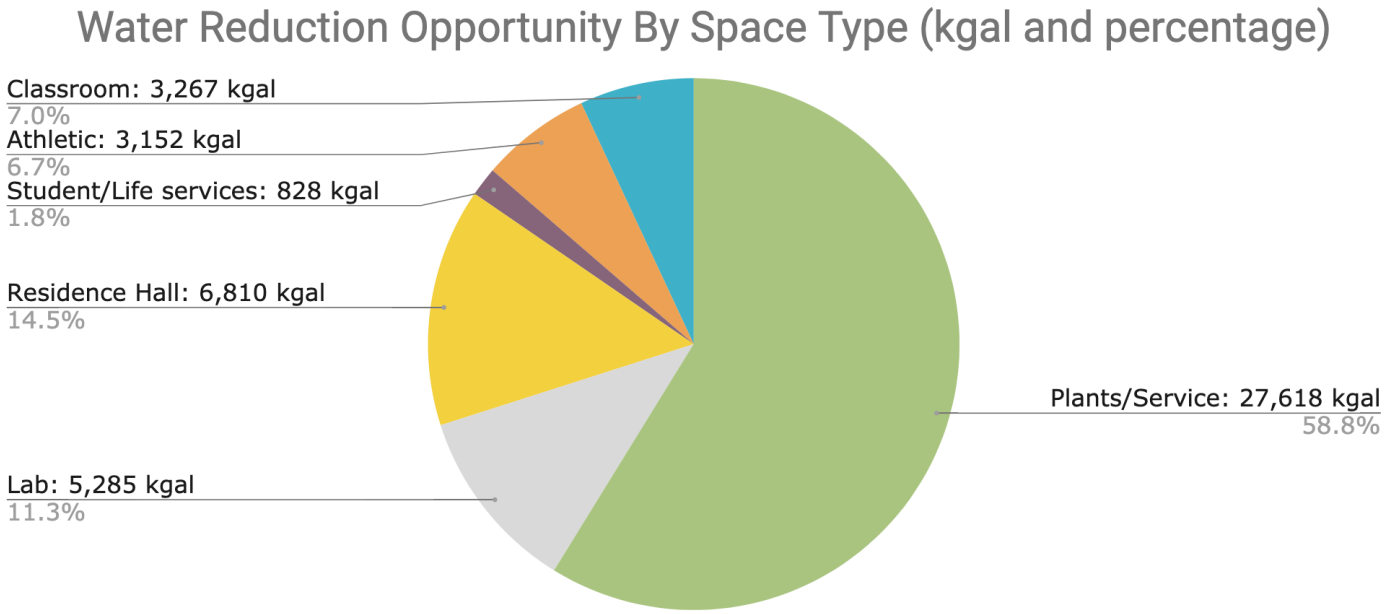
EFCAMPUS: WATER REDUCTION PLANNING

SPRING REVIEW MEETING

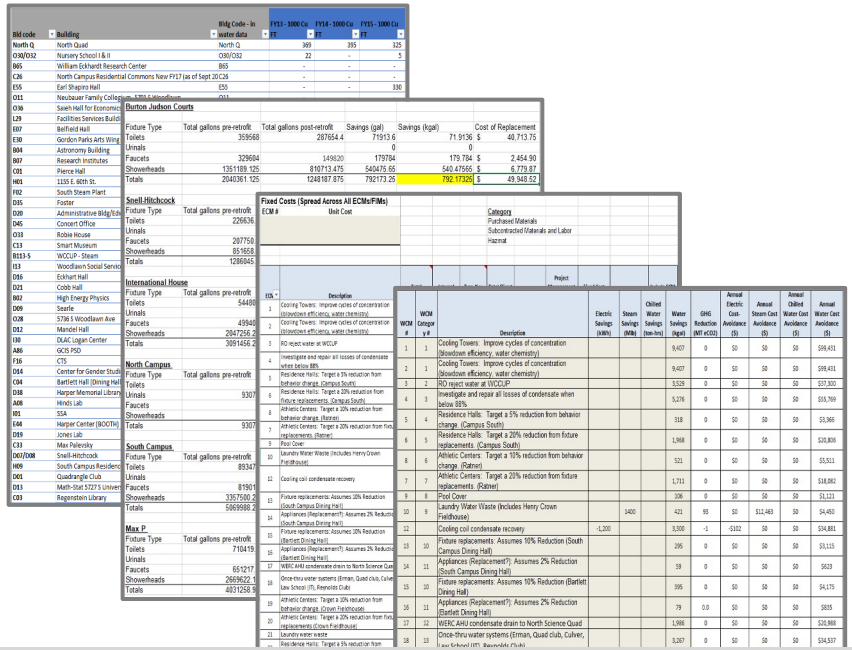
MAY 20, 2021

UCHICAGO AIMS TO REDUCE ITS WATER CONSUMPTION BY 15% BY 2025



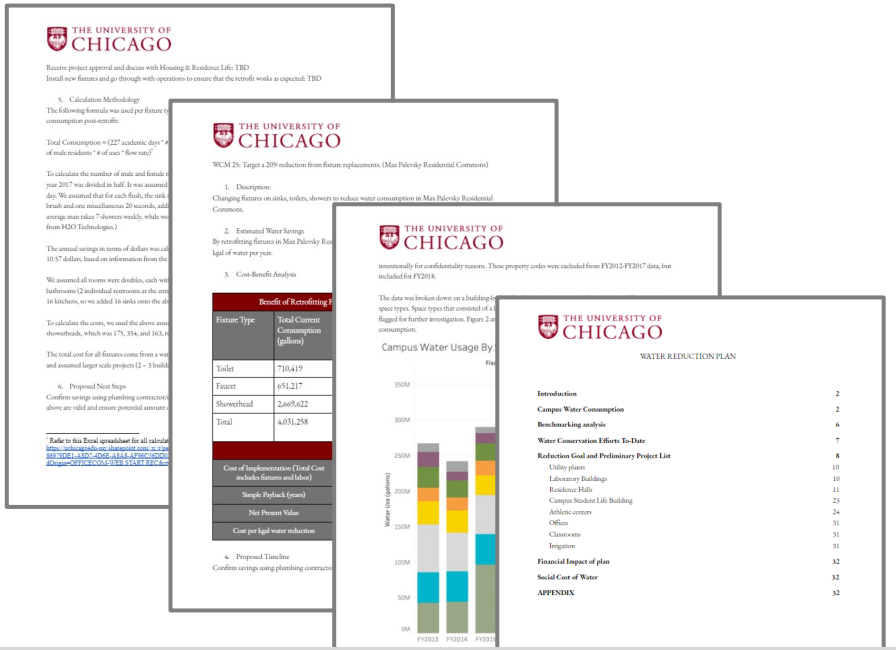
TO SUPPORT UCHICAGO'S WATER REDUCTION GOALS WE DRAFTED A FINANCIAL MODEL AND WATER REDUCTION PLAN

Financial Model



Model to assess important financial indicators of WCMs, including annual water cost avoidance, project cost, simple payback, net present value (NPV) and internal rate of return (IRR)

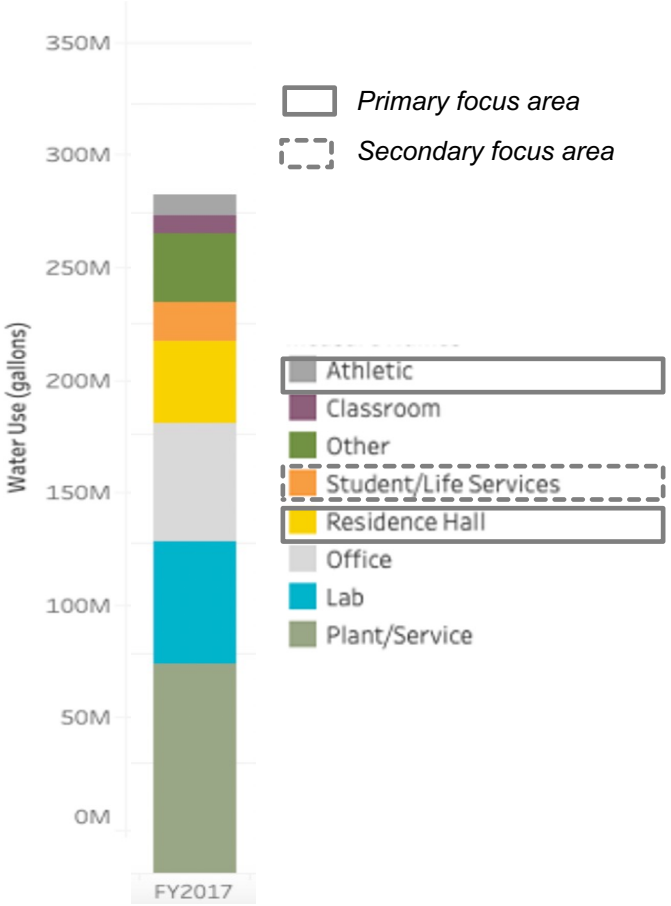
Water Reduction Plan



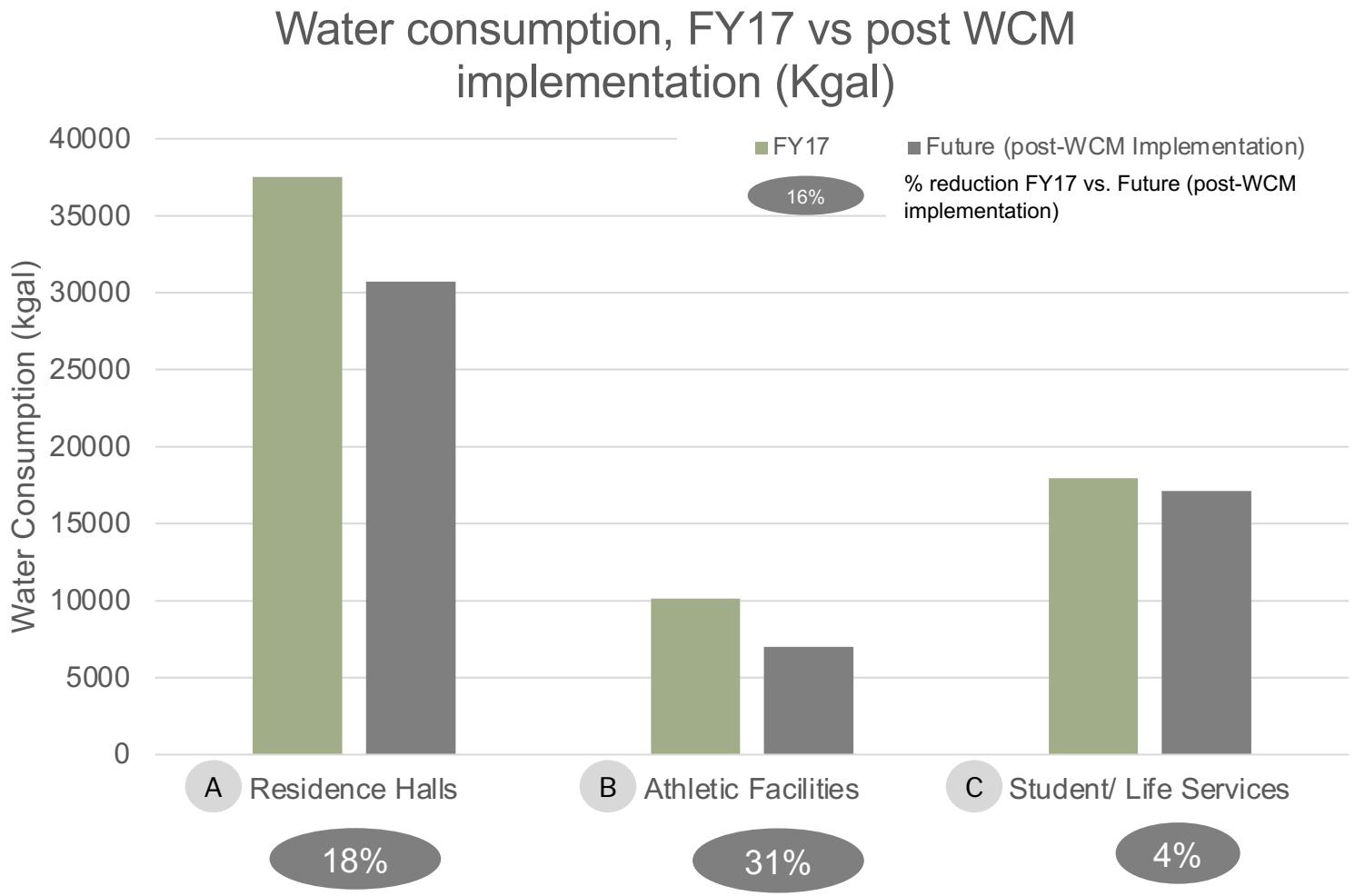
Plan detailing UChicago's water reduction plan, including details on campus water consumption, benchmarking analysis, project list by WCM, financial impact of plan, and social cost of water

WE TOOK A DEEP DIVE INTO THREE BUILDING TYPES

Campus water usage by building type



Water use following water conservation measure implementation



A RESIDENCE HALLS

- Implement annual behavioral change competitions in all residence halls to motivate students to conserve water through reduced shower/sink times
- Replace fixtures in all residence halls to updated efficiency standards

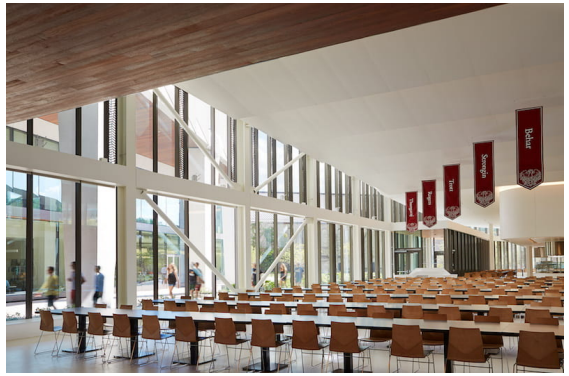
Water Conservation Measure	Water Savings / year (kgal)	Water Cost Savings / year ($)	Cost of Implementation ($)	Net Present Value ($)	Payback Period (years)
Behavioral Change Competitions	739	$7,825	$4,404	$77,360	.6
Fixture Replacements	6,072	$64,181	$376,593	$311,991	5.8

B ATHLETIC FACILITIES

- Replace fixtures in Ratner Athletics Center and Henry Crown Fieldhouse to updated efficiency standards
- Install shower timers in Ratner to attempt to shorten length of showers by gym users
- Install new equipment/systems to reduce water consumption by washers in Ratner and Crown

Water Conservation Measure	Water Savings / year (kgal)	Water Cost Savings / year ($)	Cost of Implementation ($)	Net Present Value ($)	Payback Period (years)
Fixture Replacements	2,466	$28,790	$72,110	$200,238	2.7
Behavioral Changes	383	$4,052	$710	$41,610	.2
Laundry Waste-Water Recover	303	$3,200	$167,723	$53,431	7.9

C STUDENT LIFE & SERVICES



- Replace fixtures in student bathrooms of the following dining halls: Bartlett Dining Hall (C04), Campus North Dining Hall (C26), Campus South Dining Hall (H10).

Water Conservation Measure[1]	Water Savings / year (kgal)	Water Cost Savings / year ($)	Cost of Implementation ($)	Net Present Value ($)	Payback Period (years)
Fixture Replacements* *Note: following are estimates based on student knowledge. Further analysis needs to be done in this area to confirm values.	828	$8,745	$35,196	$56,202	4.0

1. Note: This list of WCMs for Student Life & Services is not exhaustive; the team only focused on fixture replacements in this area

IMPACT OF PLAN

There are several benefits of implementing the water reduction plan, including:

- **Meeting water reduction goals** through the successful completion of WCMs
- **Improving UChicago's social impact**, as there are many hidden costs associated with water consumption
  - Includes non-carbon external effects of energy (primarily costs to health), carbon effects of energy (due to climate change), private costs (building, fueling, operating a plant)
- **Increasing student engagement** and **pro-environmental behavior**

Water Conservation Measure by Building Type	Water Savings / year (kgal)	Water Cost Savings / year ($ / year)	Cost of Implementation ($)	Net Present Value ($)	Social Cost Impact ($ / year)[1]
Residence Halls	6,810	$72,005	$380,997	$389,351	$175,692
Athletic Facilities	3,152	$33,318	$240,543	$295,279	$81,295
Student/Life Services[2]	828	$8,745	$35,196	$56,202	$21,337
Total[3]	**10,760**	**$114,068**	**$656,736**	**$740,832**	**$278,324**

1. Social cost of water was used using sum of the energy social cost as well as the utility cost of energy
2. This list of WCMs for Student Life & Services is not exhaustive; the team only focused on fixture replacements in this area
3. Total is reflective of the total of residence halls, athletic facilities, and student/life services only

TIMELINE

2021-2022 Academic Year

Summer 2021	Fall 2021	Winter 2022	Summer 2022

Prepare Residence hall behavioral change campaign

Prepare Athletics facilities behavioral change campaign

Implement behavioral change campaign for Athletic Facilities + Residence Halls

Winter/Spring Break: Fixture replacements for Athletic facilities

Fixture replacements in Residence Halls and Student/Life Services