AI: Veterinary Medicine – West |
| Q: McAlester Hall | AJ: Veterinary Science |
| R: McKee Gymnasium | AK: Waters Hall |
| S: Medical Science | AL: Whitten Hall |

- | | |
|-------------------------------|----------------------------|
| Possible Future Structures | Seeking LEED Certification |
| Existing University Buildings | E&G Building |
| University Parking Structures | Auxiliary Building |
| Major Bikeways | Utility Project |



Design Principles

ARCHITECTURAL
REVIEW COMMITTEE:

- HEIDDI DAVIS
DIRECTOR, PLANNING, DESIGN & CONSTRUCTION
- LINDA EASTLEY
MASTER PLANNER
- PAM EUGSTER
PROJECT MANAGER
- JEFF FLEENOR
PROJECT MANAGER
- JOHN GLENN
SENIOR LANDSCAPE ARCHITECT
- JASON GOLDEN
SENIOR ARCHITECT
- JEFF HARPER
SENIOR ARCHITECT
- PETE MILLIER
DIRECTOR, LANDSCAPE SERVICES
- GERALD MORGAN
DIRECTOR, SPACE PLANNING & MANAGEMENT
- MARCUS RAUTMAN
PROFESSOR, ART HISTORY AND CLASSICAL ARCHAEOLOGY
- JOAN SMITH
LANDSCAPE DESIGNER
- MIKE STORNELLO
SENIOR ASSISTANT DIRECTOR, PD&C
- JENNIFER SULLIVAN
PROJECT MANAGER
- JUDE WAWRZYNIAK
FACILITIES PROJECT MANAGER

Established in 2002, the University of Missouri’s Design Principles reflect the “sense of place” achieved through cohesion in architecture and landscape. These principles are intended to give consultant groups guidance with issues such as:

- building massing and scale
- relationships to existing buildings through use of materials
- textures and colors in creating building environments
- shaping open spaces while maintaining the historic character and traditions of the campus

Over the past 15 years, the campus has experienced significant growth, which has necessitated the addition of companion guidelines.

Meanwhile, Campus Facilities has been operating with a renewed emphasis on stewardship, which encompasses not only the history of the campus but also fiscal accountability to the citizenry.

The updated design principles will be used by campus committees, including the Architectural Review Committee. MU anticipates completing a draft in Summer 2017.

“Our charge: To work with the Architectural Review Committee to update the MU Design Principles to better reflect campus vision and to provide a current framework for project teams.

Our intent: To guide project teams on civic-design scale decisions with an eye to the larger campus composition and goals, and focusing primarily on the interrelationships of buildings, landscape and support systems.

”

Landscape Master Plan

LANDSCAPE MASTER
PLAN ATTENDEES:

- LINDA EASTLEY
MASTER PLANNER
- GREGG COFFIN
DIRECTOR, ENERGY MANAGEMENT
- CANDACE GALEN
PROFESSOR, BIOLOGICAL SCIENCES
- JOHN GLENN
SENIOR LANDSCAPE ARCHITECT
- SHIBU JOSE
PROFESSOR, FORESTRY
- PETE MILLIER
DIRECTOR, LANDSCAPE SERVICES
- JOAN SMITH
LANDSCAPE DESIGNER
- CHRIS STARBUCK
PROFESSOR EMERITUS
- JENNIFER SULLIVAN
PROJECT MANAGER
- CHRIS WILSON
SUSTAINABLE DESIGN & CONSTRUCTION PROGRAM MANAGER

The Landscape Master Plan, or LaMP, was initiated in fall 2014 to advance the goals of the Campus Master Plan and to create an iterative process by which landscape and building goals can be mutually affirming.

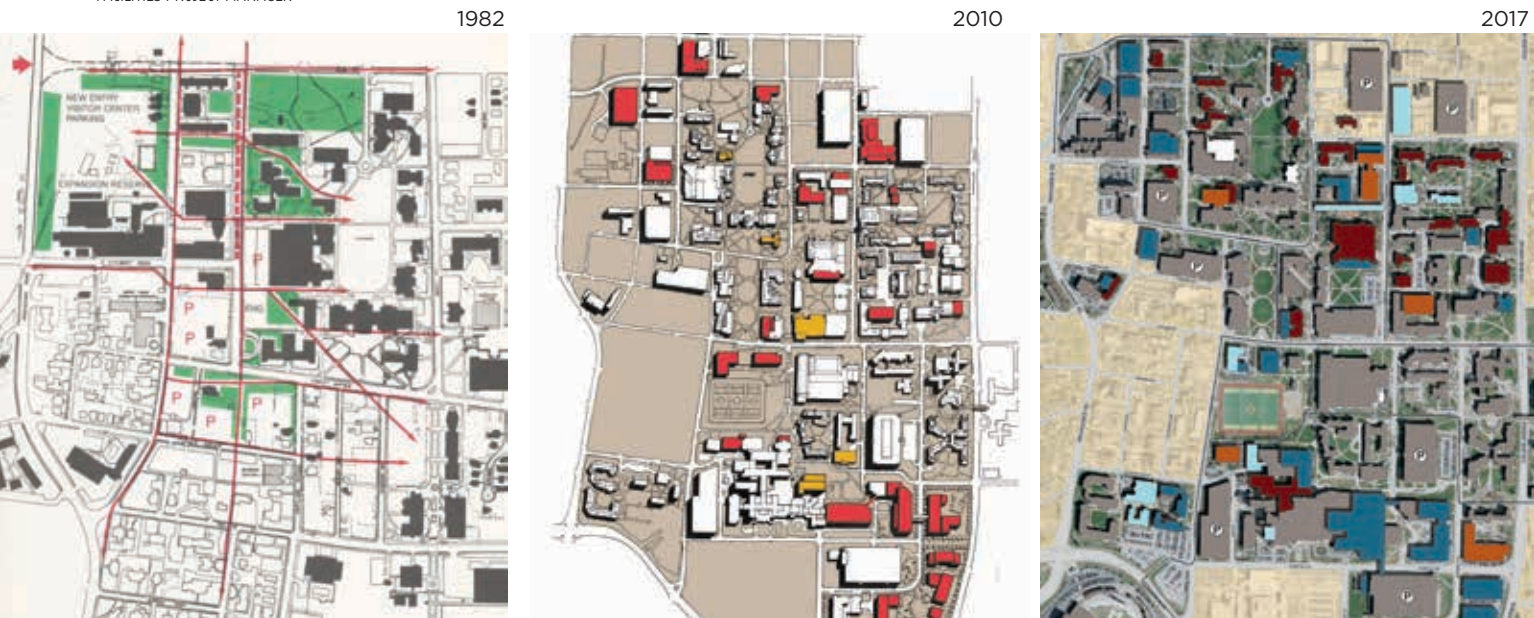
Developed through collaborative efforts of a diverse committee of faculty and staff who believe that campus landscape has a profound contribution to the mission and future of the university, the LaMP encompasses five guiding principles:

- learning innovation
- sense of place and community
- health and well-being
- environmental stewardship and sustainability
- integrity of planning and design

In reflecting on the university’s past 178 years, the LaMP serves as a framework for coordinating incremental decisions related to the physical campus environment and encourages better communication.

“Our intent: Encourage thinking beyond the traditional values of aesthetics to include mission support, ecology and maintenance as important factors in successfully renewing historic spaces and creating future landscape projects.

”



Climate Action Plan

RECENT ACCOMPLISHMENTS

As of July 2016, the campus has achieved a 51 percent reduction in greenhouse gas emissions from the 2008 emissions baseline.

RENEWABLE ENERGY

- **MU'S RENEWABLE ENERGY PORTFOLIO OF BIOMASS, WIND AND SOLAR HAS NOW REACHED 34 PERCENT OF TOTAL CAMPUS ENERGY USE.**
- Recently, the EPA's Green Power Partnership listed the University of Missouri No. 4 in its Top 30 On-site Generation list. At No. 4, Mizzou was behind only Walmart, Apple and the U.S. Department of Energy.
- The biomass combined heat and power-system is not only providing MU with sustainable steam and electricity, but the funds were re-invested back into our local economy, providing economic-development benefits. MU purchased more than 108,000 tons of wood mill residues in fiscal year 2016, investing \$3.57 million back into the local economy.

ENERGY CONSERVATION

- Energy conservation efforts continue to reduce energy costs and emissions for MU. Energy reduction has reached 21 percent per square foot with an annual cost avoidance of \$9.1 million for Educational & General buildings. Cumulative cost avoidance has reached \$78.1 million since formal energy conservation began in 1990.
- A project to upgrade energy controls in Lewis Hall is almost complete, with most of the facility using more efficient energy controls.

LED LIGHTING CONVERSION

Continuing on the success of converting Conley Avenue Garage to LED lighting last year, Campus Facilities Energy Management and Facilities Operations partnered together to re-lamp the Turner Avenue Garage (TAG) with LED lighting. A total of 531 dim, high-pressure sodium fixtures were replaced with 372 bright and efficient LED fixtures. Metering data is demonstrating a 65 to 70 percent reduction in electricity use for TAG. The garage now is a better-lit environment, and there are expected maintenance savings from fewer bulb replacements. A plan to re-lamp an existing academic building with LED lighting in 2017 is under evaluation.

ENERGY STRATEGIES STUDENT ADVISORY GROUP UPDATE

The Energy Strategies Student Advisory Group (ESSAG) submitted a recommendation letter to Gary Ward, Vice Chancellor for Operations, highlighting several energy conservation, renewable energy and education and awareness suggestions to pursue or further investigate. The letter was forwarded to the campus Environmental Affairs and Sustainability Committee (EASC) for its input and action. Several ESSAG members attended an EASC meeting to share ideas drafted in their recommendation letter. The group continues its energy advisory work and is focusing much of its attention to help increase renewable energy and sustainability awareness among MU students.



The Conley Avenue Parking Garage before (top) and after the installation of LED lights.

2016 - 2021 PLAN

In the coming year, Campus Facilities Energy Management plans to explore the feasibility of expanding the use of solar energy at MU.

MU will install a steam turbine generator in 2017 to produce additional electricity from some under-utilized steam.

Target a 57 percent carbon-emission reduction from the 2008 emissions baseline, based on the following assumptions:

GHG REDUCTIONS AND FORECASTS

Using 2008 as its emissions baseline, MU's first climate action plan realized a 9 percent reduction. The CAP projects emissions targets five years out and has consistently exceeded its targets. Its target in 2012 was a reduction of 36 percent by 2016, yet the actual reduction is 51 percent.

FUEL MIX

Target an 88 percent reduction of coal use and increase use of biomass and natural gas from the FY08 baseline. Note: Coal use was down 73 percent in FY2016 and 31 percent of power plant fuel was renewable in FY16.

RENEWABLE ENERGY

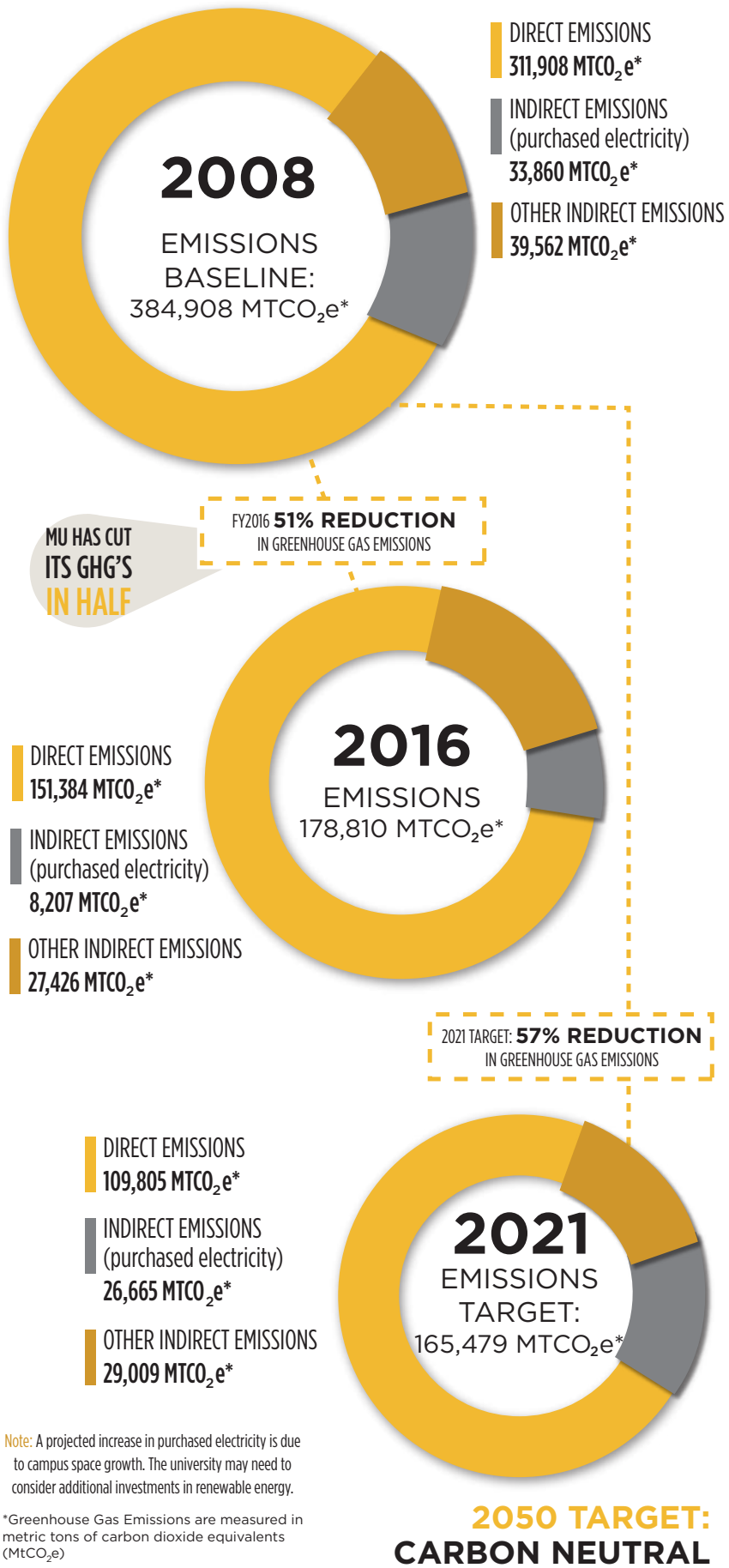
MU will continue to purchase wind power and explore other renewable technologies for its portfolio. Note: Wind power totaled 63 percent of MU's purchased power.

UTILITY MASTER PLANNING

MU uses a unique long-range utility master planning effort to prepare for future utility needs for the campus including evaluating various sustainable energy alternatives.

ENERGY CONSERVATION SAVINGS TARGET

Reduce campus energy cost by 1 percent annually.





Operations

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