

How Campus Works

by Morgan White
NRES 285 iCAP Ambassadors
January 25, 2022



Facilities & Services

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

F&S Sustainability



Facilities & Services

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Facilities & Services (F&S) provides all physical plant, operational, and essential services for sustaining an environment that fosters the research, teaching, and public engagement activities at Illinois.

- Transportation Demand Management
- Resilient Grounds and Landscapes
- Zero Waste and Recycling
- Renewable Energy
- Energy and Water Conservation
- LEED Certifications
- Green Stormwater Infrastructure
- Sustainability Education and Behavior Change



Facilities & Services

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Inspiration · Innovation · Leadership · Perseverance · Agility

Topics

- **Campus Master Plan and the iCAP**
- **Energy Overview (campus and buildings)**
- **Facility Liaisons and F&S**
- **Building Service Workers**
- **Building Users (students, faculty, staff, and visitors)**
- **How It ALL Works together...**



But FIRST...



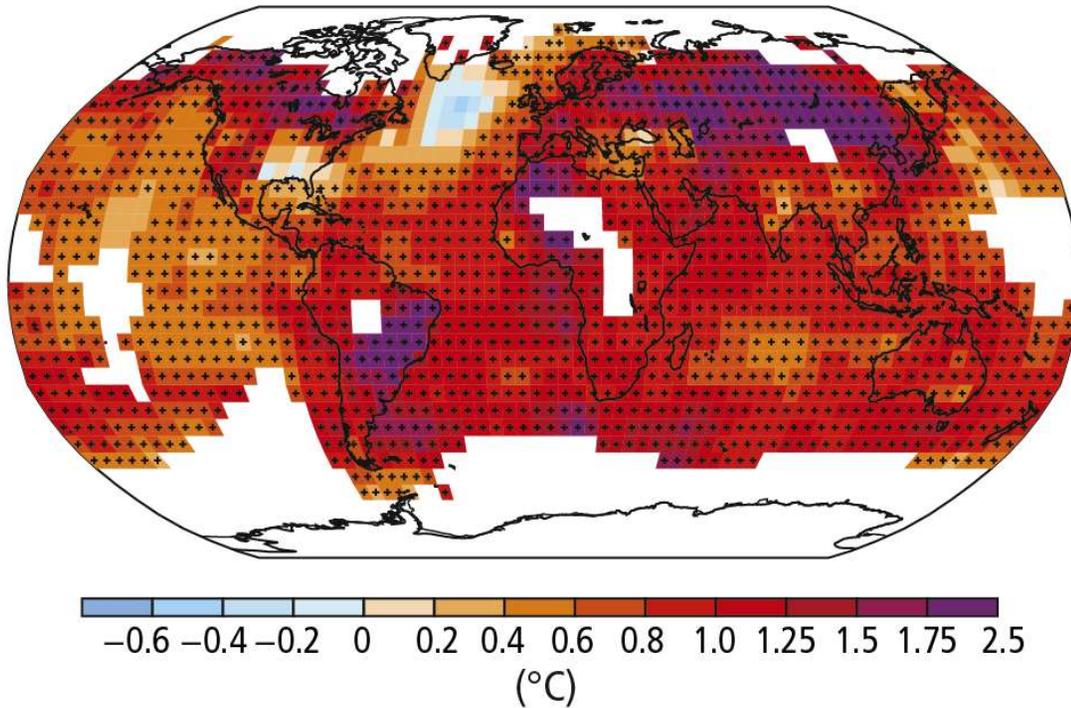
Facilities & Services
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Inspiration · Innovation · Leadership · Perseverance · Agility

Warming of the climate system is unequivocal.

Ocean and surface temp up 0.85 (0.65 to 1.06) °C, 1880 to 2012.

(b) Observed change in surface temperature
1901–2012



Is it really
that bad??

...yes



“Feeling hopeful does not mean to be optimistically naïve and ignore the tragedy humanity is facing.



Hope is the virtue of a heart that doesn't lock itself into darkness, that doesn't dwell on the past,



does not simply get by in the
present, but is able to see a
tomorrow.



Hope is the door that opens
onto the future.



Hope is a humble, hidden seed
of life that, with time, will
develop into a large tree.



It is like some invisible yeast
that allows the whole dough to
grow, that brings flavor to all
aspects of life.



And it can do so much, because a tiny flicker of light that feeds on hope is enough to shatter the shield of darkness.



A single individual is enough
for hope to exist, and that
individual can be you.



And then there will be another
"you," and another "you," and it
turns into an "us."



And so, does hope begin when
we have an "us?"



No.



Hope began with one "you."



When there is an "us," there
begins a revolution."

– Pope Francis *at* TED2017

Topics

- **Campus Master Plan and the iCAP**
- **Energy Overview (campus and buildings)**
- **Facility Liaisons and F&S**
- **Building Service Workers**
- **Building Users (students, faculty, staff, and visitors)**
- **How It ALL Works together...**



Campus Master Plan



iCAP Goal - Net Zero Growth

Balancing Future Growth and Renewal with iCAP Goals and No Net New Square Footage

Reduce

Reduce Supply - **remove obsolete structures**

Reduce Demand – **increase utilization, share resources**

Re-use

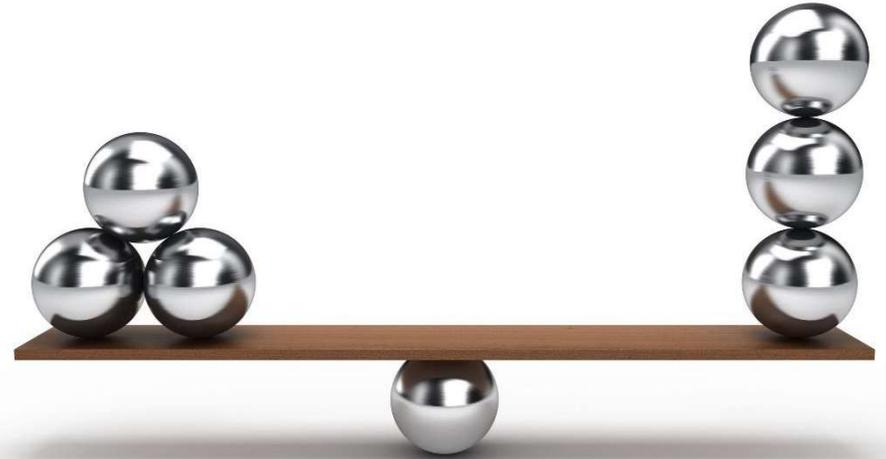
Renovate and right-size for greater flexibility and utilization

Recycle

Re-purpose facilities to create a better functional fit

Renew

Replacement space / new construction as state of the art facilities



How Did We Do?

- Within 1.5% of No Net New Square Foot Target over Next 10 Years



Facilities & Services
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Inspiration · Innovation · Leadership · Perseverance · Agility

Topics

- Campus Master Plan and the iCAP
- **Energy Overview (campus and buildings)**
- Facility Liaisons and F&S
- Building Service Workers
- Building Users (students, faculty, staff, and visitors)
- How It ALL Works together...



Energy Overview: Campus



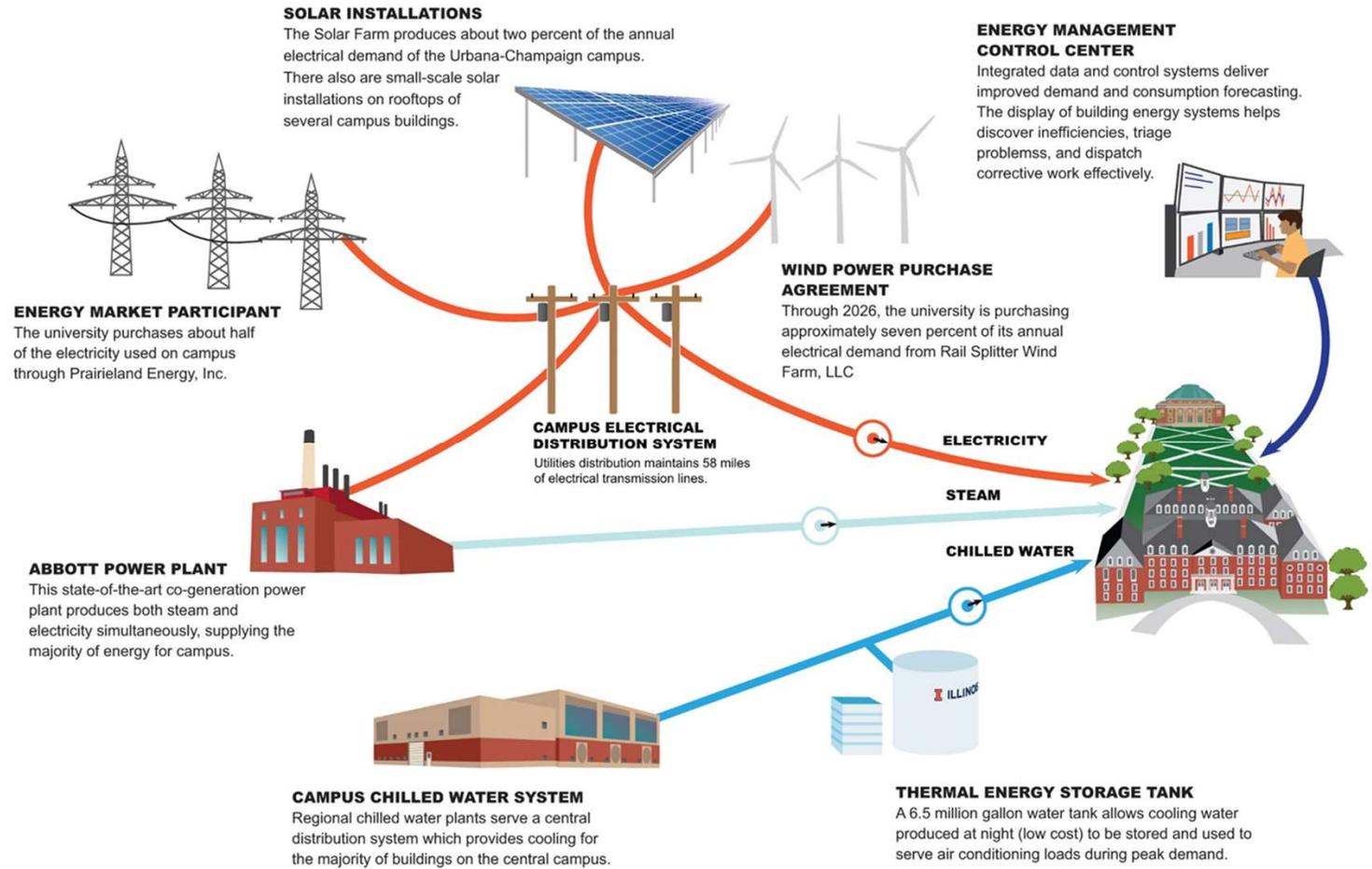
Energy Billing System

Electricity

Steam

Chilled Water

Natural Gas



Facilities & Services

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Inspiration · Innovation · Leadership · Perseverance · Agility

Building Energy

Energy Billing System

Electricity
Steam
Chilled Water
Natural Gas
(and Water Use)

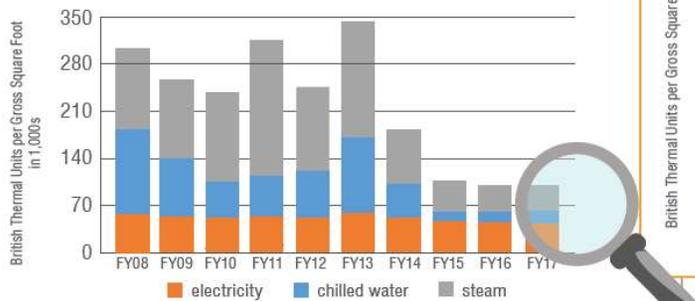
iCAP Portal

Solar Photovoltaics
Solar Thermal
Biomass
Geothermal
(and more)

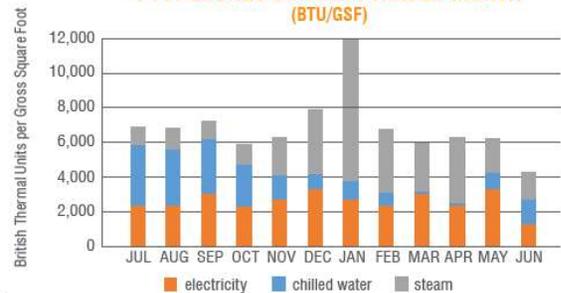
Admissions and Records

901 West Illinois Street
61801 Urbana, IL

ANNUAL ENERGY USE INTENSITY (BTU/GSF)



FY17 ENERGY CONSUMPTION BY MONTH (BTU/GSF)



ENERGY USE DECREASE TO DATE:

70%

vs 30% Reduction Goal

Projects

-  [Building-Level Energy Usage Report](#)
-  [Building Technologies Office](#)
-  [Building Technologies Office](#)
-  [Decision Frameworks for Multi-Hazard Resilient and Sustainable Buildings \(RSB\)](#)
-  [Energy Conservation Incentive Program \(ECIP\)](#)
-  [FY14 RCx](#)
-  [Infrastructure Security and Energy Restoration \(ISER\)](#)
-  [Intensive Longitudinal Analysis of Health Behaviors: Leveraging New Technologies to Understand Health Behaviors](#)
-  [Measure waste levels in dumpsters](#)
-  [Mobile Monitoring of Cognitive Change](#)
-  [Office of behavioral and social sciences research](#)
-  [Solid Waste Management Grants](#)
-  [Structural and Architectural Engineering and Materials \(SAEM\)](#)



Facilities & Services
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Inspiration · Innovation · Leadership ·



Energy

Expand all | Collapse all

- [-] Reduce Emissions from Energy Consumption Ongoing
 - [-] Energy Conservation Efforts Ongoing
 - [-] Changing Usage of Individuals In Progress
 - Energy Dashboard Project In Progress
 - Presentations with Energy Liaisons Completed
 - [-] Energy Conservation Incentive Program (ECIP)
 - ECIP Championship Challenge In Progress
 - Energy Use Policy Completed
 - [-] Building-Level Energy Usage Report In Progress
 - [-] Building Maintenance Department Energy Conservation Ongoing
 - Weatherization of Small Campus Buildings Ongoing
 - Update Building Maintenance Program Ongoing
 - Term Energy Savings Ongoing
 - AFMFA Energy Conservation Project Ongoing
 - Pipe Insulation Ongoing
 - [-] Steam System Maintenance Ongoing
 - Main Library Steam Reduction Ongoing
 - Plant Sciences Window Shades Ongoing
 - Freezer Challenge In Progress
 - Illini Lights Out Ongoing
 - Kill a Watt Monitors at Libraries Completed
 - [-] Student Competitions Ongoing
 - Eco-Olympics Ongoing
 - Green Your Dorm Proposed
 - Fume Hood Shut the Sash Campaign In Progress
 - [-] Building-Level Energy Efficiency Ongoing
 - Graduate Dance Space Completed
 - [-] Facility Standards Ongoing
 - Implement Energy Standards Ongoing
 - Convert Fume Hoods from CAV to VAV Ongoing
- Space Marketplace Proposed
- [+] LEED Certification Ongoing
- Reduce Active Fume Hoods Ongoing
- [-] Lighting Conservation Projects Ongoing
 - Art- East Annex Studio 1 Daylighting Ongoing
 - Illini Union Audit and Retrofits Ongoing
 - ISTC Lighting Retrofits Completed
 - Krannert Great Hall Lighting Retrofits Ongoing
 - [-] LED Campus Ongoing
 - LED Exit Signs Ongoing
 - [-] LED Exterior Lights Ongoing
 - 2012 Exterior Doorway Lighting Ongoing
 - LED Street Projects Ongoing
 - LED Bi-Level Lighting Pilot Ongoing
 - [-] LED Interior Lights Ongoing
 - ECE LED Lighting Completed
 - Illini Union 104 & 222 Lighting Ongoing
 - KCPA Lobby Lighting Ongoing
 - Krannert Art Museum Lighting Ongoing
 - LED Classroom Upgrade Ongoing
 - LED Projects 2012 Completed
 - SDRP Lighting In Progress
 - [-] T-12 to T-8 Lighting Retrofit Completed
 - Housing Lighting Retrofit Ongoing
 - ICECF 2008 Lighting Retrofit Ongoing
 - ICECF 2009 Lighting Retrofit Ongoing
 - Lighting Retrofit #5 Completed
 - TBH Lighting Project Completed
 - Vending Machine Sensors Ongoing
 - Occupancy and Daylight Sensor Ongoing
- [-] Centralized Energy Efficiency Efforts Ongoing
 - SAIC projects Completed
 - [-] Smart Grid for Campus Ongoing
 - DDC Command Center Ongoing
 - [+] Retrocommissioning (RCx) Ongoing
 - Variable Speed Drives Ongoing
 - Energy Recovery Wheels Ongoing
 - [-] Energy Performance Contracting / ESCO Ongoing
 - Vet Med ESCO Completed
 - Oak Street Chiller Plant ESCO Completed
 - Thermal Energy Storage (TES) Tank Completed
 - ECE Net-Zero Energy Building In Progress
 - [-] Computers and Technology Ongoing
 - Consolidate Servers with Virtualization Ongoing
 - Update and Enforce Campus Computer Policy Proposed
 - Chip PC Thin Client Ongoing
 - Reduce Energy Consumption from Computer Rooms Proposed
 - [-] Carbon-Neutral Energy for Campus Ongoing
 - [-] Energy Planning Document In Progress
 - [-] Utilities Master Plan for Energy Production and Distribution Completed
 - Stop Burning Coal at Abbott Power Plant Proposed
 - Explore Options for 100 Percent Clean Campus Energy In Progress
 - [-] Use Clean Power In Progress
 - [+] Solar Energy on Campus Ongoing
 - [+] Wind Energy on Campus Proposed
 - [+] Clean Power Agreements Off-Campus Ongoing
 - [-] Use Clean Thermal Energy In Progress
 - [+] Geothermal on Campus Ongoing
 - [+] Methane Capture on Campus Proposed
 - [+] Biomass use on Campus Ongoing
 - Solar Thermal at ARC Completed
 - [+] Carbon Capture In Progress

Topics

- Campus Master Plan and the iCAP
- Energy Overview (campus and buildings)
- **Facility Liaisons and F&S**
- Building Service Workers
- Building Users (students, faculty, staff, and visitors)
- How It ALL Works together...



Facility Liaisons and F&S

Facilities & Services Divisions

- Capital Programs
- Customer Relations and Communications
- Engineering & Construction Services
- Building Maintenance and Grounds
- Transportation and Building Services
- Safety and Compliance
- Shared Administrative Services
- Sustainability
- Utilities & Energy Services



Facilities & Services



Facilities & Services
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Inspiration · Innovation · Leadership · Perseverance · Agility

F&S – Interactions at Individual Buildings

- Waste Management & Recycling
- Building Services
- Building Maintenance
- Construction Services
- Engineering Services

Getting Work Done

- In-House Crafts & Trades = F&S craftspeople performing project work
- Contractor Services = Program utilizing the service of approved contractors from 28 divisions of work
- Job Order Contracting (JOC) = Fast Track procurement process for construction services

F&S Crafts & Trades

Painters	Laborer Electricians
Construction Laborers	Electricians
Steam Distribution	Sheet Metal Workers
Furniture Restorers	Pipefitters
Roofers	Elevator Mechanics
Finishers	Plumbers
Carpenters	Machinists
Brick Masons	Refrigeration Mechanics
Locksmiths	Water Station Operators
Mill Workers	Hydronics Crew
Operating Engineers	Insulators
Iron Workers	



Facility Liaisons

1. Facility Liaisons are usually located in or near their Building(s)
2. Sometimes there is more than one per facility – usually representing each department
3. The Facility Liaison could be an engineer, or a craftsperson, or an administrator, or an administrative aide, or a business manager, or...
4. Sometimes there is higher-level facility contact, like in the College of ACES (Doug Wolters)
5. Facility Liaisons are the best contacts for how their individual building works
6. Facility Liaisons are aware of the specific ins-and-outs for their facility – official decision makers, defacto procedures, building-level cultural expectations, typical user behavior
7. Facility Liaisons hopefully have a strong history for their building (but they may be new)



Topics

- Campus Master Plan and the iCAP
- Energy Overview (campus and buildings)
- Facility Liaisons and F&S
- **Building Service Workers**
- Building Users (students, faculty, staff, and visitors)
- How It ALL Works together...

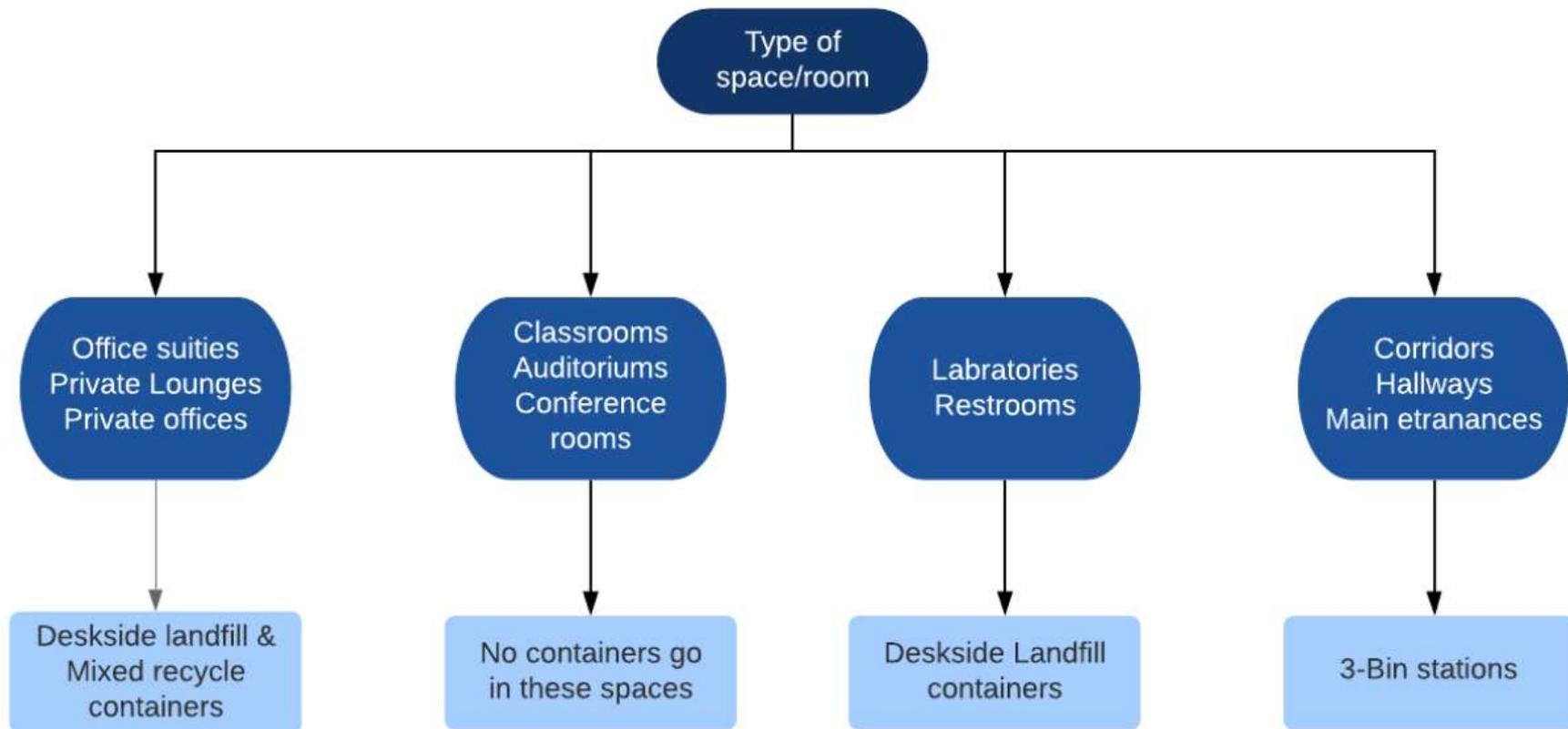


Building Service Workers

1. Cleaning restrooms and educational, research, private, and public areas
2. Emptying trash and recycling containers
3. Mopping floors
4. Restocking soap and towel dispensers
5. Erasing chalkboards and replenishing chalk
6. Dusting wood trim, window ledges, baseboards, radiators, and conduits
7. Cleaning university-installed and approved carpeting
8. Locking and unlocking doors
9. BSWs remove snow from steps and walkways leading to buildings.
10. They also perform special services such as emergency clean-ups in the event of flooding or plumbing leaks.
11. The movers in this group help move items including furniture, file cabinets, books, lab equipment, and supplies.



Recycling and Waste Bins



Topics

- Campus Master Plan and the iCAP
- Energy Overview (campus and buildings)
- Facility Liaisons and F&S
- Building Service Workers
- **Building Users (students, faculty, staff, and visitors)**
- How It ALL Works together...



Building Users



Topics

- Campus Master Plan and the iCAP
- Energy Overview (campus and buildings)
- Facility Liaisons and F&S
- Building Service Workers
- Building Users (students, faculty, staff, and visitors)
- **How It ALL Works together...**



This is a Cross-Sectoral Problem

Access to **capital**

Consumer demand: A change in **values**

A trained **workforce**



A market providing **product & services**

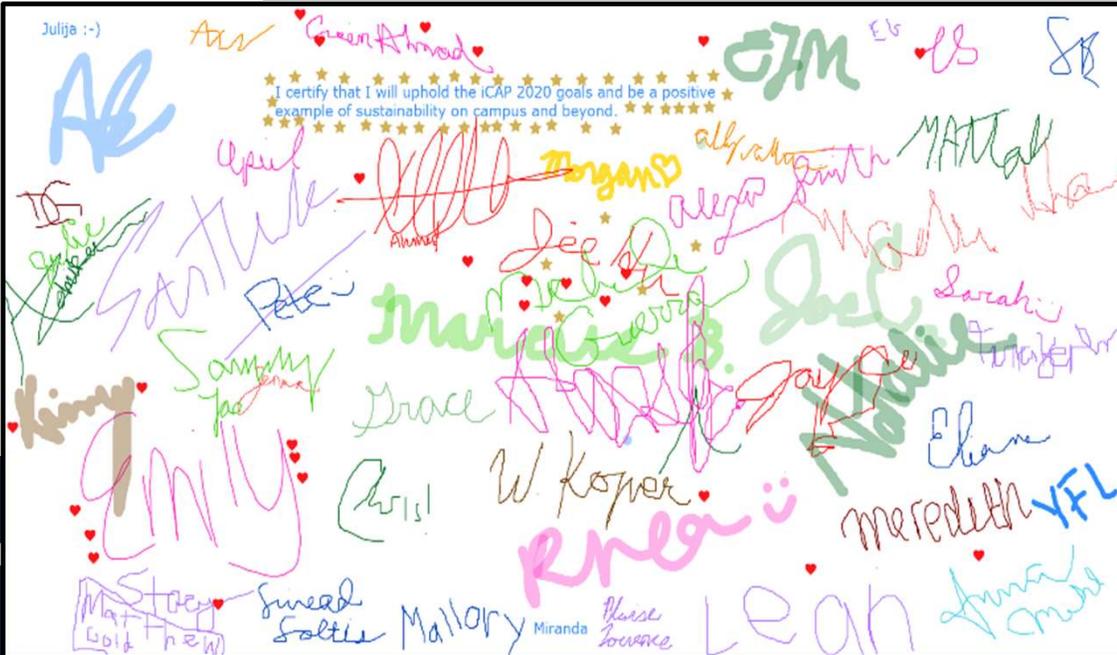
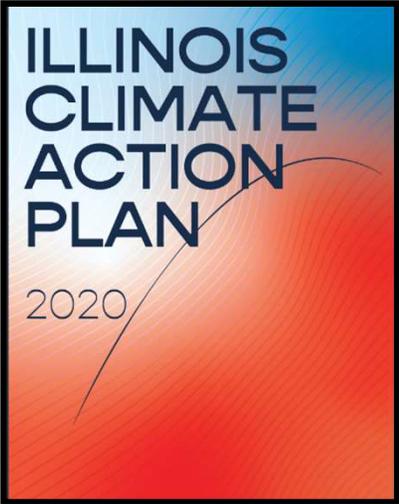
Supportive **policy** instruments



Facilities & Services
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Inspiration · Innovation · Leadership · Perseverance · Agility

It ALL Works together...
 when...
 We ALL WORK Together!



Facilities & Services
 UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Inspiratio

Morgan White
mbwhite@Illinois.edu



Facilities & Services
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Inspiration · Innovation · Leadership · Perseverance · Agility