Performing at a Higher Level: Healthy Buildings For Your Campus

October 26, 2017

U.S. GREEN BUILDING COUNCIL USGBC | AGNES SCOTT COLLEGE | JLL

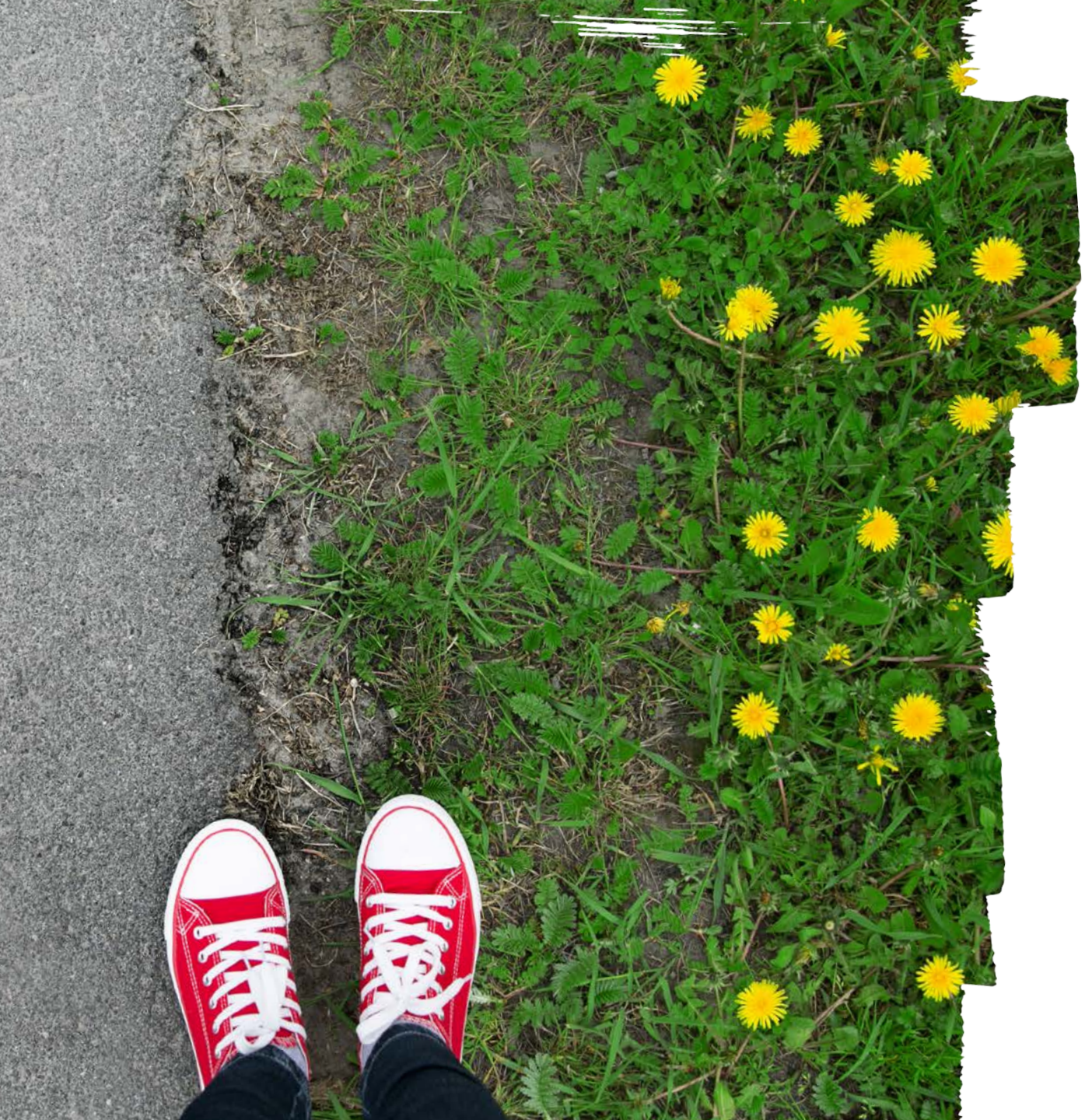
Agenda

1. *Sustainability on campus*
2. *Practical application of sustainability on a Georgia Campus*
3. *Cutting edge strategies for sustainable health and wellness*

According to the Princeton Review, **91%** of survey respondents said they take environmental concerns into account when selecting their college or university

High Performance Building - Defined

A building that integrates and optimizes all major high-performance attributes, including energy efficiency, durability, life-cycle performance, and occupant productivity.



Health - Defined

A state of complete physical, mental and social well-being not merely the absence of disease.

- World Health Organization


U.S. GREEN BUILDING COUNCIL
USGBC

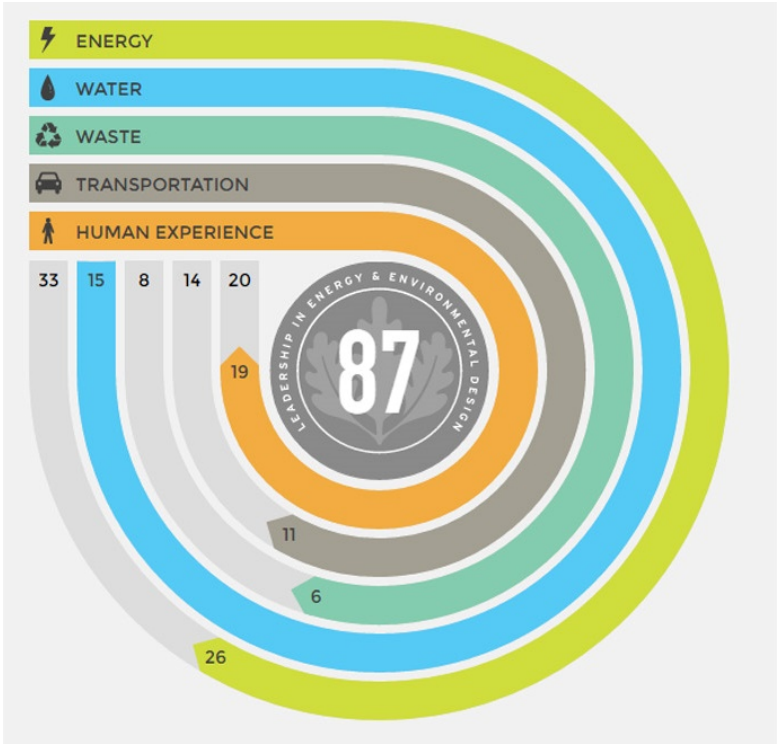

GREEN BUILDINGS
FOR EVERYONE
WITHIN THIS
GENERATION


SAFE
HEALTHY
INCLUSIVE
SMART
PRODUCTIVE
EFFICIENT
EQUITABLE
SUSTAINABLE
RESPONSIVE
RESILIENT
ZAIDINA

LEED ARC

The Fitbit for your building.

ARC



- *State of the art reporting platform*
- *Real-time performance metrics*
- *Benchmarking against industry peers*
- *Establish baseline for future operational improvement*

LEED ARC Performance Score

Ongoing, real time tracking and reporting of efficiency and sustainability metrics

What gets measured gets improved

LEED® Lab™

TRANSFORMING CAMPUSES AND CAREERS

POTENTIAL

ACADEMICS

Affordability
Accessibility
Student retention
Graduation rates
Program differentiation
Career readiness
Employability
Career pathways

OPERATIONS

Deferred maintenance
Limited staff resources
Human experience
Energy
Carbon
Water
Waste

OPPORTUNITY

ACADEMICS

Affordability
Accessibility
Student retention
Graduation rates
Program differentiation
Career readiness
Employability
Career pathways

X

OPERATIONS

Deferred maintenance
Limited staff resources
Human experience
Energy
Carbon
Water
Waste

LEED LAB

» Identify a project on the campus

» Educate students on the principles of LEED

» Create project team

» Implement LEED EB

» Make submissions to GBCI

» Pursue a LEED AP Credential

» Project is certified by GBCI

LEED® Lab™

BY THE NUMBERS

January 2014 – June 2017

# of institutions offering course: 25

# of students: 1,000+

# of disciplines represented: 40

DISCIPLINES ENGAGED IN LEED® Lab™

Anthropology, Architecture, Architectural, Asian-American Studies, Engineering, Biology, Bioengineering, Business, Chemistry, Civil Engineering, Communications, Computer Science, Construction Management, Design, Earth Science Systems, Economics, English, Environmental Design, Environmental Engineering, Environmental Science, Environmental Studies, Facility Management, Geography,
Global Studies, Industrial Engineering, Interior Design, Landscape Architecture, Land Development, Management, Math, Material Science, Mechanical Engineering, Physics, Politics, Psychology, Spanish, Spatial Studies, Studio Art, Sustainability, Technology, Urban Planning

Working with the students has allowed us to gain an outside perspective that has proven beneficial to evaluate our plans and processes, to rethink some applications and to put our monitoring efforts into a working document that can be modified as needed and tracked to obtain measurable data.

Chris Vetick, Assistant Director of Grounds and Fleet
The Catholic University of America, U.S.

“The ability to work with students from varying disciplines, apply critical thinking skills and engage in a professional project that improves our university was very rewarding. [LEED Lab] has been my favorite course at NC State.”

Jacob Seyle, student at North Carolina State University, U.S.

Agnes Scott History

Located in Decatur, GA
Founded in 1889

Population

- *950 students*
- *350 faculty/staff*

Footprint

- *30 buildings – 1,000,000 sq ft.*
- *100 acre campus*
- *2,000 trees*

Grow Student Engagement

LEED Lab with Kennesaw State University

Largest number of environmental residents since beginning the program

All three theme houses connected to sustainable food

Interns for 2016-2017 & 2017-2018 from these majors: math (3), physics (2), chemistry (1), sociology (1)

Build Internal Support

Find Visible, Cost Neutral Project

Find the Right Fit for Implementation & Financing

- *Assess options*
- *Gather building data*
- *Find broad-based interest & support*

For Agnes Scott

- *Donor supported Green Revolving Fund*
- *Geothermal HVAC*
- *Investor solar arrays*

Grants to Green GRF Projects	Bid Cost	Projected Cost Savings	Payback & ROI
Lighting & Electrical	$475,000	$93,600	5.1
Water Usage	$155,000	$41,900	3.7
HVAC, Mechanical	$449,000	$77,500	5.8
Grants to Green Total	$1,079,000	$212,900/yr	5.1 years, 19.7%
All GRF Projects	$1,351,000	$298,300/yr	4.5 years, 22.0%

Future GRF Projects: 2017-2018 & beyond	Bid Cost	Projected Cost Savings	Payback: Number of years
Lighting & Electrical	$120,350	$19,518/yr	
Water Usage	$22,500	$5,241/yr	
HVAC, Mechanical	$310,000	$69,500/yr	
TOTAL future projects	$452,850	$94,259/yr	4.8
Previous total of all GRF Projects	$1,351,000	$298,300/yr	4.5

Campbell Hall Renovation

1950s Science Building

Converted to ½ residence hall & ½ academic space

LEED Gold certification

Geothermal HVAC

Solar Arrays

Five Completed Projects To Date

238 kw

Science Center	*20.7kw*
Facilities Roof	*100kw*
Parking Deck	*92.72kw*
Observatory Roof	*6kw*
Soccer/Tennis Court	*18.59kw*

Greenhouse Gas Inventory Climate Action Plan

Completing GHG for FY 2014-2015 and 2015-2016

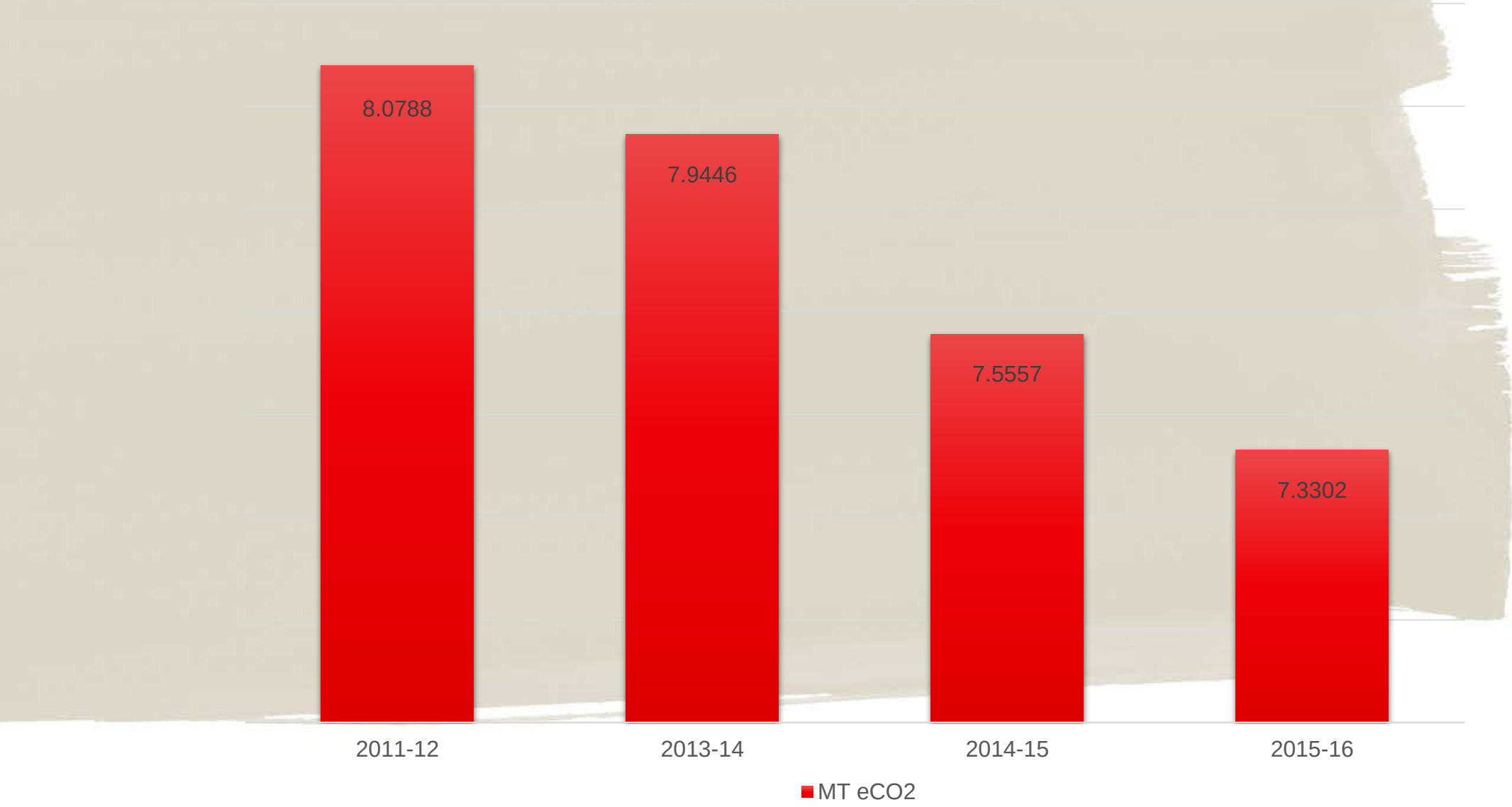
Training student intern to complete FY 2016-2017

Propose annual GHG with intern selected by faculty

Fellow updating Climate Action Plan

- Set new targets for efficiency upgrades & renewables
- Address offset options
- Confirm climate neutrality by 2037

Agnes Scott College – Annual Carbon Emissions Per Capita



ASHRAE 189.1
Standard for the Design of High-Performance Green Buildings

Achieving Efficiencies

- Solar Ready Design
- Iterative Energy Modeling process to guide design decisions
- Storm Water Management
- Native Landscaping
- Local/Reclaimed Materials
- Storage Space for students to store reusable goods

ASHRAE 189.1

High-Performance Green Building Design

Feature	Brief Description	Benefits to Campus
Integrative Design Process	Early collaboration among representatives of each stakeholder and participating consultant on the project.	Develop cost savings and elegant solutions through a collaborative process
Commissioning	Third Party review of building design and construction to ensure owner's project requirements are met. Testing of equipment prior to occupancy.	Achieve goals of the project and identify risks during construction. Deliver a functional building with fewer "day one" issues. Reduce contractor call backs. Provide a comfortable and safe environment for students and staff.
Water Efficiency	Use efficient irrigation and high performance plumbing fixtures	Conserve resources, save money, reduce maintenance costs
Energy Efficiency/ Renewables	Establishes best practices for lighting and HVAC efficiency. Sets standards for building envelope that go beyond 90.1	Conserve resources, save money, reduce maintenance costs, improve thermal comfort
Indoor Air Quality	Promotes human health by requiring use of air filtration and low-emitting paints, adhesives, and sealants	Promotes student and staff health and wellness. Improved indoor air quality is shown to improve cognitive performance (Harvard Study).

WELL Building Standard

The nutrition label for your building

Why WELL?

- *Americans spend approximately 90% of their time indoors*
- *WELL focusses solely on the people in the building*
- *Attracting and retaining quality student population*
- *Facilitating student productivity and achievement*
- *Promoting student health*

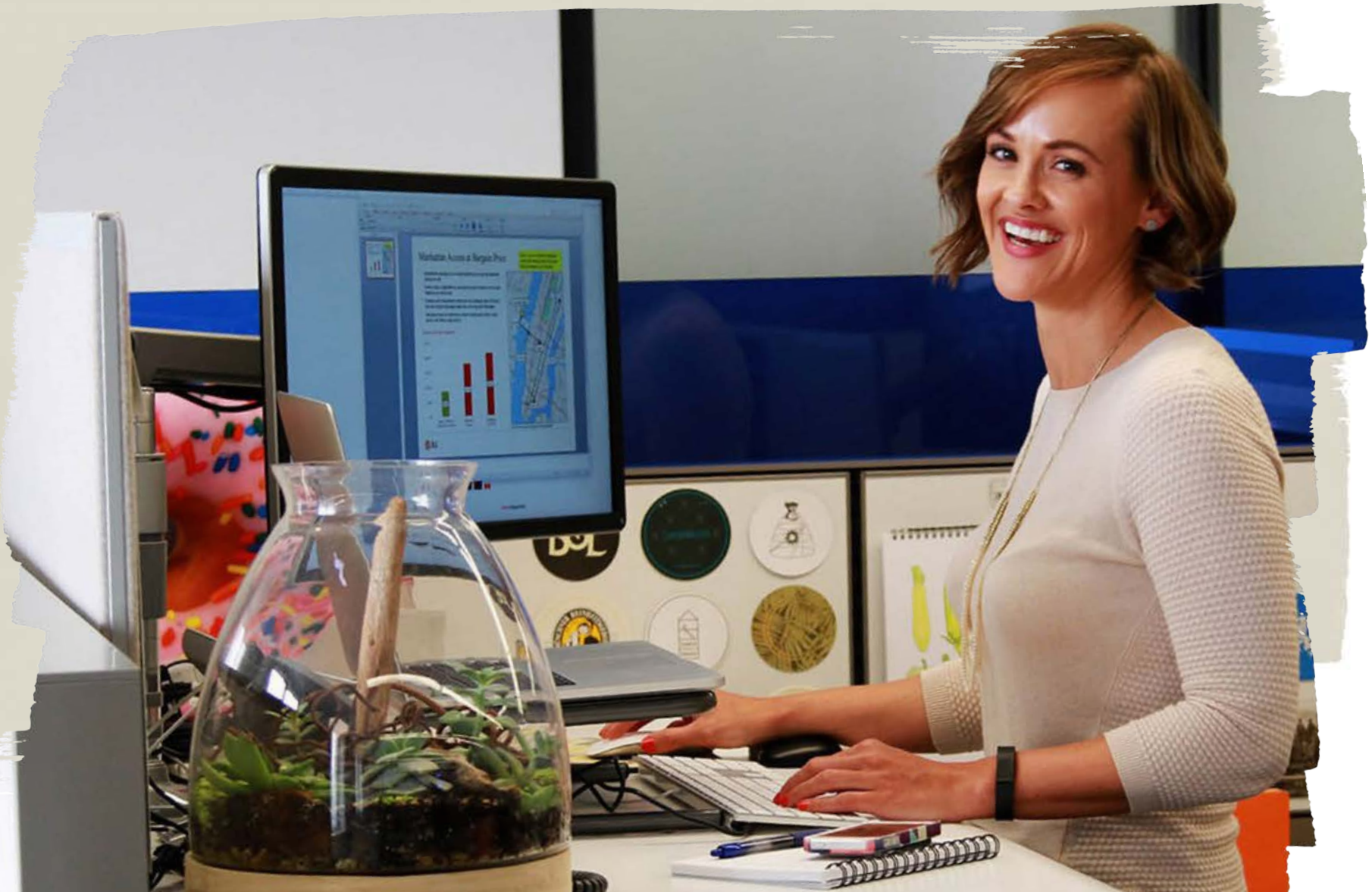
WELL Building Standard

Optimize the indoor environment for human health and productivity

Feature	Brief Description	Benefits to GTCC
Feature 54: Circadian Lighting Design	Select lighting systems that follow the same pattern as natural daylight	Enhance mood and productivity by choosing lighting systems that benefit student sleep patterns
Feature 88: Biophilia	Include natural elements/patterns in the design	Nurture the innate human-nature connection within the project
Feature 39: Processed Foods	Limit sugar, promote whole grain foods	Promote healthy weight and reduce risk of diabetes
Feature 84: Health and Wellness Awareness	Provide a health and wellness library	Promote healthy literacy
Feature 95: Stress and Addiction Treatment	Provide programs for students to receive mental health counseling and guidance	Provide students with tools to manage stress and anxiety

Circadian Lighting

WELL Building Standard



WELL Building Standard

WELL Building Standard

WELL Building Standard

WELL Building Standard

Getting Started…
High Performance, Wellness on your campus

- *Set your building up in ARC*
- *Start a Green Revolving Fund*
- *Incorporate ASHRAE 189.1 into your campus standards*
- *Pick 10 wellness features to implement on your next building*

Open Discussion

Question + Answers

Thank you