



**MONTCLAIR STATE
UNIVERSITY**

**2022 Facilities Sustainability Plan
APRIL 2022**

LETTER FROM LEADERSHIP



It is exciting for University Facilities to be at the forefront of campus efforts to integrate sustainability values into building practices and programs at Montclair State University.

Since its founding in 1908, Montclair State University has remained committed to serving the educational needs of New Jersey as a center for the creation of new knowledge and the development of innovative applications of existing knowledge. The University also seeks to play a role beyond the campus community through positive contributions to issues of importance to society. Sustainability is a central tenet integrated into all parts of our daily lives, and along with its environmental aspects, we must consider its social and economic impacts. Our campus can and should be at the forefront of generating awareness of the required actions to ensure a sustainable future for the residents of our state.

While University Facilities is primarily charged with supporting Montclair State's mission through the design, construction, operation, and maintenance of the University's physical infrastructure, our role has a much more profound impact on this campus. Unlike most other divisions, University Facilities has the opportunity to have the most considerable effect on the development of sustainability learning, living, and working activities at this institution by providing professional expertise, leadership, and a behavior model for the greater campus community to follow.

The University Facilities Sustainability Plan represents our commitment to upgrade and exceed our past practices to ensure the viability of our environment and our institution for future generations. It allows the division to catalog our previous successes and establish a formal and transparent course toward a more sustainable future. We see this as the beginning of a process that will allow University Facilities to improve our internal operation, embrace the long-term values of sustainability, and extend our programming in this area to the entire campus through a more significant engagement effort. Through our larger outreach, a more sustainable campus will increase the value proposition of attending Montclair State for current and future students.

The plan is structured around six areas of impact: Green Building Infrastructure, Green Building Operations, Engagement, Transportation and Parking, Grounds and Landscape, and Procurement. I hope that upon its review, this document will inspire you to incorporate sustainability into your actions or suggest opportunities for sustainable facilities advancement at Montclair State. To learn more about our current sustainability initiatives, please visit our website at <https://www.montclair.edu/facilities/sustainability>.

A handwritten signature in black ink that reads "Shawn Connolly". The signature is fluid and cursive, with the first name being more prominent.

SHAWN CONNOLLY
VICE PRESIDENT
UNIVERSITY FACILITIES
MONTCLAIR STATE UNIVERSITY

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EXECUTIVE SUMMARY

University Facilities, in collaboration with [Brightworks Sustainability](#) and [Ayers Saint Gross](#), hosted engagement sessions with six focus groups during Summer and Fall 2021. In these sessions, University Facilities stakeholders as well as a number of participants from elsewhere in the university defined why work in their respective topic areas should set sustainability goals. Common themes emerged including shared interest in:

- Empowering collective action;
- Supporting human health and well-being;
- Preserving natural resources;
- Demonstrating leadership as an anchor institution; and,
- Responsibly stewarding university resources.

These focus groups collaborated to develop goals, metrics, and actions that will support the next phase of sustainability work at Montclair State University while driving toward an initial AASHE STARS submission for the institution. The Facilities Sustainability Plan is organized into six chapters, each of which aligns to a set of departments within University Facilities that is accountable to achieving progress in the goals listed within that chapter. While some of the action items identified through engagement are unique to University Facilities, others will require collaboration across campus.

Each content chapter of the Facilities Sustainability Plan includes a verbal description of the existing conditions within that topic area as well as infographics of relevant existing datasets and celebration stories of initiatives Montclair State University has already completed. Each topic area includes a guiding principle that will serve as an enduring touchstone as the University's sustainability goals and actions continue to evolve. The guiding sustainability principles for University Facilities at

Montclair State University indicate that University Facilities strives to:

- Develop and maintain high-quality, resource efficient campus buildings.
- Preserve planetary and human health by operating high-performance buildings.
- Support a unified approach to campus sustainability outreach and education.
- Support low-carbon campus mobility.
- Develop and maintain high-quality, resource efficient campus landscapes.
- Leverage the University's purchasing power to accelerate the availability of sustainable goods in the marketplace.

A peer benchmarking exercise conducted at the beginning of the project evaluated Montclair State University's existing sustainability work in context with its sister institutions and strategic peers. The effort revealed high-level take-aways including:

Peer institutions who do not have AASHE STARS reports communicate few connections between sustainable campus operations and curriculum and research endeavors.

Nearly all strategic peers maintain sustainability-specific websites and social media accounts across a variety of platforms. Approximately half of sister institutions have sustainability websites and social media accounts.

The gross quantity of greenhouse gas emissions reported by peer institutions varies widely. Publicly reporting greenhouse gas emissions is one way in which peer institutions demonstrate their leadership – strategic peers have longer, more consistent reporting records than sister institutions. Most strategic peers have sustainability and/or climate action plans while only one sister institution, The College of New Jersey, has an easy-to-find climate action plan.

The Facilities Sustainability Plan offers a comprehensive understanding of how University Facilities at Montclair State University has successfully supported sustainability work to date and how that work will continue into the future. The work also hopes to inspire greater university-wide collaboration on sustainability efforts to realize

an enhanced reputation; stronger competitive advantage in student, faculty, and staff recruitment as well as innovation and research endeavors; improved efficiency and operational cost savings; and improved management processes, transparency, and accountability.

MONTCLAIR STATE UNIVERSITY'S FACILITIES SUSTAINABILITY GOALS

GREEN BUILDING INFRASTRUCTURE

01-1: Increase metering to support total energy and water accountability.

01-2: Reduce potable water consumption and annual potable water costs.

01-3: Reduce campus-wide energy use intensity and annual energy costs.

01-4: Reduce Scope 1 greenhouse gas emissions.

01-5: Develop and implement a comprehensive strategy to neutralize Scope 2 emissions.

01-6: Maximize construction waste diversion.

GREEN BUILDING OPERATIONS

02-1: Reduce waste generation.

02-2: Increase waste diversion from landfill.

02-3: Reduce the environmental impact of cleaning products and janitorial paper products.

ENGAGEMENT

03-1: Increase awareness of campus sustainability within University Facilities personnel.

03-2: Build partnerships to increase student, faculty, and staff awareness of campus sustainability.

TRANSPORTATION AND PARKING

04-1: Evolve transportation and parking policies to better support sustainability.

04-2: Reduce Scope 3 emissions generated by commuter reliance on single occupancy vehicles.

04-3: Reduce Scope 1 emissions generated by campus fleet vehicles.

GROUNDS AND LANDSCAPE

05-1: Increase use of automated systems to reduce irrigation's demand for potable water.

05-2: Electrify grounds and landscape maintenance equipment.

PROCUREMENT

06-1: Reduce the environmental impact of campus building materials.

UNIVERSITY FACILITIES SUSTAINABILITY PLAN BY THE NUMBERS

6

topics addressed

17

actionable, relevant, and time-bound goals

27

reporting metrics

96

actions to advance sustainability

PROCESS

Montclair State University began the development of the Facilities Sustainability Plan in March 2020, concurrent with the arrival of the COVID-19 pandemic in the United States. The planning team chosen by the University as collaborators in this effort, [Brightworks Sustainability](#) and [Ayers Saint Gross](#), performed an analysis of Montclair’s existing sustainability-related facilities work as well as a peer benchmarking exercise to understand the institution’s existing sustainability performance relative to its peers.

This review and analysis work was presented to the Facilities Sustainability Steering Committee in June 2020 at which point it was decided to place the project on hold to accommodate roles and responsibilities associated with Montclair State University’s COVID-19 response. Development of the Facilities Sustainability Plan restarted in May 2021 and primarily engaged stakeholders between July 2021 and November 2021.

The planning team solicited a broad and deep range of expertise from University Facilities stakeholders and beyond. Goals, metrics, and actions developed through consensus are tracked to departments within University Facilities and identify where collaboration beyond University Facilities is required in order to increase implementation accountability. The planning process included six focus groups with over 50 unique participants which align with the six major content chapters of this Facilities Sustainability Plan. In turn, each of the six major content areas address existing conditions and provide goals related to multiple University Facilities departments.

During Summer 2021, the planning team hosted a visioning session with each of the focus groups. In

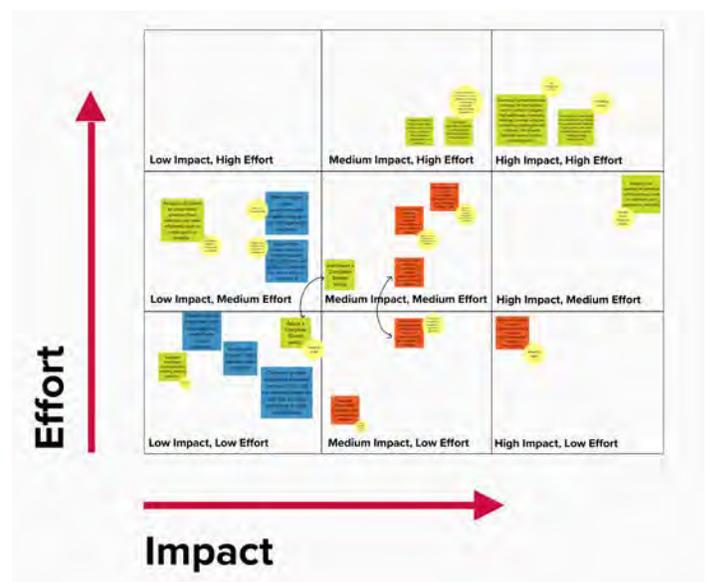
these sessions, participants defined why work in their respective topic areas should set sustainability goals. Common themes emerged including shared interest in:

- Empowering collective action;
- Supporting human health and well-being;
- Preserving natural resources;
- Demonstrating leadership as an anchor institution; and,
- Responsibly stewarding university resources.

Participants then completed an exercise in which they identified what existing and new actions Montclair State University might have to undertake, discontinue, or continue to advance the institution toward its aspirational goals in each topic area.

Information from these sessions was collated and analyzed by the planning team and measured against external reporting frameworks such as the

IMPACT VS. EFFORT MATRIX



While engagement on this project was anticipated to be in person, the onset of the COVID-19 pandemic forced a pivot to entirely remote delivery of the engagement process. Virtual whiteboards supported collaboration.

United States Green Building Council’s Leadership in Energy and Environmental Design (LEED) rating systems and the Association for the Advancement of Sustainability in Higher Education’s Sustainability Tracking, Assessment & Rating System (AASHE STARS). These frameworks are commonly used by colleges and universities to evaluate their sustainability performance both within the context of the built environment and holistically across the breadth of institutional sustainability efforts. This analysis resulted in a series of proposed goals and targets which were presented to the focus groups in a second round of conversation for feedback and clarification.

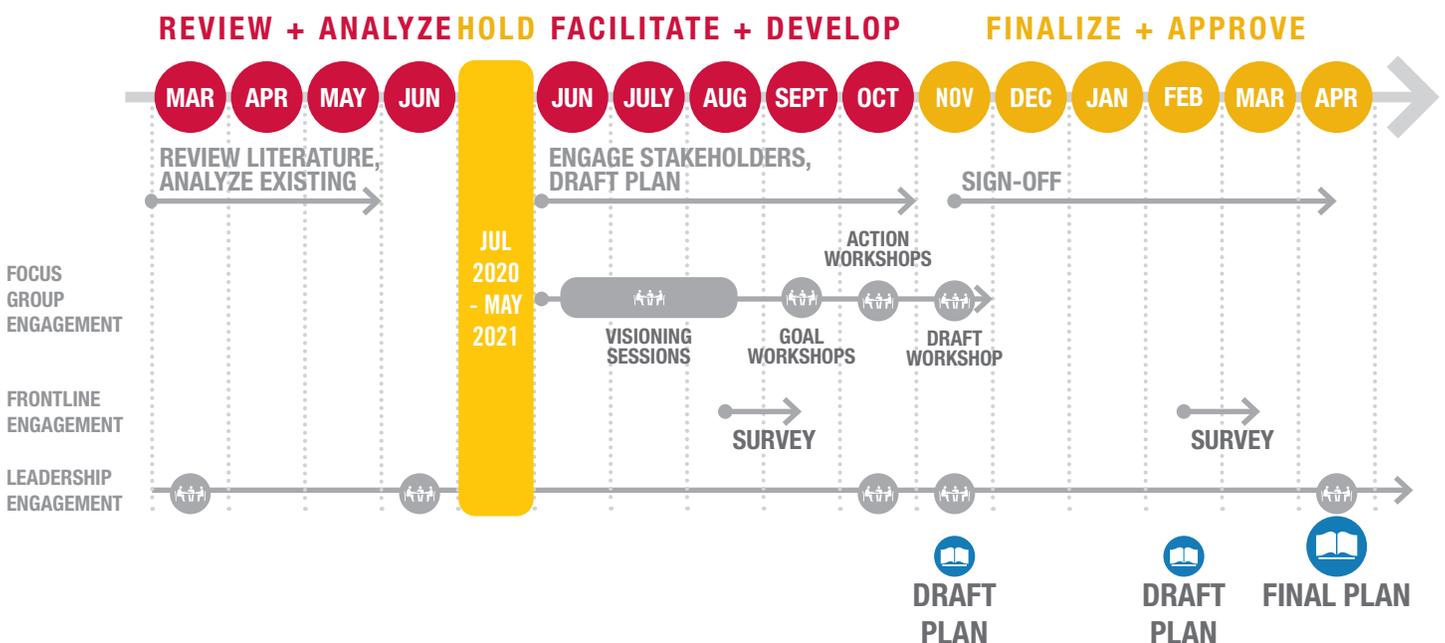
The second round of focus groups centered on validating and evolving goals and metrics proposed by the planning team for Montclair State University and began to gauge how much progress the University could potentially make in proposed metrics over time. Participants began to identify actions the University should consider taking to achieve its goals.

In October 2021, two joint focus groups were held in which participants were provided a proposed set of actions coded to each of the Facilities Sustainability Plan’s goals. Participants sorted the actions into an Impact vs. Effort matrix while proposing additional actions for consideration. The outcome of this exercise ensures this plan prioritizes high impact, low effort actions ahead of low impact, high effort actions.

To collect a broad range of feedback outside of the core focus groups, the planning team and University Facilities collaborated to conduct two surveys as part of the Facilities Sustainability Plan’s development. The first was the Sustainability Literacy and Culture Assessment which was made available to all University Facilities staff in September 2021. The survey received 55 unique responses and a summary of its findings can be found in the [appendix](#). The second survey, published in February 2022, focused on the ease and difficulty of proposed actions in the Facilities Sustainability Plan. The second survey received 32 unique responses and influenced the final presentation of this plan.

A number of the University Facilities division’s leadership staff were among the focus group participants. In addition to providing insight on their particular areas of expertise, leadership were engaged in defining the overall goals of the Facilities Sustainability Plan, its presentation, and the general direction of its content.

This document’s draft was reviewed in its entirety by focus group participants as well as the Facilities Sustainability Plan Steering Committee and published in the spring 2022 semester. A companion presentation deliverable was provided to Montclair State University to support regular updates to the steering committee and other university leaders. It is anticipated that the presentation will support annual updates on implementation’s progress.



HOW TO USE THIS PLAN

There are many immediate ways in which University Facilities will continue to advance more sustainably. The six primary content chapters of this document include goals, metrics, and actions that will support the next phase of sustainability work at Montclair State University while driving toward an initial Association for the Advancement of Sustainability in Higher Education [Sustainability Tracking, Assessment & Rating System](#) (AASHE STARS) submission for the institution. Each of the six chapters aligns to a set of departments within University Facilities that is accountable to achieving progress in the goals listed within that chapter:

Focus Group Name	Aligned University Facilities Departments		
Green Building Infrastructure	Capital Planning and Project Management	Energy Management	Facilities Maintenance and Engineering
Green Building Operations	Housekeeping	Moving Services	Waste Management
Engagement	Facilities Human Resources	Facilities Learning and Development	
Transportation and Parking	Parking Services	Shuttle Services	Fleet Services
Grounds and Landscape	Grounds and Landscape		
Procurement	Capital Procurement	Operational Goods & Services	

The primary content chapters of this document include a verbal description of the existing conditions within that topic area as well as infographics of relevant existing datasets and celebration stories of initiatives Montclair State University has already completed. Each topic area includes a guiding principle and a brief description of that guiding principle. While University Facilities' sustainability goals and actions may evolve over time, it is anticipated the guiding principles will have

greater enduring value in guiding Montclair's path toward a more sustainable future.

Goals are written with implementation in mind. The goals are specific, measurable, achievable, realistic, and time-bound. Goals have or will establish baselines as well as a short-, medium-, and sometimes long-term targets that reflect where Montclair State University expects to see improvements in performance over time. Where practical, metrics have been aligned to the Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking, Assessment and Rating System to support the long-term objective of making Montclair's first AASHE STARS submission.

This plan was published in the spring 2022 semester. Targets indicated in the "short term" timeframe therefore have anticipated achievement between 2022 and 2024. Targets indicated in the "medium term" timeframe are anticipated between 2025 and 2027. Long term targets look to 2028 and beyond.

Montclair State University's Division of University Facilities aims to advance a more resource efficient, economically responsible, and socially equitable future. It aspires to be a strong partner to broader University goals and hopes to inspire the campus community to engage in a comprehensive process to submit an AASHE STARS submission.

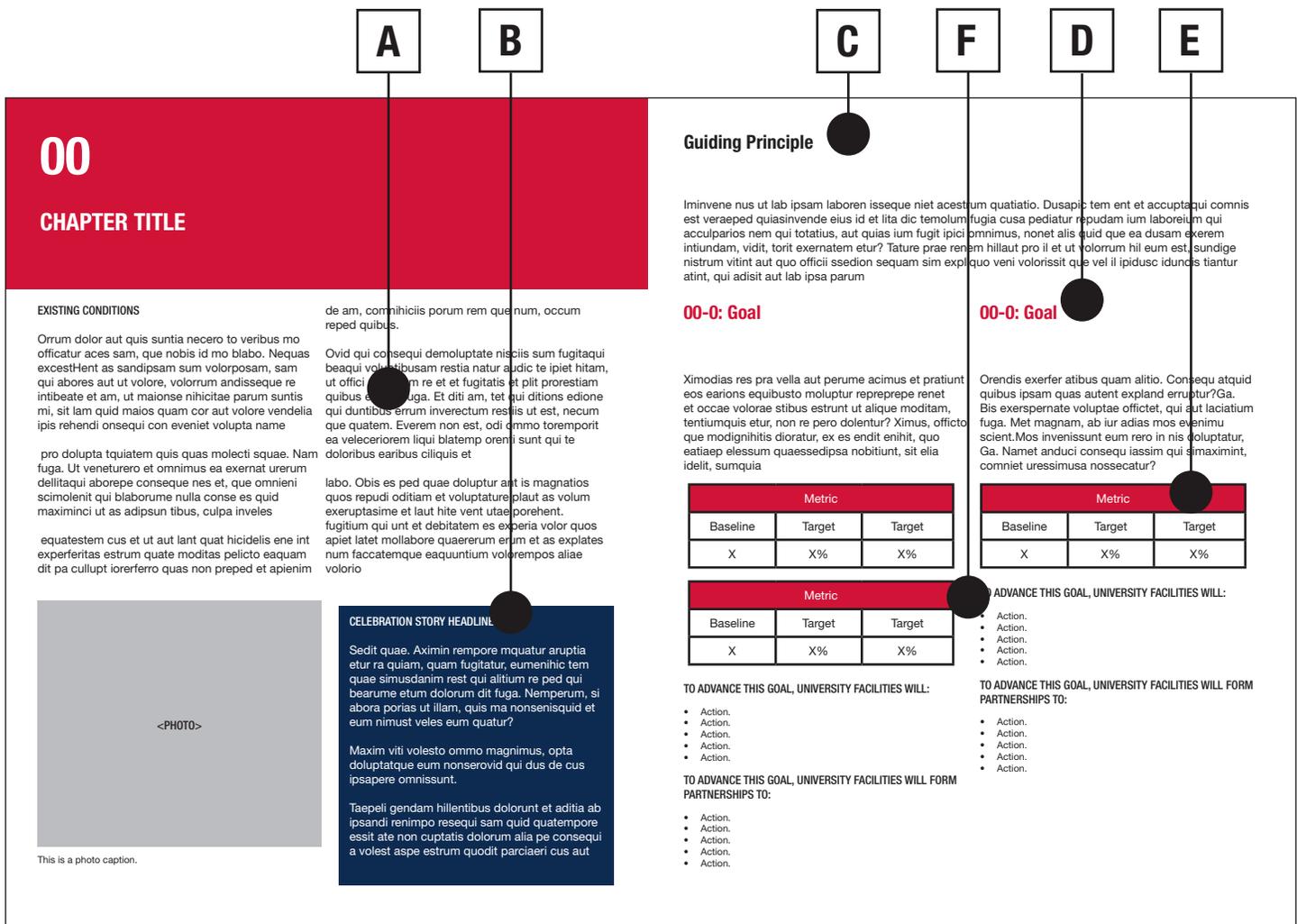
The Appendix includes a variety of content that is anticipated to support diverse audiences:

- The [Glossary](#) is intended to empower those who may be new to sustainability dialogues in fully engaging the content of this document.
- The [Acknowledgments](#) celebrates participants in this plan's development and thanks them for their contributions.

- The [Business Case](#) outlines where goals and targets offer opportunities for operational cost savings that support Montclair State University's bottom line.
- The [Accountability](#) section offers greater detail on how implementation is anticipated to advance.
- [Peer Benchmarking](#) evaluates Montclair State University's sustainability performance against both its sister institutions and strategic peers.
- The [Roadmap to an Initial AASHE STARS Submission](#) assesses the level of difficulty in achieving each credit at Montclair State University to support submission to this industry-leading reporting framework.

- The [Sustainability Literacy and Culture Assessment Results](#) section highlights significant lessons learned from the first survey run through this project's engagement process and identifies opportunities for future potential.

Taken together, the Facilities Sustainability Plan offers a comprehensive understanding of how University Facilities at Montclair State University has successfully supported sustainability work to date and how that work will continue into the future.



In a typical content spread, A is a description of the existing conditions at Montclair State University, B is a story celebrating existing accomplishments, C is a guiding sustainability principle for the topic area, D is a goal, E is each goal's associated metric or metrics, and F is a selection of actions University Facilities anticipates advancing either independently or in collaboration with other divisions to make progress toward the goal identified.

GREEN BUILDING INFRASTRUCTURE

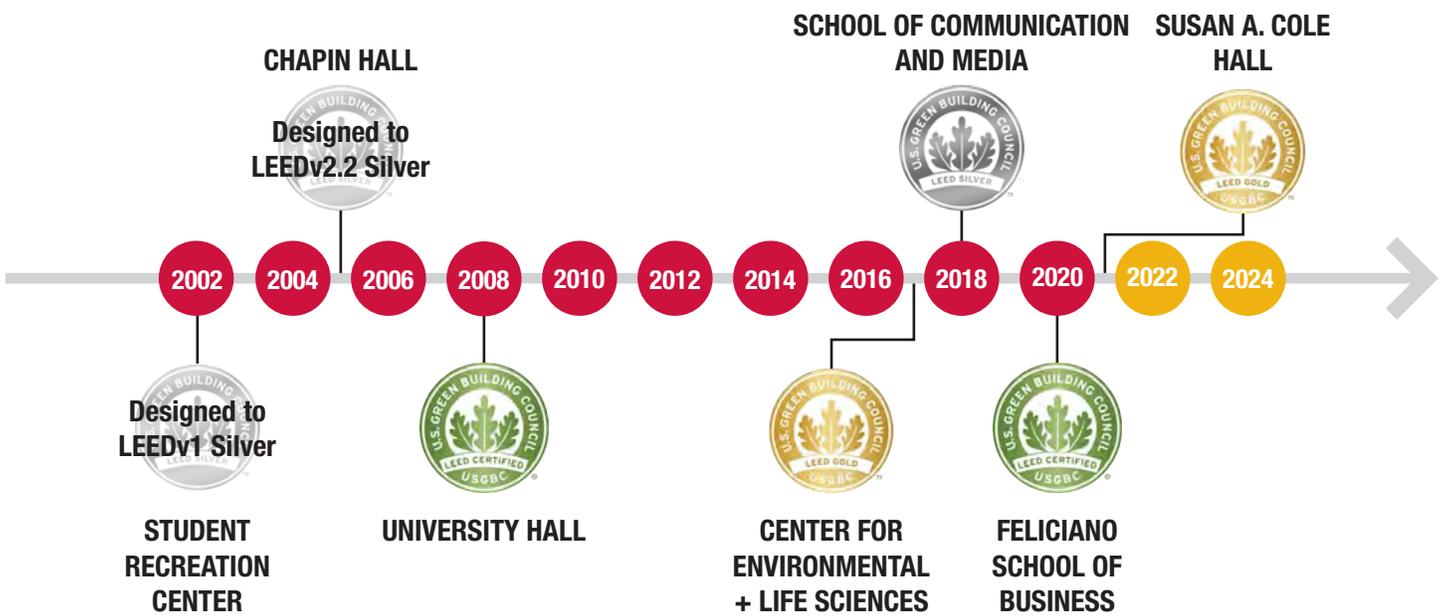
EXISTING CONDITIONS

In January 2008, the State of New Jersey passed legislation requiring all new and majorly renovated public buildings over 50,000 gross square feet to meet high performance green building standards. As a public entity, capital improvement projects at Montclair State University are required to comply with this requirement. The institution has an almost twenty-year history of achieving certification under the United States Green Building Council's Leadership in Energy and Environmental Design (LEED) program. As of October 2021, five buildings on campus have been certified. While new buildings across campus have high performance features, older buildings with aging infrastructure present opportunities for resource use reduction through infrastructure upgrades, occupant behavioral change, and automation.

Montclair State University develops many smaller scale projects each year that are not required by law

to meet green building standards. Publicly mandated sustainability and procurement requirements vary significantly for projects less than 50,000 gross square feet depending on project size and overall cost. Stringent energy and water performance and material procurement requirements for smaller scale projects would enhance Montclair State University's overall level of sustainability performance.

This Green Building Infrastructure chapter focuses primarily on capital improvement projects, greenhouse gas emissions, and the level of energy and water efficiency achieved by campus development. This chapter also addresses the environmental impact of construction's waste streams. Additional information about the sustainability of ongoing consumable products in the built environment can be found in the [Green Building Operations](#) chapter while information on the sustainability of construction materials is located in the [Procurement](#) chapter.



The timeline above highlights Montclair State University's previous success in designing projects in alignment with LEED requirements and achieving LEED certifications for new construction and major renovation projects.

ENERGY

The University's energy sources include both an on-site cogeneration plant built in 2013 and purchased energy from PSE&G. Over 90% of Montclair State University's current energy demands are met by the cogeneration plant which is operated by a third-party contractor to the University. While the cogeneration plant serves most campus buildings with electricity, steam, and chilled water, some buildings stand alone and have dedicated building scale equipment.

Most buildings have electrical meters that report the consumption of individual structures, but metering for steam, water, and chilled water is less comprehensive at the building scale. The current metering structure on campus is also inconsistent between buildings. Certain buildings have athletic fields or exterior lighting tied to their systems, which can make it difficult to track energy use and the impact of building-specific energy conservation measures.

The amount of energy used by campus facilities varies based on programmed use, building age, and occupancy among other factors. Lighting, mechanical systems, domestic hot water, and plug loads make up the most significant opportunities for energy conservation measures. Occupancy sensors and building management systems (BMS) are not present in some campus buildings and could serve as critical infrastructure for identifying and addressing energy consumption trends.

WATER

Montclair State University's water supply comes from both New Jersey American Water and Montclair Township. New Jersey American Water service is limited to the buildings along Clove Road while the rest of campus is served by Montclair Township's municipal water service. Potable water is currently metered at a campus level which makes accountability and building level tracking a challenge.

Residence halls account for the majority of water use on campus. Annual water usage data between 2019 and 2020 indicates a significant decrease in water usage, which is in line with campus occupancy trends. Domestic potable water use and irrigation water use are primary focus areas for improvement.

GREENHOUSE GAS EMISSIONS

Montclair State University maintains annual greenhouse gas emissions reporting to meet requirements of its clean air permit. Data is collected from sources across University Facilities and then shared with a third-party contractor who assembles the information into a format acceptable to United States Environmental Protection Agency reporting requirements.

ENERGY, WATER CONSERVATION INVESTMENTS REDUCE OPERATING COSTS

Recent lighting upgrades in the Student Recreation Center and equipment upgrades at Freeman Dining Hall demonstrate how relatively modest investments can yield significant energy, water, and operational cost savings for Montclair State University.

The replacement of metal-halide light fixtures in the Student Recreation Center with high-efficiency LED fixtures is anticipated to save over 36,000 kilowatt hours of electricity annually. This retrofit will not only reduce annual energy costs, but also decrease maintenance requirements as LED bulbs have a longer useful life than metal-halide bulbs.

At Freeman Dining Hall, an up-front investment of \$65,000 for new condensers in three walk-in refrigerators and one walk-in freezer is anticipated to have a simple payback of less than one year. The prior equipment was estimated to consume nearly 8.5 million gallons of water annually at a cost of \$75,500 per year. The new air-chilled equipment eliminates once through water consumption and reduces operating expenses.

University Facilities continues to study and implement low effort, high impact solutions to realize energy and water conservation efforts for Montclair State University.

University Facilities develops and maintains high-quality, resource efficient campus buildings.

Montclair State University's built environment has developed incrementally over the last century. Building design, construction, and operations have evolved substantially in that time and University Facilities works diligently to maintain both legacy structures and new facilities. Adaptability, flexibility, and timelessness are prioritized to meet the current and anticipated pedagogical and research needs of the university community. Montclair State University's built environment is a long-term investment and the goals listed in this section support future efficiency improvements and transparency in new and existing buildings.

01-1: Increase metering to support total energy and water accountability.

Montclair State University currently understands its energy and water conservation at the institutional scale. Comprehensively tracking energy and water consumption at the building scale will allow Montclair State University to continue refining energy and water conservation practices and proactively prepare for potential future regulatory reporting.

Percentage of facilities over 10,000 GSF that have stand-alone building energy and water meters		
Short Term	Medium Term	Long Term
25%	50%	100%

- TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:**
- Catalogue buildings over 10,000 GSF and existing energy and water metering provided to those structures.
 - Systematically retrofit building-scale energy and water submeters onto existing facilities greater than 10,000 GSF.
 - Ensure newly constructed buildings have building-scale energy and water metering.
 - Increase the number of buildings connected to the University's centralized building management platform.
 - Develop and implement a metering calibration plan in alignment with manufacturer's best practices; this may include sub-contracting.
 - Investigate opportunities to pilot emerging utility consumption accountability technologies.

- TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:**
- Investigate and implement meaningful submetering including foodservice operations and irrigation systems.
 - Begin engaging faculty to integrate building-scale utility data into academic courses.

01-2: Reduce potable water consumption and annual potable water costs.

A reduction in potable water usage protects waterways and demonstrates the University's commitment to resource efficiency. Monitoring potable water usage and addressing leaks and unnecessary water usage in a timely manner can reduce utility costs. With improved efficiency, the University may divert utility cost savings associated with water into other areas of facilities management.

Campus-wide water consumption in thousand gallons		
Baseline	Short Term	Medium Term
Establish in 2022	-5%	-10%

Annual potable water supply and sanitary sewer expenses in US dollars		
Baseline (FY 2019)	Medium Term	Long Term
\$1.3 M	\$1.04 M (-20%)	\$0.91 M (-30%)

- TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:**
- Consider strategies for condensate capture and reuse.
 - Expand existing practices that require the installation of WaterSense labeled lavatory faucets, urinals, showerheads, and water closets in new construction and major renovation projects into all projects.
 - Leverage increased metering infrastructure to better detect leaks and provide more timely corrective action.
 - Continue to test cooling tower concentrations quarterly to ensure optimized operations.

- TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:**
- Integrate permanent, point-of-use signage into all building renovation and new construction projects to promote water efficiency behaviors by the campus community.

01-3: Reduce campus-wide energy use intensity and annual energy costs.

Energy use intensity (EUI) is expressed as energy use per square foot of building development per year. Focusing on a reduction in EUI allows the university to pursue strategies across its building portfolio and work towards eliminating unnecessary energy usage through efficiency measures and education. A reduction in energy use can also be measured through cost. Utility cost reduction allows operating budget funds to be reallocated to other areas of facilities management.

The Commercial Building Energy Consumption Survey (CBECS) establishes average EUIs for various program types by evaluating a cross-section of buildings that exist within the United States. The most recent CBECS EUI for College/University buildings is 84.3. It should be noted that Laboratory buildings have a substantially higher EUI.

Campus-wide EUI in kBtu / square foot / year		
Baseline (2019)	Medium Term	Long Term
286	272 (-5%)	257 (-10%)

Annual energy expenses in US dollars		
Baseline (2019)	Medium Term	Long Term
\$18 M	\$17.1 M (-5%)	\$16.2 M (-10%)

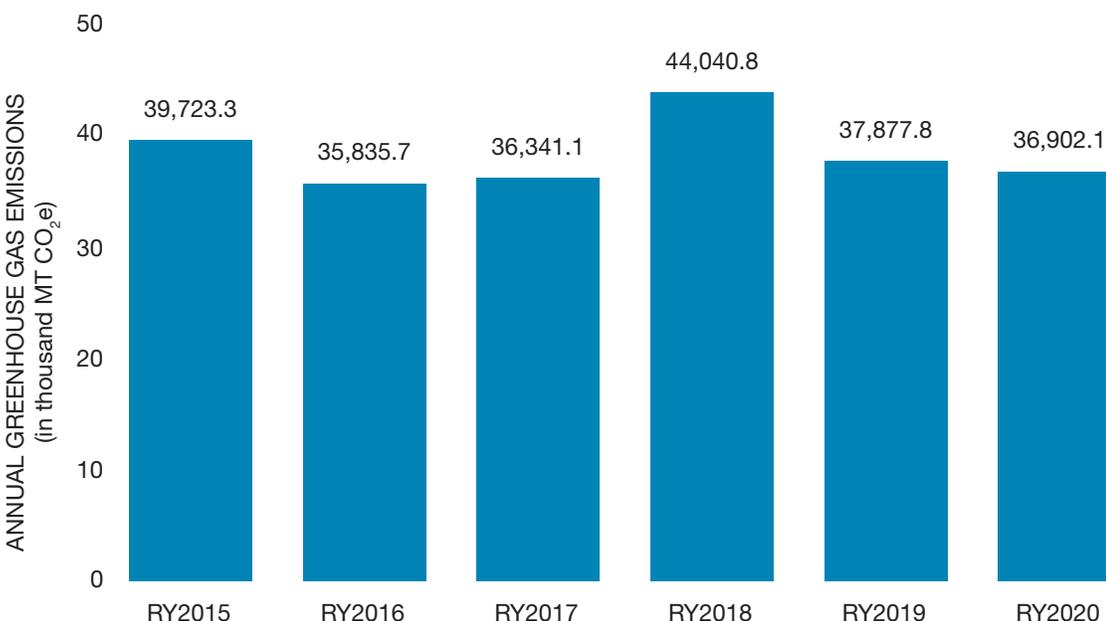
TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Integrate lighting occupancy and/or daylight sensors into existing buildings.
- Implement automated setbacks on high-demand systems such as fume hoods and foodservice exhaust systems.
- Consider replacing AHUs with VFDs.
- Complete ASHRAE Level 2 audits on buildings with high energy demands.
- Consider additional building setback schedules.
- Complete regular audits of building-scale metering data to identify and address anomalous operations in a timely fashion; this may include sub-contracting.
- Replace existing equipment and appliances with EnergyStar rated models at phase out.
- Investigate window alarms and/or point-of-use occupant education signage in buildings with operable windows to ensure closure when mechanical systems are in use.
- Prioritize projects that address deferred maintenance in the next campus master plan.
- Consider implementing demand response protocols for lighting and/or HVAC systems.
- Develop and publish an indoor temperature policy to manage occupant expectations.
- Develop and implement a retrocommissioning plan to address all buildings over 50,000 GSF.

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Explore hybrid work schedules.

MONTCLAIR STATE UNIVERSITY GREENHOUSE GAS EMISSIONS REPORTING, 2015 - 2020



Montclair State University's greenhouse gas emissions have been relatively stable over the past six years despite changes in the gross square footage of campus buildings and changes in enrollment.

01-4: Reduce Scope 1 greenhouse gas emissions.

Scope 1 addresses direct emissions from sources owned or controlled by Montclair State University. While most of Montclair State University's on-site combustion occurs in the central plant operated by a third-party contractor, a small number of buildings have their own combustion boilers. The campus's fleet vehicles also contribute to Scope 1 emissions. As of 2021, energy produced on campus is less carbon intensive than energy produced by the utility grid and therefore new construction and renovation efforts in the near term should continue to leverage remaining central plant capacity. Future projects should evaluate the carbon intensity of central plant and utility grid energy as changes in generation are implemented.

Annual Scope 1 GHG emissions in MT CO ₂ e		
Baseline	Short Term	Medium Term
Establish in 2022	-5%	-10%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Investigate opportunities for increasing efficiency of stand-alone building boilers that combust fossil fuels.
- Prioritize use of the least carbon intensive energy sources, whether that's energy from the cogeneration plant or the utility grid.

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Update energy partner contracts at renewal to prioritize reductions in carbon emissions.

See actions associated with [Goal 04-3](#) for more information about strategies to reduce the greenhouse gas emissions associated with campus fleet vehicles.



Exterior lighting upgrades across campus conserve energy and reduce costs.

01-5: Develop and implement a comprehensive strategy to neutralize Scope 2 emissions.

Scope 2 emissions are associated with the purchase of electricity, steam, heat, or cooling. Scope 2 emissions are often the largest contributor to GHG emissions and within an entity's control to minimize. Scope 2 emissions may be addressed through efficiency upgrades, renewables, and/or offsets, and play a significant role in carbon reduction.

Annual Scope 2 GHG emissions in MT CO ₂ e		
Baseline	Short Term	Medium Term
Establish in 2022	-5%	-10%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Continue implementation of demand minimization strategies.
- Assess power purchase agreements.
- Assess Renewable Energy Certificate (REC) and/or carbon offset purchases.

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Integrate signage into all building renovations and new construction projects to promote energy efficiency behaviors by the campus community.
- Assess capacity for additional on-site solar installations and strategies for engaging such installations in curricular and research opportunities.

01-6: Maximize construction waste diversion.

Many construction materials are recyclable or reusable. Implementing a construction waste management plan and focusing on strategies for diverting specific material streams can significantly reduce waste sent to landfill and the overall environmental impact of a construction project.

Percentage of construction waste diverted annually in tons		
Short Term	Medium Term	Long Term
75%	90%	95%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Consider updating construction waste contracts to require at minimum 50% construction waste diversion by weight for all projects.
- Consider a consistent location on campus for construction waste dumpsters that can be used by multiple small-scale construction projects.
- Encourage on-site separation of construction wastes.



GREEN BUILDING OPERATIONS

EXISTING CONDITIONS

This Green Building Operations chapter focuses on the in-use phase of a building including waste management as well as housekeeping. Montclair State University develops far fewer new facilities each year than the number of existing buildings it continuously operates, and as a result green building operations are critical to advancing resource efficiency, social equity, and fiscal responsibility across the institution.

WASTE

In 2019, Montclair State University diverted roughly 85% of its municipal waste stream through its contracted waste hauler. This waste data does not include specialty waste streams such as electronics, automotive batteries, and similar specialty wastes that must meet unique regulatory disposal requirements. Contamination of the single stream/

commingled recycling presents a challenge to maintaining and improving recycling rates and may lead to penalty charges by waste haulers.

HOUSEKEEPING

Montclair State University practices operational sustainability by purchasing certified environmentally preferable cleaning products and janitorial paper products and training staff on green housekeeping chemicals. A lack of engagement and coordination with operations staff in the design and construction process has sometimes led to the selection of building materials that cannot be cleaned with existing environmentally preferable products. Additionally, existing conditions around storage and infrastructure in certain campus buildings can make using green cleaning equipment, such as the auto scrubber, difficult or impossible.

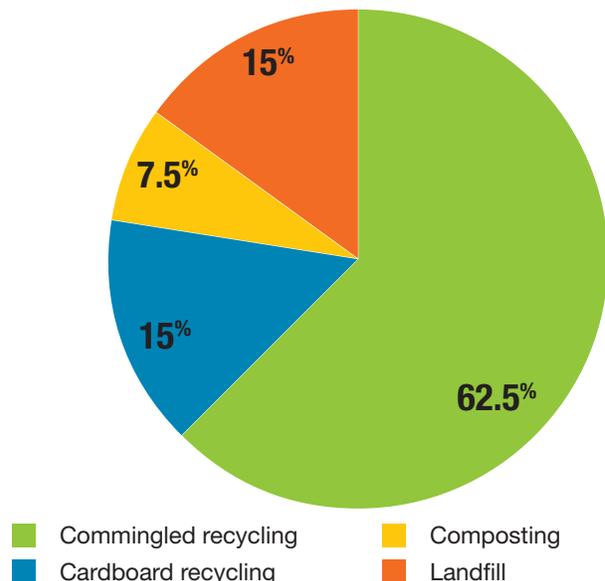
DID YOU KNOW?

450

approximate number of cubic yards of durable goods such as furniture, appliances, and other home goods on-campus residents discard annually

That's enough to fill 6 parking spaces.

MUNICIPAL WASTE STREAM DIVERSION (2019)



Montclair State University's third-party waste hauler provides information on the distribution of the institution's waste stream.

University Facilities preserves planetary and human health by operating high-performance campus buildings.

Decisions by students, faculty, and staff during the in-use phase of buildings drive both the volume of the University’s waste stream as well as the percentage of waste that is diverted from landfill while University housekeeping decisions impact supply chain sustainability. The goals outlined in this section work to advance existing practices within University Facilities to reduce and divert waste to preserve planetary health and minimize cleaning chemicals to support human health.

02-1: Reduce waste generation.

Purchasing policies, material reuse and campus-wide education can reduce waste generated, contributing to cost savings on waste hauling and reducing waste sent to landfills.

Total campus waste generated annually in tons		
Baseline (2019)	Medium Term	Long Term
1,972	1,676 (-15%)	1,381 (-30%)

Waste generated annually per capita by on campus residents in pounds*		
Baseline (2019)	Medium Term	Long Term
924	785 (-15%)	645 (-30%)

Waste generated annually per capita by commuter students, faculty, and staff in pounds		
Baseline (2019)	Medium Term	Long Term
323	274 (-15%)	226 (-30%)

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Digitize Operations & Maintenance manuals.
- Transition bidding and other processes which traditionally use a large quantity of printing paper to paperless.
- Continue to incorporate hand dryers in lieu of paper towel dispensers in bathrooms.
- Continue to incorporate hardwired automated fixtures in lieu of battery-operated.

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Divert durable goods such as furniture and lamps from landfill during Residence Life move out, office moves, and renovations.
- Encourage the use of reusable hot and cold beverage containers.
- Accelerate the adoption of electronic signature platforms.

02-2: Increase waste diversion from landfill.

Tracking annual waste diversion data and implementing strategies to encourage behavioral change can lead to greater waste diversion.

Percentage of waste stream diverted from landfill in tons		
Baseline (2019)	Short Term	Medium Term
85%	87%	90%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Continue to contract for composting grounds and landscape wastes.

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Work toward universal waste management infrastructure across both interior and exterior spaces on campus.
- Pilot back-of-house and front-of-house composting in dining venues.
- Integrate permanent, point-of-use signage into all building renovations and new construction projects to promote appropriate waste diversion behaviors by the campus community.
- Update contract language at renewal with foodservice vendors to increase accountability for waste diversion efforts.
- Develop and implement procurement language that minimizes non-recyclable single-use goods.

**Per capita waste for on-campus residents was determined by dividing the total waste in dumpsters associated with The Village, Hawk Crossings, and The Heights by the population of those buildings because. These buildings have the most consistent data sets for residence halls and represent 70% of Montclair State’s residential occupancy. Blaton, Bohn, Freeman, and Russ Halls have more complex occupancy patterns that would require additional qualifiers in data tracking and calculation.*

02-3: Reduce the environmental impact of cleaning products and janitorial paper products.

Utilizing janitorial paper products with recycled content is an impactful way to decrease the use of natural resources leading to deforestation. Non-toxic cleaning products create a safer and healthier environment for janitorial staff and building occupants. University Facilities has already made great strides in this area of sustainability and will continue to maintain this performance while advancing the other goals of this plan.

Percentage of cleaning product purchases by cost on certified green cleaning products		
Baseline (2021)	Short Term	Medium Term
75%	80%	85%

Percentage of janitorial paper product purchases by cost on certified green janitorial paper products		
Baseline (2021)	Short Term	Medium Term
95%	95%	95%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Codify existing practices into a policy to ensure continuity of green cleaning and janitorial paper product purchasing.

WATER BOTTLE FILLING STATIONS REDUCE WASTE, SUPPORT HEALTH

Over the last decade, University Facilities has made a concerted effort to increase the availability of water bottle filling stations across campus. Accessible, easy-to-use water bottle filling stations are now available in most buildings across campus and encourage the campus community to use their own reusable drinking containers in lieu of single-use plastic water bottles.

This waste minimization strategy has already been high impact - water bottle filling stations have replaced hundreds of thousands of single-use plastic water bottles which cuts down on the University's overall waste stream. Easy access to drinking water also supports community health by ensuring everyone has access to amenities to stay hydrated.

See the [list of buildings with water bottle filling stations online](#) to find the one nearest you.



Maintaining campus spaces with environmentally preferable processes and cleansers not only supports indoor air quality for regular building occupants, but also supports a healthier working environment for housekeeping staff.

TRASH AND RECYCLING ASSETS AT MONTCLAIR STATE UNIVERSITY



-  Trash Dumpster
-  Trash and Recycling Dumpster

0 200 400ft



The distribution of campus-scale trash and recycling infrastructure illustrate areas of campus where diversion is more and less accessible. The southeastern zone of campus has more limited access to both recycling and trash dumpsters while central campus primarily has access to trash dumpsters.



ENGAGEMENT

EXISTING CONDITIONS

Sustainability-related engagement occurs at multiple scales across Montclair State University: within University Facilities, within other divisions and centers on campus, and across the scope of the entire campus community. The Division of University Facilities conducts regular trainings for its staff and contracted vendors, supports an annual sustainability focused event for the campus and community, and collaborates with organizations on campus to elevate student awareness of sustainability issues, particularly those related to energy and water consumption in the built environment.

This chapter focuses primarily on the scope of sustainability-related engagement University Facilities conducts within its own personnel and recognizes that broader campus-wide engagement

is better executed through partnerships with other on-campus entities. While this chapter does not set goals for engagement beyond the campus community, participants in the working groups acknowledged that Montclair State University has a strong opportunity to leverage its own work in sustainability into broader public engagement.

Existing engagement within University Facilities includes *The Pipeline*, a recurring newsletter for University Facilities, which often features content on sustainability as well as training courses offered by University Facilities Learning & Development. University Facilities also holds an annual awards event to recognize excellence which can include achievements in sustainability. University Facilities most notably engages beyond the division by hosting [PSEG Institute for Sustainability Studies Green Teams](#).

2019 GREEN TEAM ASSIGNED TO UNIVERSITY FACILITIES WINS AWARD FOR WATER CONSERVATION EFFORTS

Five students who participated in University Facilities' first PSEG Institute for Sustainability Studies Green Team worked on various water conservation projects on campus. The group researched trends in water-efficient fixtures, calculated return on investment for fixture replacements, and helped build a rainwater collection system for the Campus Community Garden. Students also researched and created a presentation for resident assistants on campus to teach their residents water conserving behaviors.

The work produced in their 10-week internship was celebrated with an Environmental Leadership Award from the [Commerce and Industry](#)

[Association of New Jersey \(CIANJ\)](#). Their work was also published in the organization's signature publication, [COMMERCE Magazine](#).



CIANJ Chairman, William Hanson and PSEG ISS Director, Dr. Amy Tuininga celebrated University Facilities' 2019 Green Team's Environmental Leadership Award at a breakfast honoring awardees in April 2021.

University Facilities supports a unified approach to campus sustainability outreach and education.

Montclair State University includes approximately 25,000 students, faculty, and staff. As students enroll and graduate and faculty and staff transition between positions both within the University and beyond, engagement on sustainability topics is a continuous need. University Facilities advances sustainability outreach and education within its own staff and contributes to university-wide sustainability outreach and education in collaboration with other departments and divisions of the University. The goals outlined in this section aim to expand upon the existing knowledge of facilities staff and increase campus engagement.

03-1: Increase awareness of campus sustainability within University Facilities personnel.

Ensuring University Facilities staff are aware of the division’s sustainability practices and broader University initiatives to advance resource conservation, fiscal responsibility, and social equity empowers them to make decisions in alignment with the goals of this plan. Awareness can increase engagement and enhance the University’s reputation with both internal and external stakeholders.

Response rate to annual University Facilities sustainability literacy and culture assessment		
Baseline (2021)	Short Term	Medium Term
18%	25%	50%

Percentage of sustainability literacy and culture assessment respondents who indicate they incorporate sustainability into their work activities		
Baseline (2021)	Short Term	Medium Term
64%	70%	80%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Author and publish an annual sustainability literacy and culture assessment within the Division of University Facilities.
- Provide for the creation and maintenance of communications collateral associated with new and existing sustainability initiatives.
- Integrate sustainability information into new employee orientation and onboarding activities.
- Provide an online module on University Facilities’ sustainability work that is updated annually.
- Provide a quarterly in-person sustainability education session for University Facilities’ staff.

03-2: Build partnerships to increase student, faculty, and staff awareness of campus sustainability.

University Facilities hopes to be an active participant in engaging the broader campus in sustainability efforts through collaborations with other operational and academic units as well as off-campus partners. Partnerships create opportunities for consistent sustainability-related messaging that reinforces the community’s sustainability values and can more efficiently advance sustainability strategies.

Percentage of available AASHE STARS Engagement points earned		
Baseline	Medium Term	Long Term
N/A	40%	60%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Integrate permanent, point-of-use signage into all building renovations and new construction projects to promote resource conservation by the campus community.
- Elevate sustainability as a priority issue in the campus master plan.
- Establish a university-wide Sustainability Advisory Council tasked with the development and implementation of a comprehensive sustainability strategy.
- Develop a sustainability-related editorial calendar.
- Integrate sustainability information into student orientation.
- Develop sustainability-related programming for resident students.
- Increase utilization of operational data in courses.

TRANSPORTATION AND PARKING

EXISTING CONDITIONS

Over the last decade the campus vehicle fleet at Montclair State University has grown approximately 40%. The University's fleet contains roughly 240 vehicles, of which nearly 75% are rated in fair condition or above as a result of vehicle renewal investments. All campus fleet vehicles are gasoline and diesel powered, with no hybrid or electric vehicles currently in the fleet. Commuting via single occupancy vehicle and parking on campus is the primary mobility strategy for students, faculty, and staff with only 30% of students residing on campus. Resident students currently rely on the University shuttle system, as the hilly topography is not preferred for walking or biking.

Faculty and staff of Montclair State University are automatically provided parking permits on campus as part of their compensation and benefits although they can choose to upgrade their parking space for a fee. Students pay varying rates for parking permits depending on their resident or commuter status.

VEHICLE INVENTORY BY THE NUMBERS (AS OF JANUARY 2020)

243

TOTAL NUMBER OF VEHICLES OWNED
BY MONTCLAIR STATE UNIVERSITY

0%

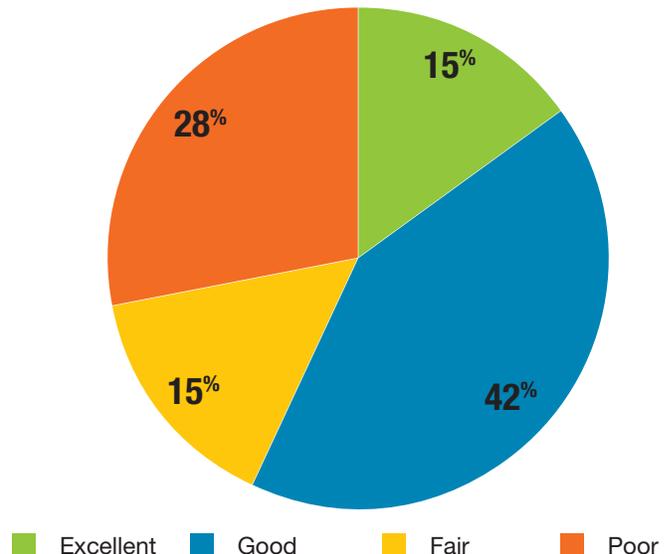
PERCENTAGE OF ALTERNATIVELY FUELED
VEHICLES IN THE CAMPUS FLEET

Despite community reliance on single occupancy vehicles, Montclair State University has access to a variety of transit amenities including multiple NJ Transit bus lines, one private bus line, and two NJ Transit commuter rail stops. Full-time undergraduate and graduate students are eligible for discounted monthly NJ Transit passes to incentivize commuting via public transportation.

Fleet Services maintains rigorous records on the condition of campus vehicles and invests annually in replacement vehicles to ensure safety and support proactive asset management.

This chapter focuses on the policies and practices Montclair State University could advance to accelerate the adoption of lower carbon mobility strategies both on campus and commuting to and from campus. Additional information about reductions in Scope 1 greenhouse gas emissions can be found in the [Green Building Infrastructure](#) chapter.

VEHICLE CONDITION INVENTORY (AS OF JANUARY 2020)



University Facilities supports low-carbon campus mobility.

Campus mobility includes walking, bicycling, transit, and single-occupancy vehicles as well as service and delivery functions. University Facilities supports multi-modal transit that prioritizes less environmentally impactful modes of transportation such as walking, bicycling, and transit over more environmentally impactful forms of transportation for those who are able. Through its fleet vehicle choices and utilization as well as campus-wide strategies that encourage safe, multi-modal transportation, University Facilities advances a highly mobile campus community that produces fewer carbon emissions and less environmental impact. The goals in this section aim to reduce carbon emissions from transportation, parking, and related activities.

04-1: Evolve transportation and parking policies to better support sustainability.

Data from Montclair State University’s existing fleet monitoring software indicate vehicles spend the majority of their time parked. Evolving policies and practices from a culture of “individual” to “shared” vehicles could better optimize their utilization. Updating policies and practices in other topic areas including electric vehicle charging and establishing a mobility hierarchy will continue to support a safe multi-modal transit environment.

Percentage of time spent parked annually by campus fleet vehicles		
Baseline	Short Term	Medium Term
Establish in 2022	-5%	-10%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Establish metrics for campus fleet vehicles per unit to ensure campus fleet remains “right-sized.”
- Investigate potential of vehicle sharing apps to increase campus fleet utilization.
- Develop and implement an amortization schedule for campus fleet vehicles to proactively steward financial resources for their equitable replacement.
- Evaluate ParkSmart certification, the only green building framework dedicated to sustainable design and operations of parking structures, for new and existing parking garages.
- Develop a comprehensive strategy for on-campus electric vehicle charging that addresses university vehicles and private vehicles owned by both parking permit holders and the general public.

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Adopt and implement a Complete Streets policy.
- Reduce the number of vehicles in the campus core to maintain safe pedestrian mobility.

04-2: Reduce Scope 3 emissions generated by commuter reliance on single occupancy vehicles.

Encouraging safe and more sustainable modes of transportation than single occupancy vehicles such as carpooling, biking, walking, and public transportation could decrease traffic congestion, reduce the need for parking on campus, preserve clean air, and reduce greenhouse gas emissions. Telecommuting practices and policies could also affect the number of community members traveling to and from campus each day.

Annual Scope 3 GHG emissions attributable to commuting in MT CO ₂ e		
Baseline	Short Term	Medium Term
Establish in 2022	-5%	-10%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Develop and implement an annual commuting and transportation survey to empower reporting the percentage of students, faculty, and staff that commute using various modes of transportation.
- Refine incentive programs for low-carbon commuting by students, faculty, and staff.

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Quantify existing parking utilization and project trends based on anticipated enrollment.
- Commission a transportation demand management study as part of a comprehensive campus master plan.
- Explore hybrid work schedules to optimize commuting requirements.
- Emphasize pedestrian priority in the development of the campus master plan.

04-3: Reduce Scope 1 emissions generated by campus fleet vehicles.

While all of Montclair State University’s current campus fleet are gasoline or diesel fueled, hybrid and electric vehicle (EV) development have become more competitive in the light duty market. Alternatively fueled vehicles can support the University in reducing the carbon footprint of its campus fleet vehicles in the future and investments in infrastructure must be made to support an EV fleet. As of March 2019, the University has EV charging stations in both the Red Hawk Deck as well as the CarParc Diem Deck, but these stations are for use by the university community, not University Facilities. Reducing fleet vehicle emissions also contributes to cost savings on fuel and preservation of clean and healthy air across campus.

Annual Scope 1 GHG emissions attributable to the campus fleet in MT CO ₂ e		
Baseline	Short Term	Medium Term
Establish in 2022	-5%	-10%

Annual vehicle miles traveled by the campus fleet		
Baseline	Short Term	Medium Term
Establish in 2022	-5%	-10%



In addition to multiple NJ Transit bus lines and two NJ Transit rail stations adjacent to campus, Montclair State University operates a campus shuttle system that supports the campus community in safely navigating the institution without reliance on single occupancy vehicles.

Annual average idling time for campus fleet vehicles		
Baseline	Short Term	Medium Term
Establish in 2022	-5%	-10%

Percentage of campus fleet that is alternatively fueled		
Baseline (2021)	Short Term	Medium Term
0%	2%	4%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Prioritize purchases of hybrid vehicles for light duty vehicles.
- Analyze work orders to understand whether fleet vehicles are more efficiently used to move parts or people.
- Pursue grants to accelerate the installation of Electric Vehicle (EV) infrastructure to support an electrified campus fleet.
- Prepare vehicle maintenance infrastructure for hybrid vehicles and EVs.

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Better enforce campus “no idling” policy.

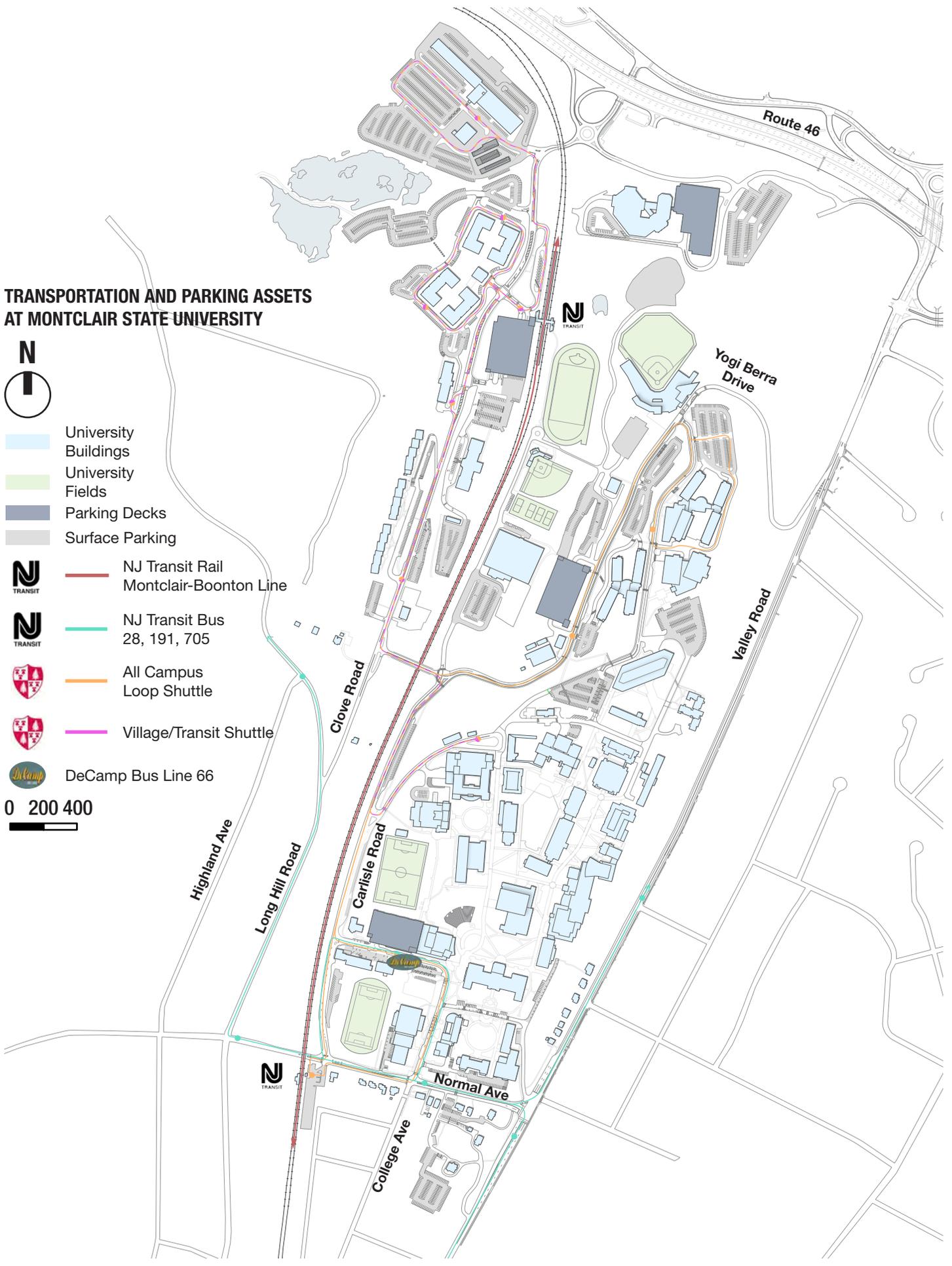
See [Goal 01-4](#) for information on how other sources of on-site combustion will be addressed.

TRANSPORTATION AND PARKING ASSETS AT MONTCLAIR STATE UNIVERSITY



-  University Buildings
-  University Fields
-  Parking Decks
-  Surface Parking
-   NJ Transit Rail Montclair-Boonton Line
-   NJ Transit Bus 28, 191, 705
-   All Campus Loop Shuttle
-   Village/Transit Shuttle
-   DeCamp Bus Line 66

0 200 400



GROUNDS AND LANDSCAPE

EXISTING CONDITIONS

Grounds installation and maintenance is performed by Montclair State University staff, allowing for full control over the practices and products utilized. All plantings are irrigated with potable water. Most plantings are irrigated manually with sprinklers and/or hoses, although the university is piloting smart irrigation in a few places on campus. Where irrigation has been installed, planting beds have been zoned separately from turf grass areas. Outdoor water use is not currently metered separately from water used inside buildings.

Landscape plants are selected with a preference for native, drought tolerant, and deer resistant plants to decrease the level of maintenance and water required. The University takes an integrated pest management approach and only utilizes insecticides and herbicides in emergency situations and under “spot treatment” conditions. Planting

beds are mulched to prevent weeds and maintain soil moisture, but weed control and abatement is still a prominent issue within grounds and landscaping. Existing practices for grounds and landscape are strong, but are not codified into written policies or guidelines to ensure knowledge transfer to the next generation of grounds leadership.

In the fall, leaves are taken off-site and composted by a third-party contractor. Liquid brine is used on roads and sidewalks in preparation for snowfall events. During snowfall, parking lots and roadways use rock salt to ensure safe mobility, but all other surfaces use environmentally preferable products.

Grounds staff indicate they spend 100% of their time doing maintenance activities. Proactive services are scheduled into the calendar and integrated into the typical maintenance calendar to minimize reactive measures.



Montclair State University has invested in a campus landscape that primarily uses native and adapted plant species. While the maintenance of this landscape requires more hands-on upkeep than turf grass, these planting selections increase campus biodiversity.

University Facilities develops and maintains high-quality, resource efficient campus landscapes.

Montclair State University is a responsible steward of campus lands located approximately 15 miles west of New York City in Essex County and Passaic County, New Jersey. University Facilities takes pride in maintaining a lush campus landscape that supports a vibrant campus experience including many community events. University Facilities works diligently to ensure campus landscapes are aesthetically appealing and appropriate to the climate zone of the region. The goals in this section aim to reduce the environmental impacts of the grounds and landscaping department by prioritizing sustainable practices and policies.

05-1: Increase use of automated systems to reduce irrigation’s demand for potable water.

Manual irrigation such as hand-watering and sprinklers can be labor intensive and difficult to maintain across systems. Automated irrigation systems, which are equipped to account for daily and seasonal variations in water needs, will decrease the need for manual irrigation and will reduce water lost to evaporation and runoff.

Annual potable water consumption for irrigation in thousand gallons		
Baseline	Medium Term	Long Term
Establish in 2022	-5%	-10%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Invest in weather-controlled, automatic irrigation systems.
- Ensure comprehensive mapping of irrigation systems at installation.
- Invest in metering specific to irrigation systems.
- Consider opportunities to irrigate with reclaimed rainwater.
- Continue to zone irrigation systems to separate planting beds from turf areas.
- Continue to prioritize the use of native and adapted species in lieu of exotic specimen plantings.
- Continue to prioritize the use of perennials ahead of annuals.

05-2: Electrify grounds and landscape maintenance equipment.

Grounds and landscape equipment can be loud and produce undesirable odors when using fossil fuels. Transitioning to electric equipment may change the noise profile of equipment and will reduce the fumes associated with fossil fuel use on campus which will improve air quality for both groundworkers as well as the broader campus community.

Percentage of grounds and landscape equipment that is electric and / or battery-powered		
Baseline	Short Term	Medium Term
Establish in 2022	-5%	-10%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Catalogue the equipment used in grounds and landscape equipment.
- Research the availability of electric equipment.
- Pilot electric equipment to verify its ability to meet grounds and landscaping needs.
- Transition equipment to electric models.

PROCUREMENT

EXISTING CONDITIONS

As a public institution, Montclair State University is subject to State of New Jersey regulations, procurement processes, and contracting requirements. Capital improvement projects over \$500,000 in construction costs are required to meet green building standards which require the procurement of more sustainable construction products and materials. Montclair State University completes many small renovations that fall below this cost threshold for which public bids must be sought and it is generally harder for the University to enforce sustainable construction procurement requirements without third party certification frameworks such as LEED.

Beyond construction materials, University Facilities purchases general office supplies and other products

which fall within larger Montclair State University contracts. University Facilities encourages the procurement of more sustainable office supplies and electronic office equipment, but has limited ability to affect these decisions given its purchasing scale within the University. University Facilities recently began using a cloud-based inventory management software which has improved material tracking and ensures goods are neither over nor understocked.

This chapter focuses on goods and materials that are most independently within University Facilities procurement purview: campus building materials. Additional information about the sustainability of housekeeping products used in the built environment can be found in the [Green Building Operations](#) chapter.



While more sustainable procurement on capital improvement projects is guided by LEED's material procurement credits, it is often more challenging for University Facilities to enforce similar criteria on smaller scale projects.

University Facilities’ leverages the University’s purchasing power to accelerate the availability of sustainable goods in the marketplace.

As the second largest public higher education institution in New Jersey, the scale at which Montclair State University purchases goods and services influences local supply chains. Prioritizing the procurement of more sustainable products increases the prevalence of such products in the marketplace and provides greater access to similar goods for the general public. The goals in this section are intended to assist University Facilities in implementing sustainable procurement policies and purchases for building materials and on-going consumable products necessary to support Montclair State University’s built environment.

06-1: Reduce the environmental impact of campus building materials.

Procuring sustainable building materials reduces the embodied carbon and overall Scope 3 emissions of buildings. Shifting to low VOC and healthier materials will increase occupant health and wellbeing as well as contribute to the campus’ green building certifications.

Percentage of purchased products with EPDs		
Baseline	Short Term	Medium Term
Establish in 2022	+5%	+10%

Percentage of purchased products with HPDs		
Baseline	Short Term	Medium Term
Establish in 2022	+5%	+10%

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL:

- Ensure accurate cataloging of attic stock.
- Elevate sustainability-related training for University Facilities’ procurement officers. Seek opportunities to broaden such trainings to include all University procurement officers.

TO ADVANCE THIS GOAL, UNIVERSITY FACILITIES WILL FORM PARTNERSHIPS TO:

- Develop a material catalogue for the 10 construction materials most frequently purchased.
- Update procurement guidelines for the 10 construction materials most frequently purchased to include recycled content, regional sourcing, material transparency, and low-emitting material requirements that balance the need to maintain a competitive bidding environment with performance.

HPD, Health Product Declaration®

HPDs provide a standardized way of reporting the material contents of building products and their potential human health hazards.



EPD, Environmental Product Declaration®

EPDs provide an internationally standardized method for communicating the environmental performance of a product or service throughout its life cycle.



Cradle to Cradle Certified®

This global standard assesses the safety, circularity, and responsibility of materials and products’ sustainability performance.



Green Seal Certified®

Green Seal certification ensures that a product or service is third-party verified to meet the performance, health, and environmental criteria of this science-based standard.



Green Label Plus

Green Label Plus for carpet, adhesives, and cushion verify products meet stringent volatile organic compound (VOC) emission requirements to support indoor air quality.



FSC, Forest Stewardship Council®

FSC certification ensures wood products come from responsibly managed forests that provide environmental, social and economic benefits.



NAF / NAUF / ULEF

Composite wood products often contain formaldehyde, a known human carcinogen and VOC. No-added formaldehyde (NAF) composite wood products should be specified whenever available. No-added urea-formaldehyde (NAUF) or ultra-low-emitting formaldehyde (ULEF) resins should be used when NAF is not available.



WaterSense Label

This label identifies the most water-efficient products on the market that have been independently certified to meet EPA criteria.



APPENDIX 1: GLOSSARY

While the Facilities Sustainability Plan has striven to avoid the use of overly technical terminology, it is possible that some of the terms used in this document are unfamiliar to readers. The glossary below is intended to provide more equitable engagement with this document and empower all members of Montclair's University Facilities division to participate fully in sustainability conversations.

Air Handling Units (AHUs): a device used to regulate and circulate air as part of a heating, ventilating, and air-conditioning system

Association for the Advancement of Sustainability in Higher Education - Sustainability Tracking, Assessment & Rating System (AASHE STARS): a transparent, self-reporting framework for colleges and universities to measure their sustainability performance

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE): an American professional association that develops and publishes industry standards regarding the performance of mechanical and electrical systems

Biophilic Design: a concept used within the development of the build environment to increase human connectivity to the natural environment

Building Automation Systems / Building Management Systems (BAS / BMS): a computer-based control system that monitors and automates protocols for mechanical and electrical equipment such as ventilation, lighting, power systems, fire systems, and security systems in a building or multiple buildings

Carbon footprint: a calculation to quantify the total greenhouse gas emissions generated by a specific building or entity

Complete streets: rights-of-way that are designed and operated to prioritize safety, comfort, and access for all people who use the street, regardless of their physical mobility abilities or mode of transportation

ENERGY STAR: a program of the United States Environmental Protection Agency that labels products including refrigerators, computers, dishwashers, and other equipment and appliances to recognize their energy efficiency

E-waste: electronic waste, or old electronics, that cannot be disposed of in a landfill for toxicity and contamination reasons

Electrification: developing new or updating existing building systems away from natural gas and other fuel sources to run solely on electricity

Energy audit: the analysis of building energy usage which typically includes a site visit, inventory of building equipment, and calculation of total energy usage resulting in recommended efficiency upgrades

Energy Use Intensity (EUI): the measure of a building's total annual energy consumption divided by its square footage quantified in kBtu / square foot / year

Greenhouse gases (GHG): gases that absorb and emit radiant energy (heat) within the thermal infrared range, defined by the source or scope of the gas in three types: Scope 1, Scope 2, and Scope 3

Green revolving funds: a pool of capital that is dedicated to funding energy efficiency, renewable energy, and/or sustainability projects that generate cost savings

Green Seal: a non-profit environmental standard which certifies products and services based on performance, health, and sustainability criteria

Gross Square Feet (GSF): the total area on all floors of a building included within the outside faces of its exterior walls, including all vertical penetration areas for circulation and shaft areas that connect one floor to another

HVAC: an abbreviation of heating, ventilation, and air conditioning

Integrated pest management: an environmentally sensitive approach to pest management that minimizes risk or hazard to humans and the environment by avoiding chemicals in pest management where possible

kBTU: a unit of heat measurement equivalent to 1,000 British thermal units; the units for other forms of energy such as electricity and steam can be converted into kBTU

kBTU / square foot / year: the unit used to quantify a building's Energy Use Intensity

Leadership in Energy and Environmental Design (LEED): a green building rating system developed by the United States Green Building Council (USGBC) that provides a framework and rating for buildings pursuing certification

Light-emitting diode (LED): a high-efficiency light source that uses less energy and requires less maintenance than many other commercially available light fixtures including fluorescent and incandescent bulbs

Lighting controls: an automated system to control building lights, usually based on time of day or occupancy sensors

MERV13: a MERV rating represents how effectively HVAC system filters can capture particulates; MERV13 is the recommended rating to maintain healthy indoor air quality within a building

Metric ton: a unit of weight equal to 1,000 kilograms (2,205 pounds)

Metric tons of carbon dioxide equivalent (MTCO₂e): an amount of a greenhouse gas whose atmospheric impact has been standardized to that of one unit mass of carbon dioxide (CO₂), based on the global warming potential (GWP) of the gas; used in greenhouse gas reporting

Non-potable water: water that has not been treated for human consumption but which may be acceptable for other uses including irrigation and toilet flushing

Plug loads: energy used by equipment and products that are powered by outlets within a building

Potable water: water that has been treated for human consumption

ParkSmart: a certification framework dedicated to the sustainable design and operations of parking structures

Photovoltaic (PV) panel: a device that converts the light of the sun into electricity, also called a solar panel

Preconsumer Recycled Content: waste materials that are reclaimed within the manufacturing process prior to a product's delivery to a consumer

Postconsumer Recycled Content: waste materials that are reclaimed after a product's delivery to a consumer that can be returned into manufacturing processes

Renewable Energy Certificates (RECs): a tradable, non-tangible energy commodity that certifies the bearer owns one megawatt-hour (MWh) of electricity generated from a renewable energy source

Retrocommissioning: a systematic process of improving an existing building's performance that evaluates its energy-consuming systems to ensure they are operating within their design parameters and provides corrective actions for anomalous operations

Return on Investment (ROI): a performance measure used to evaluate the ratio of income to investment. Generally compares initial cost (capital expense) and long-term operational costs savings (simple payback), but can be expanded to include less tangible benefits of investment including improved reputation among peers and similar outcomes

Rough Order of Magnitude (ROM): a general approximation of cost

Scope 1 emissions: direct greenhouse gas emissions that occur from sources controlled by an organization. Examples are emissions from fuel combustion in boilers, furnaces, and vehicles

Scope 2 emissions: indirect greenhouse gas emissions from sources controlled by an organization. Examples are emissions from the generation of electricity, heat, or steam purchased from a utility provider

Scope 3 emissions: greenhouse gas emissions that are the result of activities from assets not owned or controlled by an organization but are tied to the organization's value chain. Examples include commuting, procurement, water, and waste

Ton: a unit of weight equal to 2,000 pounds

Variable Frequency Drives (VFDs): components of a mechanical ventilation system that allow for ramping airflow up or down to meet real-time needs in lieu of constant volume systems which operate at a consistent rate to meet an assumed level of occupancy

Vehicle Miles Traveled (VMT): the total annual miles of vehicle travel divided by the total population served by that travel

Volatile Organic Compounds (VOCs): organic chemicals emitted as gases from certain solids or liquids that can affect indoor air quality

Waste diversion: diverting waste from landfill (traditional municipal waste collection centers where waste is buried) via recycling or reuse

Water Use Intensity (WUI): the total water use per square foot of a building or campus, commonly used to describe the water efficiency of a building



APPENDIX 2: ACKNOWLEDGMENTS

In addition to over 85 anonymous survey respondents, this work is the collaborative effort of over 125 members of the Montclair State University community who participated in multiple rounds of focus groups and workshops. This work was managed by Adeline Cochran, Sustainability Coordinator, Energy Management who organized and attended all meetings of this project's development.

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APPENDIX 3: BUSINESS CASE

EXECUTIVE SUMMARY

As University Facilities at Montclair State University memorializes current activities and embarks on a path to enhanced sustainable facilities management, the impact of sustainability strategies on the division, the university, and external stakeholders is significant. Sustainability policies and commitments are becoming expected of educational institutions and are increasingly critical to ensuring relevance to the community at large.

Goals and metrics related to environmental stewardship benefit stakeholders in several capacities. Each category identified is described in further depth below and mapped to the Montclair State University Facilities Sustainability Plan goals.

Adopting a systematic and strategic approach to sustainable and healthy building operations will help manage costs, accelerate learning between departments, attract and retain students, faculty, and staff, and allow efforts to provide real value for the University. Efficiencies in anticipated outcomes may be achieved through operational procedures, procurement, and collaboration across departments.

MAPPING TO MONTCLAIR STATE UNIVERSITY FACILITIES SUSTAINABILITY PLAN GOALS

Each of the goals identified as a priority for the Montclair State University Facilities Sustainability Plan addresses at least one of the following business case categories:

- Enhanced reputation
- Peer competition
- Innovation, research, and competitive advantage
- Attract and retain students, faculty, and staff
- Improve efficiency and realize cost savings
- Improve management processes
- Transparency and accountability

These business case categories were selected because they directly tie into the goals, metrics, and action items listed in the Montclair State University Facilities Sustainability Plan.

ENHANCED REPUTATION

Over the past decade many colleges and universities have demonstrated their commitment to being green by making public commitments to carbon reductions and publishing annual sustainability reports and/or climate action plans. As of 2020, there are nine colleges and universities in the United States that have achieved carbon neutrality including American University in Washington, DC and Colgate University in Hamilton, New York.

Although carbon neutrality is a difficult and ambitious goal to achieve, the number of institutions, businesses, and governments that have publicly made climate commitments indicate that such statements are not only good for the planet but can have a positive impact on reputation. Large companies such as Apple and Google are regularly making headlines for commitments and achievements in the realm of sustainability while most institutions have published Climate Action Plans and public commitments to increasing sustainability performance. The public favors entities that are stewards of the environment and therefore setting quantitative goals and actions will expand Montclair State University's reputation to be associated with positive environmental change.

INCREASING COMPETITION AND FOCUS ON RATINGS

As of October 2021, Montclair State University and two-thirds of its peers institutions have active memberships with AASHE. Half of the strategic peer institutions have an active STARS rating as does one of Montclair State University's sister institutions. While Montclair State University is an AASHE Member, the lack of a STARS rating may position the university as a laggard in sustainability. As the second largest public institution in New Jersey,

Goal Number	Goal	Enhanced Reputation	Peer Competition	Innovation, Research & Competitive Advantage	Attract and Retain Students, Faculty, & Staff	Improve Efficiency and Realize Cost Savings	Improve Management Processes	Transparency and Accountability
01-1	Increase metering to support total energy and water accountability.		•			•	•	•
01-2	Reduce potable water consumption and annual potable water costs.	•		•		•	•	•
01-3	Reduce campus-wide energy use intensity and annual energy costs.		•	•		•	•	•
01-4	Reduce Scope 1 greenhouse gas emissions.	•	•	•		•		•
01-5	Develop and implement a comprehensive strategy to neutralize Scope 2 emissions.		•	•				•
01-6	Maximize construction waste diversion.						•	•
02-1	Reduce waste generation.	•		•				•
02-2	Increase waste diversion from landfill.			•			•	
02-3	Reduce the environmental impact of cleaning products and janitorial paper products.			•	•		•	•
03-1	Increase awareness of campus sustainability within University Facilities personnel.	•	•	•	•		•	•
03-2	Build partnerships to increase student, faculty, and staff awareness of campus sustainability.	•	•	•	•		•	•
04-1	Evolve transportation and parking policies to better support sustainability.	•		•	•			•
04-2	Reduce Scope 3 emissions generated by commuter reliance on single occupancy vehicles.	•	•	•	•			
04-3	Reduce Scope 1 emissions generated by campus fleet vehicles.		•	•			•	•
05-1	Increase use of automated systems to reduce irrigation's demand for potable water.			•		•	•	
05-2	Electrify grounds and landscape maintenance equipment.	•		•			•	•
06-1	Reduce the environmental impact of campus building materials.	•		•			•	

Montclair State University has the opportunity to position itself as a champion of sustainability and leader among other state institutions.

INNOVATION AND RESEARCH

College campuses are often regarded as an ideal hub for inventing and piloting sustainability innovations, research, and technologies. College campuses are controlled environments with the ability to deploy resources quickly and can overcome barriers to energy efficiency improvements compared to other project types such as single buildings or entire cities. With innovation and research already taking place in student and faculty initiatives, opportunities for pilot projects and larger campus buy-in are often present. One of Montclair State University's peer institutions, Ball State University, began incorporating LEED certification into student construction administration and interior design curriculum. The program has resulted in the LEED O+M Certification of the campus' Letterman Building, as well as graduates with real world professional experience in the industry.

ATTRACT AND RETAIN

The average individual's knowledge and concern with environmental stewardship and climate change is significantly higher than it was even 20 years ago and is growing rapidly with each younger generation. This means that [campus sustainability is beginning to play a role in students' enrollment decisions](#), with public commitments and proven sustainability performance providing the most visible ways prospective students learn about an institution's sustainability performance.

Additionally, employee attitudes and priorities within the workplace are rapidly changing. Individuals increasingly indicate a desire to work for an employer that is doing their part environmentally. A recent survey published within the Montclair State University Facilities division showed that staff recognize climate change should be addressed at both the university and individual level.

[A 2011 study](#) investigated the relationships between exterior view quality and access to daylight with sick leave utilization of employees in administrative offices of a northwest university campus. Taken together, lack of access to quality exterior views and daylight demonstrate a statistically significant increase in sick leave utilization, which has a

real cost to the organization analyzed in terms of productivity and costs associated with sick leave.

There is a growing scientific understanding of the benefits of [biophilic design](#) and the positive impact of green space and nature on mental health. Many studies document improvement in occupant health in residential buildings due to energy efficiency improvements. Increased insulation and air sealing, along with efficient and well-ventilated mechanical systems, are shown to improve indoor temperatures and humidity and result in less moisture, mold, particulates, combustion by-products, and allergens in indoor air.

The [Harvard CogFx study](#) showed that indoor air quality (CO₂, VOCs, and ventilation rate) all have a significant impact on cognitive function. Cognitive scores were 61% higher for occupants exposed to reduced VOC levels and code required ventilation and were 101% higher for occupants with reduced VOC levels and increased ventilation than occupants exposed to typical VOC levels and code required ventilation. A more comprehensive body of research can be drawn on to suggest that it is not uncommon for higher air quality to result in productivity improvements of 8 to 11 percent. A company's greatest expense is generally their employees, so increased productivity has direct financial implications.

Even the perception of thermal comfort has a significant impact on workplace satisfaction. Studies

DID YOU KNOW?

40%

percentage
of annual energy use
in the United States
attributable to buildings.

consistently show that even modest degrees of personal control over thermal comfort can return single digit improvements in productivity.

IMPROVED EFFICIENCY AND COST SAVINGS

According to the Environmental Defense Fund and International Energy Agency, [buildings use nearly 40% of all energy in the United States and generate more than a third of our country's greenhouse gases](#). Higher education campuses contribute to these emissions due to their campus footprint and associated operational energy and water usage. First American's Report "Building a Business Case for Sustainability Initiatives" states "higher education contributes significantly to these emissions, as colleges and universities collectively account for more than 5 billion square feet, \$14 billion in operations and maintenance costs and spend \$6-7 billion annually on energy/utility costs."

One of the guiding principles for the Montclair State University Facilities Sustainability Plan states that "University Facilities develops and maintains high-quality, resource efficient campus buildings." The [Green Building Infrastructure](#) goals and metrics aim to reduce campus-wide energy and water use and increase efficiency, leading to operational cost savings and a decreased reliance on natural resources. Universities across the country have demonstrated cost savings associated with conservation and efficiency measures similar to those outlined in the Facilities Sustainability Plan.

The National Association of College and University Business Officers (NACUBO) [Key Facilities Metrics Report](#) has quantified results associated with sustainable outcomes on university campuses across the country. In 2017, University of Washington reported \$14.5M in cost avoidance through conservation measures on campus and Appalachian State University reported \$28M in cost savings due to a 45% reduction in energy use.

IMPROVED MANAGEMENT PROCESSES

Once the goals and metrics listed within Montclair State University's Facilities Sustainability Plan have been implemented, there will be long-term management processes in place to track buildings'

energy, water, and waste generation. Standardizing the data tracking in these areas will allow University Facilities to make better informed decisions moving forward and respond to changing regulatory compliance reporting. Systematically tracking data allows for cost savings, comparative analysis of building performance, a roll up of data across the portfolio, streamlining reporting efforts, and support for Montclair State University's sustainability goals.

GREATER CALLS FOR TRANSPARENCY AND ACCOUNTABILITY

As cities start to require buildings to report energy use and issue fines, building owners that have addressed energy efficiency and monitored performance will be prepared to manage their message. Attention to the impacts of the materials selected for new construction and renovation projects avoids situations such as toxic material recalls and associated negative publicity.

New Jersey has been a leader in setting clean energy and greenhouse gas emissions targets and as one of the state's leading higher education institutions, Montclair State University has an important role in helping the State to achieve these goals. The New Jersey Global Warming Response Act calls for a reduction of statewide greenhouse gas emissions to 80% below 2006 levels by 2050, and in 2019 Governor Phil Murphy's administration released the [Energy Master Plan](#) which provides key strategies to reach the 2050 emissions reduction target. Strategy 4 under the 2019 Energy Master Plan is "Reducing Energy Consumption and Emissions from the Building Sector" which Montclair State University and the Facilities Sustainability Plan can directly affect.

CONCLUSION

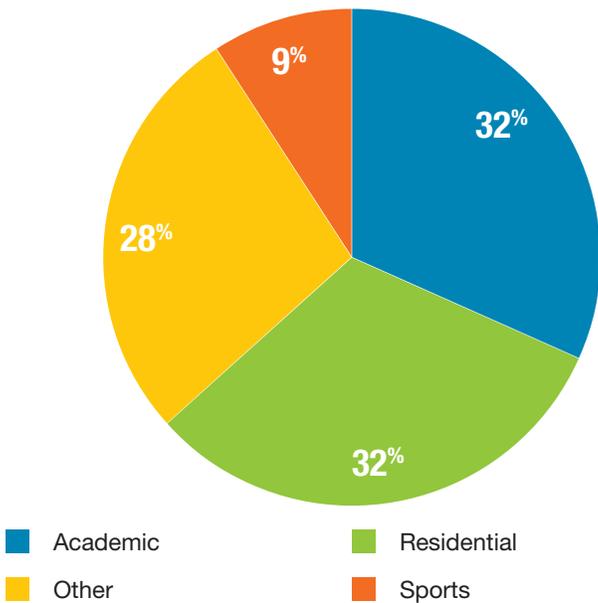
Adopting a systematic and strategic approach to sustainable and healthy building operations will serve to manage costs, accelerate learning between departments, attract and retain students and staff, and allow efforts to provide real value for the University. Efficiencies in anticipated outcomes may be achieved through operational procedures, procurement, and collaboration across departments.

A CASE STUDY IN LIGHTING AND CONTROLS RETROFITS: MAKING THE BUSINESS CASE FOR ENERGY EFFICIENCY MEASURES

Montclair State University contracted 47 ASHRAE Level 1 energy audits in 2018 to measure building energy use and highlight potential efficiency upgrades. The audits are the basis for this business case analysis.

The planning team categorized the 2018 audits into four building types: academic, residential, sports facilities, and other.

DISTRIBUTION OF FACILITIES RECEIVING ASHRAE LEVEL 1 AUDITS IN 2018



Fifteen academic and fifteen residential facilities were analyzed as part of the ASHRAE Level 1 audits and because of this larger sample size and the similarity of building programs for these facilities, the planning team was able to do further analysis using the audits on those buildings.

The audit data reveals the largest end uses of energy in both academic and residential facilities are fuel-fired and electrical HVAC equipment. Many of these buildings are served by the central plant which is operated by a third-party contractor to Montclair State University. Modifications to the central plant are likely to yield the greatest impact to facilities across Montclair State University’s building portfolio, but existing contracts limit the University’s ability to affect change in the energy used for fuel fired or electrical HVAC equipment.

Motors, lighting, plug loads, and domestic hot water make up the balance of Montclair State University’s end uses of energy. Of these loads, lighting and lighting control upgrades provide the greatest opportunity for quick and highly visible resource efficiency wins. The case study that follows highlights the positive changes that could be realized through retrofits of this scope.

Looking at the data obtained from the audits, lighting represents approximately 20% of the total energy used in the audited buildings. The audits were further reviewed to understand the strategies and energy efficiency measures proposed by the audit team. For the lighting systems, the focus was on upgrading existing fluorescent fixtures to LED lighting fixtures. The second measure considered installing automatic lighting controls that would allow lights to be turned off when spaces are unoccupied.

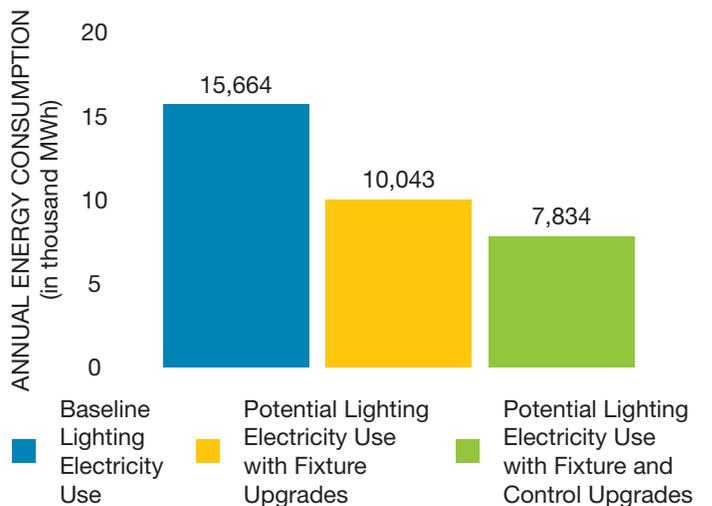
DID YOU KNOW?

20%

percentage of annual energy use attributable to lighting in audited buildings

According to the energy audits, lighting upgrades in the audited buildings could show up to 36% energy savings in the lighting end use category, and lighting controls could show an additional 14% savings. These measures may also be additive.

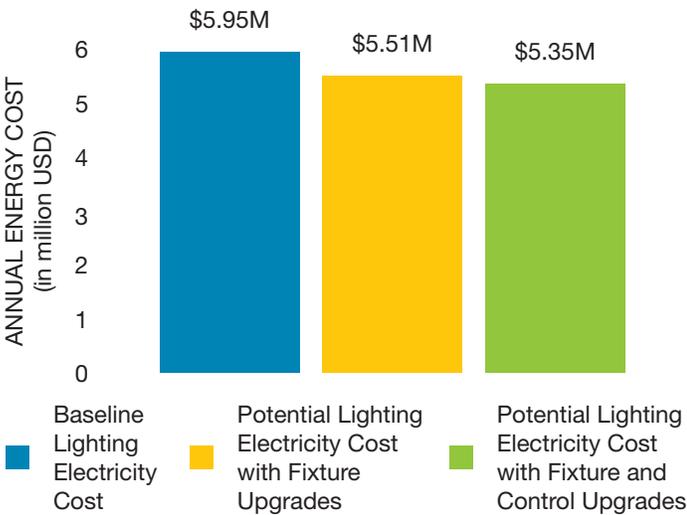
POTENTIAL ANNUAL ELECTRICITY SAVINGS IN AUDITED BUILDINGS FROM LIGHTING MODIFICATIONS



Since there are two main electricity sources serving campus (the cogeneration plant and the local PSE&G grid), energy cost savings depend greatly on where each building is sourcing its electricity. The local grid utility rate is known to be \$0.17/kWh, while the cogen plant has a much lower rate per kWh due to the university's 30-year contract with its operator. When this is factored into the savings, there is a shorter return on investment for buildings that are connected to the local grid than buildings that are connected to the cogeneration plant.

Cost savings are still shown, however, regardless of the mix of rates applied. For buildings served entirely by the cogeneration plant, which has a lower utility rate and therefore the slowest return on investment, the energy cost savings are anticipated to be almost \$500,000 annually for the lighting fixture retrofit and about \$150,000 annually for lighting controls.

POTENTIAL ANNUAL ELECTRICITY COST SAVINGS IN AUDITED BUILDINGS FROM LIGHTING MODIFICATIONS

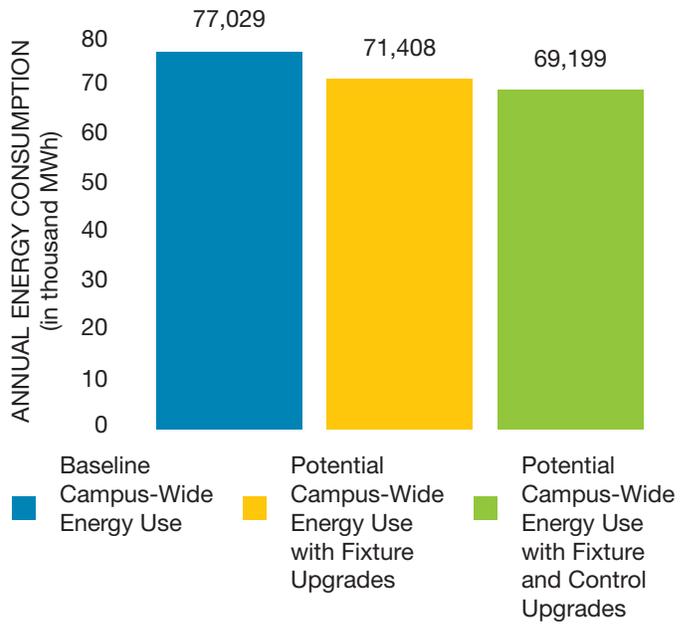


The initial investment to implement the lighting retrofits and upgrade the control system for the audited buildings are in the ROM of \$3M for lighting fixtures and under \$1M for controls. The ROI or simple payback calculations show between 5-8 years for lighting fixtures and 2-14 years for lighting controls, depending on which buildings are selected for implementation of these measures.

If all lighting fixture retrofits were implemented, Montclair State University's total energy use would be reduced by 7%. An additional 3% energy savings can be realized by implementing control upgrades.

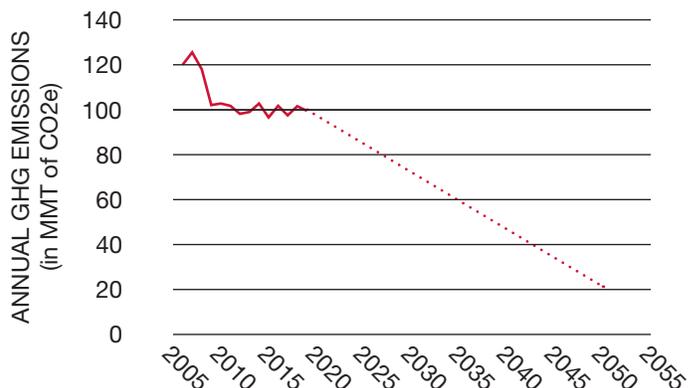
In terms of carbon emissions, the main factor to be consider is the energy source. The cogen plant

POTENTIAL ANNUAL CAMPUS-WIDE ENERGY USE REDUCTIONS FROM LIGHTING MODIFICATIONS



is fueled by natural gas, which typically has an emissions factor of 400 lbs/MWh. The emissions factors from utility grids change constantly because of utilities' initiatives to move toward clean energy. Information published by [NREL](#) notes that the emissions factor for the State of New Jersey in 2020 is 490.1 lbs/MWh. It is important to note that PSE&G (the local grid) has a plan in place to become carbon neutral by 2050, so as the grid becomes cleaner, this will directly impact the carbon emissions for campus buildings that are tied into the local grid.

HISTORICAL AND ANTICIPATED GHG EMISSIONS ASSOCIATED WITH THE PSE&G UTILITY GRID

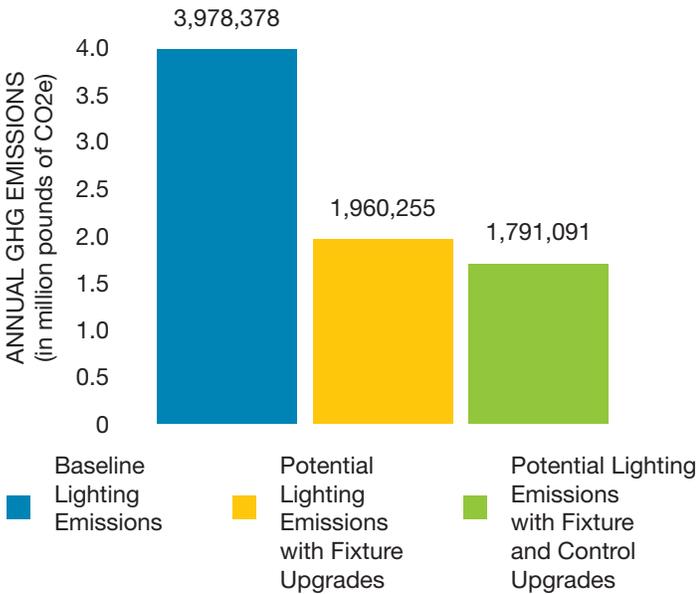


Data in this graph refers to publicly available information on New Jersey's historical greenhouse gas emissions and current reduction targets. For more information see the [State of New Jersey website](#).

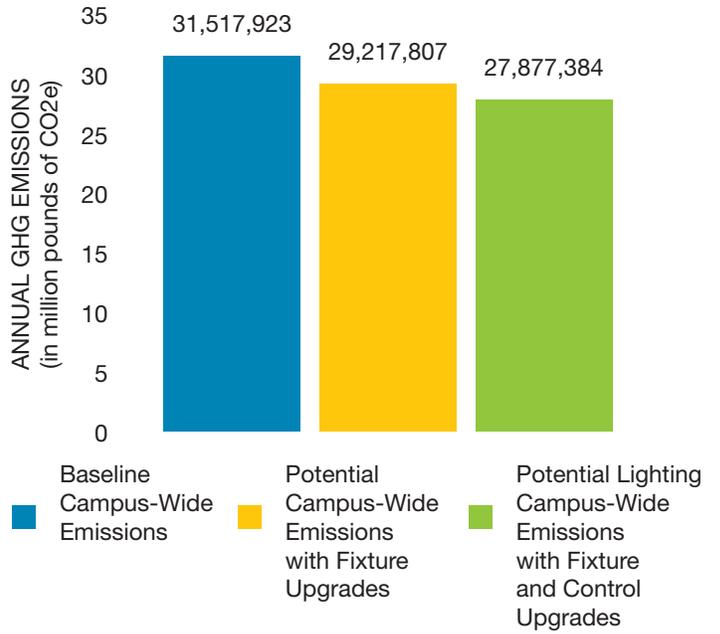
The total emissions for electricity in the 2018 audited buildings is 3,978,378 pounds of CO₂e. This calculation includes the emissions factors for both the cogeneration plant as well as the local utility grid for buildings that are not serviced by the cogen plant.

The following graph illustrates a substantial reduction in the emissions associated with lighting alone when switching to a more efficient lighting source. When looking at campus-wide emissions, the impact of lighting retrofits is less significant, but still relevant when considering a path toward carbon neutrality. Additional strategies to become carbon neutral within the campus without depending solely on the grid include on-site renewable energy generation that may significantly reduce fossil fuel energy use, cost, and carbon emissions.

POTENTIAL ANNUAL GHG EMISSION REDUCTIONS FROM LIGHTING MODIFICATIONS



POTENTIAL ANNUAL CAMPUS-WIDE CARBON EMISSIONS SAVINGS FROM LIGHTING MODIFICATIONS



A 10% reduction in energy use and cost is achievable through lighting retrofits for the audited buildings. Additional measures are explored in the audit reports; however the lighting system was selected due to the high visibility that it offers. Montclair State University should prioritize retrofits in buildings where savings may take less time to show up in the utility bills. Buildings may be further categorized by their age, last retrofit, type, and percentage of total energy use attributable to lighting.



APPENDIX 4: ACCOUNTABILITY

This planning document is intended to spur action and accountability. The goals within each topic are specific, measurable, achievable, realistic, and time-bound. Metrics within this document have short, medium, and/or long term targets depending on the scale of change anticipated and the effort necessary for advancement. This plan was published in the spring 2022 semester. Targets indicated in the “short term” timeframe therefore have anticipated achievement between 2022 and 2024. Targets indicated in the “medium term” timeframe are anticipated between 2025 and 2027. Long term targets look to 2028 and beyond.

Targets are set to date ranges to provide resilience and accommodate unforeseen opportunities that may arise after publication. Actions are compiled for each goal, but these lists are not intended to be

exhaustive or all inclusive. University Facilities will continue to be opportunistic in implementing work that advances the University towards the goals stated within this plan.

An accountability tracking tool exists to manage goals and metrics outlined in this plan through actionable tasks. Each individual goal is broken down into a separate line item that includes a description, baseline, short-, medium-, and long-term targets, status, and contextual notes. Establishing an interactive tool allows metrics to be assigned to specific individuals or departments with deadlines and action items. Team members use this accountability tool to take real time notes and document progress in order to memorialize progress, accomplishments, and the status of metrics and milestones.

Goals + Actions	Within University Facilities	University Facilities in Partnership
01-1: Increase metering to support total energy and water accountability.		
Catalogue buildings over 10,000 GSF and existing energy and water metering provided to those structures.	•	
Systematically retrofit building-scale energy and water submeters onto existing facilities greater than 10,000 GSF.	•	
Ensure newly constructed buildings have building-scale energy and water metering.	•	
Increase the number of buildings connected to the University’s centralized building management platform.	•	
Develop and implement a metering calibration plan in alignment with manufacturer’s best practices; this may include sub-contracting.	•	
Investigate opportunities to pilot emerging utility consumption accountability technologies.	•	
Investigate and implement meaningful submetering including foodservice operations and irrigation systems.		•
Begin engaging faculty to integrate building-scale utility data into academic courses.		•
01-2: Reduce potable water consumption and annual potable water costs.		
Consider strategies for condensate capture and reuse.	•	
Expand existing practices that require the installation of WaterSense labeled lavatory faucets, urinals, showerheads, and water closets in new construction and major renovation projects into all projects.	•	

Goals + Actions	Within University Facilities	University Facilities in Partnership
01-2: Reduce potable water consumption and annual potable water costs. (continued)		
Leverage increased metering infrastructure to better detect leaks and provide more timely corrective action.	•	
Continue to test cooling tower concentrations quarterly to ensure optimized operations.	•	
Integrate permanent, point-of-use signage into all building renovation and new construction projects to promote water efficiency behaviors by the campus community.		•
01-3: Reduce campus-wide energy use intensity and annual energy costs.		
Integrate lighting occupancy and/or daylight sensors into existing buildings.	•	
Implement automated setbacks on high-demand systems such as fume hoods and foodservice exhaust systems.	•	
Consider replacing AHUs with VFDs.	•	
Complete ASHRAE Level 2 audits on buildings with high energy demands.	•	
Consider additional building setback schedules.	•	
Complete regular audits of building-scale metering data to identify and address anomalous operations in a timely fashion; this may include sub-contracting.	•	
Replace existing equipment and appliances with EnergyStar rated models at phase out.	•	
Investigate window alarms and/or point-of-use occupant education signage in buildings with operable windows to ensure closure when mechanical systems are in use.	•	
Prioritize projects that address deferred maintenance in the next campus master plan.	•	
Consider implementing demand response protocols for lighting and/or HVAC systems.	•	
Develop and publish an indoor temperature policy to manage occupant expectations.	•	
Develop and implement a retrocommissioning plan to address all buildings over 50,000 GSF.	•	
Explore hybrid work schedules.		•
01-4: Reduce Scope 1 greenhouse gas emissions.		
Investigate opportunities for increasing efficiency of stand-alone building boilers that combust fossil fuels.	•	
Prioritize use of the least carbon intensive energy sources, whether that's energy from the cogeneration plant or the utility grid.	•	
Update energy partner contracts at renewal to prioritize reductions in carbon emissions.		•
01-5: Develop and implement a comprehensive strategy to neutralize Scope 2 emissions.		
Continue implementation of demand minimization strategies.	•	
Assess power purchase agreements.	•	
Assess Renewable Energy Certificate (REC) and/or carbon offset purchases.	•	
Integrate signage into all building renovations and new construction projects to promote energy efficiency behaviors by the campus community.		•
Assess capacity for additional on-site solar installations and strategies for engaging such installations in curricular and research opportunities.		•
01-6: Maximize construction waste diversion.		
Consider updating construction waste contracts to require at minimum 50% construction waste diversion by weight for all projects.	•	
Consider a consistent location on campus for construction waste dumpsters that can be used by multiple small-scale construction projects.	•	
Encourage on-site separation of construction wastes.	•	

Goals + Actions	Within University Facilities	University Facilities in Partnership
02-1: Reduce waste generation.		
Digitize Operations & Maintenance manuals.	•	
Transition bidding and other processes which traditionally use a large quantity of printing paper to paperless.	•	
Continue to incorporate hand dryers in lieu of paper towel dispensers in bathrooms.	•	
Continue to incorporate hardwired automated fixtures in lieu of battery-operated.	•	
Divert durable goods such as furniture and lamps from landfill during Residence Life move out, office moves, and renovations.		•
Encourage the use of reusable hot and cold beverage containers.		•
Accelerate the adoption of electronic signature platforms.		•
02-2: Increase waste diversion from landfill.		
Continue to contract for composting grounds and landscape wastes.	•	
Work toward universal waste management infrastructure across both interior and exterior spaces on campus.		•
Pilot back-of-house and front-of-house composting in dining venues.		•
Integrate permanent, point-of-use signage into all building renovations and new construction projects to promote appropriate waste diversion behaviors by the campus community.		•
Update contract language at renewal with foodservice vendors to increase accountability for waste diversion efforts.		•
Develop and implement procurement language that minimizes non-recyclable single-use goods.		•
02-3: Reduce the environmental impact of cleaning products and janitorial paper products.		
Codify existing practices into a policy to ensure continuity of green cleaning and janitorial paper product purchasing.	•	
03-1: Increase awareness of campus sustainability within University Facilities personnel.		
Author and publish an annual sustainability literacy and culture assessment within the Division of University Facilities.	•	
Provide for the creation and maintenance of communications collateral associated with new and existing sustainability initiatives.	•	
Integrate sustainability information into new employee orientation and onboarding activities.	•	
Provide an online module on University Facilities' sustainability work that is updated annually.	•	
Provide a quarterly in-person sustainability education session for University Facilities' staff.	•	
03-2: Build partnerships to increase student, faculty, and staff awareness of campus sustainability.		
Integrate permanent, point-of-use signage into all building renovations and new construction projects to promote resource conservation by the campus community.		•
Elevate sustainability as a priority issue in the campus master plan.		•
Establish a university-wide Sustainability Advisory Council tasked with the development and implementation of a comprehensive sustainability strategy.		•
Develop a sustainability-related editorial calendar.		•
Integrate sustainability information into student orientation.		•
Develop sustainability-related programming for resident students.		•
Increase utilization of operational data in courses.		•
04-1: Evolve transportation and parking policies to better support sustainability.		
Establish metrics for campus fleet vehicles per unit to ensure campus fleet remains "right-sized."	•	
Investigate potential of vehicle sharing apps to increase campus fleet utilization.	•	
Develop and implement an amortization schedule for campus fleet vehicles to proactively steward financial resources for their equitable replacement.	•	

Goals + Actions	Within University Facilities	University Facilities in Partnership
Evaluate ParkSmart certification, the only green building framework dedicated to sustainable design and operations of parking structures, for new and existing parking garages.	•	
Develop a comprehensive strategy for on-campus electric vehicle charging that addresses university vehicles and private vehicles owned by both parking permit holders and the general public.	•	
Adopt and implement a Complete Streets policy.		•
Reduce the number of vehicles in the campus core to maintain safe pedestrian mobility.		•
04-2: Reduce Scope 3 emissions generated by commuter reliance on single occupancy vehicles.		
Develop and implement an annual commuting and transportation survey to empower reporting the percentage of students, faculty, and staff that commute using various modes of transportation.	•	
Refine incentive programs for low-carbon commuting by students, faculty, and staff.	•	
Quantify existing parking utilization and project trends based on anticipated enrollment.		•
Commission a transportation demand management study as part of a comprehensive campus master plan.		•
Explore hybrid work schedules to optimize commuting requirements.		•
Emphasize pedestrian priority in the development of the campus master plan.		•
04-3: Reduce Scope 1 emissions generated by campus fleet vehicles.		
Prioritize purchases of hybrid vehicles for light duty vehicles.	•	
Analyze work orders to understand whether fleet vehicles are more efficiently used to move parts or people.	•	
Pursue grants to accelerate the installation of Electric Vehicle (EV) infrastructure to support an electrified campus fleet.	•	
Prepare vehicle maintenance infrastructure for hybrid vehicles and EVs.	•	
Better enforce campus “no idling” policy.		•
05-1: Increase use of automated systems to reduce irrigation’s demand for potable water.		
Invest in weather-controlled, automatic irrigation systems.	•	
Ensure comprehensive mapping of irrigation systems at installation.	•	
Invest in metering specific to irrigation systems.	•	
Consider opportunities to irrigate with reclaimed rainwater.	•	
Continue to zone irrigation systems to separate planting beds from turf areas.	•	
Continue to prioritize the use of native and adapted species in lieu of exotic specimen plantings.	•	
Continue to prioritize the use of perennials ahead of annuals.	•	
05-2: Electrify grounds and landscape maintenance equipment.		
Catalogue the equipment used in grounds and landscape equipment.	•	
Research the availability of electric equipment.	•	
Pilot electric equipment to verify its ability to meet grounds and landscaping needs.	•	
Transition equipment to electric models.	•	
06-1: Reduce the environmental impact of campus building materials.		
Ensure accurate cataloging of attic stock.	•	
Elevate sustainability-related training for University Facilities’ procurement officers. Seek opportunities to broaden such trainings to include all University procurement officers.	•	
Develop a material catalogue for the 10 construction materials most frequently purchased.		•
Update procurement guidelines for the 10 construction materials most frequently purchased to include recycled content, regional sourcing, material transparency, and low-emitting material requirements that balance the need to maintain a competitive bidding environment with performance.		•

APPENDIX 5: PEER BENCHMARKING

Montclair State University has numerous peer institutions that are identified through its Strategic Plan 2025, [Project Soar](#), as well as its status as a public higher education institution in the State of New Jersey. Montclair State University has a combined total of 19 peer institutions, some of whom are identified as strategic peers and others as sister institutions:

Strategic Peers

- Ball State University
- Bowling Green State University
- Illinois State University
- San Diego State University
- Towson University
- University of Massachusetts, Boston
- University of North Carolina, Charlotte
- University of North Carolina, Greensboro

Sister Institutions

- The College of New Jersey
- Kean University
- New Jersey City University
- New Jersey Institute of Technology
- Ramapo University of New Jersey
- Rowan University
- Rutgers University, Camden
- Rutgers University, Newark
- Rutgers University, New Brunswick
- Stockton University
- William Paterson University of New Jersey

While there are many ways to evaluate sustainability in higher education, one of the most broadly recognized is the Association for the Advancement of Sustainability in Higher Education's [Sustainability Tracking, Assessment & Rating System](#) (AASHE STARS). STARS is a comprehensive, self-reported data sharing platform that supports colleges and universities across the globe in reporting how their

institution advances sustainability in the areas of **Academics, Engagement, Operations, Planning & Administration, and Innovation & Leadership**. The Operations category contains the most available points of the system's categories and has the closest relationship to University Facilities' responsibilities at Montclair State University. This peer benchmarking exercise addresses all of the topic areas addressed by AASHE STARS even though portions of that work are beyond University Facilities because AASHE STARS is the most broadly recognized framework for evaluating sustainability in higher education.

Depending on the number of points achieved, an institution is given the designation of Reporter, Bronze, Silver, or Platinum. The planning team reviewed the group of peer institutions identified and discovered that as of October 2021, Montclair State University and two-thirds of its peers institutions have active memberships with AASHE. As of October 2021, half of the strategic peer institutions had an active STARS rating while only one of the sister institutions had an active STARS rating.

The planning team recommends Montclair State University maintain its membership in AASHE to align with the sustainability commitments made by its peer institutions. Montclair State University has an opportunity to demonstrate leadership amongst its sister institutions by making its first AASHE STARS submission. Publishing such a dataset would elevate Montclair State University's sustainability efforts to be more competitive with its strategic peers. Developing such a submission would require the collaborative efforts of multiple entities across campus. More information about how to advance an AASHE STARS submission can be found in the Appendix under [Roadmap to an Initial AASHE STARS Submission](#).

Because only approximately one-third of Montclair State University's peer institutions have made AASHE STARS reports, the planning team used a

combined analysis strategy for peer benchmarking that aggregated data from multiple sources including AASHE STARS reports, greenhouse gas (GHG) emissions data disclosed through the [Second Nature Reporting Platform](#), and other publicly available online data from each institution. The peer benchmarking exercise adopted the five major reporting areas of AASHE STARS and identified strategies for evaluating institutions with dissimilar data reporting.

For institutions with AASHE STARS reports, the peer benchmarking exercise provided a score of 0 to 5 points in each category depending on the percentage of available points an institution earned in each of AASHE STARS' primary categories:

Percentage of Points Earned in an AASHE STARS Category	Points Awarded in Peer Benchmarking
0% - 10%	0
11% - 20%	1
21% - 40%	2
41% - 60%	3
61% - 80%	4
81% - 100%	5

For institutions without AASHE STARS reports, the planning team identified criteria within each of AASHE STARS' primary categories that could be answered with existing publicly available data.

Within the area of **Academics**, an institution without an AASHE STARS report was awarded 1 point at minimum on the assumption that some manner of integration between sustainability and academic and research work likely exists at all institutions regardless of whether the planning team could access it in publicly available data or not. An institution was then awarded 1 additional point up to a maximum of 5 if the planning team could find:

- information on majors or minors related to sustainability,
- an existing campus institute or research center focused on or related to sustainability,
- sustainability-related course listings,
- sustainability-related research listings.

While the broader development of this Facilities Sustainability Plan had limited engagement with faculty, it is hoped that benchmarking existing Montclair State University efforts among sister institutions and strategic peers jumpstarts conversations about how to increase the inclusion of sustainability into curricular and research efforts.

Within the topic of **Engagement**, institutions without AASHE STARS reports were awarded zero points in peer benchmarking if there was not a clearly available sustainability-focused website for the institution and the institution had no sustainability-focused social media accounts on Facebook, Twitter, or Instagram. Institutions without AASHE STARS reports were awarded 1 point if they maintained a sustainability website for the University and 1 additional point for each sustainability-focused social media account up to a maximum of 4 points.

In the category of **Operations**, the planning team used greenhouse gas (GHG) emissions reductions as a proxy for sustainability advancements. While one-third of Montclair State University's peer institutions did not appear to have publicly available GHG emissions data, all other institutions had data published independently on their own websites, reported through Second Nature, or reported through AASHE STARS.

Institutions without publicly available GHG emissions reports or publicly articulated GHG emissions reduction goals and without AASHE STARS reports were assigned a score of zero in the Operations category. Institutions whose GHG emissions reporting indicated increases in carbon emissions were also scored with a zero. Institutions without AASHE STARS reports, but with publicly available GHG emissions reduction goals were awarded 1 point. Institutions with active GHG emissions reporting that demonstrated reductions were awarded 2 to 5 points depending on the percentage of reductions realized at the institution:

Change in Carbon Emissions	Points Awarded in Peer Benchmarking
Increases of any magnitude	0
0% - 25% decrease	2
26% - 50% decrease	3
51% - 75% decrease	4
76% - 100% decrease	5

For the **Planning** category, institutions without AASHE STARS reports were awarded zero points if no sustainability-focused or sustainability-related planning documents could be identified by the planning team and one additional point up to a maximum of 5 for each sustainability-related planning tool. In some cases, institution's physical campus master plans and/or strategic plans incorporated sustainability while other

institutions had climate action plans or independent sustainability plans.

Within the **Innovation** category, each institution without an AASHE STARS report was awarded 2 points on the assumption that there are numerous ways to earn innovation credits within the AASHE STARS system and it is likely many institutions can achieve at least 2 points in that category regardless of whether the planning team could find such information in publicly available data or not.

Using this analysis strategy, peer benchmarking revealed several high-level take-aways:

- Peer institutions who do not have AASHE STARS reports communicate few connections between sustainable campus operations and curriculum and research endeavors.
- Nearly all strategic peers maintain sustainability-specific websites and social media accounts across a variety of platforms. Approximately half of sister institutions have sustainability websites and social media accounts.
- The gross quantity of greenhouse gas emissions reported by peer institutions varies widely.

- Publicly reporting greenhouse gas emissions is one way in which peer institutions demonstrate their leadership – strategic peers have longer, more consistent reporting records than sister institutions.
- Most strategic peers have sustainability and/or climate action plans while only one sister institution, The College of New Jersey, has an easy-to-find climate action plan.

The Peer Benchmarking Analysis table that follows summarizes the results of applying this analysis strategy. Peer benchmarking reveals that Montclair State University is a leader amongst its sister institutions when it comes to sustainability, but institutional efforts lag the progress demonstrated by strategic peer institutions. Compiling existing sustainability work on campus to make the institution's first submission to AASHE STARS would support Montclair State University in elevating its leadership amongst its peer institutions and help it increase its competitive advantage relative to strategic peer institutions in the realm of sustainability.



Montclair State University maintains an on-going membership in the Association for the Advancement of Sustainability in Higher Education, the premier organization addressing sustainable academics, engagement, operations, planning, and innovation in colleges and universities.

PEER BENCHMARKING ANALYSIS

Institution	Academics	Engagement	Operations	Planning and Administration	Innovation	Average
San Diego State University	3	4	3	3	4	3.4
University of North Carolina - Greensboro	4	3	3	3	4	3.4
Ball State University	3	4	2	3	3	3.0
Towson University	3	3	4	4	0	2.8
Illinois State University	3	3	2	2	3	2.6
University of North Carolina - Charlotte	3	3	2	3	2	2.6
Bowling Green State University	1	4	3	1	2	2.2
University of Massachusetts - Boston	1	1	0	5	2	1.8
Rutgers University - New Brunswick	4	3	0	0	2	1.8
The College of New Jersey	1	2	3	1	2	1.8
Montclair State University	2	1	2	0	2	1.4
Ramapo College of New Jersey	2	3	0	0	2	1.4
William Paterson University of New Jersey	1	4	0	0	2	1.4
New Jersey City University	3	1	0	0	2	1.2
New Jersey Institute of Technology	1	3	0	0	2	1.2
Stockton University	1	2	0	0	2	1.0
Rutgers University - Camden	1	1	0	0	2	0.8
Rutgers University - Newark	1	0	0	0	2	0.6
Rowan University	1	0	0	0	2	0.6
Kean University	1	0	0	0	2	0.6

Peer benchmarking used a combined analysis strategy that aggregated data from multiple sources including AASHE STARS reports, greenhouse gas (GHG) emissions data disclosed through the [Second Nature Reporting Platform](#), and other publicly available online data from each institution.

APPENDIX 6: ROADMAP TO AN INITIAL AASHE STARS SUBMISSION

While there are many ways to evaluate sustainability in higher education, one of the most broadly recognized is the Association for the Advancement of Sustainability in Higher Education's [Sustainability Tracking, Assessment & Rating System](#) (AASHE STARS). STARS is a self-reported data sharing platform that supports colleges and universities across the globe in reporting how their institution advances sustainability in the areas of **Academics, Engagement, Operations, Planning & Administration, and Innovation & Leadership**.

Depending on the number of points achieved, an institution is given the designation of Reporter, Bronze, Silver, or Platinum. The planning team reviewed the group of peer institutions identified and discovered that as of October 2021, half of the strategic peer institutions and only one of the sister institutions had an active STARS rating.

Montclair State University has an opportunity to demonstrate leadership amongst its sister institutions by making its first AASHE STARS submission. Publishing such a dataset would elevate Montclair State University's sustainability efforts to be more competitive with its strategic peers. Developing such a submission would require the collaborative efforts of multiple entities across campus. This narrative highlights how Montclair State University might begin to advance an AASHE STARS submission, recognizing that such work will require collaboration beyond University Facilities.

In addition to the information that follows, Montclair State University is directed to explore the resources published by AASHE to support institutions in completing their STARS documentation. This publicly available information includes a [Technical Manual](#), [Credit Checklist](#) for the most recent version of STARS, and an [Innovation & Leadership Catalog](#).

All scored AASHE STARS reports require unscored preface information to set the context for the institution's scored data. AASHE STARS requires an executive letter from the institution's president, chancellor, or other high ranking executive that describes the institution's commitment to sustainability, background information, key achievements, and/or goals for future work. Institutions must also provide information about their campus boundaries and characteristics such as the gross square footage of campus buildings and current demographic data on enrollment, employees, and on-campus residents.

The matrix that follows this narrative highlights each STARS2.2 credit and the anticipated level of difficulty for achieving that credit on a scale of 1 - 4. A score of 1 indicates that information already exists within the institution in an entity known to University Facilities while a score of 2 suggests Montclair State University may need to confirm who has the requested data. A score of 3 suggests Montclair State University may need to undertake intermediate work before the data point requested could be provided to STARS while a score of 4 suggests that significant coordination and discussion would be required to pursue the credit or that it is likely Montclair State University would opt out of reporting this information. A score of N/A is assigned to credits that are not applicable to Montclair State University.

In alignment with actions noted in the [Engagement](#) chapter, it is anticipated a university-wide Sustainability Advisory Council developed by the Office of the University President with support from University Facilities and other entities on campus would be developed and charged with implementing a comprehensive sustainability strategy for Montclair State University of which a regularly renewed AASHE STARS submission would be part.

ACADEMICS

Under STARS2.2, Academics has a total of 58 points in two major categories: Curriculum and Research. Curriculum has 8 credits worth a total of 40 points while Research has 3 credits worth a total of 18 points.

The first Curriculum credit, Academic Courses, requires inventorying the course catalogue to quantify the total number of courses offered by the institution as well as the number of courses that are sustainability-focused or sustainability-inclusive. Points are awarded based on the percentage of undergraduate and graduate courses that identify as sustainability-focused or sustainability-inclusive. It is assumed that such an inventory does not already exist. Experiences with other institutions suggest auditing the course catalogue for sustainability is a time-intensive, but not overly difficult exercise and as a result the credit has been rated 2 for level of difficulty.

STARS' Learning Outcomes credit can be pursued through one of two parts that address varying scales. If an institution has a university-wide sustainability-focused learning outcome, then it can pursue this credit for the institution's population as a whole. If an institution does not have a university-wide sustainability-focused learning outcome, but does have program-level sustainability learning outcomes, then an institution can document the proportion of its graduates that are enrolled in such programs. Montclair State University does not have university-wide learning outcomes, so the second path could be used to pursue this credit. Because documentation would require coordination with multiple programs and/or colleges, this credit has been assigned a 3 for level of difficulty.

STARS' Undergraduate Program and Graduate Program credits are similar, but address the two different levels of higher education. A college or university earns half the available points in each credit for having at least one sustainability-focused minor, concentration, or certificate at each level of education and all 3 points in each credit for having at least one sustainability-focused degree program for students at each level of study. Montclair State University's [Bachelor of Science in Sustainability Science](#) should qualify the University for all points in the Undergraduate Program credit and the [Master of Science in Sustainability Science](#) should qualify the University for all points in the Graduate Program credit. Both credits are tracked 1 for level of difficulty.

A college or university earns STARS' Immersive Experience credit for offering at least one immersive, sustainability-focused educational program. Programs must be at least one week in length and may take place on-campus, off-campus, or as part of study abroad programs. While it is likely Montclair State University has such programs, the planning team could not easily find information on them and has therefore ranked this credit with a 2 for level of difficulty.

STARS' next credit is titled Sustainability Literacy Assessment. This credit requires assessing the sustainability literacy of an institution's student body although many institutions choose to survey their entire campus community with the same sustainability literacy survey tool. STARS does not prescribe the questions that must be asked but does require that at minimum one pre- and post-assessment are completed each rating cycle. Many institutions publish their sustainability literacy surveys annually to validate the efficacy of academic, outreach, and engagement activities. A minimum response rate is not required. Because developing and publishing an annual sustainability survey will require coordination with multiple entities, this credit has been rated a 3 for level of difficulty.

The Incentives for Developing Courses credit has also been assigned 3 for level of difficulty because it is unclear to what extent Montclair State University provides ongoing programs or incentives for academic staff across disciplines to develop new sustainability courses and/or incorporate sustainability into existing courses. Such initiatives are typically led by a University's guiding faculty body; in the case of Montclair State University that's likely the Academic Affairs Council within the University Senate although others, including the Office of the Provost, may be collaborators.

The last credit within the Academic sub-category is called Campus as a Living Laboratory and celebrates institutional achievements regarding the utilization of campus infrastructure and operations as an opportunity for sustainability-related applied student learning. An institution earns 0.4 points for each impact area defined in the credit regardless of how many projects address each area. Efforts such as the 2019 [PSEG Institute for Sustainability Studies Green Team](#) hosted by University Facilities could be used to support credit achievement and therefore the credit is tracked 1 for level of difficulty. Montclair

State University should investigate what other applied learning opportunities on campus may be applicable to this credit for documentation.

STARS' first credit in the Research sub-category is called Research and Scholarship and similar to the Academic Courses credit requires inventorying the number of academic departments that conduct research on campus and the percentage of those that have at least one employee who conducts sustainability-related research. An institution earns the maximum number of available points when 15% or more of its research employees conduct research related to sustainability. It is assumed by the planning team that such an inventory does not already exist. Experiences with other institutions suggest cataloging sustainability research is a time-intensive, but not overly difficult exercise and as a result it has been rated 2 for level of difficulty.

The Support for Sustainability Research credit celebrates programs that encourage students and academic staff to engage in interdisciplinary sustainability research as well as published promotion or tenure guidelines that explicitly give recognition to interdisciplinary, transdisciplinary, and/or multidisciplinary research. This credit also celebrates ongoing library support for sustainability research. A college or university earns 1 point for each of the measures identified. The planning team is not aware of publicly available information on the topics addressed by this credit and therefore assumes documentation would require coordination and collaboration across multiple Montclair State University departments. The credit is therefore rated 3 for level of difficulty.

The last credit within Academics is titled Open Access to Research and recognizes institutions who make their peer-reviewed scholarly work publicly available as well as policies that support such practices. It appears the information on [Montclair State University's Digital Commons](#) and the institution's [Research Policies and Resources](#) likely addresses some if not all of this credit's requirements, but that should be validated with campus experts on research endeavors. This credit is rated 2 for level of difficulty.

ENGAGEMENT

Under STARS2.2, the Engagement topic has a total of 41 points in two major categories: Campus Engagement and Public Engagement. The Campus

Engagement category includes 9 credits worth 21 points and the Public Engagement category includes 6 credits worth 20 points.

The first Engagement credit is titled Student Educators Program and celebrates the percentage of an institution's student body that are engaged in peer-to-peer sustainability-related education. Student peer-to-peer education programs include initiatives such as the [PSEG Institute for Sustainability Studies Sustainability Ambassadors](#) as well as similar programs that may exist within other entities at Montclair State University. Because applicable programming can be identified in publicly available information, this credit is rated 2 for level of difficulty. A later credit, Employee Educators Program, addresses similar programs directed to employees. It is less clear if applicable peer-to-peer programming exists for employees and as a result that credit is tracked 3 for level of difficulty.

STARS' Student Orientation and Employee Orientation credits recognize institutions who address sustainability prominently through their orientation activities and programming although the credit does not stipulate how sustainability must be addressed or what content must be covered. Many colleges and universities include pre-recorded sustainability-related video modules, tabling opportunities, presentations, and/or handouts as strategies to address sustainability with incoming students and employees. It is unclear how sustainability is addressed in Montclair State University's existing orientation practices for students and employees and as a result these credits are rated 3 for level of difficulty. It should be noted, however, that integration with orientation is one of the action items of this Facilities Sustainability Plan, so making those connections is a priority issue for University Facilities.

The Student Life credit recognizes co-curricular sustainability offerings and awards up to 2 points for programs and initiatives such as active sustainability-focused student groups, campus gardens or farm programs, green revolving funds, sustainability conferences or similar speaker events, cultural arts programming focused on sustainability, wilderness programming, and other endeavors. [Montclair State University's Student Government Association](#) recognizes an Environmental Club and the [Campus Community Garden](#) was founded in 2018. Because programs and initiatives relevant to this credit are easily identified, this credit is rated 1 for level of difficulty.

STARS' Outreach Materials and Publications credit awards partial credit per each type of publication and/or outreach material defined by the credit. The credit prioritizes the availability of a central sustainability website, a newsletter or social media platform that focuses specifically on campus sustainability, signage that highlights sustainability features on campus, a sustainability walking map or tour, and a green living guide for on-campus residents. Montclair State University has several sustainability-related websites including University Facilities' [Sustainable Facilities](#) page. Additional research is required to understand the availability of other outreach tools, but given the existence of at least one type of sustainability-focused outreach, this credit is tracked 1 for level of difficulty.

The next credit in Engagement is called Outreach Campaign and addresses measurable, time-bound campaigns that support sustainability-related behavior changes for students and employees. Full credit is earned when at least one such campaign directed at each cohort is hosted at minimum once every three years. Sample activities include RecycleMania, bicycle or transit commuting days, and sustainability pledge programs. It is unclear to what extent applicable practices may exist at Montclair State University, so the planning team has rated this credit 3 for level of difficulty.

The next credit, Assessing Sustainability Culture, is typically evaluated concurrently with the Academic section's Sustainability Literacy Assessment credit. Many institutions write one survey tool that includes both sustainability literacy and cultural assessment questions that they disseminate annually to document both credits. As a result, this credit's level of difficulty mirrors tracking for the Sustainability Literacy Assessment.

Staff Professional Development and Training is the last credit within Campus Engagement. The first part of this credit is achieved for offering sustainability-related professional education opportunities to all non-academic staff at least annually. The second part is awarded based on the percentage of non-academic staff that participates each year. University Facilities has the opportunity to record sustainability-related modules and make them available through existing content management platforms. Making that material available institution-wide would make such practices applicable to this credit. Alternatively, something like the Environmental Science and Management PhD program's [Sustainability Seminar Series](#) which is open to all could be used for the

first part of this credit. If attendance is tracked and participation could be quantified, this program might make the second part of this credit accessible as well. Because University Facilities can contribute to making at least part of this credit achievable, and the fact that there are existing programs elsewhere in the University that could contribute, it has been rated 2 for level of difficulty.

Moving into Public Engagement credits, Community Partnerships recognizes relationships between colleges and universities and their local non-university partners including school districts, government agencies, for-profit organizations, and non-profit organizations. This credit recognizes partnerships in which colleges or universities have relationships that meet at least two of a number of criteria. While it is assumed Montclair State University has such relationships, it is unclear who is the on-going contact person for one or more of those relationships and as a result this credit is rated 3 for level of difficulty.

The Inter-Campus Collaboration credit recognizes the importance of connectivity across higher education to advance sustainability and awards up to a maximum of 3 points. Montclair's ongoing membership in the Association for the Advancement of Sustainability in Higher Education contributes to successful achievement of points in this credit as does the university's active participation in the [New Jersey Higher Education Partnership for Sustainability](#). Because existing information indicates at least partial achievement of this credit, it is tracked 1 for level of difficulty.

Continuing Education addresses institutions that have formal continuing or community education programs. It's unclear if Montclair State University offers continuing and professional education programs to the public. A 2018 [press release](#) indicates such courses exist, but hyperlinked resources in that work are no longer active. This credit has been tracked N/A pending further clarifications.

STARS' Community Service credit measures the percentage of students that participate in community service activities, the number of community service hours performed annually per student, and the availability of university-sponsored, employee community service programs. It is likely that documentation of this information resides outside

University Facilities and it's unclear if this credit's metrics are currently tracked by Montclair State University at all. The credit is therefore rated 3 for level of difficulty.

Participation in Public Policy celebrates institutions that advocate for policies that advance sustainability at the local, state, national, and international scales. It is unclear to what extent Montclair State University already advocates for such policies and what limitations may exist for the university as a public institution. This credit is tracked 4 for level of difficulty because there may be limitations on what Montclair State University can do to advocate for sustainability because it is a public institution.

The Trademark Licensing credit recognizes that there is a significant market for university branded goods and celebrates institutions who ensure their name and logos are only placed on products made under fair working conditions. It is unclear if Montclair State University maintains memberships in the Worker Rights Consortium or the Fair Labor Association and it's unclear what code of conduct it maintains in licensing agreements with manufacturers who produce university branded goods. This credit is therefore tracked 4 for level of difficulty.

OPERATIONS

Under STARS2.2, the Operations category has a total of 71 points in nine major categories: Air & Climate, Buildings, Energy, Food & Dining, Grounds, Purchasing, Transportation, Waste, and Water. This category has the greatest alignment with University Facilities' responsibilities.

Air & Climate has two credits, Emissions Inventory and Disclosure and Greenhouse Gas Emissions. The Emissions Inventory and Disclosure credit requires that an institution complete a GHG emissions inventory of its Scope 1 and 2 emissions at minimum once every three years. Inventorying Scope 3 emissions is generally more complex and an institution is celebrated for including information on one or more sources including business travel, commuting, purchased goods and services, capital goods, and waste among others. Montclair State University records its greenhouse gas emissions regularly, so this credit is rated 1 for level of difficulty.

The Greenhouse Gas Emissions credit recognizes reductions in campus-wide greenhouse gas emissions. Greenhouse gas emissions reports

from Montclair State University across the last decade demonstrate a relatively consistent level of greenhouse gas emissions despite changes in campus gross square footage. It's likely Montclair State University could document this credit easily so it's rated 1 for level of difficulty, but it is unclear whether the documentation would demonstrate a substantial number of points in the credit or not.

The Buildings category has two credits, Building Design and Construction and Building Operations and Maintenance. Building Design and Construction evaluates the previous five years of construction and celebrates institutions who have third-party certified projects through LEED, WELL, Net Zero, or other multi- or single-attribute sustainability rating systems. Institutions earn points for the percentage of their new construction in the previous five years that has met various levels of certification through those systems. Given Montclair State University's requirements to develop and certify new construction and major renovation projects through LEED, this credit should be easy to document and is therefore rated 1 for level of difficulty.

STARS' Building Operations and Maintenance credit addresses whether the operation and maintenance of campus buildings is recognized by multi- or single-attribute sustainability rating systems. While this credit is easy to document and therefore rated 1 for level of difficulty, it's likely existing performance will earn Montclair State University few if any points in this credit. Institutions are generally challenged to fund third-party certifications for existing buildings because such projects are less attractive to donors and other funding sources than new construction. [LEED Lab](#), a program developed by the USGBC, provides an opportunity for achieving certification on existing buildings while integrating academic coursework. Montclair State University should explore LEED Lab as it provides a rich opportunity for applied student learning in addition to benefiting the University.

Energy includes two credits: Building Energy Efficiency and Clean and Renewable Energy. The first credit celebrates reductions in source and site energy use per unit of floor area while the second recognizes the development and use of clean and renewable energy resources. Given changes in Montclair State University's gross square footage, it's unclear how source and site energy use intensity have evolved over time. A small amount of renewable energy is produced at Montclair State University through on-site solar and these RECs are sold back to the grid at regular intervals.

Clean electricity is only specifically procured for LEED projects at Montclair State University when it benefits their certification outcomes. The Building Energy Efficiency and Clean and Renewable Energy credits are both rated 1 for ease of documentation, but whether existing practices support the achievement of points in either credit is unclear.

Food & Dining includes two credits, Food and Beverage Purchasing and Sustainable Dining. The Food and Beverage Purchasing credit measures the percentage of food and beverage purchases by cost that meet one or more criteria that indicate the product was sustainably or ethically produced and/or plant-based. The Sustainable Dining credit recognizes programs or initiatives that support sustainable food systems including hosting farmers' markets, sustainability-themed food outlets, disadvantaged businesses, low impact dining events such as Meatless Monday, and similar such programming. Because Montclair's on-campus dining is contracted to a third party, it's likely documentation on both of these credits will require significant coordination and may be limited by existing contractual relationships. Montclair State University should consider how its contracts could be revised at renewal to elevate sustainable food service practices. These credits are currently tracked at 3 for level of difficulty.

Grounds includes two credits, Landscape Management and Biodiversity. The Landscape Management credit recognizes institutions who maintain their grounds using documented Integrated Pest Management (IPM) programs. Discussions with University Facilities through the development of this Facilities Sustainability Plan indicate that IPM practices are used across campus, but are not codified into a policy document. Documenting that work is one of this plan's action items and will support successful pursuit of this credit. This credit is currently tracked 2 for level of difficulty.

The Biodiversity credit celebrates institutions who have completed habitat assessments for endangered and vulnerable species and/or colleges and universities that manage landscapes of particular biodiversity significance. Montclair State University's campus does not officially include any documented areas of unique habitat value, but completion of such an assessment would support achievement of this credit. It's tracked 2 for level of difficulty.

Purchasing includes four credits: Sustainable Procurement, Electronics Purchasing, Cleaning and

Janitorial Purchasing, and Office Paper Purchasing. As noted in the [Procurement](#) chapter, Montclair State University is subject to a variety of purchasing requirements as a public institution. Because most of the purchasing is governed by university contracts or departments other than University Facilities, most procurement credits for AASHE STARS have been assigned 3 for level of difficulty.

STARS' first Purchasing credit, Sustainable Procurement, requires documentation of an institution-wide policy or guideline that supports sustainable purchasing. The subsequent credits look to understand what percentage of electronics, cleaning and janitorial purchasing, and office paper purchasing meet a variety of third-party sustainability standards. The Cleaning and Janitorial Purchasing credit is the only Procurement credit tracked 1 for level of difficulty because engagement for this plan indicated environmentally preferable products are already being purchased for housekeeping.

Transportation includes three credits: Campus Fleet, Commute Modal Split, and Support for Sustainable Transportation. The Campus Fleet credit recognizes institutions who are making progress in transitioning their vehicles away from fossil fuels. Points are awarded for the percentage of campus fleet vehicles that are hybrid, electric, or otherwise alternatively fueled. Montclair State University does not currently have any alternatively fueled vehicles in the campus fleet and this plan recommends that such purchases be prioritized for replacement vehicles.

The Commute Modal Split credit requires surveying students, faculty, and staff to understand what their primary means of transportation to and from the university is. Points are then awarded for the percentage of the campus population that uses less impactful means of commuting than single occupancy vehicles. While Montclair State University currently maintains significant data about its transportation and parking assets, commuter modal split is not data that is currently recorded. This credit is therefore tracked 2 for level of difficulty as a new survey instrument would need to be developed and published to access this information.

STARS' Support for Sustainable Transportation credit awards points for each of a number of programs or initiatives that support less environmentally impactful modes of transit including bicycle-sharing programs, car sharing programs, preferential parking or other

incentives for fuel efficient cars, electrical vehicle charging stations, and other strategies. Montclair State University has [car sharing](#) available on-campus as well as [EV charging stations](#). This credit is ranked 1 for level of difficulty because of existing conditions.

Waste includes three credits: Waste Minimization and Diversion, Construction and Demolition Waste Diversion, and Hazardous Waste Management. The first credit, Waste Minimization and Diversion, addresses the municipal waste stream generated by the campus community. Points are awarded for both reducing waste generation and increasing waste diversion from landfill. Montclair State University's existing partnership with its waste hauler provides the data necessary to document this credit which is rated 1 for level of difficulty.

STARS' Construction and Demolition Waste Diversion credit recognizes the unique waste profile of construction and renovation projects. While waste minimization should be prioritized, points are awarded on the basis of waste diversion on projects developed through major construction, renovation, and/or demolition projects in the three years prior to submission. While this data has not been provided to the planning team, such projects are required to pursue LEED certification which inherently has waste diversion requirements that will ensure appropriate documentation is generated by applicable projects. This credit is rated 1 for level of difficulty.

The last Waste credit addresses Hazardous Waste Management. Half of the available points are awarded for having strategies in place to safely dispose of all hazardous, special, and non-regulated chemical waste as well as practices that seek to minimize the existence of such materials on campus. The other half of available points are awarded for having programs in place to divert electronic waste from landfills. Documentation of this credit requires coordination with Environmental Health & Safety who contracts hazardous waste through a third-party contractor. Montclair State University has an existing policy on hazardous waste management and could request the data required for this credit from the contractor. This credit is therefore rated 1 for level of difficulty.

Water includes two credits, Water Use and Rainwater Management. The first credit, Water Use, has three parts which recognize potable water use reductions per person, per unit of floor area, and

per unit of vegetated grounds. This credit has a variable number of points available depending on a campus's location and "Physical Risk Quantity" defined by the World Resources Institute Aqueduct Water Risk Atlas. Locations with greater potential for water shortages have more points available in this credit in recognition of the unique regional concerns water has in arid locations. Montclair State University likely has the information necessary to document the first two parts of this credit already while separating irrigation water is currently more challenging. Actions included in this Facilities Sustainability Plan include separating metering for irrigation and building projects to support better tracking which will help in documenting this credit.

The Rainwater Management credit celebrates institutions that have comprehensive rainwater management policies as well as guidelines that incorporate low impact development to mitigate stormwater run-off impacts. University Facilities has an existing Stormwater Pollution Prevention Plan which likely helps in documenting this credit. This credit is therefore tracked 1 for level of difficulty.

PLANNING & ADMINISTRATION

Under STARS2.2, the Planning & Administration category has a total of 33 points in four major categories: Coordination & Planning, Diversity & Affordability, Investment & Finance, and Wellbeing & Work.

The first credit within Coordination & Planning is called Sustainability Coordination and requires the institution have at least one standing committee, office, and/or officer that is tasked by the administration with governing sustainability campus-wide. While multiple positions at Montclair State University address sustainability within an operational or academic unit, the planning team is unaware of a university-wide sustainability officer or governing body. The [Engagement](#) chapter of this Facilities Sustainability Plan advocates for the establishment of a university-wide Sustainability Advisory Council which would meet the requirements of this credit. Because such a body does not currently exist at Montclair State University, this credit is rated 4 for level of difficulty.

Sustainability Planning addresses whether plans have been developed or published to address the areas STARS covers. This Facilities Sustainability Plan qualifies as such a plan that addresses operations and will support Montclair State University in achieving part of this credit's available

points. The second part of this credit is available for integrating sustainability into an institution's highest guiding document, typically its strategic plan. As of April 2022, sustainability is not integrated into Montclair's most recent strategic plan.

STARS' Inclusive and Participatory Governance credit recognizes the existence of formal shared governance bodies in developing university policy. Such groups must engage students, academic, and non-academic staff. Further parts of this credit also celebrate gender equity in governance, awarding full credit for that part when at least 20% of the official members of the institution's highest governing body are women and/or individuals who do not self-identify as men. Montclair State University's [University Senate](#) and [Student Government Association](#) are qualifying types of participatory governance. Coordination with these groups increases the level of difficulty of achieving this credit to 2, but it is assumed the necessary data exists within those groups to pursue this credit.

The Reporting Assurance credit works to increase the caliber of data reported in the AASHE STARS database by either having a third party within an institution that is not associated with data collection perform a quality assurance check or sharing preliminary data with a peer institution for similar review prior to submission to AASHE. STARS provides a [guideline document](#) to aid in reviewing submission documents. This credit is given a 2 for level of difficulty because an internal review is likely desirable by campus leadership not associated with data collection prior to submission and publication by AASHE. Third-party review by a peer institution would be more challenging, but given that many of Montclair State University's strategic peers have completed AASHE STARS reports, such connections may be relatively straightforward.

Moving into Diversity & Affordability, STARS' Diversity and Equity Coordination credit addresses whether an institution has a diversity and equity committee, office, and/or officer tasked with university-wide implementation of policies, programs, and training related to on-campus diversity, equity, and inclusion. The second part of this credit addresses the availability of workshops and training that address cultural competence and related subjects. It appears Montclair's [Office for Social Justice and Diversity](#) likely meets the criteria of this credit part. This credit is rated 2 as partnerships between University Facilities and the Office for Social Justice and Diversity will need to be established to support documentation.

The Assessing Diversity and Equity credit recognizes institutions that have engaged in structured assessments to improve diversity, equity, and inclusion on campus. Such processes must address one or more topics including the attitudes, perceptions, and behaviors of the campus community as related to issues of equity, diversity, and inclusion; student outcomes related to diversity, equity, and success such as graduation and/or retention rates as well as employee outcomes related to diversity and equity such as compensation and retention rates. It is unclear if such assessment currently happens at Montclair State University and as a result this credit is assigned 3 for its level of difficulty.

STARS' Support for Underrepresented Groups credit recognizes policies, programs, or initiatives that foster a more diverse and inclusive campus community. Montclair State University's publicly available [Notice of Non-Discrimination](#) addresses this credit's first element. The second credit element evaluates whether an institution has a discrimination response protocol or bias team to respond to and support those who experience or witness bias incidents, acts of discrimination, or hate crimes. The Dean of Students has a [clear portal](#) for reporting incidents should they occur, but it is unclear what happens after a report is made. Additional elements of this credit recognize programs that recruit and mentor students, faculty, and staff from underrepresented groups. Because of the amount of coordination required to document this credit fully, it is rated 3 in the level of difficulty matrix.

Affordability and Access specifically focuses on the extent to which an institution is affordable and accessible to low-income students using one or more of four indicators: the percentage of need met, (on average) for students who were awarded need-based aid, the percentage of students graduating without student loan debt, the percentage of entering students that are low-income, and graduation rates for low-income students. Reporting on this credit is outside of University Facilities and is therefore rated 2 for level of difficulty because of the coordination required.

Investment & Finance is generally one of the more challenging sub-categories within STARS and fewer institutions choose to document these credits than others. The first credit, Committee on Investor Responsibility, is earned by institutions who have a

committee on investor responsibility or equivalent entity comprised of students, faculty, and staff that makes recommendations to the institution’s fund decision-makers on socially and environmentally responsible investment opportunities across asset classes. This category’s second credit, Sustainable Investment, looks at how an institution’s investment dollars are allocated and celebrates investments in sustainable industries and businesses, community development financial institutions, socially responsible mutual funds that exclude investment in industries counterproductive to sustainability efforts, and the institution’s own green revolving funds. The last credit in this category, Investment Disclosure, is awarded to institutions who make a snapshot of their investment holdings available to the public at least annually.

It’s unclear to what extent Montclair State University’s existing financial practices align with the requirements of these credits and/or could be modified to support achievability. As such, these credits are all rated 4.

The Wellbeing & Work category has four credits. The first, Employee Compensation, addresses the extent to which an institution provides living wages for employees and employees of contractors to the university. The credit also celebrates institutions whose minimum total compensation for employees exceeds the local living wage minimum. This type of analysis requires substantial effort by Montclair State University given the complexity of its employee and contractor relationships and is therefore rated 4 for level of difficulty.

STARS’ Assessing Employee Satisfaction credit requires an institution complete a regular survey that allows for anonymous feedback to measure employee satisfaction and engagement. While the credit does not specify questions, the survey instrument must address job satisfaction, learning and advancement opportunities, work culture, and work/life balance at minimum. A minimum response rate is not required and points are awarded on the basis of what percentage of an institution’s employees are offered the opportunity to participate. It is unclear if Montclair State University has such a survey tool already. This credit is rated 3 for level of difficulty given the number of parties that would need to coordinate to develop and administer such a tool.

The Wellness Program credit recognizes institutions who have wellness and/or employee assistance programs available for counseling, referral, and wellbeing services for students and/or employees as well as campus-wide smoking bans within campus buildings and limited to designated outdoor smoking areas. Montclair State University’s existing [Tobacco-Free Policy](#) will support the achievement of this credit and therefore it is tracked 1 for level of difficulty.

STARS’ Workplace Health and Safety credit recognizes institutions that have an occupational health and safety management system as well as institutions that have few work-related injuries or illnesses annually. Montclair State University [Environmental Health and Safety](#) likely maintains but has not published the data this credit requires and therefore this credit is tracked 2 for level of difficulty.

INNOVATION & LEADERSHIP

Under STARS2.2, the Innovation & Leadership category has a total of 4 points that recognize emerging best practices, initiatives that perform beyond the thresholds of existing credits, initiatives and outcomes that are only relevant in specific higher education environments, and truly innovative programs and initiatives that are not addressed by other credits. An institution is awarded half a point for each initiative it undertakes in this category. Montclair State University is directed to the [STARS Innovation & Leadership Catalog](#) to understand what existing practices may support the institution in earning Innovation & Leadership credits. Given the number of options available, credits in this category are rated 1 for level of difficulty.

CONCLUSION

While a STARS submission requires a high volume of data, the average level of credit difficulty in all credit categories is less than 3. Operations is anticipated to be an easier category to document with an average of 1.6 while Planning & Administration is anticipated to be the most difficult with an average of 2.7.

Category	Average Level of Credit Difficulty
Report Preface	1.0
Academics	2.1
Engagement	2.6
Operations	1.6
Planning & Administration	2.7
Innovation & Leadership	1.0

LEVEL OF DIFFICULTY AND ANTICIPATED CONTRIBUTORS TO MONTCLAIR STATE UNIVERSITY'S FIRST AASHE STARS SUBMISSION

Category	Sub Category	Credit Number	Credit Title	Level of Difficulty
Report Preface	Introduction	PRE 1	Executive Letter	1
		PRE 2	Points of Distinction (optional)	N/A
	Institutional Characteristics	PRE 3	Institutional Boundary	1
		PRE 4	Operational Characteristics	1
		PRE 5	Academics and Demographics	1
Academics	Curriculum	AC 1	Academic Courses	2
		AC 2	Learning Outcomes	3
		AC 3	Undergraduate Program	1
		AC 4	Graduate Program	1
		AC 5	Immersive Experience	2
		AC 6	Sustainability Literacy Assessment	3
		AC 7	Incentives for Developing Courses	3
		AC 8	Campus as a Living Laboratory	1
	Research	AC 9	Research and Scholarship	2
		AC 10	Support for Sustainability Research	3
		AC 11	Open Access to Research	2
Engagement	Campus Engagement	EN 1	Student Educators Program	2
		EN 2	Student Orientation	3
		EN 3	Student Life	1
		EN 4	Outreach Materials and Publications	1
		EN 5	Outreach Campaign	3
		EN 6	Assessing Sustainability Culture	3
		EN 7	Employee Educators Program	3
		EN 8	Employee Orientation	3
		EN 9	Staff Professional Development and Training	2
	Public Engagement	EN 10	Community Partnerships	3
		EN 11	Inter-Campus Collaboration	1
		EN 12	Continuing Education	N/A
		EN 13	Community Service	3
		EN 14	Participation in Public Policy	4
		EN 15	Trademark Licensing	4
Operations	Air & Climate	OP 1	Emissions Inventory and Disclosure	1
		OP 2	Greenhouse Gas Emissions	1
	Buildings	OP 3	Building Design and Construction	1
		OP 4	Building Operations and Maintenance	1
	Energy	OP 5	Building Energy Efficiency	1
		OP 6	Clean and Renewable Energy	1
	Food & Dining	OP 7	Food and Beverage Purchasing	3
		OP 8	Sustainable Dining	3

Category	Sub Category	Credit Number	Credit Title	Level of Difficulty
Operations (continued)	Grounds	OP 9	Landscape Management	2
		OP 10	Biodiversity	2
	Purchasing	OP 11	Sustainable Procurement	3
		OP 12	Electronics Purchasing	3
		OP 13	Cleaning and Janitorial Supplies	1
		OP 14	Office Paper Purchasing	3
	Transportation	OP 15	Campus Fleet	1
		OP 16	Commute Modal Split	2
		OP 17	Support for Sustainable Transportation	1
	Waste	OP 18	Waste Minimization and Diversion	1
		OP 19	Construction and Demolition Waste Diversion	1
		OP 20	Hazardous Waste Management	1
	Water	OP 21	Water Use	2
OP 22		Rainwater Management	1	
Planning & Administration	Coordination & Planning	PA 1	Sustainability Coordination	4
		PA 2	Sustainability Planning	1
		PA 3	Inclusive and Participatory Governance	2
		PA 4	Reporting Assurance	2
	Diversity & Affordability	PA 5	Diversity and Equity Coordination	2
		PA 6	Assessing Diversity and Equity	3
		PA 7	Support for Underrepresented Groups	3
		PA 8	Affordability and Access	2
	Investment & Finance	PA 9	Committee on Investor Responsibility	4
		PA 10	Sustainable Investment	4
		PA 11	Investment Disclosure	4
	Wellbeing & Work	PA 12	Employee Compensation	4
		PA 13	Assessing Employee Satisfaction	3
		PA 14	Wellness Programs	1
		PA 15	Workplace Health and Safety	2
Innovation & Leadership	Innovation & Leadership	IN 1	See the Innovation & Leadership Catalog for strategies Montclair State University can apply to earn credits in this category.	1
		IN 2		1
		IN 3		1
		IN 4		1
		IN 5		1
		IN 6		1
		IN 7		1
		IN 8		1



APPENDIX 7: SUSTAINABILITY LITERACY AND CULTURE ASSESSMENT RESULTS

To quantify the areas of interest and assess the sustainability knowledge, practices, opinions, and preferences of Montclair State University's University Facilities team, a Sustainability Literacy and Culture Assessment was administered in September 2021. The results of the survey were helpful in understanding a broader range of insights on University Facilities' sustainability awareness and attitudes. This information also helps to highlight future sustainability opportunities and challenges for University Facilities.

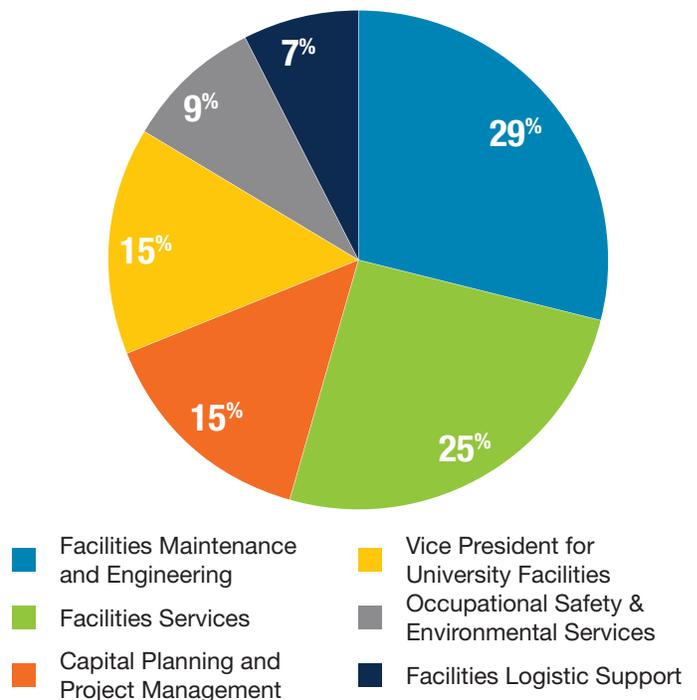
Sustainability literacy is about having knowledge related to resource conservation and being able to use that knowledge to make informed decisions. It also means people identify that there are environmental, social, and economic challenges to sustainability, and that one must consider all three dimensions to create solutions to challenges. Sustainability culture refers to the values, behavior, beliefs, and attitudes of students, faculty, and staff.

This section follows the structure of the survey, providing information about the respondents and the multiple areas of sustainability for which feedback was requested. The results were obtained using an online survey software program to design and send the survey and analyze results.

The survey was administered in September 2021 and received feedback from 91 respondents. Nearly half of respondents responded to only the first few questions which may have been a flaw in survey design. After an initial introductory block of text that was provided in both English and Spanish, respondents were asked to choose their preferred language and then directed to a short video in their selected language. The survey questions followed that video introduction and it is anticipated many respondents did not realize the survey continued

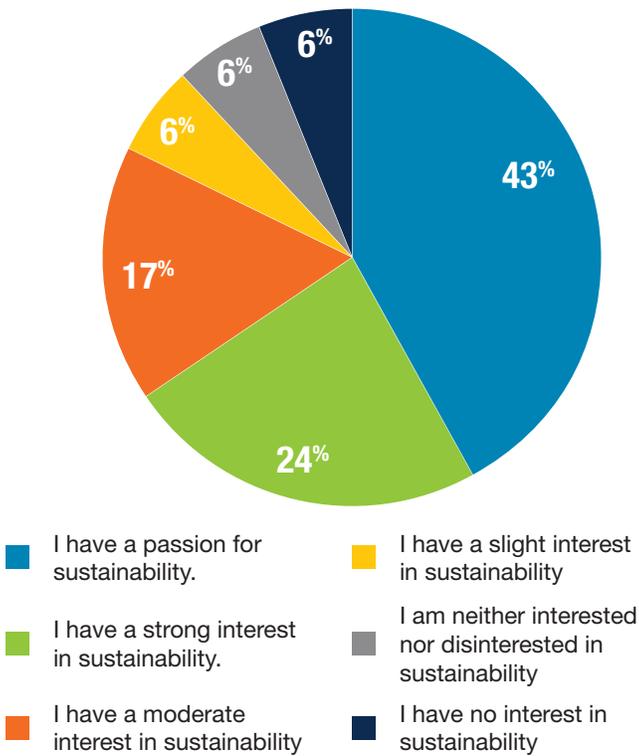
after the video content. Most questions received approximately 55 responses each. The majority of respondents, 95%, elected to take the survey in English while only 5% chose to take the survey in Spanish. The survey achieved a good distribution across departments within University Facilities with the most respondents coming from Facilities Maintenance and Engineering.

SURVEY RESPONDENTS BY DEPARTMENT



The questions assessed respondents on a variety of topics, including their level of interest in sustainability as well as what the definition of sustainability is based on their understanding of the field. The majority of respondents, 67%, have at least a strong interest in sustainability. Based on their prior understanding of the field, respondents demonstrate a high level of consensus on sustainability's definition, recognizing sustainability as a combination of integrating efficiency into everyday activities to conserve resources, an interdisciplinary

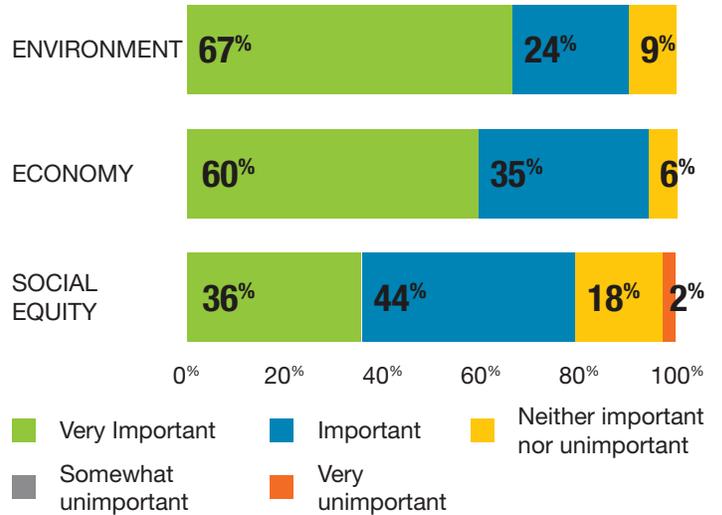
RESPONDENT INTEREST LEVELS IN SUSTAINABILITY



effort to meet the needs of the present without compromising the ability to meet future needs, and cleaning up the environment through human engagement and initiative. Approximately half of the respondents indicate that environmental problems are a dire threat to global well-being, but can be solved by greatly increasing efforts under the current socioeconomic system while 33% of respondents believe environmental problems can be solved only through radical changes in the current socioeconomic system. On the contrary, 14% think that although environmental problems are quite serious, they are not a dire threat to global well-being and they can be solved by continuing current approaches and efforts.

[Elkington](#) states, “Sustainable development involves the simultaneous pursuit of economic prosperity, environmental quality, and social equity. The companies aiming for sustainability need to perform not against a single, financial bottom line but against the triple bottom line.” The survey tool asked respondents about how important the environment, the economy, and social equity are to sustainability and despite typical definitions of sustainability highlighting a non-hierarchical triple bottom line, the answers from University Facilities indicate the community is nearly twice as likely to identify environment as very important to sustainability as compared to social equity. This roughly aligns with the distributions the planning team has seen on

HOW IMPORTANT DO SURVEY RESPONDENTS THINK THE ENVIRONMENT, THE ECONOMY, AND SOCIAL EQUITY ARE TO SUSTAINABILITY?



these questions at institutions across the country and perhaps highlights an opportunity for continued outreach and engagement.

In order to understand sustainability attitudes and behaviors, the survey included a series of questions asking to what extent respondents agreed or disagreed with a number of statements. A majority of respondents strongly agreed that they are willing to put forth a little more effort in daily life to reduce their environmental impact as well as that our present consumption of natural resources will result in serious environmental challenges for future generations. Just over half of respondents indicated they strongly agreed that they would take pride in working for an employer that values sustainability and 72% at least somewhat agreed that it is important to them for their employer to be a leader in sustainability.

Respondents were most likely to strongly agree that they have a personal responsibility to help make a difference on environmental issues such as minimizing waste, resource consumption, water use, and energy use while they were least likely to strongly agree that they have a personal responsibility to spread environmental education. This suggests that University Facilities respondents understand the role their personal actions have in achieving sustainability but that they do not see themselves as advocates for positive action across larger scales of community.

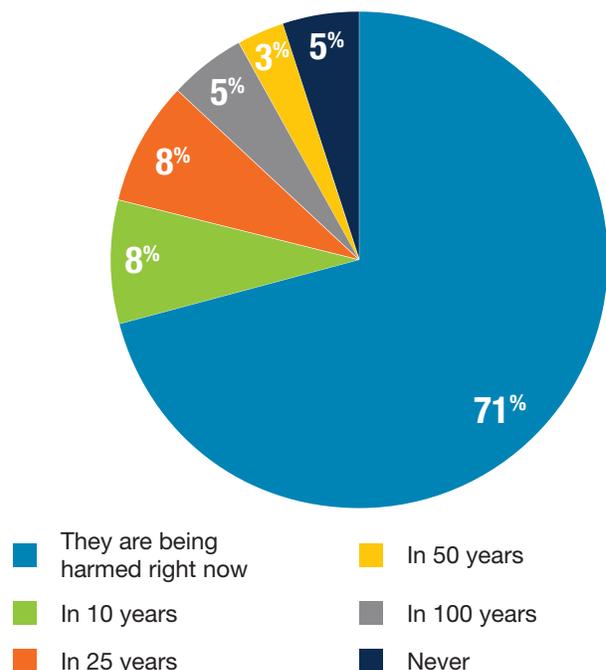
WHICH OF THE SUSTAINABILITY PROGRAMS AND INITIATIVES BELOW ARE YOU AWARE OF AT MONTCLAIR STATE UNIVERSITY?

Program or Initiative	% of Respondents Indicating Awareness
Recycling	44%
LEED Buildings	40%
Cogeneration Plant	35%
Stormwater Pollution Prevention Plan	35%
Solar Panels on Campus	35%
The Campus Community Garden	35%
EV Charging Stations	33%
Microgrid	33%
Green Cleaning Products in Housekeeping	33%
PSEG Institute Green Teams Internships	26%
Zipcar	23%
PSEG Institute for Sustainability Studies	21%
Bachelor's degree program in Sustainability Science	19%
Master's degree program in Sustainability Science	19%
Our website: https://www.montclair.edu/facilities/sustainability	19%
Native and Drought Tolerant Plants in Landscaping	16%
Institutional Membership to AASHE	14%
Hawk on Wheels (bike rental program)	9%
Low-sulfur Diesel Fuel for Shuttle Buses	5%
The United Nations Sustainable Development Goals	2%
The GIS Story Map of Sustainability Initiatives on Campus	2%
The Refresh Podcast on the University's Radio Station, 90.3 FM, WMSC	2%
Other	2%
I am not aware of any of the sustainability programs and initiatives mentioned above	0%

In terms of the sustainability programs and initiatives at Montclair State University, recycling tops the list for not just being known as an activity that contributes to sustainability efforts at Montclair State University, but also the program or initiative respondents are most likely to have participated in at the university. LEED buildings had both the second highest level of awareness and the second highest level of participation. Montclair State University's Stormwater Pollution Prevention Plan placed relatively high on both the level of awareness and level of participation which was intriguing. Montclair State University indicated that an annual training on the Stormwater Pollution Prevention Plan is required across University Facilities which is perhaps why awareness and participation are rated so highly for this initiative. The fact that an annual required training is sufficient enough to elevate that initiative in awareness and participation suggests that perhaps annual trainings related to other areas of sustainability would be sufficient to accelerate awareness and participation in other sustainability-related University Facilities programs.

Respondents were least aware of outreach vehicles such as the GIS Story Map of Sustainability Initiatives on campus as well as the Refresh Podcast on the University's radio station. Perhaps better advertising of these initiatives would increase both awareness and participation.

WHEN DO RESPONDENTS THINK CLIMATE CHANGE WILL START TO HARM PEOPLE IN NEW JERSEY?

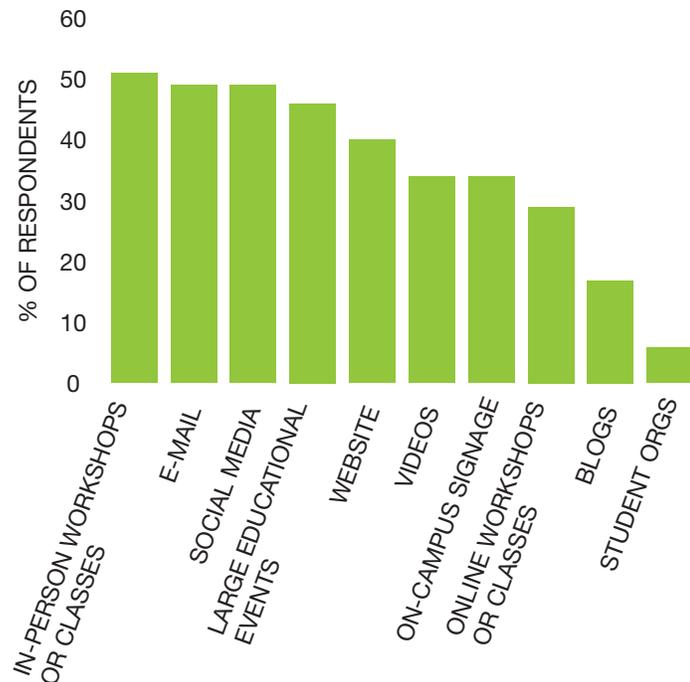


With 46% somewhat worried and 37% very worried about climate change, the majority of respondents believe that climate change will create the greatest harm for future generations and people in developing countries and agree that climate change will harm them, their family, and their communities a lot. The majority of respondents indicate that the people in New Jersey are already being harmed by climate change with only 5% believing people in New Jersey will never be harmed by climate change.

On a scale of 1 to 10, with 10 indicating most important, respondents average 8.5 when evaluating how valuable it is for Montclair State University to incorporate sustainability in its planning and initiatives. At an individual level, 64% believe that they already incorporate sustainability into their work activities while 59% take an interest in incorporating sustainability into their work activities.

In order to understand how respondents would like to be more involved, the survey requested they vote on which resources they would find most beneficial for them to learn about sustainability:

WHICH RESOURCES WOULD YOU FIND MOST BENEFICIAL TO HELP YOU LEARN MORE ABOUT SUSTAINABILITY?



The survey closed out with several open-ended questions including:

- What would motivate you to engage in more sustainable activities or to do more?
- What sustainability efforts would you like to see at Montclair State University?
- Is there anything else you want to tell us about sustainability at Montclair State University?

Sixteen respondents provided answers to the motivation question. While each response was unique, shared themes emerged. The first theme focuses on the need for better university-wide goals that can empower collective action. This suggests that right now respondents are unclear what Montclair State University’s sustainability-related priorities are and as a result it’s difficult for any initiative to build a critical mass of momentum. This builds to the second theme communicated by respondents which relates to active encouragement from both University Facilities and Montclair State University at large. Coupled with insights from engagement sessions, these results support the narrative that sustainability initiatives are perceived as “nice to have,” but not “imperative” and as a result are relatively easy to sidetrack.

Thirteen respondents provided answers to the sustainability efforts question. Three common responses emerged including desires for more waste minimization and diversion accountability, more support for remote work to reduce the University’s carbon footprint associated with commuting, and more visible resource efficiency efforts in the development of University buildings and grounds.

Ten respondents chose to share additional information about sustainability at Montclair State University. In general the responses align with the insights provided elsewhere that respondents are looking for greater understanding of what the shared goals and objectives for sustainability are and concrete, quantifiable actions to advance toward those goals.



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