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CARBON NEUTRAL 2040

Miami 2040 Climate Action Plan for Miami University

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From President Crawford



A commitment to carbon neutrality and our ongoing efforts toward a more sustainable campus are among the greatest gifts we can give future generations. Higher education institutions are essential in leading the charge for climate action and a more sustainable future. At Miami University, we are dedicated to educating our community and fostering meaningful conversations that shape attitudes and progress toward our goals for carbon neutrality.

Miami is deeply committed to preparing our students to be tomorrow's leaders and innovators. We foster an environment that encourages entrepreneurship and innovation, including those who will develop new solutions to address the challenges of climate change.

On our Oxford campus, we have invested in the innovative and long-range planning necessary for campus energy systems infrastructure transitions. Since implementing our Utility Master Plan for the Oxford campus in 2012, we've already reduced our utility-based carbon emissions by more than 50% and have achieved remarkable accumulated savings of \$100 million (2008-2023) from building improvements, conservation efforts, and energy systems conversions. One of our next steps in decarbonizing our energy systems is considering proposals for a potential 1-megawatt solar installation on our campus — underscoring our commitment to investing in clean energy solutions.

We must all be vested in this Miami 2040 Climate Action Plan. Thank you to our faculty, staff, students, and alumni for their commitment to creating a more sustainable future. I encourage the entire Miami community to join our pledge for carbon neutrality.

Love and Honor,

A handwritten signature in black ink that reads 'Gregory P. Crawford'.

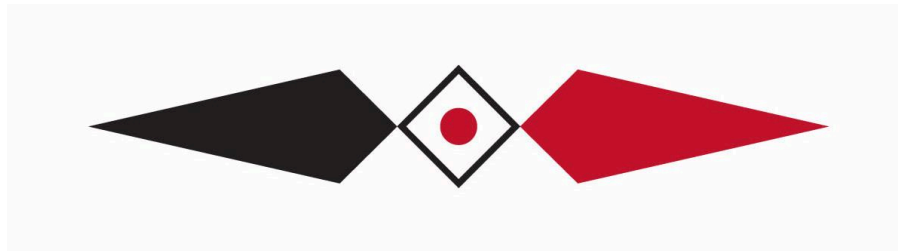
Gregory P. Crawford, President

Miami University's Land Acknowledgement

Miami University is located within the traditional homelands of the Myaamia and Shawnee people, who along with other indigenous groups ceded these lands to the United States in the first Treaty of Greenville in 1795. The Miami people, whose name our university carries, were forcibly removed from these homelands in 1846.

In 1972, a relationship between Miami University and the Miami Tribe of Oklahoma began and evolved into a reciprocal partnership, including the creation of the Myaamia Center at Miami University in 2001. The work of the Myaamia Center serves the Miami Tribe community and is dedicated to the revitalization of Miami language and culture and to restoring that knowledge to the Myaamia people.

Miami University and the Miami Tribe are proud of this work and of the more than 140 Myaamia students who have attended Miami since 1991 through the Myaamia Heritage Award Program.



About Miami University, Oxford campus

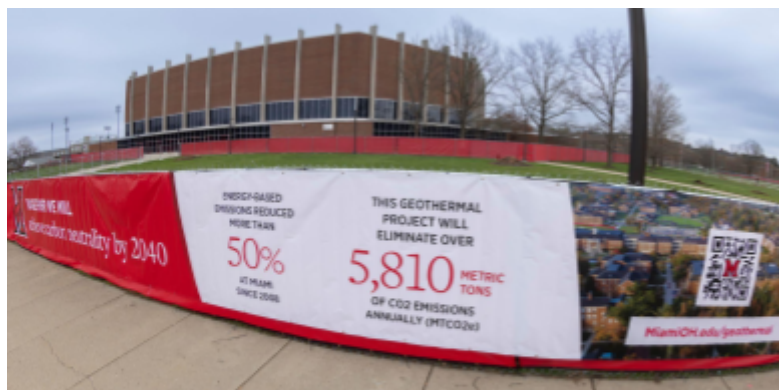


Miami University's main campus is located in Oxford, Ohio, with regional campuses in Hamilton, Ohio; Middletown, Ohio; the Voice of America Learning Center in West Chester, Ohio; and the John E. Dolibois European Center in Luxembourg.

Our Miami 2040 Climate Action Plan is for the Oxford campus, a primarily residential campus of about 16,500 undergraduates and more than 2,000 graduate students. Miami requires first- and second-year students to live on campus. With more than 3,700 employees, it is the largest employer in Butler County. The city of Oxford has a population of about 22,000 and is located in southwest Ohio.

From the Climate Action and Sustainability Council co-chairs

We are proud of Miami President Gregory Crawford's commitment to carbon neutrality on Miami's Oxford campus and of his resilient leadership. Since signing the Presidents' Climate Leadership Commitments in September 2020, President Crawford has led Miami through, among other issues, a global public health crisis, an economic downturn, and now, climate change.



Miami breaks ground this summer on the North Chiller Plant Geothermal Conversion project. When complete by summer 2026, the conversion will eliminate more than 5,810 metric tons of carbon dioxide equivalents in emissions (MTCO_{2e}) annually.

Just over 10 years ago, Miami University's Office of Energy Systems implemented a bold and innovative long-range plan for energy systems infrastructure conversions, energy conservation, and building improvements. The success of that Utility Master Plan is the foundation of our Miami 2040 Climate Action Plan.

We submit this plan with a sense of urgency, facing the fact that Earth was hotter in 2023 than in any other year on record, according to the [European Union's Copernicus Climate Change Service](#), and each month of 2024 so far has been the hottest on record (European Union's Earth Observation Programme, 2024).

The Miami 2040 Plan takes our work to the next level, spreading deeper and wider across the Miami community — not only through energy systems but through curriculum, research, and outreach. The plan presented here is a living document: Our goals and actions will be updated and adapted as new opportunities and technologies are presented.

Already, Miami is moving forward with a large geothermal expansion project, with the drilling of wells to begin next month and a potential solar installation on campus in the near future.



Inside the Western Geothermal Plant:
Larry Davidson, Hydronics Operations Systems Manager,
and Olivia Herron, Sustainability Director

The city of Oxford has pledged to become carbon neutral by 2045 per its Climate Action Plan approved in September 2023. We look forward to working together with members of the city's Climate Action Steering Committee on our mutual goals.

Thank you to the dozens of Miami community members involved in the development of this plan. We are grateful for the support of those involved in the implementation of this plan in the years to come.

Susan Meikle, B.Phil. '83, lead writer Miami 2040 Plan, co-chair Climate Action and Sustainability Council, Miami University Communications and Marketing writer and sustainability communications

Olivia Herron, B.A./MEn. '20, co-chair Climate Action and Sustainability Council, Director of Sustainability

Jonathan Levy, co-chair Climate Action and Sustainability Council, Director of the Institute for the Environment and Sustainability, associate professor of Geology and Environmental Earth Science



Learn more about Sustainability at Miami University
[MiamiOH.edu/sustainability](https://miamiOH.edu/sustainability)

Introduction



Miami University is committed to achieving carbon neutrality on its Oxford campus by 2040

As a signatory of [Second Nature's Climate Commitment](#), our Climate Action Plan outlines the goals, targets, and actions that will lead Miami's Oxford campus to carbon neutrality for energy-based emissions — Scopes 1 and 2 — and emissions from commuting and university-financed air travel — Scope 3 ("Climate Leadership Network," 2023).

Future climate change impacts depend on choices made today

The [Fifth National Climate Assessment](#), published in November 2023, states that the effects of human-caused climate change are already far-reaching and worsening across every region of the United States (Jay et al., 2023).

As part of the Campus-Community Climate Resilience Assessment for Miami University (submitted to Second Nature in August 2023), a study on the historical and predicted effects of climate change in southwest Ohio found that in the Midwest, future projected

changes in average annual temperature are projected to be higher than in any other region of the United States.

The study, by Jonathan Levy, director of the Institute for the Environment and Sustainability, and Jason Rech, professor of Geology and Environmental Earth Science, predicts that southwest Ohio will experience lower precipitation and increased temperatures in summer and increased precipitation and increased maximum temperatures in fall, winter, and spring.

Rapidly reducing greenhouse gas emissions can limit future warming and associated increases in many risks.

At the national scale, the benefits of deep emissions cuts for current and future generations are expected to far outweigh the costs, according to the National Climate Assessment.

At Miami, not only have we succeeded in reducing energy use by nearly half, and reducing energy-based carbon emissions by more than half since 2008, we have realized an estimated cost savings of more than \$100 million during that period.

Our Story: Successes, Challenges, Solutions

Miami University's path to carbon neutrality began in 2010 when our historic residence halls — Elliott and Stoddard (circa 1829 and 1836) — were converted off steam to geothermal heating and cooling.

Since then, with the implementation of Miami's Utility Master Plan, most campus buildings have transitioned from the legacy district steam system to simultaneous heating and cooling, low-temperature Heating Hot Water, and geothermal exchange for heating and cooling.

The Utility Master Plan has led to sustainable reductions in energy use and energy-based carbon emissions since 2008, achieving by fiscal year 2023:

- 51.5% reduction in energy-based carbon emissions.
- 62.5% reduction of energy-based carbon emissions per gross square foot.
- 47.3% reduction in energy use intensity, kBtu per gross square foot.



Elliott Hall, one of the oldest residence halls in the country, was one of Miami's first buildings converted to geothermal heating and cooling.

Figure 1

Oxford Campus Energy Use

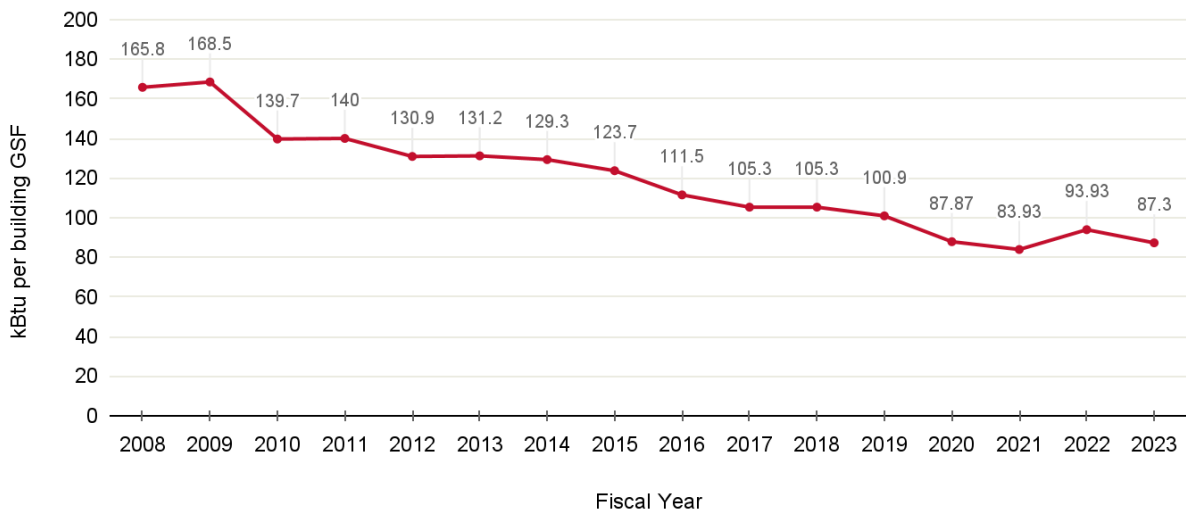


Figure 1, above, displays the campus energy use (kBtu) per building gross square foot (GSF), 2008–2023, Oxford campus (Btu is British thermal units, a unit of energy measurement).

Figure 2

Total Energy-based Emissions from 2008–2023

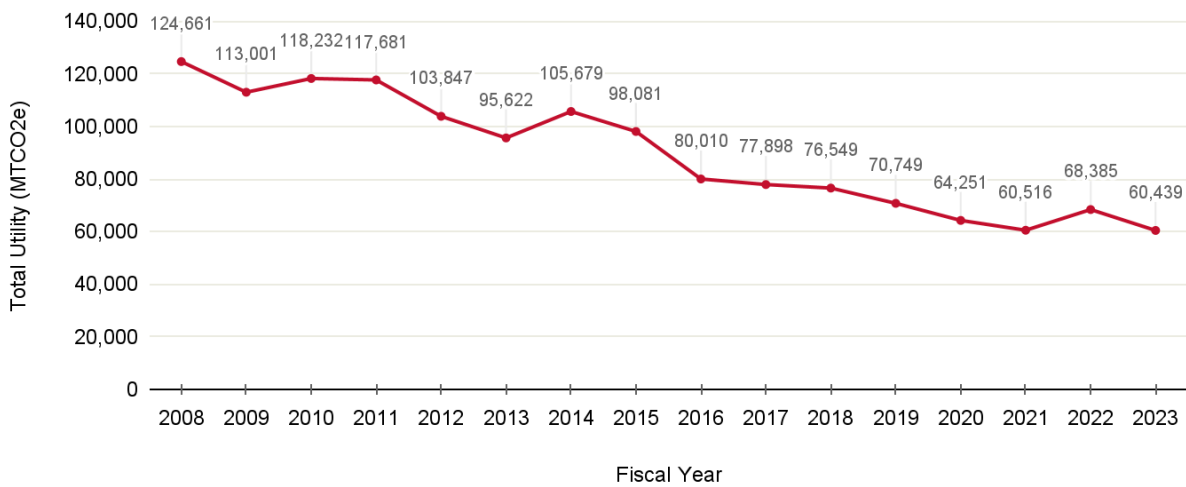


Figure 2, above, displays the total energy-based emissions, MTCO2e (metric tons of CO2 equivalent) from 2008–2023; Oxford campus.

Table 3

Accumulated Utilities Cost Savings, 2009–2022

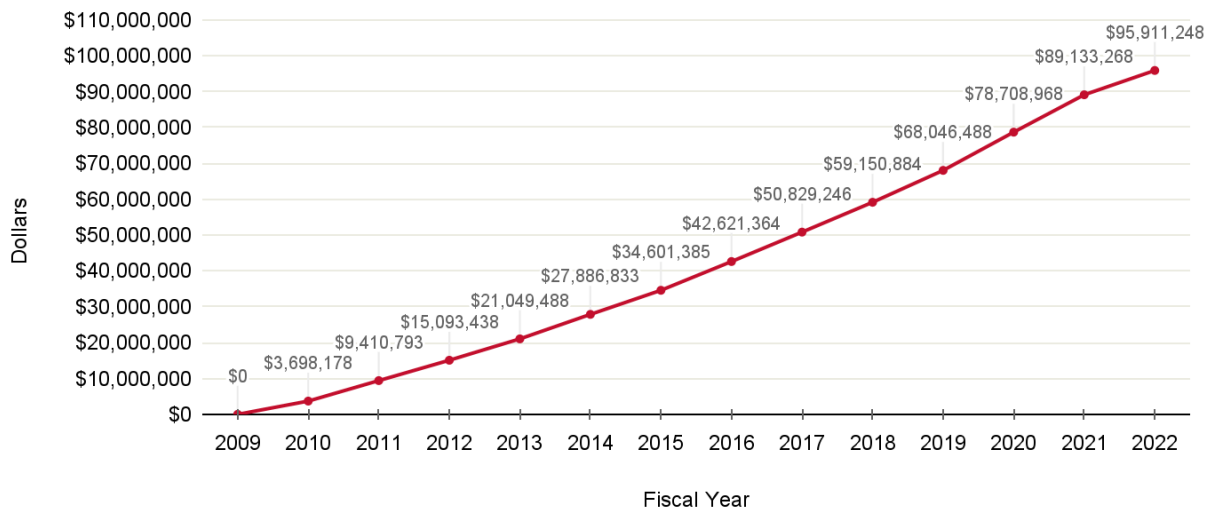


Figure 3, above, displays accumulated energy cost savings, 2009–2022, from Oxford campus energy systems conversions, building improvements, and conservation.

Working Collectively

To confront a challenge unlike any faced by previous generations, “the best possible future will emerge only if the nation works collectively,” according to National Climate Assessment authors. Miami agrees. In fact, Miami is working with the higher education community to share knowledge and best practices for energy systems transitions.

- Miami was one of 12 institutions selected for the first [White House Forum on Campus and Community-Scale Climate Change Solutions](#) (University of Washington, 2023). The March 2023 virtual forum convened U.S. government officials with climate, sustainability, and resilience leaders and educators from colleges and universities across the country to showcase how innovative ideas and actions can advance climate change efforts on college campuses while benefiting the surrounding communities.
- In spring 2023, Miami’s Office of Energy Systems convened a workshop for knowledge sharing about energy systems transitions to geothermal heating and cooling. The inaugural Campus District Energy & Geothermal Workshop was co-hosted with Doug Hammerle (former director of Energy Systems at Miami and currently senior project manager for MEP Associates) and was attended by energy systems and sustainability representatives from several institutions.

Now is the time to implement the Miami 2040: Climate Action Plan.

Summary of Strategies



Construction fence banner for the North Geothermal Expansion project. 520 geothermal wells, 850 feet deep, will be drilled under the front lawn of Millett Hall starting this summer.

The plan's strategies include:

For emissions from energy use and production

Strategy: Further reduce energy consumption; complete the transition of building heating and cooling systems off steam; electrify campus systems to reduce burning fossil-fuels on site; generate electricity from solar energy (zero-emissions energy) on-site; procure purchased electricity from renewable sources; and offset the remainder.

For emissions from commuting and university-financed air travel (Scope 3). These emissions typically account for about 16% of Miami's annual MTCO_{2e} emissions.

Strategy: Reduce barriers to and equitably increase accessibility of alternative transportation modes and reduce the campus drive-alone rate. Reduce as much as possible Miami's commuting and university-financed air travel emissions, and offset the rest.

Curriculum and Research



Larry Davidson, hydronics operations systems manager, talks to a group of students about geothermal exchange in the Western Geothermal Plant. Tours of the geothermal plant are offered to classes, student groups, community groups, and other visitors throughout the year.

Miami students are increasingly provided with opportunities to learn about sustainability and climate change, whether through an academic course, undergraduate research, an education module, living learning communities, or other initiatives. Through offerings from each academic division, the Institute for the Environment and Sustainability, Miami Plan Signature Inquiry courses, and other initiatives, we will aim to provide all Miami students with climate change education.

Student Engagement and Outreach

We propose the creation of a new Student Sustainability Outreach Coordinator position, and, with the support of Associated Student Government, the implementation of a modest Student Sustainability Fee. These resources will help in projects to motivate behavior change for the goal of building a campus culture of sustainability on campus.



Student EcoReps tabling at Mega Fair, an annual event for student organizations at Miami University.

Resilience

While specific climate impacts vary based on regional conditions and context, no region of the nation is immune from the impacts of climate change. As part of the [Campus-Community Climate Resilience Assessment for Miami University](#) (submitted to Second Nature in August 2023), a study on the historical and predicted effects of climate change in southwest Ohio found that in the Midwest, future changes in average annual temperature are projected to be higher than in any other region of the United States. While our campus has many strong assets for resiliency, our resilience monitoring plan will help us assess targeted vulnerabilities on a regular basis.

Zero Waste:

Scope 3 emissions related to waste disposal and recycling — while not currently addressed under the Presidents' Climate Leadership Commitments should be an integral part of a plan for climate action and sustainability. A campus Zero Waste planning committee will be formed to conduct a feasibility study and cost analysis for a Zero Waste Campus Plan.

The Miami 2040 Plan

Decarbonizing Miami's Campus: Energy-based Emissions



Approximately 300 geothermal wells are situated under Western Upper Pond (pictured above) and Lower Pond (a first-of-its kind use). Coils of piping, buried under the sand of Upper Pond, act as a heat exchanger and can provide the heat exchange of 30 geothermal wells.

Miami University's path to carbon neutrality began with our historic residence halls (Elliott and Stoddard) in 2010, when they were converted off steam heating to geothermal heating and cooling. Miami's Utility Master Plan provided a roadmap for the transformation of nearly all the building heating and cooling systems off steam.

Since 2008: Miami has reduced its energy-based carbon emissions by 51.5% and by 62.5% per gross square foot.

By 2040, Miami will decarbonize our energy-based emissions as much as possible, and offset the remainder.

Strategy: Further reduce energy consumption, complete the transition of building heating and cooling systems off steam; electrify campus systems to reduce burning fossil-fuels on site; generate electricity from solar energy (zero-emissions energy) on-site; procure purchased electricity from renewable sources; and offset the remainder.

Goal 1: By 2040, achieve carbon neutrality for emissions associated with fuel combustion on campus, including electricity production and campus fleet (Scope 1).

Target 1: Complete the transition of building climate control systems from energy-intensive steam to high-temperature heating hot water by 2030 and to low-temperature heating hot water and simultaneous heating and cooling by 2040.

- **Action:** Miami's utility master plan, implemented in 2012, takes an eight-phase approach to convert buildings to more efficient heating and cooling systems. Many of these buildings will utilize geothermal exchange to enhance efficiency

further and reduce reliance on fossil fuels. By 2030 Miami's steam plant will be converted to Heating Hot Water. *For a summary of the utility master plan, contact the office of sustainability at Sustainability@MiamiOH.edu.*

Target 2: Increase building energy efficiency by 45% by 2030 from the 2008 historical baseline.

- **Action:** Require that all major campus renovations reduce energy consumption (kBtu - kilo British thermal units) per gross square foot (gsf) by 20% from the site-specific pre-renovation baseline.
- **Action:** Continue to meet or exceed annual energy performance goals set by Miami's Director of Energy Systems ("continuous improvement" kBtu per gross square foot reductions).

Target 3: Electrify campus equipment and appliances to reduce fossil fuels burned on-site as much as possible.

- **Action:** Electrify all domestic water boilers in residence halls by 2030.
- **Action:** Electrify clothes dryers in all residence halls as rental contracts are renewed or machines are replaced by 2030.
- **Action:** Accommodate steam-based laboratory equipment such as autoclaves and cage washers and kitchen equipment such as dishwashers when the steam plant is retrofitted for heating hot water (HHW) utilizing building-level electric steam boilers by 2030.

Target 4: Reduce emissions from electricity produced on-site.

- **Action:** Investigate alternative fuel sources such as biogas to reduce the carbon intensity of electricity produced on-site.

Target 5: Electrify the campus fleet and utility vehicles where possible.

- **Action:** Electrify lightweight vehicles when cost-effective or by 2040.
- **Action:** Electrify heavy-duty vehicles, off-road vehicles, grounds equipment, and other fossil fuel-powered machinery where and when possible.

Target 6: Offset unavoidable emissions from scope 1 sources beginning in 2040.

Goal 2: Achieve carbon neutrality for GHG emissions from purchased electricity (Scope 2)

Target 1: Produce zero-emission electricity on-site.

- **Action:** Implement On-site Solar. The Oxford campus base load capacity is 7 megawatts. Exceeding this threshold would require a net metering agreement with the utility provider (Duke Energy) or on-site battery storage. Several sites on campus have been assessed for potential solar infrastructure installation.
- **Action:** Procure purchased electricity from renewable resources.

Target 2: Explore the feasibility of renewable energy credits (RECs) from off-site clean energy.

- **Action:** The base load at the Miami Regionals Hamilton campus is 200 kW. Representatives from the City of Hamilton have met with Miami energy systems staff to discuss the potential for net metering which would allow for excess production of electricity. This is not currently feasible but will be continuously reassessed. ***Emissions from Miami's regional campuses are not included in the Oxford carbon footprint, but initiatives on these properties can count as internally produced renewable energy credits (RECs) or carbon credits.*
- **Action:** Contract with a developer to build a solar array on-site or at an off-site location, and purchase the power and associated RECs.

Target 3: Offset unavoidable emissions from purchased energy (Scope 2) sources beginning in 2040.

Action: Establish a university-wide policy for Purchasing of Carbon Offsets by 2035.

Emissions from Commuting and University-financed Travel



Architect rendering of the Chestnut Street Station multimodal transportation center. Groundbreaking for the project began Jan. 2024. It will open in fall 2025 and will serve transportation needs throughout Oxford and Butler County.

Scope 3 emissions include all greenhouse-gas emissions not covered by Scopes 1 and 2. These are emissions that are associated with Miami University activities but are not directly caused by the university's consumption of fossil fuels or use of electricity.

There are numerous sources of Scope 3 emissions; however, the Presidents' Climate Leadership Commitments requires the Climate Action Plan to consider only those emissions caused by:

- **Commuting:** Emissions produced by faculty, staff, and students commuting daily to campus in personal vehicles, and
- **University-financed air travel:** Emissions generated off-campus when faculty, staff, and students travel on official campus business.

These emissions typically account for about 16% of Miami's annual GHG emissions (MTCO_{2e}).

Strategy: Reduce barriers to and equitably increase accessibility of alternative transportation modes and reduce the campus drive-alone rate. Reduce as much as possible Miami's Commuting and University-financed travel emissions, and offset the rest.

Goal 1: Update the Campus Circulation Master Plan in coordination with the city of Oxford's goal to create carbon-neutral mobility systems, as specified in Oxford's Climate Action Plan (adopted Sept. 18, 2023).

Target 1: Update campus circulation and related transportation plans in collaboration with the city of Oxford in 2025 to ensure alignment in relation to emissions reduction goals.

Goal 2: Reduce emissions generated by student commuting to and from campus in Oxford by 50% by 2030 and by 90% by 2040 relative to 2023 levels.

Target 1: Expand opportunities for walking, biking, and micro-mobility (e.g. electric scooters, skateboards).

- **Action:** More fully pedestrianize the campus
- **Action:** Expand bicycle and micro-mobility programming and infrastructure
- **Action:** Move forward with bike sharing by updating past planning and gauging feasibility
- **Action:** Increase student parking permit fees and revise parking policies to discourage student driving to campus.
- **Action:** Support Butler County Regional Transit Authority (BCRTA) in its efforts to decarbonize its fleet and improve the efficiency and levels of local transit service.

Goal 3: Reduce emissions generated by faculty and staff commuting to and from campus by 20% by 2035 and by 90% by 2040 from 2023 levels.

Target 1: Implement parking policies to manage commuting demand and offset emissions.

- **Action:** Incorporate distance disincentives, mode-based incentives and/or emissions offset fees in parking permits.
- **Action:** Increase employee permit fees, scaled for income.
- **Action:** Expand incentives for low-emissions vehicles, carpooling.
- **Action:** Incorporate commuting distance offset fee calculation in permitting process (exempt 100% electric).
- **Action:** Explore funding models to improve transit from parking revenue.

Target 2: Increase use of BCRTA by supporting BCRTA route planning and financial support with parking fees. Support BCRTA alternative fuel study and infrastructure planning. The new [Chestnut Street Station Multimodal Hub](#), currently under construction with expected completion in fall 2025, will support this goal (Meikle, 2024).

- **Action:** Implement a single app clearinghouse for bus, parking, bike, car/rideshare information, and booking/payment. Develop Request For Proposal (RFP) to explore the market for services.
- **Action:** Expand BCRTA transportation connections to/from Oxford (e.g. Park and Ride). Progress has begun on the [Chestnut Street Station Multimodal Hub](#), currently under construction with expected completion in fall 2025.
- **Action:** Implement car sharing and expand ride sharing.



A Miami Tribe and Miami University branded BCRTA bus.

Target 3: By 2026 develop an EV charging infrastructure plan.

- **Action:** Incorporate Level 3 fast-charging stations at major visitor destinations. Use increased parking permit fees to support infrastructure development.
- **Action:** Incorporate Level 2 charging stations in key employee and student daily parking lots (such as Cook Field) using increased parking permit fees to support infrastructure development.

Target 4: Develop a robust remote-work policy that supports less driving to and from the Oxford campus.

Goal 4: By 2030, reduce to zero net carbon emissions associated with long-distance travel impacts and/or generate revenue for offsets.

Target 1: Expand alternatives to long-distance business travel.

- **Action:** Support utilization of regional or remote travel alternatives.

- **Action:** Review professional development and expense policies.

Target 2: Equitably offset emissions from long-distance employee travel.

- **Action:** Incorporate an emissions offset fee (based on distance and mode).
- **Action:** Incorporate an offset fee calculation module in purchasing systems and procedures.
- **Action:** Ensure university/departmental funds are applicable to offset spending.

Target 3: Expand alternatives to long-distance study abroad travel.

- **Action:** Ensure curriculum supports study away and virtual global learning.

Target 4: Equitably offset emissions from study abroad/away.

- **Action:** Add a student air-travel offset fee: domestic and international.
- **Action:** Integrate travel offset fee into study abroad/away workshop fees/administration.
- **Action:** Ensure relevant scholarships are applicable to fee.

Goal 5: Foster an equitable car-free campus culture.

Target 1: Develop policies and programming to encourage student recreation and access/mobility without reliance on a private automobile.

- **Action:** Strengthen regional and long-distance transit connections.
- **Action:** Expand weekend and other chartered trips (e.g. Cincinnati).

Offsetting Miami's carbon emissions



Bachelor Pond in the Miami University Natural Areas, a 1,000 acre preserve surrounding campus.

Miami aims to reach net carbon emissions by 2040 through at least 90% drawdown of energy-based emissions and commuting and University-financed travel emissions. The unavoidable remaining emissions will be offset.

Goal 1: Establish a Carbon Offset Fund Committee to recommend an

annual carbon fee and select offset projects. The standing committee will ensure that the university's offsets are appropriate each year, given the changing offset price and continuous development of new offset projects.

Target 1: Establish a university-wide policy for Purchasing of Carbon Offsets by 2035.

- **Action:** Integrate transport-related emissions offset into employee travel purchase (using Chrome River or a similar program identified by the office of procurement.)

Goal 2: Establish internal offset projects that can be used by 2040 to help achieve carbon neutrality.

Target 1: Begin accelerated tree-planting program by 2025.

Target 2: Create additional carbon credits by investing in renewable energy at the Regionals campuses.

Target 3: Use student research teams to investigate the conversion of grass lawns and leased farm land to more natural land uses and/or farming practices that sequester carbon.

Curriculum and Research



The fall 2023 "It's Our World" Student Response Exhibition was one of two exhibitions developed by Miami's art museum for students from all majors in conjunction with the 2023–2024 FOCUS theme of Environmental Justice.

Miami students are increasingly provided with opportunities to learn about sustainability and climate change, whether through an academic course, undergraduate research, education module, living learning communities, or other initiatives. Sustainability-inclusive courses are offered across all divisions and are increasingly transdisciplinary.

The new [Miami Plan 2023 for Liberal Education](#), implemented in fall 2023, includes Sustainability and Resilience as one of five Signature Inquiry areas (comprising 9 credit hours of courses) they can choose from

(Miami University, 2023). The new Miami Plan Innovation Lab (MPIL) is directly involved in the creation of new team-designed, team-taught courses that — among other things — address climate change and sustainability in a variety of ways.

Strategy: Integrate sustainability across the curriculum; develop new sustainability and climate-related degree programs, micro credential or certificate programs; foster and support research on climate change.

Goal 1: Increase the number of academic courses, majors, minors, certificates, and other curriculum-based programs offered at Miami that are focused on sustainability and climate change.

Target 1: Increase the proportion of graduates from programs that are focused on sustainability and climate change.

Target 2: Increase the proportion of departments offering courses focused on sustainability and climate change from 5% to 10% by 2035.

- **Action:** Evaluate the opportunity and options for creating a multidisciplinary microcredential in Climate Change and Sustainability.

- **Action:** Support new course development through the Office of Liberal Education and the Center for Teaching Excellence.
- **Action:** Continue to support faculty to seek approval for courses in the Sustainability and Resilience Signature Inquiry of the Miami Plan 2023.

Target 3: Implement a course designation for sustainability-focused and inclusive courses in alignment with AASHE STARS.

Goal 2: Foster and increase the research efforts at Miami centered on sustainability and climate change.



Students collect samples from Acton Lake. The lake, about 6 miles from campus, is the site of an NSF-funded Long Term Research in Environmental Biology project focusing on the effects of climate change on the ecosystem of the lake and its watershed.

- **Action:** With the office of ASPIRE, enhance Miami's partnerships with governments, businesses, and non-governmental organizations to provide opportunities for faculty and students across disciplines for projects centered on sustainability, such as researching offset projects with local governments.
- **Action:** With the office of Advancement and For love. For honor, For those who will. — The Campaign for Miami University, foster relationships with alumni to garner financial and strategic support for research centered on climate change and sustainability.
- **Action:** Enhance Miami's Teacher-Scholar model, support opportunities for undergraduate research and other experiential learning programs centered on sustainability and climate change.

Student Engagement and Outreach



Director of Sustainability Olivia Herron (center) with student assistants Will Sayner and Kaitlyn Carlin. The students work in the Office of Sustainability through Miami's Service+ AmeriCorps program.

Miami University's Sustainability Pillar 2, Commitment to Enhancing Campus Culture — one of three overarching Sustainability Pillars Miami established in 2021 — promotes a University-wide culture of sustainable behavior. We recognize that we all share a responsibility to build a campus culture of sustainability to help reach carbon neutrality on campus.

Strategy: Increase student awareness of how individual actions impact the success of Miami's commitment carbon neutrality and motivate change in behavior.

Goal 1: Increase student awareness of Miami's climate commitment, and increase student awareness of how their actions and behaviors have an impact on our commitment to decarbonization.

Target 1: Create a new Student Sustainability Outreach Coordinator position. This position will focus on Sustainability initiatives in partnership with the Director of Student Engagement/ Leadership or the Director of the Armstrong Student Center; the Office of Sustainability; and the office of ASPIRE.

- **Action:** Allocate funding from Armstrong Student Center, Office of ASPIRE, and the Office of Sustainability for a full-time (32 hr/week) position within the Division of Student Life. Estimated cost: \$45,000

Goal 2: Implement a modest Student Sustainability Fee to fund opportunities for students for student-led projects, events, or programming centered on Miami's climate commitment.

Target 1: Associated Student Government proposal to the board of trustees to support a Student Sustainability Fee of \$5/semester, similar to other Ohio public universities. Funding allocation would be decided by a committee of students, the Sustainability Director, and others.

- **Actions:** Establish a Climate Action/Sustainability Fund available for students to support projects centered on climate action. Students propose projects (i.e. zero waste projects, pollinator gardens, workshops, outreach for community members, travel to conference) annually. Funding allocation would be decided by a committee of students, the Sustainability Director, and others.

Goal 3: Motivate change in user behavior by encouraging resource stewardship, responsible consumption, and waste disposal.

Target 1: Aim for 20% of events held at Armstrong Student Center to be Zero Waste in 2024–2025; and 40% of events to be zero waste by 2040.

- **Actions:** Provide resources and guidance for student organizations and other groups using Armstrong Student Center to hold Zero Waste Events in the facility. Provide guidance and resources for disposal of compostable and recyclable items offered by Dining Services.

Goal 4: Motivate change in user behavior by encouraging resource stewardship by residential students.

Target 1: Reduce energy and water consumption in the residence halls 5% by 2030 from 2024 levels.

- **Action:** A student sustainability outreach coordinator will lead outreach and communication for residential students about how their actions affect energy use and water consumption in their residence halls. Progress will be tracked and shared by the Director of Energy Systems, Director of Utilities, Director of Sustainability, and a team of students in IES 474 “Sustainability in Practice” using U.S. Green Buildings Council’s (USGBC) Arc platform.
- **Action:** High performing buildings will be LEED for Operations + Maintenance (Leadership in Energy and Environmental Design, O+M) certified to publicize the success of efficient building operation. Estimated cost to certify 12 initial buildings: \$35,000

Resilience Monitoring



Student workers install steps on a trail in the Miami University Natural Areas. With nearly 1,000 acres and 17 miles of trails in our backyard, the Natural Areas are an invaluable resource for resilience, recreation, and research.

As part of the [Campus-Community Climate Resilience Assessment for Miami University](#) (submitted to Second Nature in August 2023), a study on the historical and predicted effects of climate change in southwest Ohio found that in the Midwest, future projected changes in average annual temperature are projected to be higher than in any other region of the United States. While our campus has many strong assets for resiliency, our resilience monitoring plan will help us assess targeted vulnerabilities on a regular basis.

Summary of Current State and Vulnerabilities

Identified Vulnerabilities for Miami University and the City of Oxford		
Climate Change Hazards	Climate Change Impacts	Exacerbating Factors of Climate Change
Extreme Heat	Invasive Species	Drug/Alcohol Abuse
Extreme Cold	Infrastructure Failure	Food Insecurity
Severe Storms	Loss of Biodiversity	Lack of Affordable Housing
Drought	Power Outage	Structural Racism
Rainfall Flooding	Poor Air Quality	Undiversified Economy
	Water Insecurity	Unemployment

Bolded vulnerabilities are also discussed in the [City of Oxford's Climate Action Plan](#).

Strengths/Assets of Miami University:

- Adaptive infrastructure for extreme weather events on campus. On-site Wartsila Generators which can supply approximately 10% of campus electricity demand in case of grid failure.
- More than 30% of building square footage on the Oxford campus is Leadership in Energy and Environmental Design (LEED)-certified Gold or Silver. (A total of 32 LEED certified buildings(5 Gold and 27 Silver).
- Free public bus transportation for all campuses provided by the Butler County Regional Transit Authority (BCRTA).
- [Chestnut Street Station Multimodal Transportation Hub](#), which broke ground for construction in January 2024, will be completed by Fall 2025 and will facilitate car, bus, bicycle, and other forms of transportation for the Oxford and Miami communities. An Amtrak platform is expected near the Chestnut Street Station by 2026.
- [Natural areas on campus](#) and in the community. Nearly half of Miami's 2,000 acre Oxford campus is designated as forest. 1,000 acres are protected in perpetuity as the Miami University Natural Areas. 17 miles of hiking trails/multi-use paths, some of which connect the city of Oxford and Miami University through the Oxford Area Trail System.
- Existing emergency evacuation plans and communications. Strong collaborative

relationship and communication channels with the Butler County General Health Department.

- Efforts to increase inclusive excellence through the Office of Transformational and Inclusive Excellence and other divisions have been recognized nationally: [Forbes ranks Miami No. 16 overall on America's Best Employers for Diversity List](#) for 2024 (Kissell, 2024). The Miami University Alumni Association is the recipient of a [2024 Alumni Association Inclusive Excellence Award from Insight into Diversity](#) (Chapin, 2024).
- Miami has invested more in mental health resources for students in response to greater need. A student mental health fee of \$50 per semester was applied starting in fall 2022, which has helped fund additional counselor and staff positions in Miami's [Student Counseling Service](#) (SCS). Miami's new Clinical Health Sciences and Wellness facility, which opened June 2023, allowed for the Student Counseling Service to expand from 21 to 37 counseling rooms. A new, free, "[Campus Care](#)" program is an option for students to meet with a mental health professional in a less formal setting on a drop-in basis (Miami University, n.d.). Miami recently [received nearly \\$1 million in funding](#) from the Ohio Department of Higher Education for mental health support (Miami University, 2023). Miami's Institutional Task Force on [Student, Faculty, and Staff Mental Health and Well-Being](#) (MHTF) was implemented in 2022-2023 and is charged with assessing current services and culture around mental health and well-being and making recommendations for improvement (Miami University, 2023).

Resilience Monitoring

Resilience Monitoring Strategy				
Parameter	What is measured	Measured by	Frequency	Additional Costs
Sustainability education	Number of sustainability-focused classes, number of majors focused on sustainability	Office of Sustainability as part of STARS and the Provost's office	Every three years	None
Access to counseling services	Wait time for student appointments; number of students using services and number not able to access services. Number of services available	Student Counseling Service	Every three years coinciding with STARS	None
Food security	Number of students receiving food from TOPSS and/or Miami Cares	Student Success Office (Miami Cares) and provided by TOPSS (Talawanda Oxford Pantry and Social Services)	Annual	None
Access to local food	Opportunities available for local food purchase, walkable, bikeable or by bus: (i.e. weekly Farmer's Market Uptown, Butterfield FarmMarket, MOON Coop, certain campus dining locations)	Dining Services Sustainability manager; Office of Sustainability	Annual	None
Extreme temperature plans	Number of days above 90°F	IES; from data collected from the weather station at the Ecology Research Center	Annual	None
Drinking-water quality	Concentrations of lead, copper and various organic chemicals	City of Oxford water treatment plant operator	Annual	None
Surface-water quality	Concentrations of nitrate, phosphate and bacteria in many Butler County streams	Butler County/Miami Stream Team	Monthly, March through November	None
Air quality	Particulate matter concentration via PurpleAir quality sensor; Ozone and wet and dry deposition of precipitation chemistry	IES graduate student does weekly collection funded by two continuing IES grants	Weekly	Installation of PurpleAir sensor at Shideler; upkeep of monitoring equipment at the ERC.
Biodiversity	Species diversity inventories of local birds, tree seedlings/saplings, wildflowers	Various Biology faculty, IES faculty members	Annually	None

Resilience Monitoring Strategy

Parameter	What is measured	Measured by	Frequency	Additional Costs
Soil carbon	Soil carbon content of various Miami land-use types	IES graduate student under the supervision of faculty member of Geology and Environmental Earth Science	Every 5 years	Funding for summer employment of IES master's student and laboratory analyses
Access to natural areas	Use of Miami University Natural Areas for recreation: number of hikers on trails (this measures users of MUNA trails but not OATS trails); investment (city, public, state) in the MUNA and OATS	Natural Areas Committee; City of Oxford sustainability coordinator	Continuous	Trail counter system: \$2500
Campus water use	Water withdrawal and potable water use	Miami Physical Facilities Dept.	Annual	None
Access, adoption of alternative transportation	Number of parking permit holders; number of permit holders who indicate on the Commuting Survey commuting by other means than single occupancy vehicle	Annual survey administered by the Office of Sustainability and the Sustainability communications manager when students and employees apply for annual parking permit	Annual	
Sustainable infrastructure	Total carbon emissions and carbon emissions per gross square foot	Miami Physical Facilities Dept.	Annual	None
Waste, Recycling	Amount of waste vs. in residence halls recycling	EcoReps waste/recycling audits; Campus Race to Zero Waste competition waste measured by Rumpke for 8 weeks	Monthly and will compile yearly averages	None
Waste	Amount of waste vs. recycling in Armstrong Student Center	Armstrong staff waste audit and the OSCAR system continuous waste audit ; GoZero will measure the composting weight for compost collected at ASC	Annual	None
Sustainable investment	Percentage of investment pool in sustainable industries	Department of Finance	Annual	None
Student financial aid	Amount of financial aid awarded and percent of students with financial need receiving financial aid	Enrollment Management and Student Success	Annual	None
Green Revolving Fund	Number of proposal requests for the Fund	Office of Sustainability	Annual	None

Future planning: Zero Waste Campus

The Miami University Climate Action and Sustainability Council recognizes that Scope 3 emissions related to waste disposal and recycling, while not addressed under the Presidents' Climate Leadership Commitments, should be an integral part of a plan for climate action and sustainability.



Students at a Weigh the Waste event at one of Miami's Dining halls. These events help educate students on food composting and zero waste initiatives.

Goal 1: Create and implement a Zero Waste campus plan.

Target 1: Starting by 2024, form a campus Zero Waste planning committee to conduct a feasibility study and cost analysis for a Zero Waste campus Plan, beyond the goals set for Zero Waste events in Armstrong Student Center (Goal 3 of Student Engagement and Outreach).

Implementation of the Miami 2040 Climate Action Plan



Jay Hammer, member of the Physical Facilities Department grounds crew, maintains the green roof on Western Dining Hall.

Implementing the Miami 2040 Climate Action Plan begins with institutionalizing the Plan's goals, from the Miami University Board of Trustees to the Office of the President and across the Miami community.

For Miami to achieve this presidential priority, it will require this support:

- Not only will it require incorporation by all departmental units and offices across campus, it will require additional resources in targeted areas such as the Office of

Strategic Procurement, Parking and Transportation, the Office of the Provost, University Communications and Marketing (UCM), Student Life, and Dining Services.

- Miami's [Energy Systems](#), within the Physical Facilities Department (PFD), is responsible for a large part of the Miami 2040 plan ("Energy Systems Staff," n.d.). They have been guided by the Utility Master Plan, established in 2012, which has been key to Miami's tremendous success in reduction of energy use and of carbon emissions: 51.5% reduction in GHG emissions since 2008 (as of FY23).
- The Office of Sustainability is currently staffed by only one full-time position, the Director of Sustainability, within PFD. While this position will be responsible for overseeing the implementation of some of the Goals, Targets, and Actions of the Miami 2040 plan, other parts of this plan are in the purview of other departments.
- **Recognizing the value of embedding sustainability responsibilities into select positions**, as demonstrated by the model recently established by University Marketing and Communications. Likewise, the position responsibilities for the Armstrong Student Center Associate Director of Events and Operations,

were recently updated to include managing sustainability initiatives. This is key to the success of the new zero waste event program in Armstrong.

- Miami's Dining Services provider's Sustainability Manager is key to the success of the composting program that began in fall 2023 in Armstrong Student Center.

We strongly recommend:

1. Hiring an additional member(s) of the Office of Sustainability to support implementation of the Miami 2040 Plan in areas outside of PFD.
2. Embedding Sustainability in job positions: Reprioritize the duties of certain positions in other departments to embed sustainability.

Embedding Sustainability into current positions within:

1. Office of Strategic Procurement

This procurement position would provide guidance to the "Zero Waste" and "Carbon Offsets" committees, and help ensure institutional policies reflect the Goals of the Miami 2040 Plan.

2. Office of the Provost

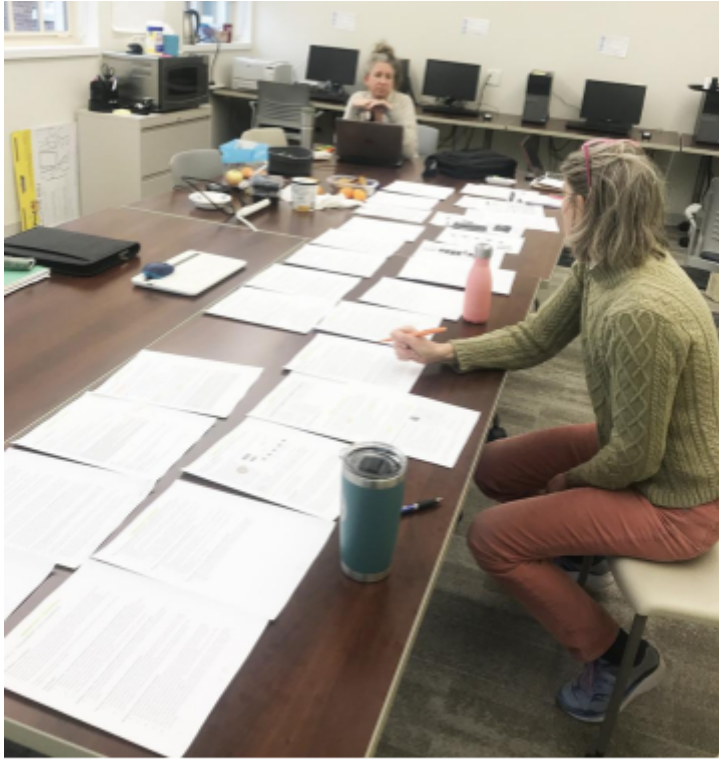
This academics-focused position would guide the tracking and reporting on Miami 2040 Plan goals for Education and Research; and the tracking and reporting of the Educations, Research, and Curriculum objectives associated with the AASHE STARS report.

3. Parking and Transportation

This position within Parking and Transportation would guide and implement Miami 2040 Plan goals and targets to reduce Scope 3 emissions associated with Commuting and University-sponsored air travel.

The individuals assigned sustainability as new responsibilities within their existing role would be selected by the respective departmental supervisors; we recommend incorporating these new responsibilities into job descriptions (through Human Resources).

Sustainability and Climate Action at Miami University: A Brief Timeline



Suzi Zazycki (left) co-chair of the Sustainability Committee 2016–2022, and Susan Meikle (right), current co-chair, with Helaine Alessio (not pictured) work on the report "Further Examination of Carbon Neutrality Pathways: An Addendum to The Commitment to Lead," Feb. 2020.

The Miami University Sustainability Committee, created in 2010 with the appointment of Miami's first sustainability coordinator, drafted the first set of Sustainability Commitments and Goals (SCAG).

Updated in 2016 and led by Miami's first full-time sustainability director, the SCAG helped guide actions leading toward Miami's AASHE Gold STARS ratings by (2019, 2022) and our 32 LEED (Leadership in Energy and Environmental Design) Silver and Gold-Certified buildings, which account for more than 30% of building square footage on the Oxford campus.

In 2019, Miami University President Gregory Crawford charged the Sustainability

Committee to prepare a new plan for sustainability that would leverage our successes to date and set forth new aspirations. The report "A Commitment to Lead" (June 2019) led to a new charge to further examine carbon neutrality pathways (report February 2020). That report recommended that President Crawford sign the Climate Commitment, committing Miami to Carbon Neutrality and an assessment of climate resilience.

President Crawford signed the PCLC-Climate Commitment in September 2020, The Miami University Climate Action Task Force informed much of this Miami 2040 plan.

Climate Action and Sustainability Council Members 2023–2024

In fall 2023, the Miami University Climate Action Task Force and the Sustainability Committee combined to form the Climate Action and Sustainability Council.

Co-chairs: Susan Meikle, Jonathan Levy, Olivia Herron



View our current and previous members on the Sustainability website
MiamiOH.edu/sustainability/climate-action-task-force



Appendix

Sources

- Chapin, J. (2024, April 15). "Miami alumni association receives honor from Insight Into Diversity." Miami University News. <https://miamioh.edu/news/2024/04/miami-alumni-association-receives-honor-from-insight-into-diversity.html>
- City of Oxford Staff and Climate Action Steering Committee (2023, September). "Climate Action Plan." City of Oxford, Ohio. https://www.cityofoxford.org/our_community/climate_efforts/climate_action_plan.php
- European Union's Earth Observation Programme. (2024, April 9). "March 2024 is the tenth month in a row to be the hottest on record." Copernicus. <https://climate.copernicus.eu/copernicus-march-2024-tenth-month-row-be-hottest-record>
- Jay, A. K., Crimmins, A. R., Avery, C. W., Dahl, T. A., Dodder, R. S., Hamlington, B. D., Lustig, A. R., Marvel, K., Méndez-Lazaro, P. A., Osler, M. S., Terando, A., Weeks, E., & Zycherman, A. (2023, April 14). "Ch. 1. Overview: Understanding Risks, Impacts, and Responses." Fifth National Climate Assessment. <https://doi.org/10.7930/NCA5.2023.CH1>
- Kissell, M. R. (2024, April 24). "Forbes ranks Miami No. 16 overall on America's Best Employers for Diversity list." Miami University News. <https://miamioh.edu/news/2024/04/forbes-ranks-miami-no-16-overall-on-americas-best-employers-for-diversity-list.html>
- Meikle, S. (2024, January 24). "BCRTA breaks ground on the chestnut Street multimodal station Jan. 19 with Miami and the city of Oxford." Miami University News. <https://miamioh.edu/news/2024/01/bcrt-a-breaks-ground-on-the-chestnut-street-multimodal-station-jan-19-with-miami-and-city-of-oxford.html>
- Meikle, S. (2024, March 29). "Expanding geothermal on Miami's campus: North Chiller Plant Conversion to Geothermal Project." Miami University News. <https://miamioh.edu/news/2024/03/north-geothermal.html>
- Miami University. (2023, November 29). "Miami receives nearly \$1 million to support mental health services." Miami University News. <https://miamioh.edu/news/2023/11/miami-receives-nearly-1-million-to-support-mental-health-services.html>
- Miami University. (2023, October). "Miami Plan 2023." Miami University Office of Liberal Education. <https://www.miamioh.edu/liberal-ed/student-resources/miami-plan/>
- Miami University. (n.d.). "About the Natural Areas." Miami University Natural Areas. Retrieved May 9, 2024, from <https://miamioh.edu/student-life/natural-areas/about/index.html>
- Miami University. (2023, May). "Advancing and Supporting Campus Mental Health and Well-Being." Life at Miami University. <https://miamioh.edu/life-at-miami/health-well-being/mental-health-well-being-task-force/index.html>
- Miami University. (n.d.). "Energy Systems Staff." Miami University Physical Facilities. <https://www.miamioh.edu/pfd/about/staff/energy-systems/index.html>

Miami University. (n.d.). "Student Counseling Service." Life at Miami University. Retrieved May 9, 2024, from <https://miamioh.edu/life-at-miami/health-well-being/student-counseling-service/index.html>

Miami University. (n.d.). "Student Counseling Service Outreach and Programs." Life at Miami University. Retrieved May 9, 2024, from <https://miamioh.edu/life-at-miami/health-well-being/student-counseling-service/index.html>

Second Nature. (2023, September 13). "Climate Leadership Network." Second Nature. <https://secondnature.org/climate-action-guidance/network/>

Second Nature. (2023, August 7). "Resilience Assessment for Miami University (Oxford)." Second Nature. <https://secondnature.org/wp-content/uploads/2023-RA-204024.pdf>

University of Washington. (2023, March 09). "White House Forum on Campus and Community-Scale Climate Change Solutions" [Video]. YouTube. <https://www.youtube.com/watch?v=tVVds9zcloU>