
SJSU
SAN JOSÉ STATE
UNIVERSITY

Campus Highlights

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Sustainability in Facilities Development & Operations

Understanding sustainability in facilities requires an understanding of the scope and complexity of our university. SJSU is very similar to a small city. We have approximately 34,000 students, 5,000 employees, over six million square feet of buildings, roadways, walkways, a building department, a utility department, a power plant, our own water system, sewer system, electrical and plumbing system, police department, etc. SJSU is one of three CSU campuses with a large cogeneration facility, the Central Plant, producing electricity, steam, and chilled water for most of the campus. The Cogeneration Unit produces 6 MW of electricity and buys 2 MW from Pacific Gas and Electric (PG&E) to fulfill the daily campus electrical demand. SJSU operates its own Public Water System that delivers 115 million gallons of potable water per year to the campus.

SJSU is the oldest CSU campus, with our oldest building, the Associated Students House built in 1904. The new Student Union, our newest expansion, was completed in 2014. SJSU is comprised of four sites totaling more than 6 million gross square feet with the main campus centrally located in one of the United States' most important urban and economic centers.

- Main Campus 88.5 Acres
- South Campus 62 Acres
- Aviation facility 5 Acres
- Moss Landing facility 21 acres

Having an appreciation of the physical and operational complexity of the university is helpful in order to understand and gauge progress in our sustainability efforts. We use key performance indicators – useful variables that are linked to sustainable practices and outcomes that can be measured by a consistent methodology over time. Over time, campus changes, such as building more on-campus housing, upgrading the utility distribution systems, lighting system conversions, and even weather and the economy can significantly impact natural resource demand. Therefore, analyzing trends in indicators and understanding the interdependency with university efforts is more meaningful than a snapshot at one point in time.

In 2013, SJSU adopted several indicators that we monitor in order to assess the effectiveness of our sustainabil7(s)-2.4(s).5(n)9-1.8(t)-rntffect5.5(d)-0.6(e)-(m)1.2(o)d[u)-0.6ououmabnh

Energy Efficiency

The University of California (UC), California State University (CSU), and California's four large investor-owned utilities (PG&E, SDG&E, SCE and SoCalGas) established an Energy Efficiency Partnership (CSU/IOU) in 2004 in order to provide a sustainable and comprehensive energy management program for the 33 UC and CSU campuses. SJSU has utilized this program for funding energy conservation projects such as building systems and central plant retrofits, lighting retrofits, and MBCx projects. To date SJSU has received $4.5 million in incentive funding towards these projects.

Campus Energy Efficiency A chievements

Monitoring Based Commissioning (MBCx) is a process that involves installing meters and other monitors to see where energy is being used, to make systems work as efficiently as possible, and to provide tools and training on building systems to increase energy efficiency and savings.

MBCx was completed for: Martin Luther King Library; Chiller Plant;

Upcoming Energy Efficiency Projects

The campus exterior lighting project is underway to replace all of the exterior lighting on campus with energy efficient LED lighting. The estimated CSU/IOU incentive payment is $200,000 based on an estimated annual energy savings of $70,000. Over a 15 year lifespan, this lighting project will save over $1 million.

The Joe West building will undergo a boiler and domestic hot water retrofit. The estimated annual energy savings total 82,000 kWh and 64,000 therms saving almost $2 million over its lifetime.

MBCx projects scheduled for next year include Central Plant Chiller and Clark Hall.

Ongoing Programs

Demand Side Management has been implemented at the Central Plant since 2003 when the Central Plant installed a thermal energy storage tank that generates ice at night when electrical ratese1.7(haTi6)1.6(wD)-3etr20i

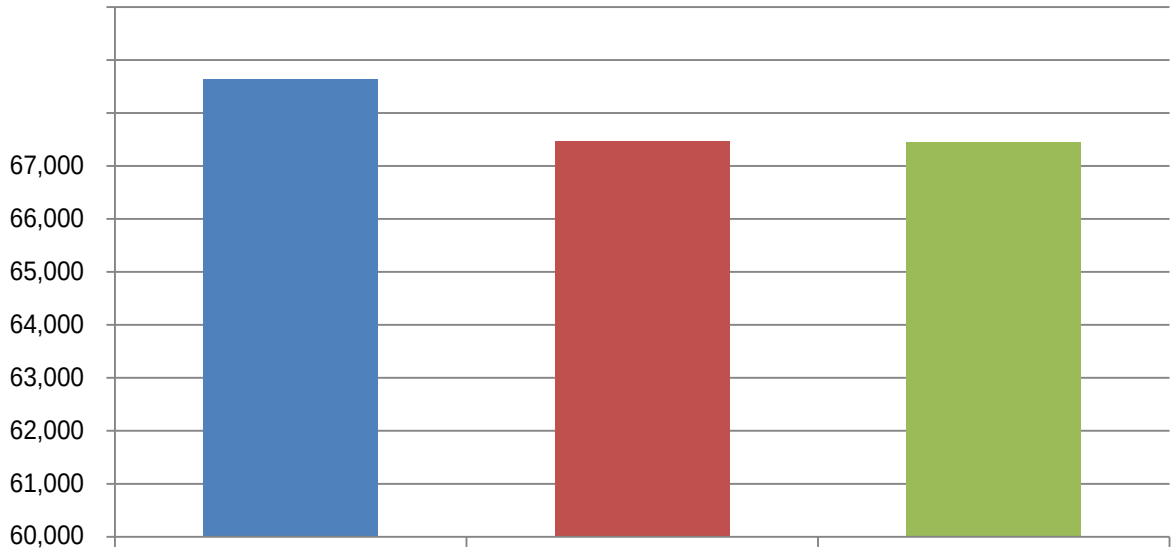

Figure1. Energy Intensity BTU per gross square footage

Figure2. Utility Cost per gross square footage

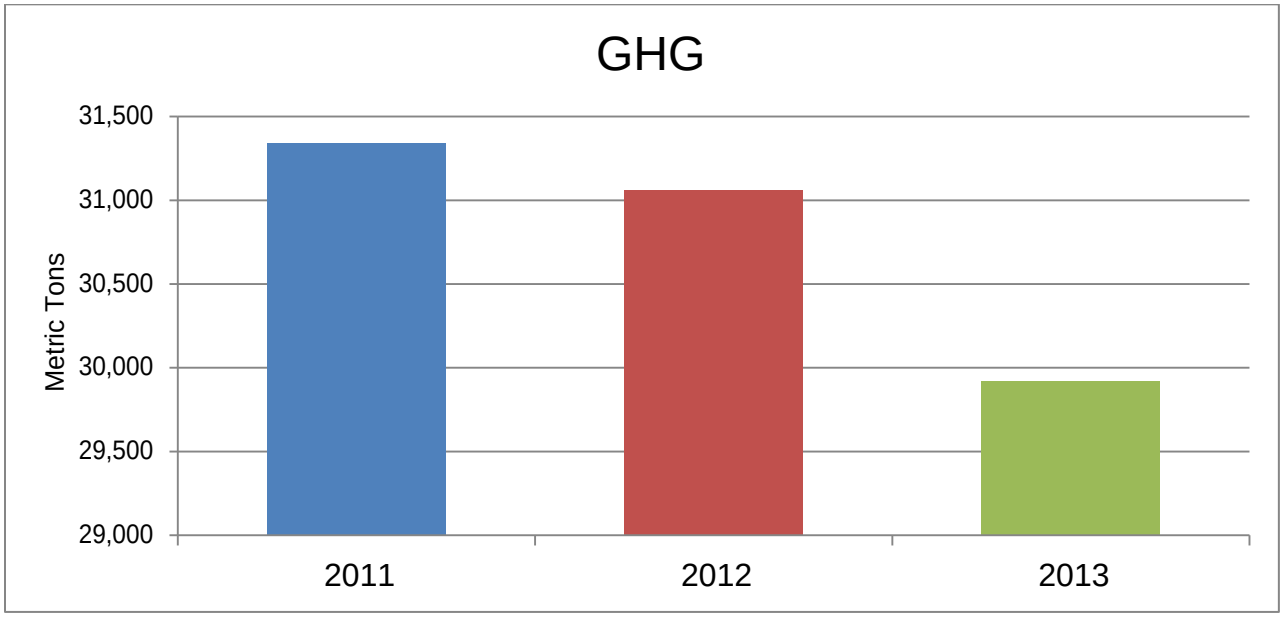

Figure3. Greenhouse Gas Emissions

Future Energy Supply Strategy

The Utility Master Plan for SJSU specifies the approach to continue providing the campus with sustainable and reliable energy. Strategies include considering conversion of all buildings to 12kV as well as renewable energy sources such as solar panels (PV), fuel cells, and other low/no-fossil fuel technologies. New renewable energy sources are continually being reviewed and we continue to implement MBCx of campus buildings.

Green Building Design

The CSU has committed itself to sustainable building practices by establishing CSU Executive Order 987 (EO987).

All new buildings at SJSU are designed and built in accordance with LEED (Leadership in Energy and Environmental Design), a program administered by the United States Green Building Council (USGBC).
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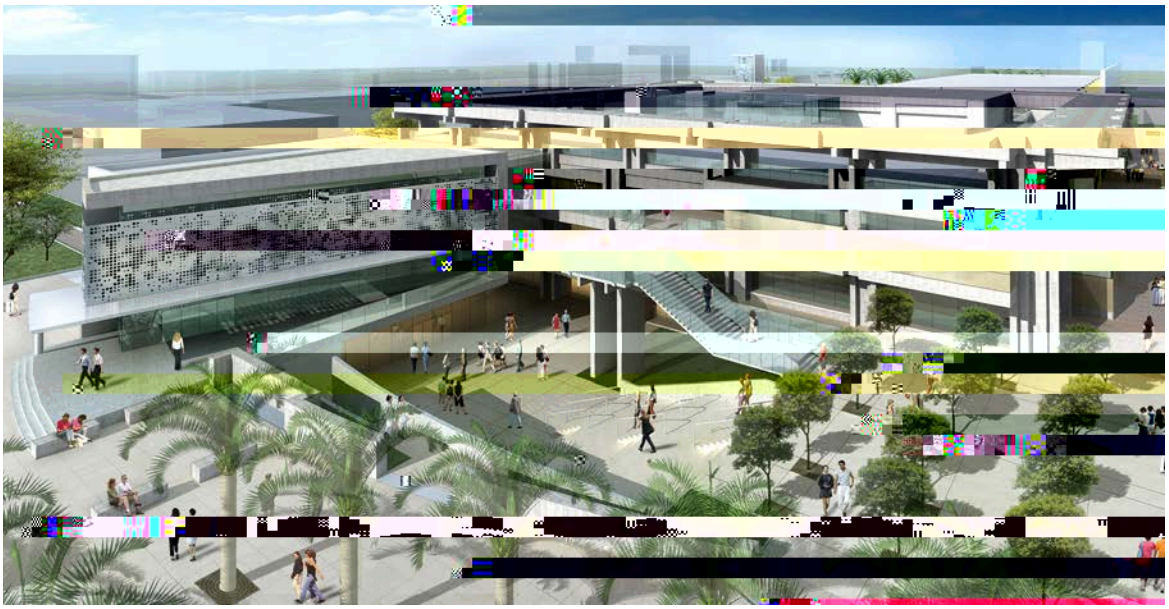

Figure5. Student Union East Expansion

Student Health and Counseling Building

The Student Health and Counseling Building is scheduled for completion in spring 2015. The Student Health and Counseling Building is designed to LEED Silver standards. Its mechanical design is 20% more efficient than Title 24 requires. A cool roof and water efficient fixtures have been installed. The building will be plumbed for recycled water in toilets similar to the Student Union.

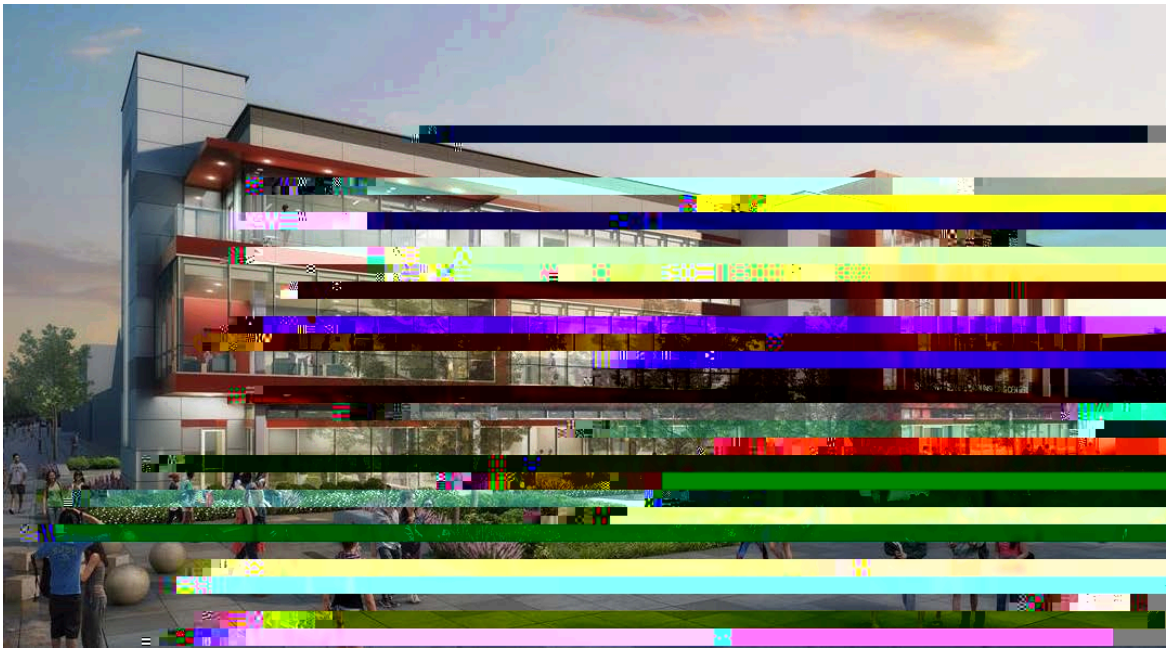

Figure6. Student Health and Counseling Building

Spartan Complex

Spartan Complex (SPX) is estimated to be completed by fall 2015 and designed to LEED Silver standards.

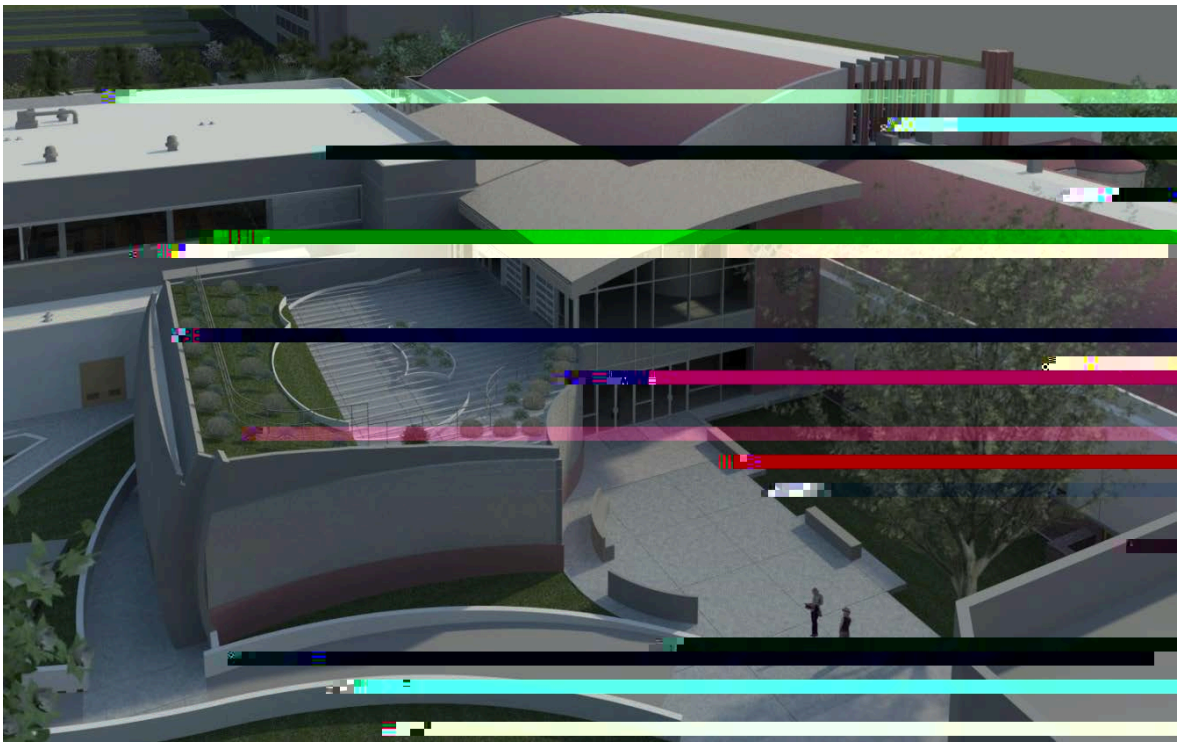

Figure7. Spartan Complex Renovation and Expansion

Campus Village 2

Campus Village 2 is estimated to be completed in fall 2016 and designed to LEED Silver standards.

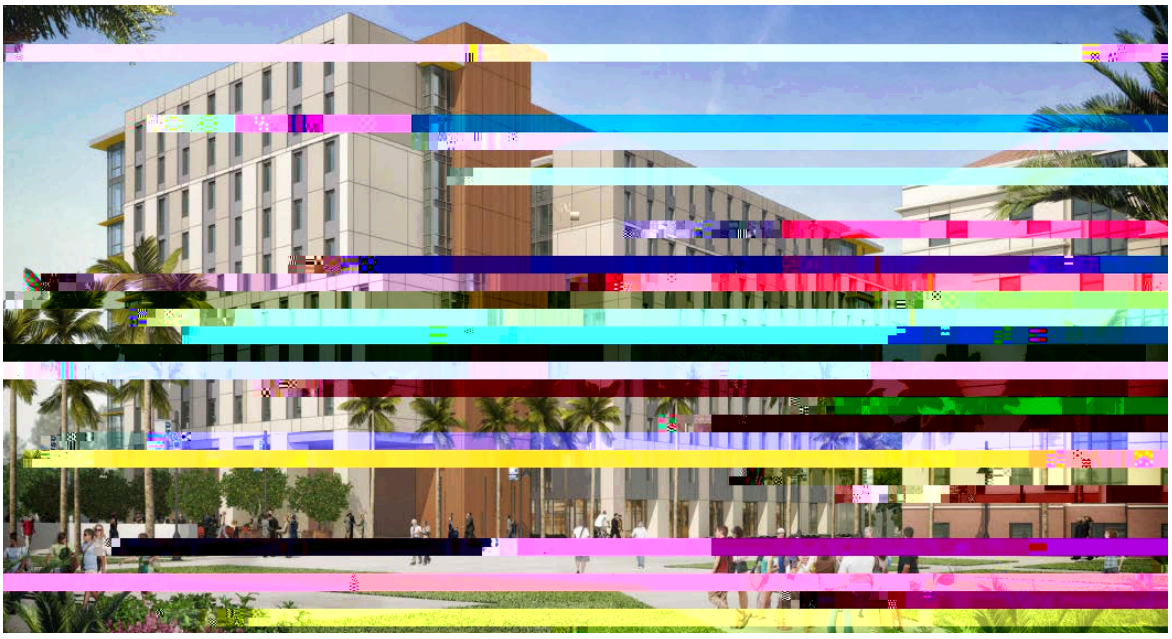

Figure8. Campus Village 2

Recreation and Aquatic Center

The Recreation and Aquatics Center is estimated to be completed in 2018 and designed to LEED silver.

Figure9. Recreation and Aquatic Center

SJSU has implemented an energy efficiency design strategy for all new construction. Buildings will be designed and built with new, more efficient variable air volume HVAC systems. Staged systems and CO_2 controls are installed to respond to varying occupancy. Buildings will have energy efficient fluorescent and LED lighting and controls. Building management systems and metering helps to monitor and improve performance. Options for solar photovoltaic or other emerging technologies are evaluated for each new project.

Other planning and design strategies that help with energy efficiency include light color building facades and “cool” roofs that help deflect more sunlight to reduce cooling demand. Canopies, custom vertical screens, and high performance low-e glazing are used to shade windows to reduce cooling demand. Better-than-code wall and roof insulation are also used to reduce heating and cooling demands.

SJSU has also implemented a water and material efficiency strategy for new construction. The use of drought resistant, native plants and recycled water irrigation are used for all new landscape projects. Low-water use fixtures are used and piping for municipal recycled water for non-potable uses is installed.

Sustainable building material

Figure10. Total Campus Water Usage

Water Conservation Strategy

Long term strategies to conserve potable water include converting the steam plant make up water from potable water to recycled water. This will save an estimated 15 million gallons of water a year. We will be installing water meters at individual buildings and landscaped areas. This helps identify heavy water consumption and opportunities for conservation. We installed dual plumbing for toilet flushing in all new construction

Waste Diversion and Recycling

Ongoing waste reduction programs have continued to be successful through FY 13/14. The surplus furniture reuse program remains active as not only a method of waste diversion, but cost savings for campus departments looking for furniture.

We continue to recycle paper, cardboard, cans & bottles, metal, wood, toner cartridges, electronics, batteries, and appliances. Yard waste and food waste generated at SJSU is composted at an off-site facility. Our efforts have achieved a waste diversion rate of 83% for 2013. (Baseline 2006 diversion rate was 59%)

Green Procurement Programs

Custodial supplies purchased by FD&O adhere to EPA guidelines and Green Seal Certified where possible. Bathroom tissue contains 95% total recycled content and paper towels are 100% total recycled content. The SJSU procurement department published Environmentally Preferable Purchasing (EPP) guidelines to encourage all university employees to purchase more environmentally responsible supplies or reusing available material.

FD&O Vehicles

FD&O vehicles remain compliant with Air Quality requirements. The 108 electric maintenance carts, 8 E-85 fleet vehicles are capable of using 85% ethanol fuel, and the exhaust systems of various mowers, shuttle buses and forklifts have been retrofitted with particulate filters.

Spartan Shops

SJSUTransportation Solutions

Mission

The Associated Students Transportation Solutions (TS) is dedicated to serve the commute needs of students and employees at SJSU. Its region-wide operation emphasizes alternatives to driving alone. These alternatives are primarily made of carpools and vanpools, public and private transit including buses and shuttles, local and regional rail, and non-motorized travel, including bicycling and walking.

By increasing the usage of alternative transportation, TS fulfill the goals of reducing single occupant vehicle trips to SJSU and Downtown San Jose area, enhance students' educational experience and improve air quality. TS offers incentives for using alternative transportation, as well as providing commute information and services to the SJSU community.

TS's mission is to alleviate automobile traffic to SJSU and reduce its impact on the University's parking facilities. The core strategies for accomplishing the TS mission are:

- Program development and implementation
- Communication, marketing, and outreach
- Corridor - mobility mapping and analysis
- Program evaluation and measurement
- Linking TDM to broader initiatives and service improvements
- Funding opportunities and grants

University Transit Pass (Eco Pass) and Other Alternatives

Since 1994, the Associated Students, in contract with Santa Clara Valley Transportation Authority (VTA), provides a deeply discounted transit program for the entire student and employee populations. The combination of Eco Pass sticker affixed to the SJSU ID provides a pass to unlimited rides on all VTA buses and light rail lines 24/7, 365 days a year. TS also offers discounts on for the Altamont Corridor Express (ACE), Highway 17 Express, and Amtrak.

TS utilizes 511.org, the Metropolitan Transportation Commission's Regional Rideshare program. Every semester, the TS Commute Coordinators register many students and employees from Santa Clara, San Mateo, San Francisco, Alameda, Contra Costa, Santa Cruz, and Monterey counties into the 511.org rideshare matching service to find their carpool partners. In 2013, 6.8% of SJSU's population (2,363) carpooled to campus. The University Police Department (UPD) operates a vanpool system for SJSU employees which provides quick and affordable transportation from Modesto, Manteca, Tracy, Livermore and Pleasanton.

TS operates six bicycle enclosures located throughout campus. The total storage capacity for all the six cages is 417, at any given time. Currently 1,300 students and employees have signed out access keys. Bicycling to SJSU has been on the rise for some time as the following chart indicates. In 2013, 3.8% of the population or about 1,320 biked to campus, a 0.1% drop from 2012 that may be attributed to usage

of Bay Area Bike

Figure12. %SJSU student population using alternative transportation

Figure 13 shows that solo-

Conclusion

San Jose State University, Facilities Development & Operations, the Campus Sustainability Board, and the campus community as a whole, embraces the philosophy and goals of a sustainable environment for the benefit of future generations. The campus is soundly committed to the continued improvement in the sustainability of the physical campus. Our guiding principles include integrating sustainability practices in visible and accessi