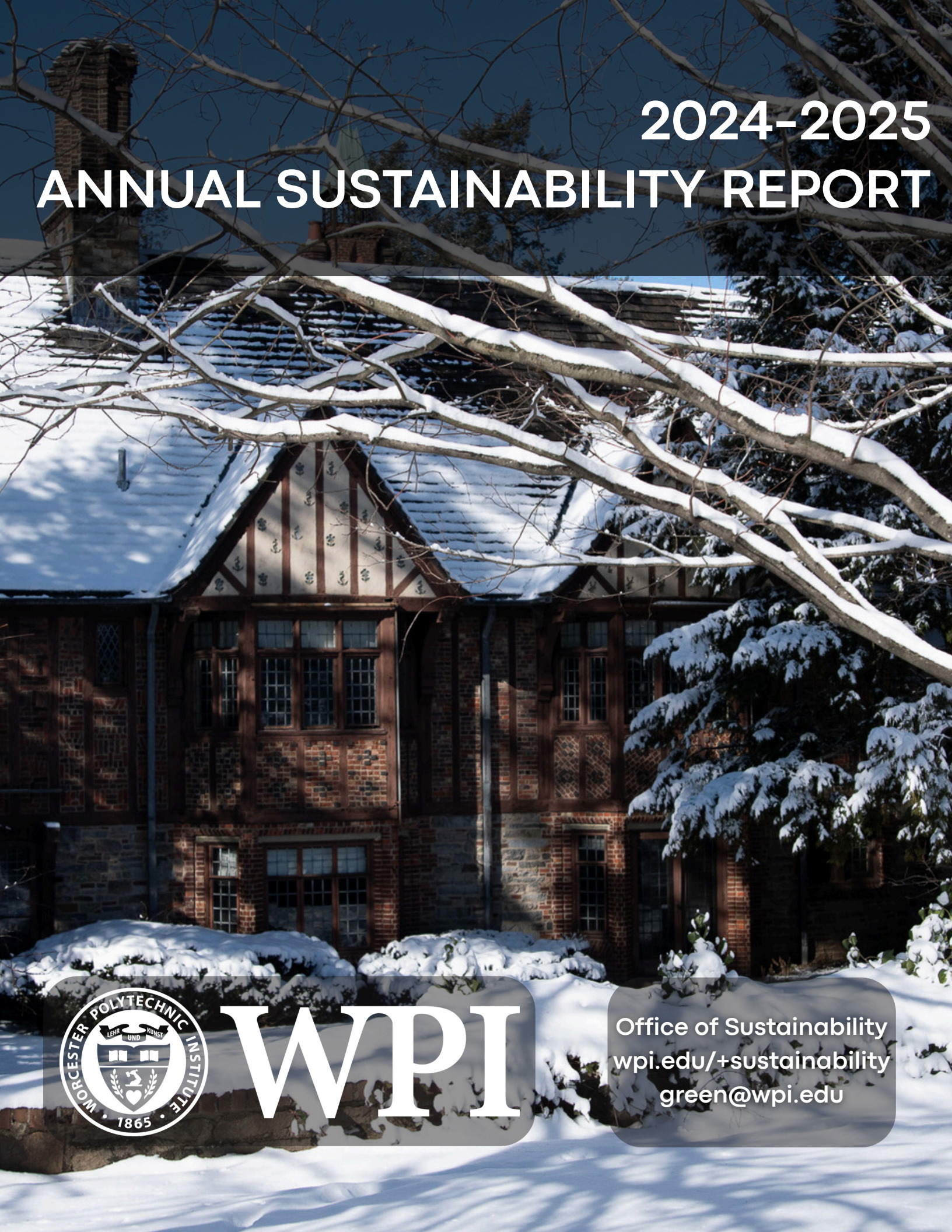
2024-2025 ANNUAL SUSTAINABILITY REPORT



WPI

Office of Sustainability
wpi.edu/+sustainability
green@wpi.edu

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INTRODUCTION

WPI strives to provide academic programs, projects, research, and scholarship that will advance sustainability both on campus and abroad. This report, the 2024-2025 Annual Sustainability Report, summarizes the steps taken towards sustainability by WPI from July 1, 2024 to June 30, 2025. Here, sustainability is defined in accordance with the United Nations' definition of "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987). Accordingly, this report is comprised of four sections which correspond to the four goals set forth by WPI's five-year sustainability plan: operations and facilities, academics, research and scholarship, and community engagement. Some initiatives, such as the Sustainable Solutions Collaborative, which cover multiple sections are included in their most relevant section.

Operations & Facilities

Principles of sustainability guide our actions as well as our academic and research programs.
This section discusses building progress, utility reports, waste, and transportation.

Academics

Graduates will leave campus with the mindset and abilities to develop sustainable solutions to the world's problems.
This section outlines sustainable curriculum, coursework, and student projects.

Research & Scholarship

Our research and scholarship will make significant contributions to technologies, policies, and mindsets to help assure a sustainable world.
This section looks at the research at WPI making a difference.

Community Engagement

Every member of the WPI community will engage in sustainability related education, awareness, action, and service in order to achieve positive, long-lasting change for all communities.
This section focuses on the groups making a change on campus.

Context - Sustainability Plan & The Pillars of Sustainability

Additionally, this report will serve as a reflection of the five-year sustainability plan established by WPI in 2020. This includes assessments of progress and comparisons to the sustainability goals listed in the sustainability plan. The five-year sustainability plan recognizes the three foundational pillars supporting sustainability to be: economic security, environmental stewardship, and social justice.

Economic Security - represents the understanding that all members of society deserve access to the means to support themselves and their families

Environmental Stewardship - embodies the principle that human activities must respect the need to preserve our natural world

Social Justice - represents our belief that respect for the dignity of every human being leads to the assurance of equitable rights and opportunities for everyone

Therefore, the five-year sustainability plan strived to incorporate these values into WPI's academic programs, research, as well as its campus life. This includes setting goals such as increasing sustainability focused coursework and projects, being less wasteful, finding ways to convert energy sources to renewable alternatives, and much more.

Cross-Cutting Initiatives

Cross-cutting initiatives (those which fall into multiple of the four categories: operations and facilities, academics, research and scholarship, and community engagement) include the development of WPI's Climate Action Plan, work to advance the UN Sustainable Development Goals (SDGs), the Sustainability Living and Learning Laboratory (SL3), and the Sustainable Solutions Collaborative (SSC). The SL3 and SSC are discussed further in the academics section of the report, while the Climate Action Plan is discussed in the operations and facilities section.

Advancing the UN Sustainable Development Goals (SDGs)

WPI's "ecosystem of sustainability" built on the three pillars of sustainability is tailored to impact both the local and global community. These values fall in line with the 17 UN Sustainable Development Goals (SDGs) that WPI commits itself to honoring. WPI's SDG Steering Committee has continued its efforts to gain a deeper understanding of WPI's contributions and celebrate accomplishments with considerations to the SDGS in all areas - operations and facilities, academics, research and scholarship, and community engagement. These goals will be referenced throughout this report and are shown in the figure below.

The SDG Steering Committee's efforts have included the identification of "champions" from various departments to promote the SDGs, coordination of selected activities with the Sustainable Solutions Collaborative (SSC), and the development of the second SDG progress report across all of the SDGs. The SDG Progress Report, completed this spring, addressed WPI's progress towards all 17 SDGs and is posted on the SDG section of WPI's Sustainability website.

The SDG Steering Committee also completed its third submission to the Times Higher Education (THE) Impact Ranking. The Committee initiated submissions to this ranking in 2023 to assess WPI's progress towards these goals and to consider how WPI's impact on the SDGs can be bolstered. Since THE only requires a minimum of 4 SDGs for review, the Committee began with five goals, with one goal added each subsequent year. In 2024-2025, Goal #4 - Quality Education was submitted for the first time. The list of all seven goals submitted in the 2024-2025 academic year is shown below.

This evaluation yielded a ranking of 801-1000th, an increase from last years result of 1001-1500th. The results for the past three years are summarized in the table below.

		Overall	SDG 4	SDG 7	SDG 9	SDG 11	SDG 12	SDG 13	SDG 17
2023	Score	53.8	--	39	68.5	--	63.2	23.7	33.9
	Rank	1001+	--	401-600	201-300	--	201-300	601+	1001+
2024	Score	58.2	--	41.3	70.4	57.5	68.4	30.6	48.1
	Rank	1001-1500	--	601-800	201-300	301-400	201-300	601-800	1001-1500
2025	Score	63.5	41.5	45.4	72.2	55.4	67.8	48.5	58.3
	Rank	801-1000	1001- 1500	601-800	201-300	301-400	201-300	301-400	801-1000

The overall score is given out of 100 points. Each year WPI has increased by around five points in its overall score. Additionally, WPI has greatly increased in score for Goal #13 - Climate Action and Goal #17 - Partnership for the Goals. WPI's overall ranking has continued to rise even as a growing amount of institutions submit themselves for review. In FY25, 2,389 institutions participated in the THE Impact Ranking. It is anticipated that the THE approach and requirements for 2025-26 are changing, so other assessments may be considered in the future.

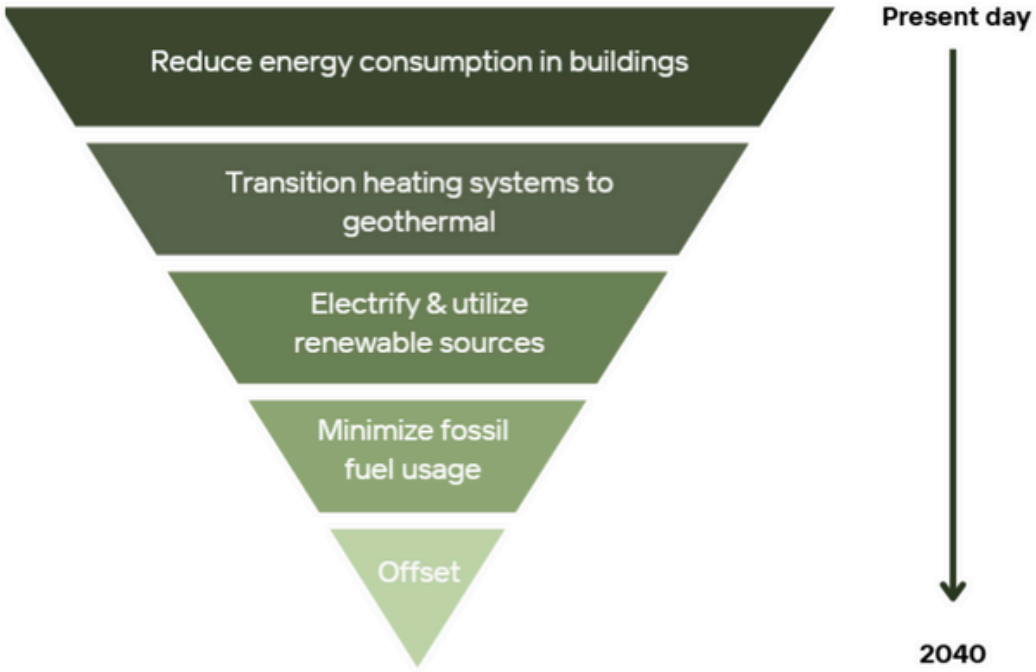
OPERATIONS & FACILITIES

As WPI continues to develop new programs and initiatives, it must also manage its resource use, including its energy use and greenhouse gas emissions. This section of the report covers WPI's Climate Action Plan to achieve carbon neutrality by 2040, recent campus updates and expansions (i.e. the Stratton Hall renovation and the recently acquired hotels adjacent to the WPI campus.), and WPI's utilities, transportation, and waste data.

Climate Action Plan - Towards Carbon Neutrality

One of the goals of the five-year sustainability plan was to develop a Climate Action Plan to achieve carbon neutrality for WPI. The plan began to take shape in 2023 after the formation of the Climate Action Committee. Through the development of this plan, the Office of Sustainability as well as professors and researchers in the fields of sustainability and energy, set a carbon neutrality date of 2040.

To achieve this goal, WPI plans to reduce its Scope 1 and Scope 2 emissions. Scope 1 emissions are direct emissions controlled by the institution and emitted on-site, such as fossil fuel combustion, mobile combustion, refrigerant leaks and fertilizers, and Scope 2 emissions are indirect emissions from the purchase of energy, where the emissions are generated off-site but is a result of the institution's operations. This will follow the general framework below:



To reduce Scope 1 and 2 emissions, WPI is partnering with the Harrison Street, an investment management firm. In FY24, to test the possibility of geothermal as a source of heating and cooling for WPI's campus, Salas O'Brien, one of Harrison Street's partners, drilled wells in multiple locations across campus. From this test, they determined that geothermal energy is a potential alternative for meeting WPI's energy needs. Upgrading the campus steam heating system and implementing the technologies would offset an estimated 78% of WPI's total carbon emissions. Other methods to reduce Scope 1 and 2 emissions include reducing general energy usage through energy control measures (ECMs), utilizing renewable energy such as solar energy, electrifying peripheral properties, switching campus vehicles to electric, and transitioning any fuel sources to low carbon alternatives.

In total, these efforts are estimated to reduce WPI's total carbon emissions by 78%. To tackle the remaining 22% of emissions to achieve carbon neutrality, WPI plans to develop additional renewable energy sources (including off-campus sources as needed), continue looking at innovative strategies for sustainable solutions, and continue to monitor and quantify emissions so they can be offset. Therefore, the plan includes additional conservation projects on campus and also integration into WPI's academics, research and community engagement initiatives. These are included in the relevant sections throughout this report.

Building Renovation and Utility Conservation Measures

WPI's buildings and the resources required to operate and maintain them are important considerations for sustainability. This past year has seen a number of projects to renovate and upgrade the utilities associated with WPI's buildings. Projects in FY25 by GreenerU include lighting upgrades (one phase completed and another in construction), weatherization, and water conservation projects for a number of buildings on campus. The resource savings for these projects are noted in the section on utilities data, and some updates on building renovations and additions are included here.

Stratton Hall - Renovated & Fresh

Stratton Hall reopened this year after a complete renovation. The building has an added accessibility ramp and elevator so it is accessible to all students. Home to the mathematical sciences department, Stratton Hall now connects the pre-existing academic building with the Laurie A. Leshin Global Project Center. The copper which coats this connection was sourced from 90-99% recycled materials and is designed to outlast the building itself.

Renovations to make Stratton Hall more energy-efficient were also made, including insulation in the attic, lighting, and a new HVAC system. Moreover, the new roof was designed to accommodate solar panels, although this space was limited. The energy use will increase due to the HVAC requirements, but the energy efficiency should curtail the increase to the extent possible. Notably, due to the addition of an elevator accessing all floors, Stratton Hall is fully wheelchair accessible. Now, all of WPI's academic buildings are accessible for every floor. With the exception of Salisbury Lab (which has no bathrooms and no direct elevator access to the bottom floor), every academic building has restrooms that are accessible via elevator access.

Expanding WPI - The Hotel Purchases

In September 2024, WPI purchased the Hampton Inn at 65 Prescott Street and the Courtyard Marriott at 72 Grove Street just across the road from Gateway Park. For the 2024-2025 academic year, the buildings continued to operate as hotels, with WPI planning to eventually convert the Hampton Inn to student housing. The purchase was made to provide housing for WPI's student population.

WPI has set up systems to collaborate with the city of Worcester to ensure that the hotel purchase benefits both WPI and the city. While they continue to operate as hotels (independent from the WPI community), their energy use is not included in WPI's utility data over the past year; their utilities can be included when they are used for student housing.

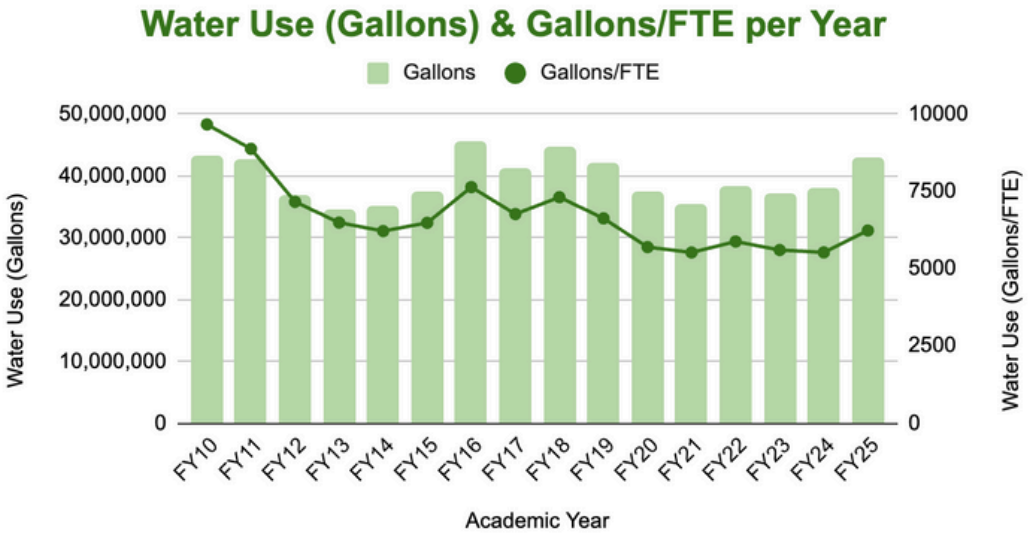
WPI also formed a program with the City designated as the "Academic Civil Collaborative" through its Worcester Community Project Center (WCPC) and other groups working with the City. This collaborative includes up to four city-identified projects annually for students to tackle. WPI will continue to collaborate with Worcester to attract developers for the future development of Gateway Park and to identify locations for new hotels.

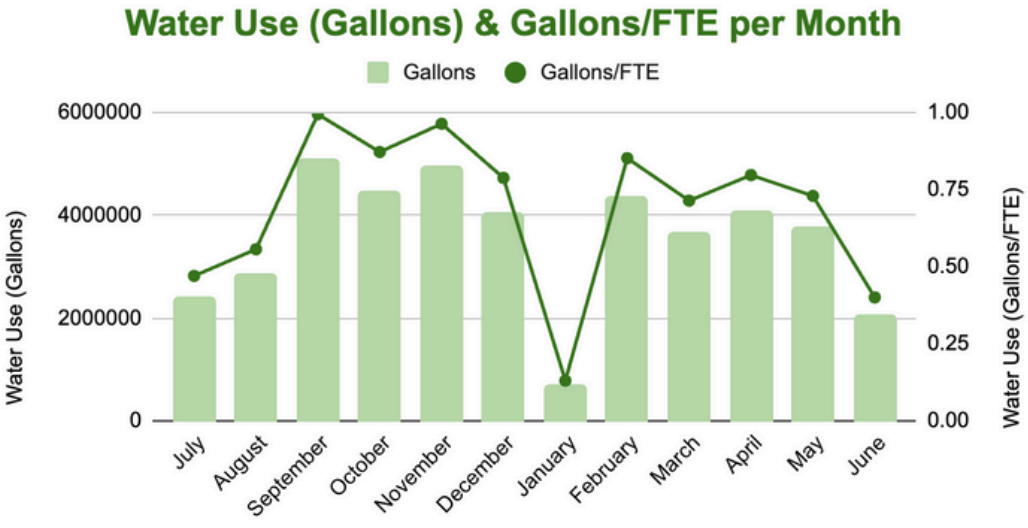
Utility Data

WPI's utility and resource use represents a notable cost and an important consideration for meeting our sustainability goals. This section summarizes the WPI's utility use, including water supply, electricity, natural gas, and WPI's associated greenhouse gas emissions.

Water Use

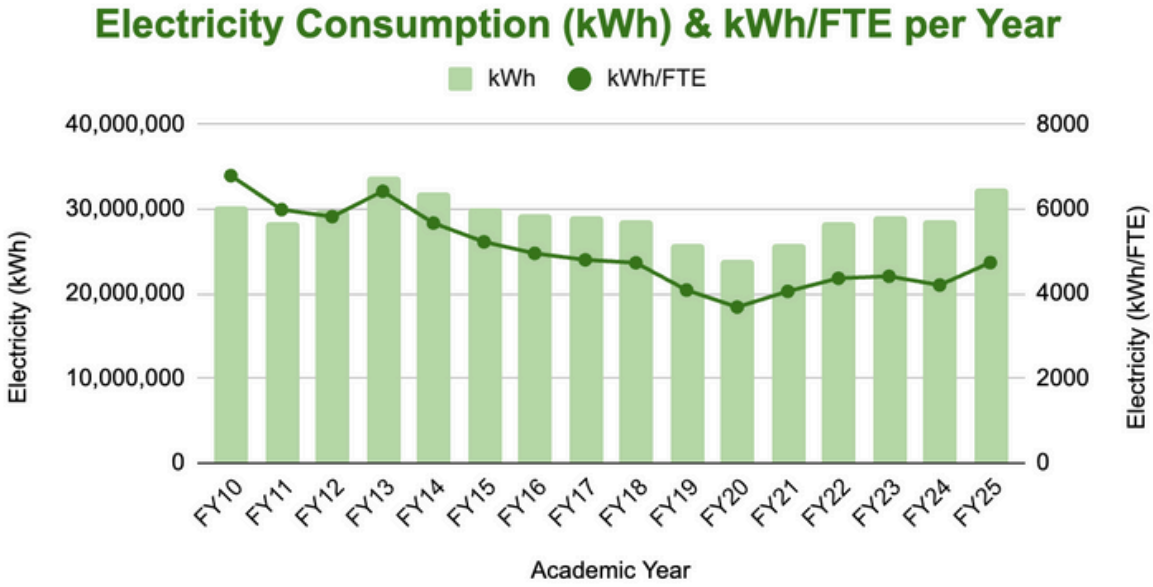
In FY25, the water demand for the WPI campus was 42,647,940 gallons of water, resulting in a water consumption of 6,236 gallons per full-time equivalent (FTE) student. This did not meet the goal for reducing water use given in the five-year sustainability plan of a 15% decrease in the amount of gallons/FTE. However, this year WPI implemented a water conservation project to bring water use down. This project included installing low flow toilets and flushometers, low flow urinals, faucet aerators, and shower heads in academic buildings across campus. They anticipate this will save around 3.7 million gallons of water per year.

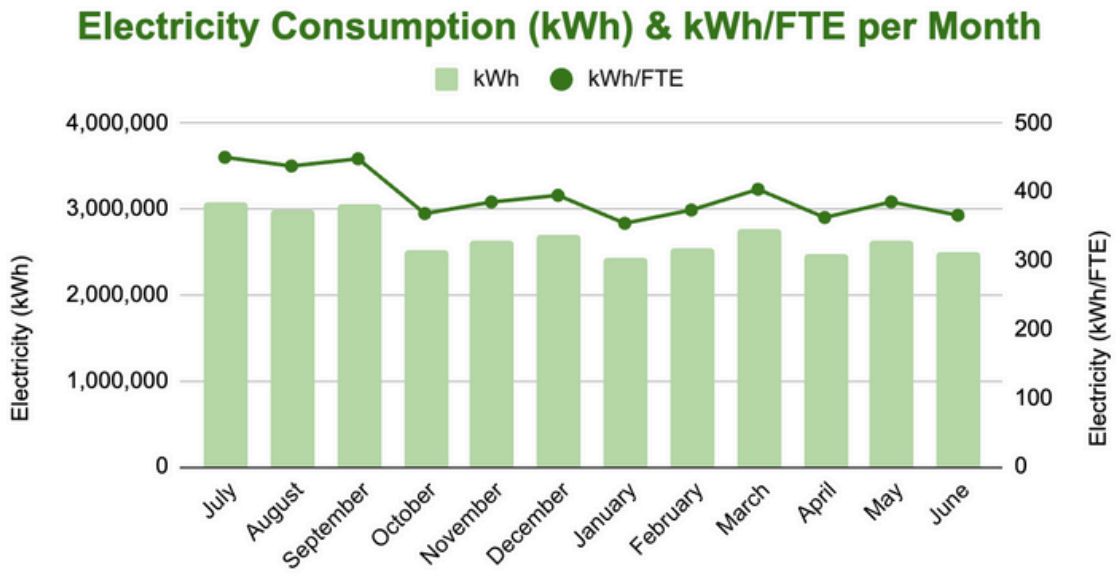




Electricity Consumption

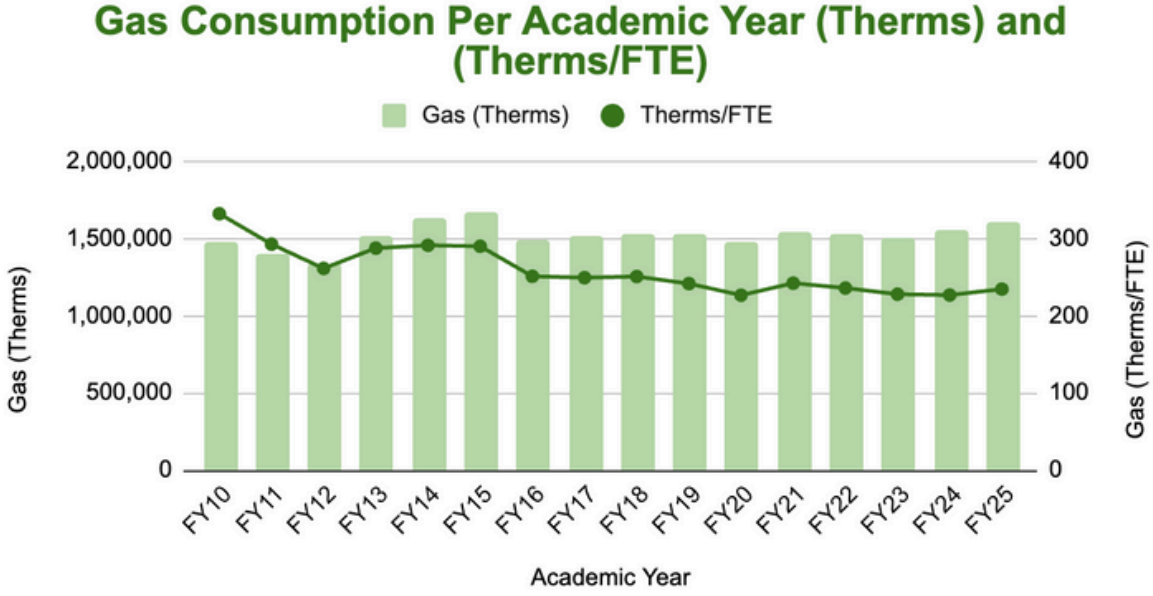
WPI's electricity consumption for FY25 was 32,341,940 kWh, corresponding to approximately 4,729 kWh/FTE. This consumption has remained relatively consistent over the last five years. In the five-year sustainability plan, the goal for reducing electricity consumption was a 10% decrease in kWh/FTE. WPI did not meet this goal, likely due to expansion and renovations to campus since 2020 (e.g. Unity Hall) which would inherently increase consumption and other utility use. Still, energy conservation projects have/are being completed to decrease this consumption. Multiple lighting projects have been completed by GreenerU in conjunction with the energy initiative to continue converting campus to LED lighting. In total, these projects are expected to save 819,000 kWh of energy per year.

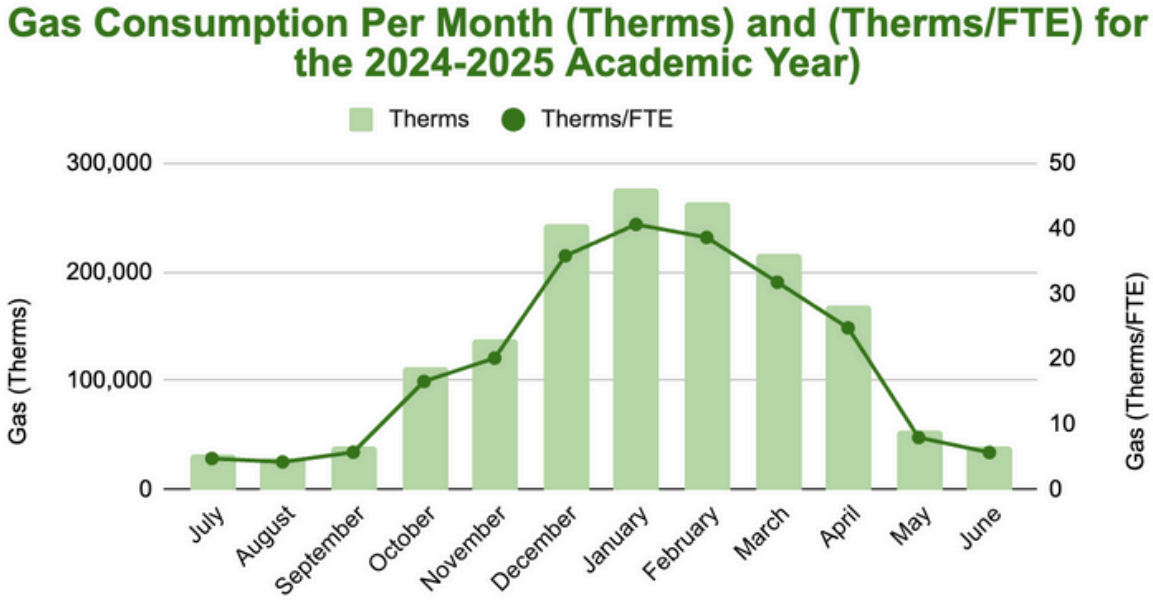




Natural Gas Use

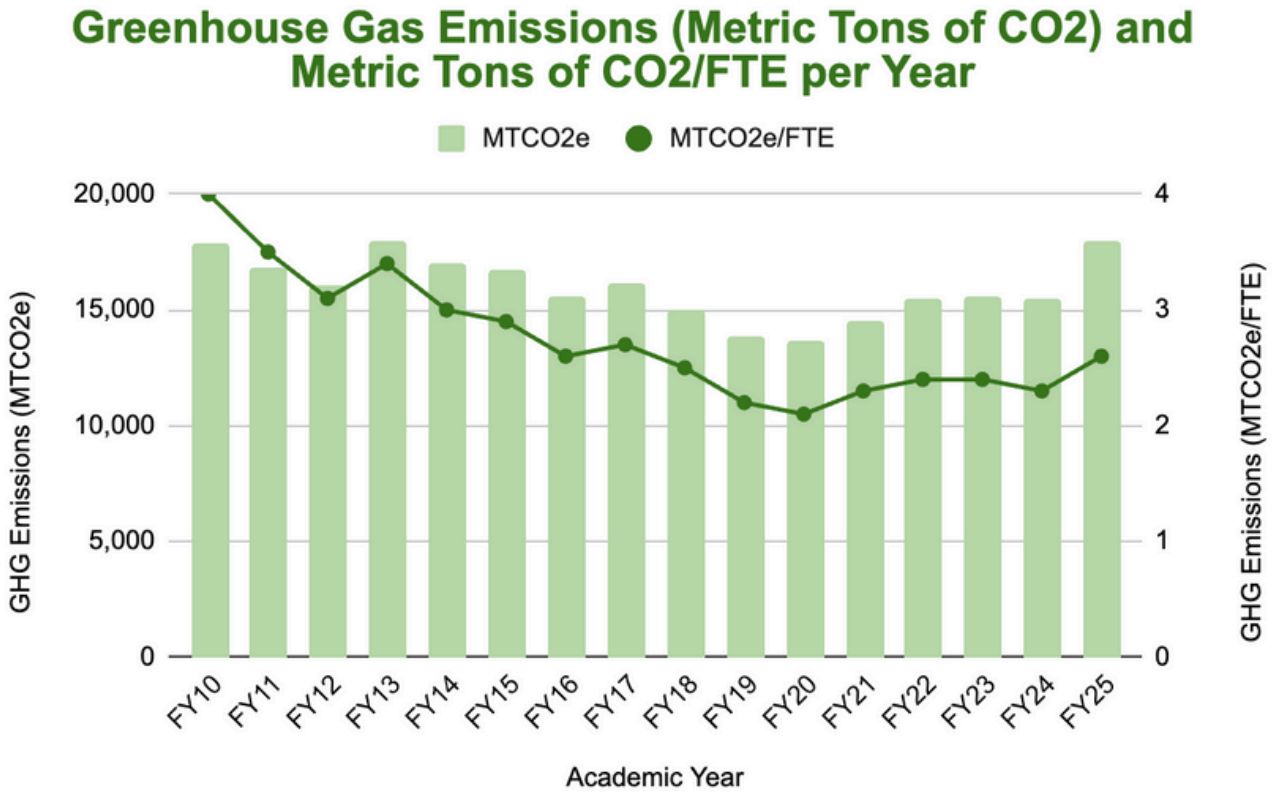
In FY25, WPI used approximately 1,603,260 therms of natural gas, which is equivalent to 234.5 therms/FTE. While the five-year sustainability plan did not set a goal specifically for reducing natural gas use, the increase/decrease in usage will impact greenhouse gas emissions discussed on the next page. WIth the steps of the recently completed Climate Action Plan, the amount of natural gas use should fall drastically in the coming years as WPI utilizes its partnership with Harrison Street to upgrade the energy infrastructure and install a geothermal system. This upgrade is expected to decrease natural gas use by 78%.





Greenhouse Gas Emissions

WPI's greenhouse gas emissions were calculated from data on electricity consumption, natural gas use, motor vehicle fuel data, and refrigerant/chemical use. The calculation was completed using the SIMAP carbon and nitrogen-accounting platform, a tool to track and analyze campus resource use. WPI does not yet track Scope 3 emissions because Scope 3 tracking is extensive and its Second Nature Commitment only requires Scopes 1 and 2. In FY25, WPI produced 18,000 metric tons of carbon dioxide (MTCO2e). An increase in FY 25 can be attributed to completion of the Stratton Hall renovation and addition of the Gateway II building to WPI's facilities operations/accounting. The five-year sustainability plan set a goal of reducing Sope 1 and 2 greenhouse gas emissions by 20%. This goal was not met within five years, but the Climate Action Plan outlines a method to reduce greenhouse gas emissions by 78% and offset the remaining 22% with off-site renewable energy.



This amount of greenhouse gas emitted is equivalent to around:

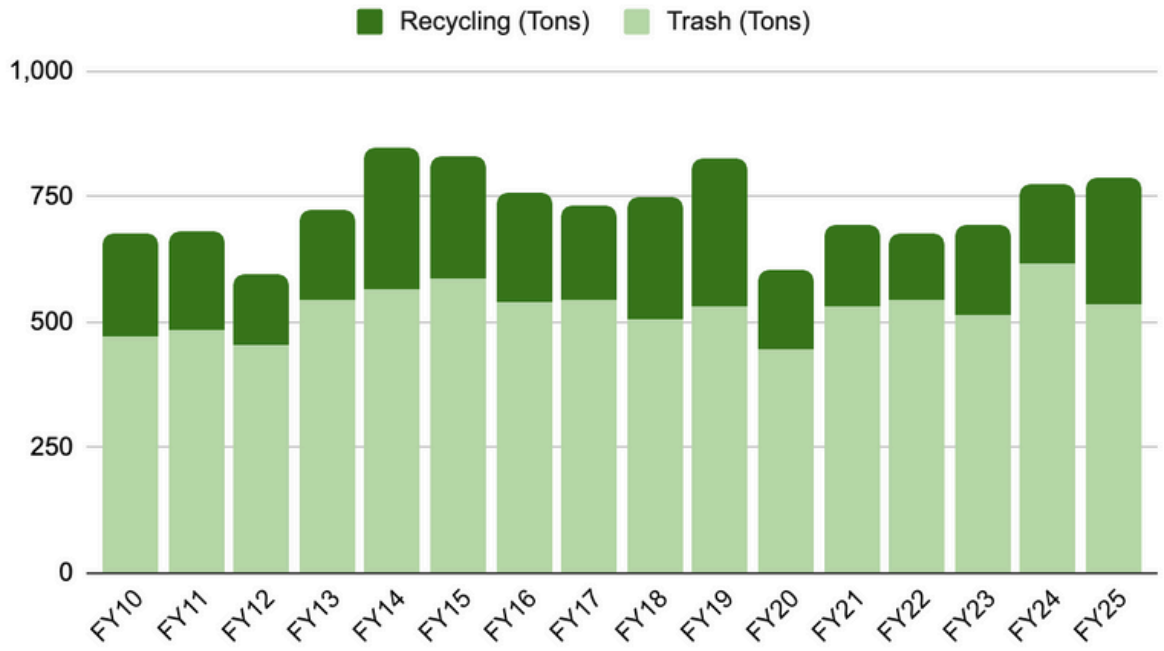
2,500 Homes Annual Energy Usage

1.5 Billion Phones Charged

2 Million Gallons of Gas

Waste

This year, WPI generated 546 tons of waste that was sent directly to a landfill and recycled an additional 227 tons of waste. Compared to FY24, this is less trash and more recycling, showing that some efforts have been effective. Still, WPI did not meet its goal from the five-year sustainability plan of leading to a 25% reduction in landfill waste. However, initiatives such as the composting initiative discussed below may help WPI meet this goal in the future.



Composting in Morgan Dining Hall

Morgan Dining Hall's partnership with Black Earth Compost went into full effect this year, proving to be effective. In Morgan Dining Hall alone, 3.4 tons of plate waste, 10.7 tons of trim, and 14.1 tons of bones and shells were sent to be composted. This greatly reduced the amount of waste sent straight to a landfill. Through this partnership, instead of heading to a landfill, food waste can be composted and eventually reused.

E-Waste

E-Waste is typically collected by Exhausted Inc. & Northeast Precious Metals". They collect and sort the materials and directly reuse materials as feasible, and also distribute materials to advanced facilities with shredding and sorting capabilities to allow for recovery of materials for reuse. Additionally, an e-waste drive (further discussed in the community engagement section) was held. Overall, WPI produced/recycled 7.6 tons of e-waste.

Transportation

In the five-year sustainability plan, WPI sets a few main goals towards transportation services: improving alternative modes of transportation (walking, biking, and ridesharing), making campus vehicles more sustainable by purchasing green vehicles (30% decrease in gallons of fossil fuel), and tracking transportation methods to determine miles/FTE. These initiatives are also important for climate action planning.

Shuttle Services

The first alternative method of transportation offered to students is the daytime shuttle service WPI provides through the Safety Transportation Program. The Valet Park of America (VPA) is a free service available to both students and employees of WPI to bring them to and from campus. This shuttle leaves from the WPI Townhouses every 30 minutes from 7AM-5PM and makes stops at Faraday Hall, 60 Prescott St, Bartlett Center, 44 West St, and 48 Sever St.

At 6PM, this turns into the nighttime shuttle service. This shuttle provides on demand nighttime shuttle rides from 6PM-2:30AM to users who request them through the TripShot app. To learn more about this process, click here.

This year the shuttle services provided:

Gompei's Gears

The Gompei's Gears bikeshare program is available for WPI students, staff, and faculty to have access to free bikes. This program is managed by the Green Team and the Office of Sustainability. This is discussed further in the Community Engagement section of the report.

Zipcars

Zipcars provide an affordable and fuel-efficient alternative to traditional rental cars. To take out a Zipcar, apply online with a valid driver's license and book out a car per hour or per day. Once you are finished with your trip, return it to where you rented it out. There are seven Zipcars at WPI (three at Gateway I garage and four at Park Ave garage.)

This helps WPI students, faculty, and staff reduce carbon emissions and generally the amount of cars on the road. This year, Zipcars provided:

80,000 Miles | **902 Trips** | **10,500 Hours**

EV Chargers

There are 10 electric vehicle chargers located across campus (three at Park Ave Garage, five at Gateway I Garage, and two in Boynton Lot) to support students, faculty, and staff. Additional EV chargers are being considered to accommodate users. Each charger has two ports to support two electric vehicles at once. As of June 2025, users are allowed four hours of free charging before being charged $4/hr. Users are asked to charge only within this free period and contact campus police if they ever need to overstay their welcome (over eight hours.)

242,000 kWh | **16,000 Sessions** | **330+ Users**

Campus Vehicles

While WPI has yet to implement a way to track the emissions or mileage of all vehicles used by the WPI community, they do track the usage of Facilities fleet and campus police vehicles. Since 2020, facilities has adopted four electric vehicles for use with carpentry, HVAC maintenance, and general tasks. This has helped reduce their emissions.

Additionally, mileage and gallons of fossil fuels consumed by all of the non-electric vehicles were tracked. In the 2024-2025 academic year, 24 non-electric vehicles were managed and used by WPI Facilities and 10 were managed by Campus Police. In total these vehicles accounted for:

561,000 Miles

10,000 Gallons of Gas

$33,000 Spent

WPI aims to reduce the amount of fossil fuel used by campus vehicles by transitioning fleet vehicles to electric. The Climate Action Plan establishes a final transition date of 2035.

ACADEMICS

WPI offers students a plethora of opportunities with its 90+ degree programs and countless course offerings. In recent years, after the publishing of the five-year sustainability plan, many WPI faculty members have made a conscious effort to offer and implement sustainability into their courses. This supports WPI's efforts to increase student involvement/engagement in sustainability activities and influence students to pursue sustainable efforts in their future careers. These are important considerations for the sustainability and climate action plans. The table below outlines the WPI's sustainability-focused degrees and certificates.

21 Sustainability-Focused Degrees & Certificates

Architectural Engineering BS, Minor	**Civil Engineering** BS, MS, PhD
Community Climate Adaptation MS	**Environmental Engineering** BS, MS
Environmental & Sustainability Studies BS, Minor	**Global Health** MS
International and Global Studies BS, Minor	**Power Systems Engineering** MS, Certificate
Power Systems Management MS, Certificate	**Sci. & Tech. for Innovation in Global Development** MS, Certificate
Global Public Health Minor	**Sustainability Engineering** Minor

Courses in Sustainability

If we consider progress in advancing sustainability in the past five years, there has been growth in academically-integrated sustainability. In FY20, 150 courses were offered, while in FY25, 220+ courses were offered. Additionally, the number of students actively engaged in these courses and programs increased. In 2020 there were 82 students who graduated (undergraduate and graduate level) in sustainability-focused degree programs. By 2025, this number increased by nearly 50% to 119 graduates. Notably, this increase is relatively much higher than the growth in students enrolled at WPI (6,900 to 7,600 for a 10% increase overall.)

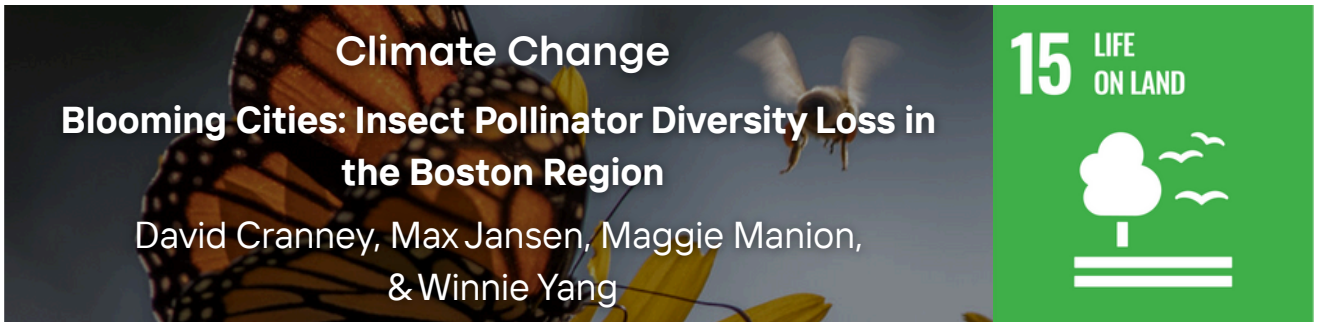
220+ Sustainability-Inclusive Courses

ENV 2710 - Designing for Climate Resilience & Justice	BB 292X - Urban Ecology & Environmental Justice
CE 3070 - Urban & Environmental Planning	FP 4001 - Fire, Risk, & Sustainability
GE 2341 - Geology	AREN 3006 - Advanced HVAC System Design
CHE 4063 - Transport & Transformations in the Environment	INTL 2910 - Topics in Global Studies
ECE 3500 - Electric Power and Renewable Energy Systems	GOV 2311 - Environmental Policy & Law

However, coursework isn't the only home for sustainability in WPI's academics. The five-year sustainability plan makes a pledge to incorporate sustainability into project work at all levels including the Great Problems Seminar (GPS), Interactive Qualifying Project (IQP),, and Major Qualifying Project (MQP). The following section will highlight undergraduate student project work with a focus on sustainability.

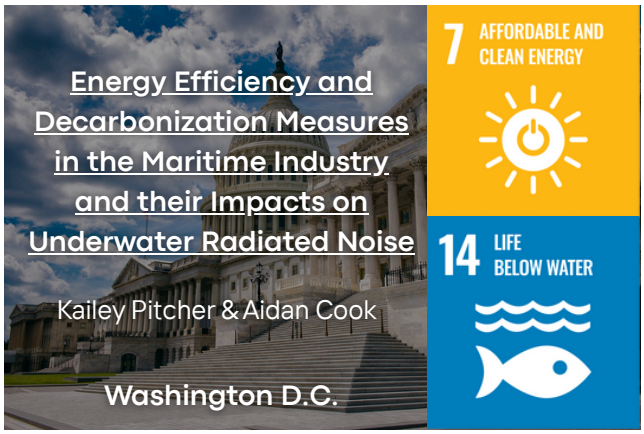
Great Problems Seminar (GPS)

The Great Problems Seminar (GPS) is a dual-course semester-long course offering managed by the Global School for first-year students. The GPS aims to expose students to project-based learning at WPI by considering solutions to the world's greatest challenges. Fundamentally, all of these challenges correlate to one or multiple of the SDGs discussed earlier. In the 2024-2025 academic year, 11 different Great Problems Seminars were offered. Below are a few highlights of this student work:



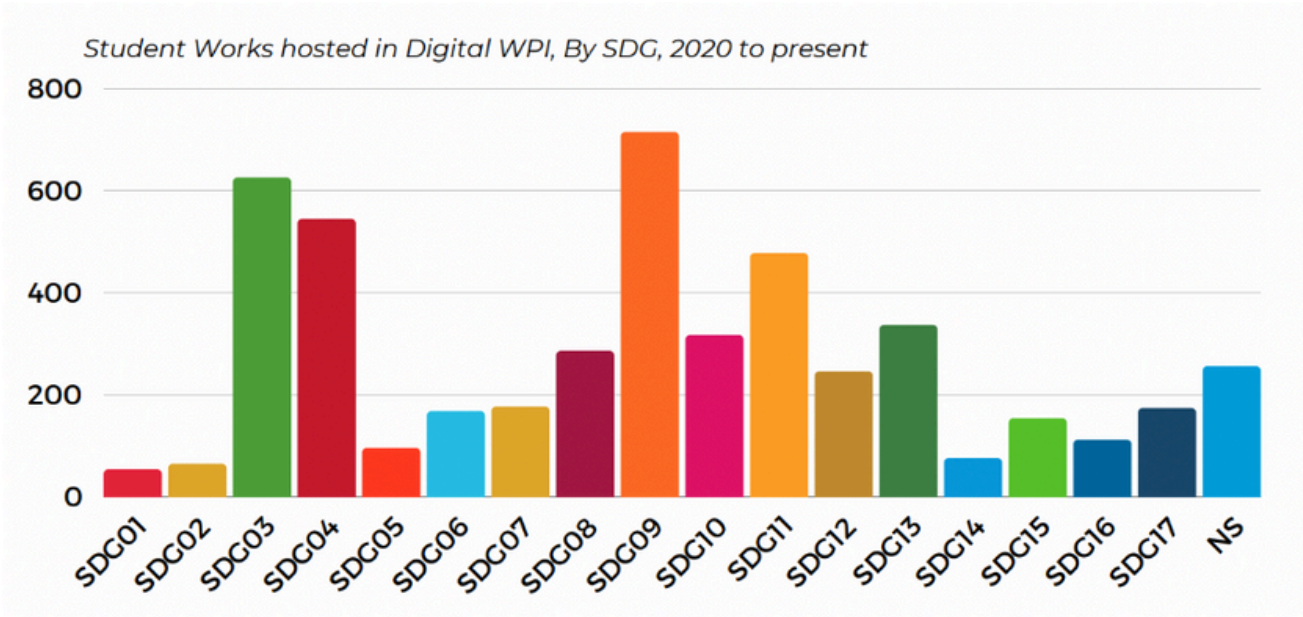
Interactive Qualifying Project (IQP)

The Interactive Qualifying Project (IQP) is a keystone of WPI, helping students develop real-world and project-based skills to prepare them to make a significant difference. This inter-disciplinary project fundamentally involves sustainability and generally aligns with the UN SDGs. Of the hundreds of IQP projects completed by students per year, this report includes a few examples which exemplify sustainability:



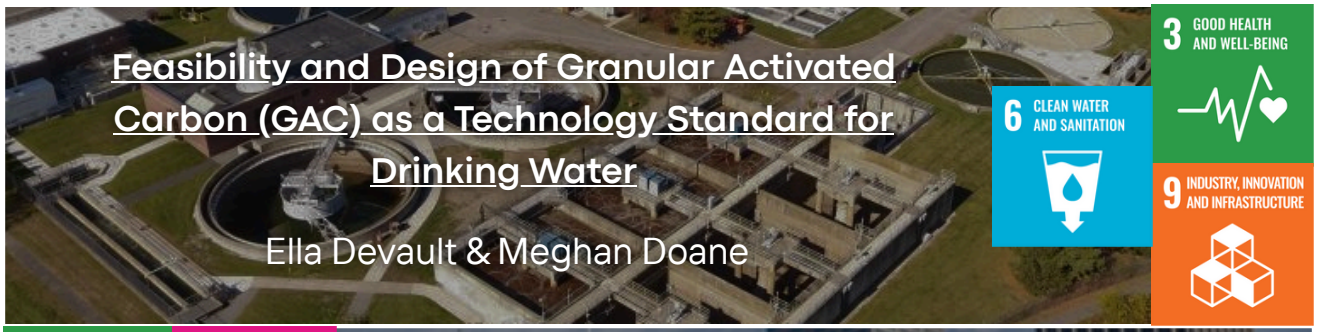
*One of the projects shown above (Identifying Hotspots: Analyzing the Impact of Vulnerable Populations Using Geographic Information Systems) was the undergraduate project winner at the 17th Annual Sustainability Project Showcase. The Showcase is described on Page 25.

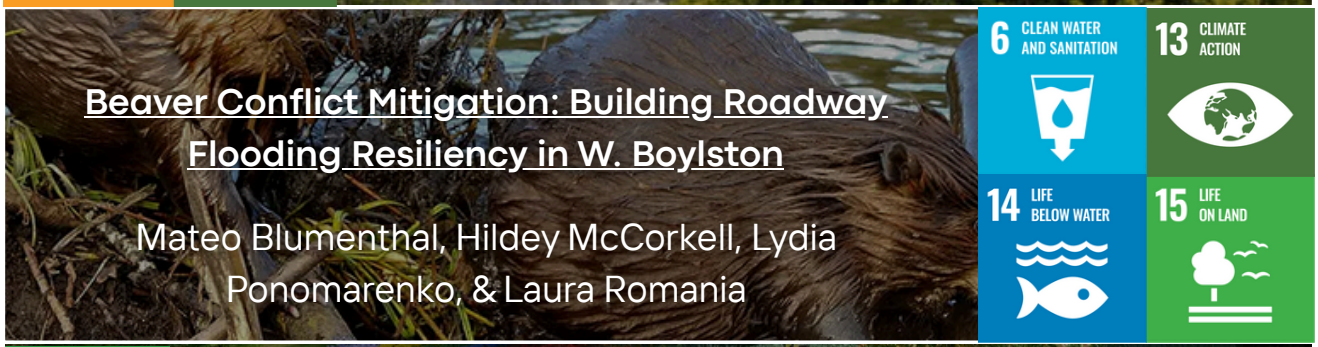
All of the IQPs are included in Digital WPI, the database for student projects. If you click on the titles of the projects listed on the previous page, you can visit Digital WPI, Furthermore, to learn more about all of the sustainable IQPs completed during the 2024-2025 academic year, click here and sort by SDGs. These SDGs are assigned by students themselves when submitting to eProjects. The bar chart below, which was taken the 2024 WPI SDG Progress Report, shows the number of projects associated with each of the SDG since 2020.



Major Qualifying Project (MQP)

The Major Qualifying Project (MQP) is the project which students complete in their senior year, applying the skills they've developed throughout their time at WPI. The MQP provides a well-rounded experience; challenging students to understand the "scientific, social, and ethical dimensions of the problem." Therefore, many MQPs, like the IQP, follow the UN SDGs closely. A few examples are included here.

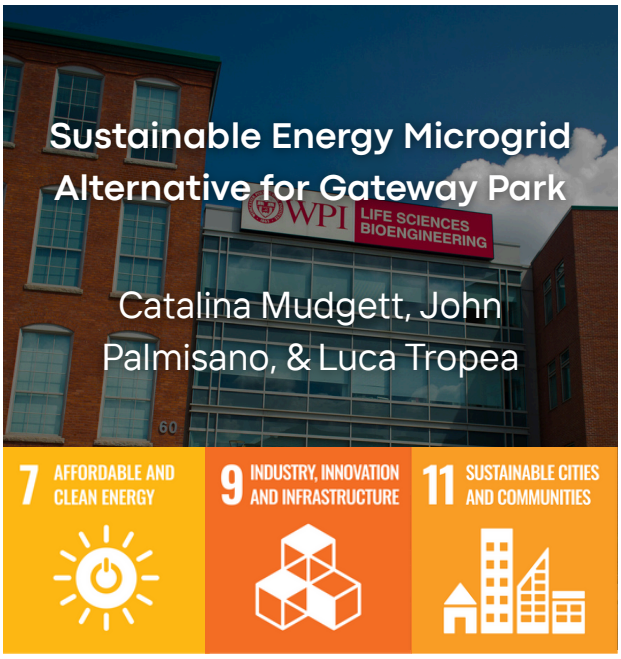




To learn more about each MQP, click on the titles of the projects. Furthermore, to learn more about all of the sustainable MQPs completed during the 2024-2025 academic year, you can go to digital WPI. Just click here and sort by SDGs.

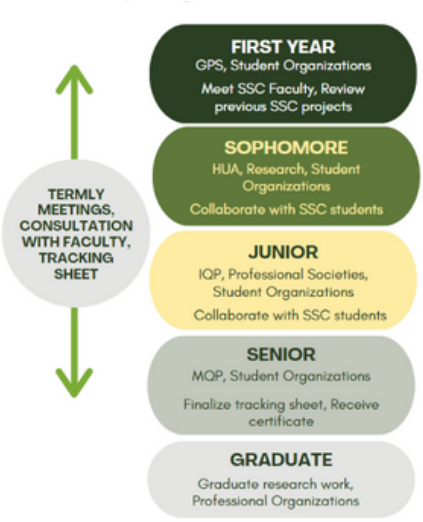
The Sustainability Living and Learning Lab (SL3)

The Sustainability Living and Learning Lab (SL3) is a conceptual laboratory that supports and promotes WPI's campus community to engage in the three pillars of sustainability set out by the five-year sustainability plan. This SL3 includes any projects and student work towards sustainability focused on and around WPI's campus. For example, here are two IQP projects completed at the WPI Energy Sustainability Project Center this past year and two MQPs centered around on the WPI campus.



The Sustainable Solutions Collaborative (SSC)

The Sustainable Solutions Collaborative (SSC) is a leadership program that provides students with the opportunity to learn about issues and solutions related to sustainability, develop a deeper engagement with sustainability through their coursework, projects, and activities, and gain experience as leaders in sustainability.



Faculty and students come together for collaborative meetings once per term to work on major problems related to sustainability. These allow attendees to learn about each other's work and consider options for collaboration on topics in the future. Below are some other events organized by SSC.

Meetings and Civic Engagement

In FY25, the SSC held met every term, including a kick off meeting in A Term to introduce the SSC and plan topics, a roundtable discussion focusing on climate change, issues, a civic engagement workshop in C Term, and an end of the year wrap-up discussion/celebration in D Term. This workshop included a presentation by Corey Dehner to discuss motivations and approaches for civic engagement.

SSC/SDG World Café

An SSC Event was set up in a "World Cafe" format to encourage a discussion on SDGs in collaboration with the SDG Steering Committee, with the discussion focusing on energy, infrastructure, climate, and justice. At the end of the World Café, a discussion was held on the next year's SSC initiatives and leaders who completed the program were recognized.

Pathways Toward a Clean Energy Transition

The Office of Sustainability hosted a panel event as part of the SSC program. This panel provided a forum to discuss the different perspectives on overcoming the current energy challenges in the Massachusetts area and implementing new technologies to meet the needs for a sustainable energy future. The discussion recognized the need for new technologies, cooperation between stakeholders, and a multifaceted approach with broad implementation to achieve a clean energy economy.

17th Annual Sustainability Project Showcase

The 17th annual Sustainability Project Showcase was hosted in April this year, awarding sustainability-focused projects from three different student categories: first-year, undergraduate, and graduate. Winners were awarded a $500 cash prize. In total, 33 projects were submitted. Winners of this project showcase are listed below:

To learn more about the winning projects and all of the projects submitted by students, click here to browse through the Annual Sustainability Project Showcase website.

RESEARCH & SCHOLARSHIP

Scholarly work towards sustainability at WPI doesn't end with undergraduate projects. Graduate students and staff also continue to push the envelope and innovate for sustainability. This research and scholarship are important components of the Sustainability Plan and the Climate Action Plan. The Sustainable Solutions Collaborative (SSC) and Sustainability Project Showcase described in the previous section are intended to support this research and scholarship. This section touches on the faculty and student research that is developing innovative solutions to address challenging sustainability problems.

$25+ Million Awarded for Sustainability Research

Funded Research - Some Examples

This year, over $25 million was awarded to faculty and students in support of research involving sustainability research. This amount has generally remained constant over the past few years. Some examples of recent sustainable research are described below:

Lighting the Way to Better Drying Technologies

The Center for Advanced Drying (CARD) at WPI and the University of Illinois at Urbana-Champaign are partnering together to develop laser-based drying technologies for food, pulp, and paper production. CARD founding director Jamal Yagoobi and associate professor Yuxiang Liu are heading this $3.5 million project (funded by the US Department of Energy and Massachusetts Clean Energy Center), which will span over three years, aims to reduce greenhouse gas emissions from manufacturing facilities that utilize drying. Partners for this project include IPG Photonics, Reading Bakery Systems, the Electric Power Research Institute, the Alliance for Pulp and Paper Technology Innovation, and the Rapid Advancement in Process Intensification Deployment Institute (RAPID).

Rubble to Rockets

"Rubble to Rockets" is a research initiative which was awarded $6.3 million by the Defense Advanced Research Projects Agency (DARPA) to develop an innovative approach to additive manufacturing. This research, lead by associate professor Danielle Cote and assistant research professor Kyle Tsaknopoulos, and aims to ensure that essential components are able to be produced even in the most resource-limited areas such as battlefields. Researchers are applying a machine-learning approach to identify materials and understand their properties before transforming them into new parts which are strong and reliable. This approach allows materials to be formed at a rapid pace without sacrificing the durability or strength they are aiming for.

The end product will be a proof-of-concept sounding rocket to test the reliability of the procedure. Wider applications and implications of this research include implementing this software into the energy and transportation industries. This will support PhD, MS, and BS students.

Major Recycling Challenge: Mixed Plastic

WPI was awarded $331,4592 in state funding to develop an innovative approach towards converting mixed plastic waste into valuable chemicals. This will make the process quicker and more cost-effective as well as reducing plastic waste and its environmental impact.

Chemical engineering professor Michael Timko and assistant research professor Alex Maag are leading these efforts, planning to create modular reactors that are versatile and scalable, able. This project is being supported by the Massachusetts Technology Collaborative (MassTech) and the Executive Office of Housing and Economic Development (EOHED.)

Additional Thesis Projects

Additionally, graduate students are conducting research for their Master of Science (MS) theses at WPI. Below are a few examples of graduate student research projects which exemplify sustainability.

Effects of Climate Change on Boston's Groundwater, the Deterioration of Foundational Timber Piles, and Green Infrastructure as a Solution

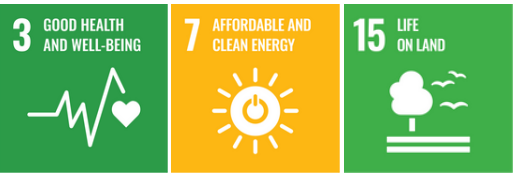
Student Author: Clara Dublin

Approximately 10,000 buildings in Boston are supported on timber piles. These piles must be completely submerged in groundwater to create an anaerobic environment that prevents fungal and insect attack, which lower structural capacity. However, groundwater levels in the city have become unreliable as climate change alters New England's weather processes. This study explores the anticipated climate change impacts on timber pile performance, ongoing government action, economic projects if trends continue, and how green infrastructure can slow timber pile deterioration.

Liquid Metal Leaching for Rare Earth Permanent Magnets Recycling and G-METS Distillation

Student Author: Emmanuel Opoku

The critical role of rare earth metals in advancing clean energy technologies, coupled with growing concerns over supply security, have promoted significant research into alternatives to traditional mining. One increasingly viable strategy is recycling, which offers a sustainable and commercially attractive solution to meet part of the US demand for rare earth elements, particularly for use in permanent magnets. This thesis explores the feasibility of using magnesium (Mg) as a leaching agent for extracting rare earth metals from magnet scraps. The findings suggest that G-METS distillation, combined with Mg-based leaching, offers a promising pathway for efficient, cost-effective, and environmentally sustainable recycling of rare earth elements.



Quantifying the Wildfire Risk to Electrical Systems in Solar Farms

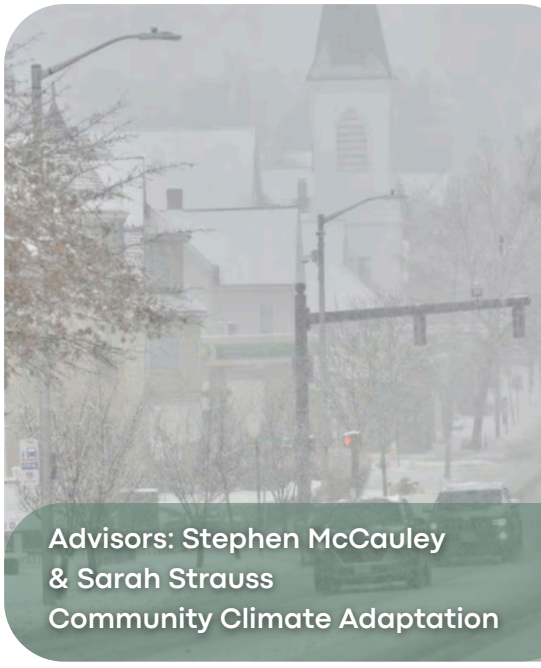
Student Author: Christian Vogt

As human development continues to encroach into wildland areas, wildfires in solar farms are expected to become more frequent, and their impact could be exacerbated by the effects of climate change. In addition, green mandates such as no-mow zones are becoming more common, limiting one of the most effective ways to reduce the fire hazard. This research aims to identify the degree to which grass and surface fires endanger the overlying electrical components and to provide engineers and operators of solar farms with a better understanding of this fire exposure pathway. To that end, the model provides a tool for engineers to perform improved fire risk analysis.

Winter Climate Adaptation in Worcester

Student Author: Hassan Dajana & Camila Gomez

Due to climate change, winters in Worcester, MA are becoming warmer and more unpredictable. This includes wetter winters and more frequent and intense storms. This study looked at ways to make Worcester more resilient to these winter changes. Solutions include reviewing stormwater systems to prevent flooding, incorporating permeable surfaces, creating multilingual emergency information, partner with colleges to increase the number of volunteers shoveling to clear snow for the elderly and disabled, expanding warming centers to make space for unhoused people, and look at food insecurity to provide short-term relief for income insecure people. They believe that doing this will make Worcester a beacon of climate resilience in the United States.



Events and Activities Promoting Research

A number of events relating to research and scholarship were held throughout this past academic year. The following pages include a few examples centered around sustainability.

Global School Forum

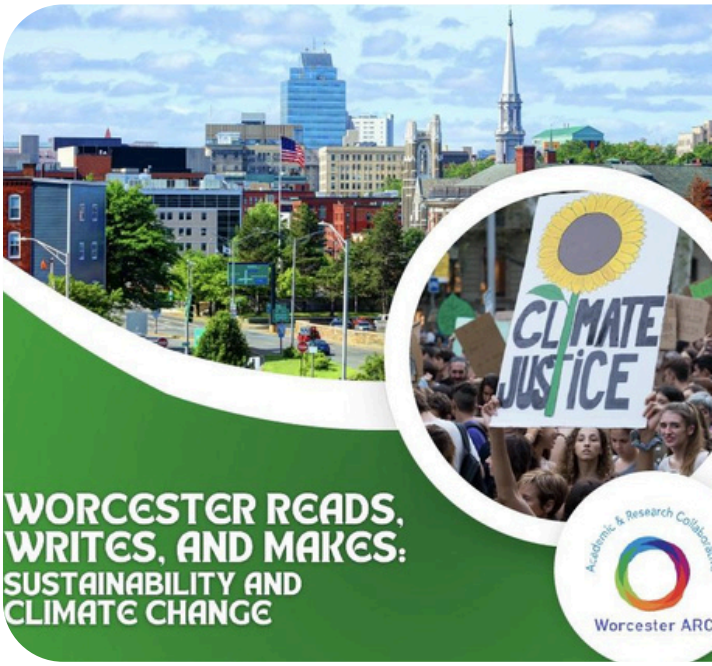
WPI's Global School continued to organize number of forums this past year, covering issues that range from climate change, health and well-being, and social justice, to approaches for incorporating human engagement into policies.

The presentations included:

1. Navigating Global Challenges: Humanitarian Relief, Equity and Justice, by Abby Maxman of Oxfam America Collaborative
2. Learning to Confront Climate Coloniality and Decolonize Global Futures, by Farhana Sultana of Syracuse University
3. Can Machine Learning (NLP, LLM) Make Policy Research more "Reflexive"? by Vijayendra Rao of the World Bank.

Worcester Reads, Writes, and Makes Series

Gordon Library, in conjunction with Worcester's Academic Research Collaborative, developed a Worcester city-wide public event series to help introduce the creative accomplishments and scholarship of our academic community. This year the series, called Worcester Reads, Writes and Makes, focused on sustainability and climate change themes. Speakers included WPI's Dean Mimi Sheller, who spoke on Mobility Justice and Mobile Networked Creativity. Additional sessions included regional researchers addressing global issues, and a tour of weather and climate in art works at the Worcester Art Museum.



WPI's ClimaTech Hub

The Mass Leads Act, signed into law by Governor Healey in November 2024 designates the MassCEC to administer financing tools and tax incentives to create jobs and promote economic growth in climatech. A central feature of the plan is the establishment of a statewide Climate Corridor designed to harness Massachusetts' regional strengths and ensure that all areas of the state benefit from its leadership in climatech. WPI is a key partner of the Central MA Climate-tech Hub, advancing partnerships between MassCEC, educational institutions, and other industry and start-up partners in Central Massachusetts. The Hub hosted the state delegation at WPI in February to announce the MassLeads Act commitment to climate tech and also hosted a ClimaTech Summit on campus in April (ReDI Symposium described below).

ReDI Annual Symposium

The fifth Research, Discovery, and Innovation Day (ReDI) Annual Symposium was held this year. The theme was "A Summit on Climate Tech," a day-long summit focusing on integrating climate tech into our everyday lives. Speakers included WPI professors, Worcester city manager Eric Batista, Massachusetts state senator Robyn Kennedy, Lt. Governor Kim Driscoll, representatives from sustainable companies, and many more. Panels covered the Central Massachusetts startup ecosystem, climate tech discovery and solutions, workforce development challenges and opportunities, and creating the right environment for a thriving industry ecosystem.

MassDEP's 50th Anniversary Celebration

The Massachusetts Department of Environmental Protection (MassDEP) hosted their 50th Anniversary at WPI this year. MassDEP and WPI maintain close partnership in their efforts to protect the environment and promote the quality of life in MA. These efforts include on-going partnership in conjunction with WPI's Water Resources Outreach Center (WROC) and and additional collaborative projects at the undergraduate and graduate levels. During the ceremony, they gave out four awards: Legislator of the Decade, Advocate of the Decade, MassDEP Alumnus, and MassDEP Educator Award. The MassDEP Educator Award went to WPI's own Water Resource Outreach Center's founders (Corey Dehner and Paul Mathisen).

A Greener Approach to Meeting Our Computing Load

WPI's high performance computing (HPC) hardware, AI utilization, and computational programs are expanding. This power footprint is outgrowing the computational capacity WPI has available to support various academic programs on campus - particularly the research demands. To meet this demand, WPI is transitioning 50kW of its computing load to the Massachusetts Green High Performance Computing Center (MGHPCC) in Holyoke. Their large hydroelectric supply will help lower prices and provide an energy mix which is 87% non carbon emitting. This provides a more affordable and sustainable alternative while meeting the needs of campus.

WPI Startups in Sustainability

Startups from WPI currently support 536 employees and nearly $1.7 billion capital. WPI's sustainability research has provided the foundation for a number of these startups. This section will cover three examples, but to learn more about all startups from WPI, click here.

Ascend Elements

Ascend Elements is increasing the supply of critical minerals in North America and Europe. They produce high-performance engineered battery materials from infinitely recyclable elements in end-of-life batteries and manufacturing scrap. TIME magazine named Ascend Elements one of America's Top Green Tech Companies in 2024 and the World's Top Green Tech Companies in 2025. The initial research and development of Ascend Elements' process was done at WPI in 2011. Patents were filed for this process and Ascend Elements was eventually founded in 2015.

Cyvl

Cyvl is an infrastructure intelligence platform that uses AI-powered technology to identify defects in roads, sidewalks, bike lanes, curbs, signage, etc. Cities have already implemented this technology to assess their infrastructure, including Atlanta, Georgia, Manchester, New Hampshire, Mason, Ohio, and many more all in FY25.

Cyvl, originally Roadgnar, was founded in 2021 by three WPI alumni: Noah Budris, Noah Parker, and Daniel Pelaez. Together they combined their knowledge of robotics and computer science to utilize LiDAR technology to increase the efficiency of maintaining public infrastructure.

River Otter Renewables

Another notable startup from WPI is River Otter Renewables which transforms sewage and waste into crude oil to be used for home heating, transportation, and possibly new plastic consumables. While they are still looking for cities to implement their pilot program, they've already been funded by the U.S. Army, U.S. EPA, AFWERX, SERDP, the Massachusetts Clean Energy Center, and Mass Ventures.

COMMUNITY ENGAGEMENT

Sustainable efforts are impossible without a community behind them taking action. At WPI, the campus community (including faculty, staff, students, and other groups) put together events, started initiatives, and brought people together to fight for a greener and more inclusive future. These efforts relate directly to our Sustainability and Climate Action Planning efforts. This section will describe these groups and activities, highlighting the actions that were taken this year.

Sustainable Clubs and Organizations

There are over 280 clubs and organizations at WPI. All of these clubs operate with a different mission in mind, with some pledging themselves to spread sustainability. The clubs and organizations below function to further sustainability and one or more of the UN SDGs:

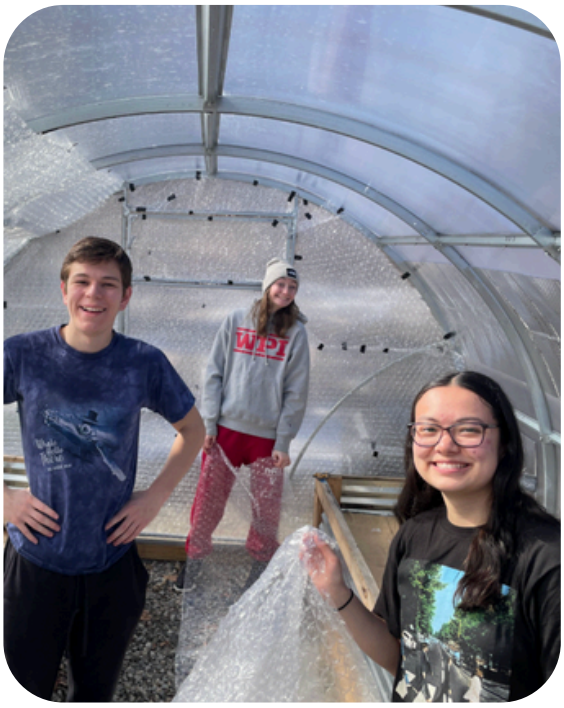
- Active Minds
- American Academy of Environmental Engineers & Scientists
- American Cancer Society on Campus
- American Society of Civil Engineers
- Architectural Engineering Institute
- DoughClub
- Engineers Without Borders
- Exploradreams
- Food Recovery Network
- Girls Talk Math
- Green Team
- Greenhouse and Horticulture Club
- Habitat for Humanity
- Office of Diversity, Inclusion, and Multicultural Education (ODIME)
- Office of Sustainability
- Outing Club
- The Alliance
- The Triangle Collective

This section will put on a spotlight on a few student clubs which exemplify sustainability.

Green Team

WPI's Green Team has three core values: sustainability, action, and justice. To accomplish these goals, it is broken up into five subcommittees: community garden, tree planting, waste management, education and outreach, and bikeshare.

Community Garden



One of the goals outlined in the five-year sustainability plan was to develop an on-campus garden. Green Team helped achieve this goal, opening the Liz Tomaszewski Community Garden in collaboration with ODIME and SGA in August 2023. Since then, the garden has thrived, hosting seasonal harvests and recent projects such as the insulation and native plant projects. The community garden is entirely volunteer supported. Students sign up to water plants, rotate the compost, and regulate the temperature within the greenhouse. Green Team hopes to expand the community garden in the future with a mural and more plant beds.

Tree Planting

This spring the tree planting subcommittee of Green Team planted two tulip trees in the Banana with help from the city of Worcester. They worked in collaboration with WPI Greek Life and the Office of Sustainability to maintain the trees.

Waste Management

Waste Management made progress towards the five-year sustainability plan goal of reducing food waste. They've worked to implement composting through Black Earth Compost in Morgan Dining Hall and Goat's Head. Moreover, they've established vermicomposting (where earthworms stabilize organic matter) in the Sigma Epsilon house.

Gompei's Gears Bikeshare Program

Since the creation of the five-year sustainability plan, Green Team has also aided in providing "healthy living through transportation" by revitalizing Gompei's Gears Bikeshare Program. Originally, the bikeshare was created by an IQP group in 2017, but fell out of service. In 2023, Green Team brought the service back to life and expanded it to make traversing Worcester easier and more environmentally friendly. Now there are seven bikeshare stations across campus: Unity (5 racks), Salisbury (6 racks), the Quad (6 racks), Faraday (4 racks), Gateway (3 racks), Townhouses (3 racks), and South Village (3 racks) station. The bikes are free to rent out for 12 hours, only requiring users to download the Bloom Sharing app and create an account using their WPI email. This spring, the app was redone, hoping to make a more seamless user experience.

Since the bikes were switched over to the new app in the spring, the bikeshare program has been a great tool for students. In total, the program currently supports 188 students for 600 rides and an average of 7 hours per rental trip. The total distance of these trips in the just month and a half that the new app was launched was around 3,100 miles. This helps to offset 110.7 Mg of carbon when considering a bike as an alternative to a car. This amount of saved carbon footprint is equivalent to:

15 Homes Annual Energy Usage

8.9 Million Phones Charged

10.9 Thousand Gallons of Gas

Engineers Without Borders

Engineers Without Borders (EWB) is a club on campus dedicated to creating engineering solutions to help communities meet their needs. This year, WPI's EWB continued working on solutions to improve water quality for the rural community of Shungubug Grande in Ecuador. For the first half of the year, they prototyped a biosand filter to test its efficacy in removing nitrates and phosphates, two of the community's largest contaminants. They also dedicated most of the year to designing structural upgrades to the catchments to prevent contaminated surface water from penetrating the catchments (e.g. water-tight lids and waterproofing the catchments.) Near the end of the academic year, they worked with EWB-USA and WPI's administration to plan a trip to Shungubung Grande to implement these upgrades.

They presented their poster on the upgrades they designed for the Shungubug Grande system at the New England Water Works Association (NEWWA) undergraduate student competition. They earned second place, winning a $500 award.

DoughClub

DoughClub, formed in 2022 and sponsored by DoughBoyz, is focused on fighting hunger and promoting social justice and sustainability. They launched their food pantry in 2023 for any student experiencing food insecurity to not go hungry. Located on the first floor of Innovation Studio, the food pantry accepts non-perishable food and gives away food for free with no questions and no paperwork.

Events & Programs

Climate Action Fair

This year Green Team hosted its third annual Climate Action Fair on the Quad. Their theme this year was zero-waste, making sure that all serving trays and utensils were compostable. Composting services were then provided through one of the guests that partners with WPI: Black Earth Compost. Other guest organizations included Citizens Climate Lobby (CCL), Greater Worcester Land Trust (GWLT), the Worcester Native Plant Initiative, and Worcester Roots. Speakers, also including past Green Team President Yashvi Gosalia, urged students to engage in local action such as voting in local elections and reaching out to representatives to make their voices heard. In between speeches, students were able to enjoy live music from WPI student bands, a choice between two food trucks, and chats with the sustainable clubs, campus offices, and organizations which had their own tables.

One table, the Education and Outreach Green Team subcommittee table, helped provide insight into what students wish for in the future of sustainability. When asked, "what change do you want to see?," Here is what students said:

- More green space (some even wanted more flowers and pollinator gardens on campus)
- Plant native
- Save National Parks
- Clean energy (implementing solar and transitioning off of gas generators)
- Better climate education
- Reduced emissions
- Wide-scale bike infrastructure
- Improved recycling (including tips and bottle-specific recycling)
- Compost all over campus
- No plastic waste
- Sustainable farming (students want to grow their own food!)
- Decreased water use in dining halls

Careers for Sustainable and Just Communities Networking Event

The Careers for Sustainable and Just Communities Networking Event was organized by Professors Elisabeth Stoddard and Laureen Elgert from the environmental and sustainability studies program. Additionally, the Global School, Green Team, the Office of Sustainability, and the Heebner Career Development Center helped bring the networking event together.

This event aimed to help students learn about the different paths WPI alumni and others took towards their sustainable careers, ranging from renewable energy, wildlife conservation, community development, sustainability consulting, etc. In the past, this event was held in the spring. It was held in the fall this year to help students gain insight on their prospective careers before submitting job applications.

Green Team's Free Thrift Store

Green Team's waste management efforts do not end at food waste. Once per term, Green Team holds its Free Thrift Store where students donate unwanted clothing and can pick up anything they like for free. This helps discourage fast fashion and provides students with free clothing if needed. The program has continued to generate lots of student interest and is very successful. This year Green Team also partnered with the Office of Sustainability and other organizations on e-waste and furniture drives - these events are described on the next page.

E-Waste Drive

The Office of Sustainability and Green Team partnered with the Green Team in the Fall of 2024 to offer an electronics recycling (i.e. e-waste) drive to assist the WPI community in dealing with their E-Waste. For this drive, WPI worked with East Coast Electronics Recycling (ECER), and collected TVs, laptops, speakers, cables, vacuum cleaners, water coolers and other items. When all was completed, a total of 2970 lbs of E-Waste was collected.

Furniture Drive

This year, the Office of Sustainability, the Housing & Residential Experience Center (HREC), and the and Green Team partnered to offer multiple move-out donation options for the end of the school year. Hartsprings bins were provided for clothing and household items, with additional cardboard boxes in more locations.Green Team, HREC and Office of Dropoff locations included the Hackfeld lot and the Boynton and Hackfeld Lot. Food donation bins were provided by HRET.

Student Resources & Beyond

Sustainable Career Mentorship Program

WPI faculty and staff came together to launch the Sustainable Career Mentorship Program in the fall of 2024. This program is meant to connect WPI students with professionals working in sustainable careers for one-on-one meetings at least twice per year. Through the program, students are able to learn more about job opportunities in this field and which may be the best fit for them.

The mentorship program launched with seventeen students from different majors including data science, environmental and sustainability studies, and robotics, civil, architectural, and environmental engineering. To match, there were 24 mentors, 14 of which were WPI alumni. To learn more about the program, click here.

Okanagan Charter

The Okanagan Charter is an international charter for universities and colleges to provide a framework for advancing the health and well-being of their campus community. The Dean of Student Wellness partnered with WPI's Global School and the Office of Sustainability to sign the Okanagan Charter in November 2024 in their pursuit of a community of support. This follows WPI's previous work to promote wellness following the publishing of the five-year sustainability plan such as the establishment of the Center of Well-Being in 2022 and the formation of the Campus Wellness Coalition.

Supporting Sustainability Across the Campus

Throughout FY25, the Office of Sustainability continued to promote sustainability on the WPI campus and support WPI's various groups and organizations working to advance sustainability on and off campus. In the fall, Paul Mathisen (Director of Sustainability), Nicole Luiz (Energy and Sustainability Manager, and the Office of Sustainability interns presented to a number of classes to spread information about the Office of Sustainability: what they do on campus and the different ways in which the campus community can get more involved. Great Problems Seminar (GPS) classes also served as forums for discussions about sustainable activities.

The Sustainability interns also held table-sitting sessions in the Campus Center and at the fountain to spread the word about sustainability. In addition, the Office supported the SDG Working Group on promotion of the SDG's, including the SDG Annual Report and the submission to the Times Higher Education (THE) Impact Ranking as mentioned previously in section on SDGs. The Office of Sustainability also worked to develop and promote the WPI Climate Action Plan and also worked with the Green Team and other groups to support them on their programs and activities (many of which are included throughout previous sections of this report). The Office of Sustainability appreciates the many contributions of Nicole Luiz, which were important in advancing our sustainability initiatives throughout this past year.

CONCLUSION

WPI is continuing to push towards a more sustainable future on campus. Although utility use increased this year compared to prior years, the newly outlined Climate Action Plan has established WPI's path forward to carbon neutrality. This method will drastically decrease the amount of greenhouse gas WPI is emitting (by 65%) and offset any remaining emissions using off-site renewable energy (35%). In the meantime, faculty, staff, and students are widening their knowledge on sustainability and advocating for sustainable change.

ACKNOWLEDGEMENTS

This report would not have been possible without the help of the WPI community, particularly Paul Mathisen (Director of Sustainability) and Nicole Luiz (Energy & Sustainability Manager.) Special thanks also go out to:

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This report was authored by:
Ethan Paredes '26
Environmental Engineering
Office of Sustainability Intern

WPI

Office of Sustainability
wpi.edu/+sustainability
green@wpi.edu