Dear Campus Community,

The purpose of this report is to document the work of Facilities and Campus Services over the past fiscal year. We understand the importance of being accountable and embrace the commitment 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 change, the 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.

Over the past five years, the Facilities and Campus Services operation has been benchmarked against the national leaders in our field. Through our 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
LED lights installed.

Our Staff is Here to Help

18 Planning & Construction

75 Maintenance & Utilities

20 Landscape Services

11 Administrative

64 Custodial

340 Instagram followers.

87 total buildings maintained.

3.5 million square feet on Reynolda Campus.

100% United Way Campaign Participation.
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
Construction

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.

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.

CAD Design

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

Problem Solving in Facilities

Construction

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

Problem Solved

Repurposing Wood

from fallen and cut trees on campus.

Repurposing Artwork

from student projects.

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Problem Solved
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 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.
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.

**Campus Engagement**: BPI² engages our campus community to educate and motivate building occupants about our program and its benefits.

**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 preventative maintenance will help reduce energy usage and return the systems to maximum efficiency.

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

**Metering**: The meters on buildings measure utility usage in real time for accurate reporting on cost reduction and efficiency.

**Analytics**: Our team works to analyze data from all BPII program projects to ensure the effectiveness and results of the initiative.

The analytics tool continuously analyzes the building systems through an automated Fault Detection and Diagnostics (FDD) feature that pinpoints where faults are occurring within the facilities, allowing for immediate resolution. The tool ranks fault occurrences by comfort and energy waste.
Exterior lights replaced with **LEDs**:

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

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

**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 continue to grow.

The University has added 44% or 1,615,173 GSF to our Carbon Footprint since 2007, but reduced energy intensity in buildings from 148 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.

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.

Reynolda Main Campus is responsible for 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

The Central Heating Plant have provided over 1700 charges, for 71 individual cars in Fiscal Year 2019.

The University Stores

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

EV Charging Stations

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

We continue to save.

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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.

Wakerspace

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

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.
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.
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 Women's 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.
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.

Wake Well
40 Gallons of water provided
256 bottles diverted from waste
Event Support

Facilities & Campus Services is there behind the scenes to support all events across campus to make sure that everyone who comes to Wake Forest receives the Deacon experience.

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

22,313 Preventative Maintenance Work Orders
287 PM Templates
3,919 PM Schedules
359 Pieces of Equipment Added
19,219 Filters per year

Summer Process

32,260 Work Orders submitted in FY '19
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.

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

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

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

While Facebook and Twitter have shown steady, consistent growth, Instagram has taken off ahead of the other two platforms, engaging more students through stories than Facebook and Twitter combined.

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

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 conscious 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.

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.

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

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.

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.

Total Projects

A. Wait Chapel - Steeple Lighting Project
B. ZSR Library - Starbucks Odor Remediation, exterior painting project
C. Wingate - New Fan-coils installed
D. Reynolds - 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, OSI, 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

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

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
Reynolda Campus has over 32,000 doors.
Of the doors on campus, 140 are ADA accessible.
Reynolda campus has over 100,000 door hinges.
There are 1500 card readers on campus.
The Lockshop manages over 7000 keys for Housing alone.
Every year, the Lockshop re-cores/ rekeys 700 student rooms.
The Lockshop replaces about 650 mailbox keys per year.
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.

- 2620 fire extinguishers on campus
- 139 fire alarm tests per year
- 31440 monthly visual inspections
- 319 fire alarms campus wide
- 70+ fire inspections per year
- 54 sprinklered buildings
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 of the landfill

Exterior Waste Containers on campus include...

- **328** trash receptacles
- **147** recycling bins
- **25** pet waste stations

87 daily stops for Reynolda Campus building waste collection
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.

### Facilities by the Numbers

- **1,444** parts inventoried
- **$161,343** year end inventory value

- **Handled 1,084** vendor deliveries
- **Processed 5,898** part requests from technicians
- **Over 10,000** inventory transactions

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.
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

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.

#9 on *The Travel’s*
"10 of the Prettiest College Campuses On the East Coast"