Annual Report Fiscal Year 2019 Facilities & Campus Services



Letter from the Vice President

HIGHLIGHTS

Dear Campus Community,

The purpose of this report is to document the work of Facilities and Campus Services over the Over the past five years, the Facilities and Campus past fiscal year. We understand the importance of Services operation has been benchmarked against being accountable and embrace the commitment the national leaders in our field. Through our to be visible, transparent, and collaborative.

The campus environment is constantly changing. While change can be challenging, it can also be exciting. In supporting positive the change, Facilities staff has proven that the best resource any organization can have is its own people. Our staff is diverse, extremely talented, and dedicated to providing the best experience possible for students, faculty, staff and visitors.

commitment to improve, we are now ranked among the best in our peer group. The department continues to challenge past practices, focusing on opportunities to support the campus assets.

Thank you to our campus partners and our peers in Finance and Administration for their support. Strong vision along with great applications has created an environment that allows the staff in Facilities and Campus Services to continue to grow and succeed.

> Sincerely, John Shenette







05 Refresh & Renew: Large capital projects that have changed the campus community for the better.

11 North Chiller Plant: One of the most impactful efficiency improvements to date, the North Chiller Plant project has moved us into a new realm of energy savings.

13 BPI²: Two years into the program that has brought the most efficiency improvements to the university, we reflect on our accomplishments.

16 Wait Chapel Lighting Project: This project was a success with the exchange of our halide lights on the chapel for brighter, more directional and sustainable LED lights - in more colors!

24 Tunnel Tours: Our Department collaborated with students and staff and brought them, literally, behind the scenes to show them how the infrastructure handles the campus utilities.

26 The Wake Well: Two men who built a portable water station that hydrates campus and decreases our use of disposable bottles.

41 Satellite Success: Bruce is one of the most recent graduates of the Satellite Student Program and joins us as a full time employee of Fleet Services.

50 Tulip Bulb Giveaway: One of the many ways our Department gives back to our campus community, the annual bulb giveaway is one of our most popular collaborative efforts.

WFU FACILITIES

at a Glance...

32,260 Work Orders submitted.

3,536 Users submitted Work Orders.

1,021 Event Work Orders Submitted.

5,230







3.5 million square feet on Reynolda Campus.

100% United Way Campaign Participation.

Our Staff is Here to Help

1E Planning & Construction

75Maintenance & Utilities

20 Landscape Services





Davis Hall Building Renovation \$18.0 M

> Salem Hall Complete Renovation and Modern Transformation \$21.0 M

EGBERT

ACC Network Control Room New state-of-the-art facility

Boiler Addition A new boiler added to the Central Heating Plant

> Since it's move to Winston-Salem in 1955, Wake Forest University's property has grown from 1.2 million square feet to over 5.2 million square feet.



Planning & Construction



The Office of Planning and Construction partners with other departments at Wake Forest University on both large and small construction projects to enhance Wake Forest's Winston-Salem Campus.



Salem Hall

Complete Renovation and Modern Transformation

Reopening in the fall of 2018, Salem Hall has been transformed into a modern teaching and research facility. While the building has received numerous small renovations over the years, this circa 1955-era chemistry building had never had a complete renovation until now.



\$21 million 4 large teaching labs 19 research labs

nearly 500 hoods with state of the art exhaust controls

new roof, windows, and main entry facade









The Construction team provides expert carpentry, masonry, and specialized construction for projects around campus. **Reclaiming wood** from fallen trees on campus and renovating campus classroom spaces are a few of the projects this skilled team tackles. **Partnering with landscaping** and other campus departments, the construction team continues to deliver projects with unique craftsmanship.





Problem Solving in **Facilities**

Brainstorm

Projects requiring large plans could be as heavy as 1,000 pounds, but needed to be easily transported, posing a problem for project managers.



Construction

A custom base plate was welded and heavy duty casters were attached.



CAD Design The drawn design was mapped out in CAD software to ensure exact measurement.





Problem Solved









The two chillers run so smoothly that a coin can be balanced on its side while the chiller is on full operation - as demonstrated on the North Chiller Plant's launch day.

North Chiller Plant

Within a stripped down 2,513 square foot building, two new 1200 ton chillers were set carefully into place, a leap toward reducing our entire campus electricity consumption by 3 -5 percent overall. The two chillers sit behind a 14 by 21 foot glass air hanger door, showing off the plant's interior.

Each chiller can generate up to 1200 tons of cold water, a total of 2400 tons, doubling the outcome we previously achieved with the old North Chiller Plant. This capacity is about the amount of chilled water needed to cool 800 average 2,000 square foot homes.

WFU launched the Plant on April 2, 2018 and began making efficiency adjustments, improving by a whopping 16% when compared to our old system. Both the South and North Chiller Plants have yielded results that are projected to increase our combined plant efficiency nearly 25%.



With an attractive, but tucked away presence on campus, we chose to display the inner workings of the North Chiller Plant with an air hanger style door and offer class and department tours for those interested in the engineering behind the plant.





The Building Performance Improvement Initiative is a campus wide collaborative effort to reduce our carbon footprint, improve the efficiency of our building systems, and increase the comfort of our community.



Enhanced PMs: In April of 2018 we started an Enhanced PM program where the Maintenance & Utilities teams perform an intense operational check on the major components of each building's HVAC system. This in addition to routine preventitive maintenance will help reduce energy usage and return the systems to maximum efficiency.

Campus Engagement: BPI² engages our campus community to educate and motivate building occupants about our program and it's benefits.



13



Scheduling The Building Systems Specialist schedules buildings for automatic shutdowns and startups using occupancy information to save energy when buildings are not in use.



Analytics:

The analytics tool continuously analyzes the building Our team works to analyze data from all BPII program systems through an automated Fault Detection and projects to ensure the effectiveness and results of the Diagnostics (FDD) feature that pinpoints where faults are initiative. occurring within the facilities, allowing for immediate resolution. The tool ranks fault occurrences by comfort The WFU analytics tool translates building automation and energy waste.

systems output data into meaningful information. The tool alerts the building systems team when actions need to be taken and enables them to make informed decisions.

Exterior lights replaced with LEDs:

230 street and parking lights
250 pedestrian acorn lights
750 outside building lights

Wait Chapel Lighting Project

We replaced the metal halide light fixtures that shine on the University's iconic Wait Chapel Bell Tower with new energy-efficient LED fixtures that allow deeper and more vibrant colors for special events and other occasions.

The new LED lights are more energy efficient, using approximately 60% less energy and can be operated more safely and effectively from a central master panel that is programmed with options for scheduling, dimming, and customizing colors.

We saved 500,000 kwh through LED conversions, enough energy to watch a 42 inch tv for 285 years.





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D eynolda Main Campus is responsible for **N**approximately **70%** of total WFU annual carbon emissions and energy usage. With that impact in mind, we have identified several key strategies to achieve a **45%** reduction in gross carbon emissions and reach an energy intensity goal of 95 kbtu/GSF or 35% reduction by 2027.*

*from our 2007 baseline of 148 kbtu/GSF



EV Charging Stations have provided over 1700 charges, for 71 individual cars in Fiscal Year 2019.

W^e continue to grow. Te continue to Save.

The University has added **44%** or 1,615,173 GSF to our Carbon Footprint since 2007, but reduced energy intensity in buildings from **148** to **103** kbtu per gsf or **30%**. The Energy Intensity chart shows the Energy Intensity (kBTU / GSF) and the total GSF of The University's carbon footprint, and progress of reducing energy intensity of our buildings.

We have been able to keep reducing our energy usage with respect to the reporting GSF growth.

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Our gross carbon emissions have reduced by over **28%**.

The emissions graph represents what our gross carbon emissions would have been if we continued at our FY07 baseline rate per GSF of emissions.

The **Central Heating Plant** got an additional No. 2 fuel storage tank to increase on site storage to **36 hours** of backup capacity.

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ar	NatGas (dT)	Electric (kWh)	Total MMBTU	Reporting GSF
FY07	228,026	78,886,000	537,642	3,630,121
FY08	224,104	78,735,682	533,783	3,755,461
FY09	227,465	76,543,520	525,718	3,755,461
FY10	231,641	77,435,720	538,879	3,755,461
FY11	234,642	76,483,546	540,083	3,875,337
FY12	210,992	72,867,236	503,342	3,909,027
FY13	219,462	74,126,221	516,299	4,240,478
FY14	235,507	78,172,845	550,372	4,566,764
FY15	251,827	78,561,177	562,011	4,566,764
FY16	257,967	83,043,286	582,926	4,816,515
FY17	257,621	84,840,051	589,367	4,933,330
FY18	243,012	78,132,119	551,165	5,076,133
FY19	242,575	75,858,364	542,151	5,245,294
Change	6%	-4%	1%	44%
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# Facilities In and Out of the Classroom

Our department contributes to the educational environment of Wake Forest, further supporting the mission of the University. Partnering with the Office of Sustainability, we provide tours and class discussions on the campus systems that are working around us.

From the tunnels under the campus steam plant to the rain garden at Winston Hall, students engage in our spaces to directly learn about engineering, environment, and economics.



### Campus as a Lab

The Campus as a Lab Program, through the Office of Sustainability, supports collaborative efforts between operational and academic department members in order to create campus-based learning opportunities that engage students in analyzing, evaluating and generating creative solutions for a more sustainable campus.





### Wakerspace

Facilities played a pivotal role in one of the most exciting student facing projects by completing the interior upfit for the new Wakerspace.



**Habitat for Humanity** of Forsyth County reached out to Wake Forest University for volunteers to help build affordable homes in a local Winston-Salem neighborhood. We signed up with **14** staff for two separate days of service alongside the Office of Sustainability.

Facilities & Campus Services has consistently been the most accountable donor to the Forsyth County **United Way**. With **100%** participation in the United Way campaign led by Director of Landscaping, Jim Coffey, we continue to set the example for all Wake Forest University departments.

Our community engagement permeates the campus community with our continued support of the **PDC Program**, offering a series of specialty classes taught by professionals and offered to staff and faculty. The extremely popular **Winter Arrangements** class teaches the basics of creating floral and greenery arrangements with our talented gardening group just in time for the holidays. **Check Engine Light** is a course that Fleet Management gets to lead, sharing some information on car maintenance including tire pressure and oil changes. **Spring Lawn Care** is taught by the turf team, sharing seasonal lawn maintenance pointers to help those without a green thumb grow a lush front lawn.





## Wait Chapel Bell Tower & Tunnel Tours

Over 500 senior students toured the bell tower and tunnels during the 1834 Campaign. We also led tours for private groups including 49 staff in Advancement, 12 Dean of the College Office members, Wake Womens Weekend's 16 participants, and the Human Research Protections team of 17.

12 undergraduate engineering students toured the "Beating Heart of Campus" providing a special experience for the University's 2-year old engineering program. Other groups that toured our steam plant include 17 Environmental Economics students and 11 Sustainability Assistants and Interns.

24



## Wake Well

What started as a 2 team mission to create a mobile water station, quickly became a community effort led by two guys, Sloan Cole and Seth Looney, and launched on the day of Commencement 2019.

#### Named by the People

In order to name our prized project, we sent out surveys on social media to gather input. Out of the 25 unique suggestions, we pared down to four final names, then sent them out again on social media for a vote. After 589 votes came rolling in, it was obvious what our winner was. Thus, the Wake Well was born.

> 40 Gallons of water provided

256 bottles





27

### Athletic Celebrations

### Hit the Bricks

LG Monitor



As we provide event support for a number of campus organizations, our event work orders continue to increase every year.

THE BR



#### **Maintenance Team**

### **Summer Process**

Each summer Facilities & Campus Services works to clean, repair and renew the campus buildings for a new academic school year. In a short summer filled with camps, conferences, and both large and small construction projects we work in partnership with Residence Life and Housing as well as Campus Services and Planning to coordinate time in each building to complete all of the work that goes into preparing the buildings for the return of the students.

approximately 6700 guests

nearly **48,000** bed nights

### **Preventative Maintenance**

After Hours

**Reactive Work** 

22,313 Preventative Maintenance Work Orders

287 PM Templates

3,919 PM Schedules

359 Pieces of Equipment Added

19,219 Filters per year

#### Work by Type by Maintenance Teams

**Preventitive Maintenance** 

### **Technology in Facilities**



#### The Facilities team participated in **TechXploration**, a

technology showcase by departments across campus. We demoed our usage of our Work Order system on Ipads, our Lockshop, and our new social media platforms for campus communication. With the launch of **Workday**, many campus systems (Human Resources, Payroll, Procurement, and P-Card) were consolidated into one primary system of record. This streamlined many manual processes to become more efficient in our daily operations with transactions shared in the Cloud. Facilities installed custom **time clocks** across campus to support the timekeeping portion of Workday.





**Tree Check** is a tool that our arborists use to inspect the health of trees across campus and assess the need to replace trees in collaboration with the Tree Advisory Committee.



The Landscaping department utilizes **Landscape Pro** software to plan garden beds, hardscapes, and campus beautification projects.



Department employees and vistors can monitor Facilities metrics, latest news, and service alerts on our informational digital **display board** in the HS Moore main office.



Our Department deployed **Ipads** to managers, supervisers, and technicians in the field for remote access to the work order system, energy management systems, building drawings, and other tools.

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### Facilities & Campus Services in the Cloud

Facilities & Campus Services launched the new Wordpress website in March of 2018, bringing the site up to the design standards held across campus. The more user-friendly and intuitive site made a great landing page for those who click through our three new social media channels that later launched in August of 2018. With the goal of spreading departmental awareness to the rest of campus, communicating time sensitive alert information, and providing a new avenue for customer service, Facilities & Campus Services dove into the **21st** century by going **social.** 





#### 🕅 Wake Forest University

**Facilities & Campus Services** 

Work Order Request Planning and Construction 

Facilities Services



**17,000** website users since March 2018 **23.5%** of users on mobile devices

emergencies, contact us

Submit Work Order



Monday-Friday, 8 a.m.-4:30 p.m. For immediate assistance or emergencies, contact us immediately at 336.758.4255. **RELATED LINKS** Projects Guidelines Master Plan





30.95

33



Post engagement is vital to track to make sure that our published content is making a positive impact. Engagement is the unit of every click, like, comment, or other concious action a user takes in response to a post.







**Custodial** staff in residence life and housing strives to create a healthy and clean living environment while minimizing impact on students.

**52** RLH buildings and houses with **1,281,609** square feet of residential space

**4,135** beds

**56** academic buildings with **2,634,181** square feet

**960** miles of toilet paper, enough to roll our way to Kansas City.





The Custodial department at Wake Forest outperforms its peers in cleanliness as rated by an independent third party industry partner.



As Facilities launched it's three social media channels, Custodial took the spotlight on the successful **#MeetUsMondays** campaign used to introduce new students to the staff in their buildings.

per 2018 Sightlines ROPA+ Study

36

Peers

## **Maintenance Services**



### Champions of Change

The Maintenance and Utilities Services Team, led by Mike Draughn, was presented with this year's **Resource Conservation** award. This team has worked tirelessly to capture energy efficiency across campus and to translate that work into a greenhouse gas reduction plan.





Rob Hager awarded the Campus Partner Award from WFU Campus Police for going above and beyond in his job to assist and protect the campus community.

Maintenance Services is divided into two teams that serve our academic/administrative and residential buildings across campus. We are responsible for performing the day-to-day maintenance and repairs necessary to provide corrective and preventive maintenance services for campus, while also managing smaller projects and programs.









Maintenance Services serves our academic/administrative and residential buildings across campus. Our dedicated teams of cross-trained technicians provide a broad set of services to maintain the buildings as well as manage projects to support the deferred maintenance and system-level renewal programs for the buildings. Our projects completed last fiscal year, including renewal projects, are displayed on this map.

#### Renewals

Roofing Repairs and Renovations on Wilson Wing of ZSR, Bostwick/Johnson, HS Moore, North Chiller Plant, and NCA 1-10.

Interior renovations including new carpet, flooring, and lighting in Scales, Worrell, Carswell, and Reynolda.

Fire Panel Replacement in Tribble, Benson, and Reynolda.

A. Wait Chapel - Steeple Lighting Project B. ZSR Library - Starbucks Odor Remediation, exterior painting project C. Wingate - New Fan-coils installed D. Reynolda - The Pit Tray Accumulator and Dish Machine, Installed New Cooling Unit in AT&T Phone Room, and Added E. Benson - Skylight Reseal and Kitchen Window Film F. Deacon Shop - Heat Pump Replacement G. Tribble - Stair Tread Replacement and New Domestic Hot Water Generation System H. Reynolds Gym - New Basketball Goal Controllers I. Calloway and Kirby - Replaced Drives J. HS Moore - Replaced HVAC System K. University Entrance - New Gate Arm Controllers L. Alumni Hall - Replaced 1.5 Ton mini split in CATV room M. Scales, OS1, and Campus Ministry - Added Dehumidifiers N. Kitchin - Large Waterproofing Project at Exterior of Fraternity O. Babcock - New Water Heater P. Collins - Installed Solid Surface Epoxy Flooring Q. Palmer and Piccolo - Installed Solid Surface Epoxy Flooring R. Student Apartments - Replace 1 Large 86 Gallon Hot Water & Waterproofing and Added Dehumidification to Crawlspace S. Polo - Changed All Exhaust Fans on Roof **Off Campus** 

### **Total Projects**

Off Site Storage - Added New Gas Meter Wake Downtown - Repairs Throughout Campus - Installed Hydro Stations Howe

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Fleet Management The Fleet Management team maintains 372 campus vehicles, including trucks, trailers, golf carts, bobcats, and more. There are 152 landscaping specific vehicles, including blowers, edgers, tillers, and chain saws. Of the 372 total vehicles 50 are electric and **9** on the road are diesel.

#### 166 Oil Changes



### Satellite Success

Bruce Avelar, the newest member of the Fleet team, came to us from the Satellite Student program. Formerly known as Project Dream, the Satellite Student program is a partnership between Wake Forest University and Winston-Salem/Forsyth County Schools that allows high school students to gain work experience at the Reynolda Campus and Graylyn. Bruce was hired for his full time position immediately after his graduation.

Bruce also participated in the recent shadowing program where student groups shadowed select Facilities and Campus Service technicians and created multimedia projects expanding on the immersive experience.

## Lockshop

There are **1500** card readers on campus.



Administrative Professional Conference Proven Winners Landscape Roadshow International Sanitary Supply Association Association of Physical Plant Administrators Workshop International Facility Management Association Apple Worldwide Developers Conference NACD NC Clean Energy Technology Center State Energy Conference WEEC Dude University Conference Atlanta Garden Tours NCAPPA The Appalachian Energy Summit NAFA - I Back Flow Prevention Training **Tradeline - University Facilities 2019** Partners in Community Forestry Conference ACUHOI Davidson Horticultural Symposium Sustainable Fleet Technology Conference ssociation of College and University Housing Officers - International GIE Expo ege and University Housing Officers - International GIE Expo Atlantic Coast Conference Chief Facilities Officer Conference Sightlines Insight Conference Atlanta Botanical Garden Expo Southeastern Regional Association of Physical Plant Administrators Green Industry International District Energy Conference North Carolina Association of Physical Plant Administrators **World Energy Engineering Conference** Pesticide Application Training **National Association of Fleet Administrators Equipment Expo** State Extension - Turfgrass **Great NC Tree Conference NC Urban Forest Council** 

In partnership with the Office of Environmental Health and Safety, Facilities & Campus Services is committed to investing in a secure work environment by understanding and adhering to industry standards, ensuring our employees stay safe while performing their daily duties.





Facilities team members engage in extensive and ongoing training and certifications that require periodic renewal. Training is tracked allowing leadership to ensure that it is current, to estimate budget and resource needs for training and certifications, and establishes greater visibility into the talent and knowledge base of staff.





In the last five years, speaker/voice/strobe capability in our buildings has expanded from 62% to 86% on Reynolda Campus. In the next five years, we are planning to upgrade an additional 10 buildings.



**31440** monthly visual inspections





70+ fire inspections per year





### Waste Reduction & Recycling

The Office of Waste Reduction & Recycling is committed to reducing the University's environmental footprint and promoting sustainable practices. Through continued initiatives such as technotrash recycling, we are making a difference on campus and in the community with our waste diversion. Partnering with Sustainability, we work closely with the various departments, staff, and students to create new waste reduction and recycling initiatives on campus.

#### **Campus Surplus**

The WFU Surplus Property Program collects property from departments that no longer need it and redistributes it to departments that do need it. Our primary goal is to maximize reuse of University property and minimize the quantity of property that ends up in our landfills.

579 total surplus Work Orders

**1,016** individual items re-purposed on campus

1,361 pieces donated, keeping 22 tons out if the landfill







### Facilities by the Numbers

Our Systems Team provides vital infrastructure operations including the warehouse, our work order system, preventative maintenance scheduling, asset tracking, technical support, financial reporting, utility billing, and digital communications.

Facilities Warehouse is responsible for ordering, receiving, stocking, and issuing all warehouse inventoried parts and non-stock purchases as requested. Our team of 3 partners with University Procurement to maximize the value of our purchasing power, utilizing Work Day to make the purchase of record and work order system to track inventory.



\$161,343 year end inventory value







Processed **5,898** part requests from technicians

Handled **1,084** vendor deliveries

Over **10,000** inventory transactions

## Landscape Services

- 73 hazardous trees removed
- 199 trees planted
- 3,600 gallons of brine spread
- **35** tons of ice melt used
- 544 tons of mulch repurposed
- **40,300** pounds of fertilizer
- 7,500 pounds of lime
- 12,500 pounds of grass seed
- 29,478 annuals planted in two seasons
- **30,812** tulip bulbs planted
- 12,800 daffodils planted
- 320.92 acres on Reynolda Campus



"10 of the Prettiest College Campuses On the East Coast"



The annual **tulip bulb giveaway** is a chance for the Landscaping team to give back to the campus community. All of the seasonal tulip bulbs that are cycled out of the garden beds in the Spring are given out to staff and faculty who sign up for the event. In 2018, we had over 200 participants pick up bags of bulbs, and our waitlist filled up within the first day it was listed.







Photo by Clark Lupton '19

