

Comprehensive Sustainability Plan

UNIVERSITY OF VERMONT AND STATE AGRICULTURAL COLLEGE
2023 - 2040



The University of Vermont

PRESIDENT'S MESSAGE

I am pleased to share with you the University of Vermont's first Comprehensive Sustainability Plan (CSP), which amplifies the excellent work already underway in UVM's indoor and outdoor laboratories, classrooms, and its other facilities and infrastructure. The plan sets a number of new goals coupled with strategies to move this work forward. First and foremost is the achievement of carbon neutrality by 2030, a profound realization of sustainability as a central priority for the University.

UVM has a long and proud history of environmental and sustainability leadership, and the University's students, faculty, and staff are deeply committed to our vision of helping to create a better world through responsible stewardship of all of our resources. For the fourth successive time, UVM has earned a "Gold" rating in the Sustainability Tracking, Assessment and Rating System (STARS) program. This designation at a national level further demonstrates that sustainability is embedded in scholarship, teaching, operations, and planning and engagement at the University. The CSP will help guide us over the next decade and beyond as we further enhance our work in this critically important arena.

The CSP prioritizes decarbonization and features important goals and strategies in the areas of operations, governance and planning, and research and learning. UVM will develop a campus energy plan to guide our actions and investments on the road to achieving carbon neutrality and, consistent with our land grant mission, we will secure carbon offsets within the state, thereby enabling rural Vermont landowners to better manage forest land that will sequester more carbon. Additionally, we will use the campus as a "living lab" to test renewable energy technology, creating new knowledge to further humanity's responsible stewardship of the planet.

I want to thank the CSP Work Group for their time and deep expertise and our Director of Sustainability, Elizabeth Palchak, for her leadership in creating this visionary plan, which aligns with the University's Campus Plan and the strategic vision of Amplifying Our Impact, ensuring that UVM will stay on a sustainable path well into the future.



Suresh Garimella
President, University of Vermont



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VISION

Consistent with Our Common Ground, the University of Vermont's Comprehensive Sustainability Plan promotes just, equitable sustainability solutions by connecting world class research and academics to University operations.

INTRODUCTION

UVM has a history of sustainability leadership in higher education and global recognition. It's essential that UVM contribute to the growing efforts at colleges and universities to develop sustainable solutions as climate change intensifies. The development of UVM's Comprehensive Sustainability Plan will allow UVM to step forward, amplify the work we already do, and announce renewed commitment to a healthy environment and healthy societies.

The themes *resilience, conservation, equity, education, and health and wellbeing* were identified as fundamental concepts in the creation of the goals and strategies. These themes are integrated throughout the plan and help to provide the foundation and rationale for this work across the University.

LAND ACKNOWLEDGMENT

The campus of the University of Vermont sits within a place of gathering and exchange, shaped by water and stewarded by ongoing generations of Indigenous peoples, in particular the Western Abenaki.

Acknowledging the relations between water, land, and people is in harmony with the mission of the university. Acknowledging the serious and significant impacts of our histories on Indigenous peoples and their homelands is a part of the university's ongoing work of teaching, research, and engagement and an essential reminder of our past and our interconnected futures for the many of us gathered on this land.

UVM respects the Indigenous knowledge interwoven in this place and commits to uplifting the Indigenous peoples and cultures present on this land and within our community.

THEMES



Resilience



Conservation



Equity



Education



Health and Wellbeing

Based on a **2022 Survey on Sustainability** we found that...

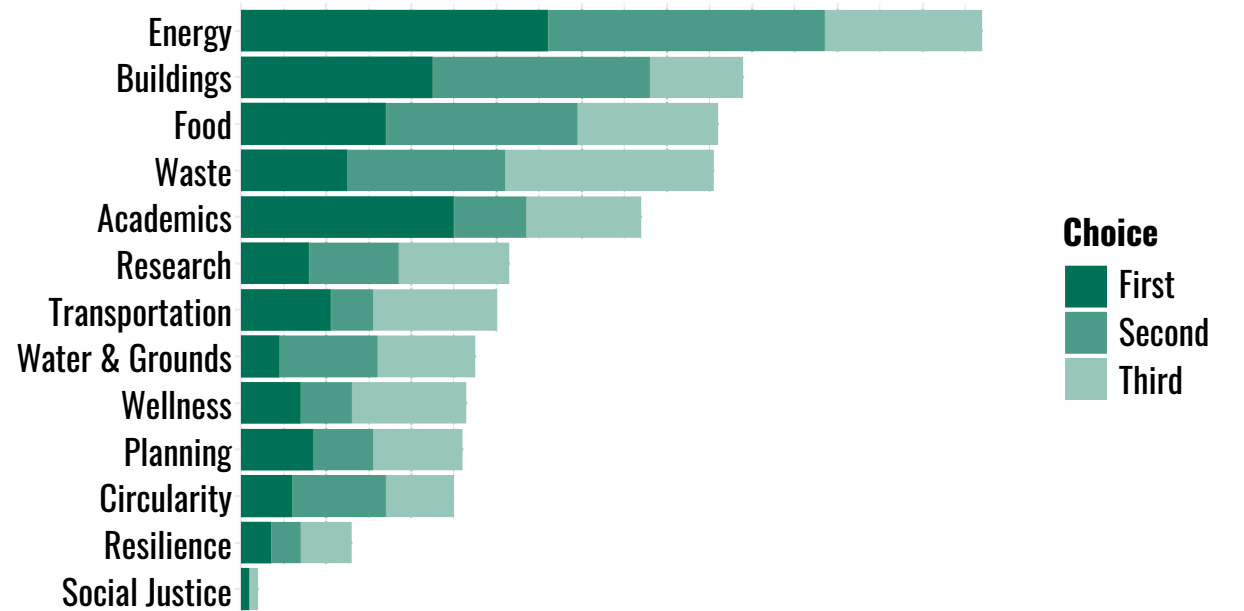
“...While sustainability is multidimensional, we may need to focus on a few specific areas, at least to start...”

90%
agree UVM has a responsibility to be a **leader in sustainability**

28%
agree UVM does enough to justify its **sustainability reputation**

45%
agree UVM's sustainability reputation influenced my decision to **learn or work here**

What areas of campus sustainability should be addressed first according to students, faculty, and staff:



“...UVM holds a great responsibility as a sustainability leader among universities, and needs to continue to work to uphold this position...”

77%
agree sustainability is one of UVM's values

Many said:

- We are a leader amongst sustainability universities.
- Continue to invest and uphold UVM's sustainability values to demonstrate its leadership.
- Use the University grounds and buildings as research and educational opportunities.
- Progress on goals should be shared frequently.

Carbon Neutrality Goals

Carbon Neutral
by **2030**

60%
below 2007 levels
by **2024**

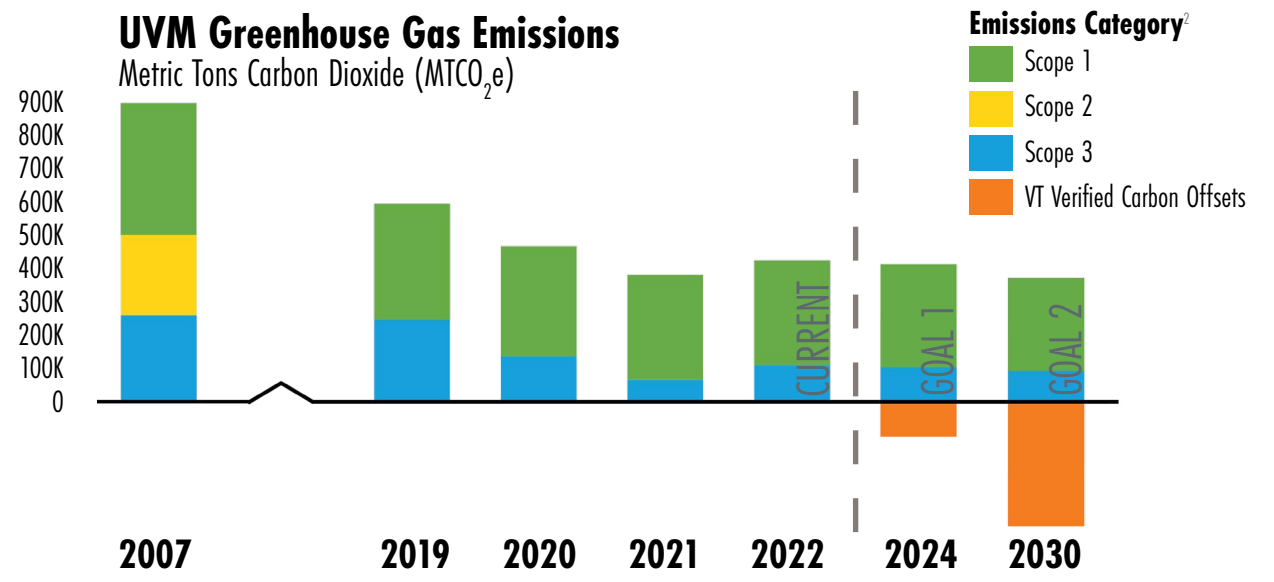


DECARBONIZATION



The University of Vermont (UVM, the University) is working toward the decarbonization¹ of UVM’s buildings, fuel sources, and transportation. UVM regularly evaluates the needs for investments in building improvements to reduce energy use and to analyze annual greenhouse gas (GHG) emissions and trends over time. Since 2004, UVM has required that all major construction and renovation projects be formally commissioned as well as certified at a minimum of LEED Silver level.

The goal is to continue to reduce greenhouse gas emissions. In 2007, students asked for a \$10 per semester fee to create the Clean Energy Fund, now called the Sustainable Campus Fund, to support cleaner energy sources and sustainability projects on campus. In 2012, a \$13 million Green Revolving Loan Fund was established to pay for energy efficiency projects that have a simple payback period of seven years or less. Since 2015, UVM’s electricity is 100% renewable.



¹ The reduction or elimination of greenhouse gas emissions.
² Scope 1, Scope 2, and Scope 3 Emissions are defined in the Appendix.

DECARBONIZATION

ENERGY AND CLIMATE

GOAL: Carbon neutral by 2030.

- Develop a campus energy plan to achieve carbon neutrality.
- Purchase local carbon offsets in 2030 to address remaining emissions.

GOAL: Reduce greenhouse gas emissions 60% below 2007 levels by 2024.

- Develop a strategy to optimize solar energy and other renewable energy technologies.
- Purchase local forest carbon offsets in 2024 to address emissions from University travel (Scope 3).

BUILDINGS

GOAL: Reduce GHG emissions in major University buildings.

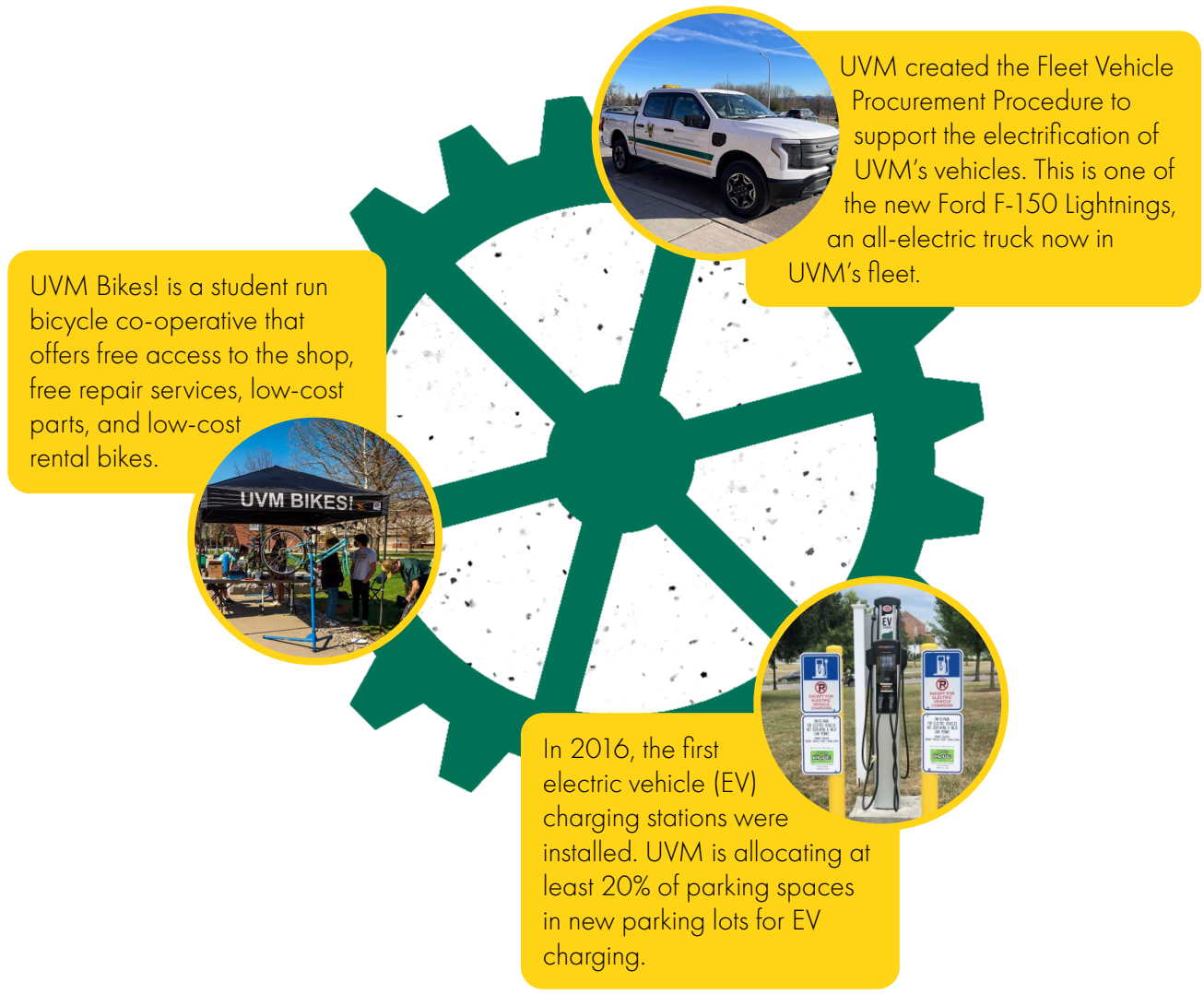
- Install renewable energy heating systems in new buildings and in major renovations.
- Conduct a space utilization study to guide planning and energy upgrades.
- Increase the required payback period in the Green Revolving Loan Fund to 15 years.
- Pilot geothermal energy projects on campus to test feasibility for broad implementation.
- Assess and map current building level metering infrastructure.
- Prioritize utility metering and data collection on buildings with high energy use.

GOAL: Increase energy efficiency in laboratory buildings.

- Develop a program for “greening” campus labs by increasing the efficiency of fume hoods and recycling lab supplies.



UVM, the Vermont Land Trust, and several other local organizations partnered to pilot the **first forest carbon aggregation project in the U.S.** This project united ten landowners and over 8,600 acres, generating carbon credits through enhanced forest management practices to increase carbon sequestration.



TRANSPORTATION

GOAL: Reduce GHG emissions associated with the UVM fleet.

- Reduce size of fleet by 10% by 2030 using a 2022 baseline.
- Increase electric vehicles (EVs) to 100% of light-duty fleet³ vehicles by 2040 and prioritize high-mileage and older vehicles for replacement by EVs.
- Launch a campus-wide fleet sharing program.

GOAL: Reduce conventional single-occupancy vehicle commutes from 2019 baseline.

- Measure the impact of telework on campus commuting and associated GHG emissions.
- Increase sustainable commuting to campus by 10% by 2035 from a 2019 baseline.⁴
- Continue to build and maintain infrastructure like covered bike parking, bus shelters, and lit paths.

GOAL: Implement the EV Charging Campus Plan.

- Allocate at least 20% of parking spaces in new lots for EV charging.

³ Excludes medium and heavy-duty vehicles including buses, trucks, vans and specialty equipment (Federal Highway Admin. Classification).

⁴ Defined by AASHE STARS criteria.



UVM Dining has a strong commitment to social responsibility and works with regional businesses to provide as much organic and local food as possible to the entire campus community.

Increase spending on Vermont-grown food to
25%
 by 2030.

← Food and Dining Goal



UVM Eco-Reps are undergraduate student employees who help their peers make more sustainable choices while on campus and build an environmental justice ethic that lasts a lifetime.

OPERATIONS

In UVM's operations and resource management, the goals and strategies support continued and improved stewardship of shared resources such as food, water, and land. The strategies below further multiple objectives in various areas of operations, as well as other focus areas throughout the CSP. During the development of these goals, there has been a strong focus on circularity, which aims to design out waste and pollution, keep products and materials in use for as long as possible, and regenerate natural systems. These goals and strategies align with the strategic priorities within the Facilities Sustainability Plan (2021-2030).

FOOD AND DINING

GOAL: Increase spending on Vermont-grown food to 25% by 2030 from 2020 baseline.

- Prioritize food purchasing from diverse suppliers where possible (i.e., minority/women-owned).
- Support access to healthy, local food for the campus community.

UVM Dining is committed to reducing packaging waste and has had an EcoWare program since 2011.



As of 2017, UVM has earned Bee Campus status from Bee City USA. UVM students and staff have worked to increase pollinator habitat, expand education and outreach about pollinator conservation, and reduce the use of pesticides on campus.



OPERATIONS

WASTE

- GOAL:** Reduce total pounds of waste generated per campus user 10% by 2035 from 2019 baseline.
- Develop waste reduction goals within Facilities Management and Purchasing Services by summer 2025.
- GOAL:** Increase composting and recycling by a combined 10% or more by 2035 from 2019 baseline.
- Conduct a waste characterization study to establish a baseline of campus waste composition.
 - Implement a repair and redistribution program for used equipment and furniture.



UVM's Spring Move Out Project (SMOP) assists students in managing unwanted items during the move-out process. Participants are invited to bring furniture and household items to the swap for free, which creates a community exchange.



Outdoor amphitheater in between Austin Hall and Millis Hall features an eco-friendly design, with wetland plants filtering stormwater run-off.

LANDSCAPE

- GOAL:** Prioritize the purchase of electric grounds management equipment.
- Include language in Request for Proposals (RFPs) encouraging the use of electric equipment.
- GOAL:** Increase the acreage of sustainable and native plantings on campus.
- Assess and map pollinator-friendly areas on campus and define goals to increase acreage.
 - Prioritize the use of low-water plantings where appropriate.

In 2021, UVM purchased its first electric ride-on mower. UVM plans to replace two-thirds of the remaining aging gas-powered lawn tools with electric equivalents.



As a leader in sustainability, UVM embeds this theme into academics, campus culture, and operations to further our progress on sustainability. We support the realization of Our Common Ground by clearly defining University sustainability goals and developing sustainable solutions.

To increase transparency and support achievement of the goals in the CSP, UVM will create a leadership group to advise, report on, and track the implementation of the strategies. This group will include broad representation and communicate regularly with the campus community.

UVM continues to focus on socially responsible investing (SRI), factoring environmental, social, and corporate governance criteria into investment decisions to produce long-term competitive fiscal returns along with positive social impacts. In 2011, UVM formed the Socially Responsible Investing Advisory Council (SRIAC), a group of students, faculty, staff, and administrators, that makes recommendations on sustainability investment. As part of this work, investments in the green bonds portfolio were doubled to \$20 million in 2019 and UVM committed to divestment from fossil fuels in 2020.

Additionally, by selectively choosing what we bring to campus through purchasing decisions, we can reduce waste and promote health and wellbeing.

DIVERSITY, EQUITY, AND INCLUSION (DEI)

GOAL: Support the implementation of Inclusive Excellence Action Plans within departments across the University.

- Amplify University-wide efforts to build a diverse and globally aware university community.

The 2022 Inclusive Excellence Symposium explored the intersection of diversity, equity, and inclusion and sustainability. Member of The Standing Rock Sioux Tribe sharing how renewable energy is empowering Native American communities.



GOVERNANCE AND PEOPLE

GOVERNANCE

GOAL: Implement the CSP and revise the Plan on a five-year basis.

- Create a Leadership Committee to advise and report on implementation progress.⁵

INVESTMENTS

GOAL: Increase percentage of positive sustainability investments and shareholder advocacy.

- Invest \$30M from cash investments in socially responsible funds.

WORKFORCE DEVELOPMENT

GOAL: Create partnerships with other training and educational institutions to support the development and training of the green workforce in Vermont.

- Prioritize programs that build and expand pathways to careers that work to respond to climate change in the agricultural sector, with a focus on students from underrepresented communities.
- Support the development of programs that train and educate home energy efficiency contractors and electricians.

PURCHASING

GOAL: Improve purchasing practices to increase sustainable purchases across the University.

- Define sustainability purchasing practices and policies on website and update annually.

Joshua Faulkner, PhD, coordinates the UVM Farming and Climate Change Program, doing applied research and outreach on soil, water, and nutrient related issues, and works with farmers on practices and innovative solutions to improve management of these resources and enhance farm resilience to climate change.



⁵ This group will be comprised of seven members, with representation from the CSP Work Group and senior leadership.

RESEARCH AND LEARNING

Sustainability education is an area of strength at the University and sustainability learning requirements are in the core curriculum. To reinforce sustainability learning, opportunities abound to use campus classrooms and campus lands as “living labs” for the development of sustainability solutions. Research at the University tackles some of the most complex and important sustainability questions of our time. To amplify UVM’s impact on critical environmental and social issues, strengthening and supporting transdisciplinary sustainability research is crucial.

In order to promote social and environmental responsibility, UVM strives to bridge the academic activities of teaching, research, and outreach with the operations of the campus. The Office of Sustainability is launching a Sustainable Solutions Lab (SSL) to connect campus sustainability challenges to faculty, staff, and students who can support the development of research projects to test various ideas on campus. If feasible, these ideas can be implemented by campus staff. These are rich learning experiences that benefit students and faculty, but also the staff responsible for implementing good solutions. The University aims to encourage research that would leverage and build on UVM’s current strengths as well as align education and outreach with opportunities for students to engage with innovative approaches to addressing climate change and increasing resilience.

RESEARCH

GOAL: Strengthen and support transdisciplinary sustainability research across the University.

- Amplify the Gund Institute for Environment’s work to mobilize scholars and decision-makers to generate research and act on sustainability challenges, including climate solutions, health and wellbeing, and equity and justice.
- Support the Grossman School of Business SI-MBA Program and training students to use business as a ‘force for good’.
- Empower students through experiential learning, research, and scholarly inquiry specifically in the Honors College and with the support of the Summer Undergraduate Research Fellowships.

GOAL: Launch Sustainable Solutions Lab (SSL) and cultivate research that uses campus as a “living lab”.

- Support applied student research (ex. GHG inventories, carbon fees, renewable energy policy).

The Sustainable Solutions Lab will provide students opportunities to develop leadership skills and tackle sustainability challenges that advance UVM’s sustainability goals and use campus as a “living lab”. UVM also offers many project-based classes to further this goal.



Students supporting the Catamount Farm Community Supported Agriculture (CSA).

LEARNING

GOAL: Educate students to have a positive impact and contribute to sustainable communities.

- Support UVM’s Academic Success Goals through sustainability research and teaching.
- Educate both the campus community and surrounding communities to maximize career opportunities in renewable energy, environmental justice, resilience and the green workforce.



In 2021 UVM created the **Salt Mitigation Task Force**, a group of staff, faculty, researchers, and students from physical plant maintenance and grounds, custodial, the Rubenstein School of Environment and Natural Resources, and the College of Engineering & Mathematical Sciences to investigate how changes could be made to reduce the effects of salt usage on the environment and on physical/building infrastructure.

APPENDIX

GLOSSARY

ABBREVIATIONS AND ACRONYMS

RENEWABLE ENERGY

SUSTAINABLE DESIGN



APPENDIX

GLOSSARY

AASHE STARS: The Association for the Advancement of Sustainability in Higher Education (AASHE)'s Sustainability Tracking, Assessment & Rating System (STARS) is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance.¹

Bee Campus USA: Provides a framework for university and college campus communities to work together to conserve native pollinators by increasing the abundance of native plants, providing nest sties, and reducing the use of pesticides.²

Carbon Neutral: Net zero greenhouse gas emissions by balancing those emissions released into the atmosphere with an equivalent amount that is removed through emissions reduction strategies such as carbon offsets.³

Carbon Offsets: Carbon offsets are credits representing the removal of one ton of CO₂ from the atmosphere. They are intended to help entities reduce their emissions while they work to reduce the sources of emissions. In addition to carbon taken in by forests, carbon offsets can be generated by reducing emissions or increasing sequestration from other sources, like agricultural or industrial processes.⁴

Circularity: Circularity is an alternative to a linear model, where societies produce, use, and then dispose of materials when they are no longer useful. In a circular framework, the system is restructured so all resources at any stage in their life are useful. These resources are circulated to theoretically eliminate the waste, reduce pollution, and symbiotically integrate human processes with natural systems. In practice, circularity requires all inputs and outputs of both the natural and human system to be understood and connected.⁵

Decarbonization: Reducing the amount of carbon dioxide output to lower the greenhouse emissions associated with buildings, energy, and transportation.

Diversity: Individual differences (e.g., personality, learning styles, and life experiences) and group/social differences (e.g., race/ethnicity, class, gender, sexual orientation, country of origin, and ability as well as cultural, political, religious, or other affiliations) that can be engaged in the service of learning.⁶

EcoWare: UVM's reusable takeout container program that helps minimize the use of single-use containers and increases the flexibility of meal plans by allowing meals to-go from dining halls. UVM's EcoWare program started in 2011.

Environmental, Social, and Governance (ESG) Funds: Three factors to measure the sustainability and ethical impact of an investment to target companies with outstanding efforts toward gender equity, clean water investments, and clean energy investments.

Equity: Refers to distributing or dividing resources proportionally based on the needs of the recipients to achieve a fair outcome for those involved. Equity can be synonymously equated to "more for those who need it" to reach a level playing field.⁷

Greenhouse Gas (GHG): Earth's greenhouse gases trap heat in the atmosphere and warm the planet. The main gases responsible for the greenhouse effect include carbon dioxide, methane, nitrous oxide, and water vapor (which all occur naturally), and fluorinated gases (which are synthetic). Human activities, such as burning fossil fuels for electricity, heat, and transportation, also produce greenhouse gases. These gases have different chemical properties and are removed from the atmosphere, over time, by different processes. Carbon dioxide, for example, is absorbed by so-called carbon sinks such as plants, soil, and the ocean. Fluorinated gases are destroyed only by sunlight in the far upper atmosphere.⁸

Green Revolving Loan Fund: Funds that replenish themselves with savings accrued by reduced energy spending, allowing institutions to make a long-term commitment to energy efficiency and environmental protection that is financially sustainable.

Green Workforce: Jobs related to producing energy from renewable sources, improving energy efficiency, preventing and cleaning up pollution and greenhouse gases, and conserving natural resources.⁹

Health and Wellbeing: More than genetics and behaviors create health and wellbeing. Community connections, access to affordable food, housing, and transportation, prejudice, discrimination, and systems of racism and structural inequity all contribute to health.

Inclusion: The active, intentional, and ongoing engagement with diversity — in people, in the curriculum, in the co-curriculum, and in communities (intellectual, social, cultural, geographical) with which individuals might connect — in ways that increase one's awareness, content knowledge, cognitive sophistication, and empathic understanding of the complex ways individuals interact within [and change] systems and institutions.⁷

LEED: Leadership in Energy and Environmental Design (LEED) is a third-party green building certification program and the globally recognized standard for the design, construction and operation of high-performance green buildings and neighborhoods.

Resilience: The ability of individuals, households, communities, cities, institutions, systems and societies to prevent, resist, absorb, adapt, respond and recover positively, efficiently and effectively when faced with a wide range of risks, while maintaining an acceptable level of functioning without compromising long-term prospects for sustainable development, peace and security, human rights and well-being for all.¹⁰

Scope 1 Emissions: Direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization¹¹ (e.g., emissions associated with burning fuel on campus, direct transportation, agriculture, and refrigerants and chemicals).

Scope 2 Emissions: GHG emissions associated with purchased electricity.

Scope 3 Emissions: All other indirect GHG emissions that occur in an institution's value supply chain (i.e. study abroad travel and commuting patterns).¹

Socially Responsible Investing: A model for investments that looks beyond financial returns to consider environmental, ethical, and social impacts.

Sustainability: In 1987, the United Nations Brundtland Commission defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." The goal of sustainability, derived from the U.S. National Environmental Policy Act of 1969 (NEPA), is to, "create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations." A sustainable approach is a systems-based approach that seeks to understand the interactions which exist among environmental, social, and economic pillars in an effort to better understand the consequences of our actions.¹²

Sustainable Campus Fund: Created in 2008 by students with a vision of enhancing a culture of sustainability, innovation, and research on campus through a self-imposed \$10 per semester fee for all students, generating about \$230,000 annually. In 2020 the scope of the Fund was broadened to include all three pillars of sustainability (social equity, ecological health and economic viability).

Sustainable Solutions Lab: Opportunity to connect campus sustainability challenges to faculty and staff who can support the development of research projects to test various ideas on campus. If feasible, these ideas can be implemented by campus staff. These are rich learning experiences that benefit students and faculty, but also the staff responsible for implementing good solutions.

1 aashe.org
2 beecityusa.org/bee-campus-usa-commitments/
3 unfccc.int/blog/a-beginner-s-guide-to-climate-neutrality
4 pr.vermont.gov/sites/pr/files/Forest_and_Forestry/Climate_Change/Files/ForestCarbonOffsetsForVermontLandowners_Mar2021.pdf
5 ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview
6 Association of American Colleges and Universities (AAC&U)
7 uml.edu/student-services/multicultural/programs/dpe-glossary.aspx
8 nrdc.org/stories/greenhouse-effect-101#gases

9 bls.gov/green/home.htm
10 <https://unsdg.un.org/sites/default/files/2021-09/UN-Resilience-Guidance-Final-Sept.pdf>
11 <https://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>
12 epa.gov/sites/default/files/2015-05/documents/sustainability_primer_v7.pdf

APPENDIX

ABBREVIATIONS AND ACRONYMS

AASHE = Association for the Advancement of Sustainability in Higher Education

CAS = College of Arts and Sciences

CATS = Campus Area Transportation System

CDAE = Community Development and Applied Economics

CESS = College of Education and Social Services

CSP = Comprehensive Sustainability Plan

DEI = Diversity, Equity, and Inclusion

ESG = Environmental, Social, and Governance

EV = Electric Vehicle

GHG = Greenhouse Gas

LEED = Leadership in Energy and Environmental Design

M/WBE = Minority/Women-Owned Business Enterprises

OS = Office of Sustainability

PDC = Planning, Design & Construction

Plant = Central District Energy Plant

PPD = Physical Plant Department

RFP = Request for Proposal

RSENR = Rubenstein School of Environment and Natural Resources

SCF = Sustainable Campus Fund

SI-MBA = Sustainable Innovation MBA

SMOP = Spring Move Out Project

SRI = Socially Responsible Investing

SRIAC = Socially Responsible Investing Advisory Council

SSL = Sustainable Solutions Lab

STARS = Sustainability Tracking, Assessment, and Rating System

STEM = Science, Technology, Engineering, and Mathematics

TDM = Transportation Demand Management

TPS = Transportation and Parking Services

UVM = University of Vermont

VMT = Vehicle Miles Traveled



APPENDIX

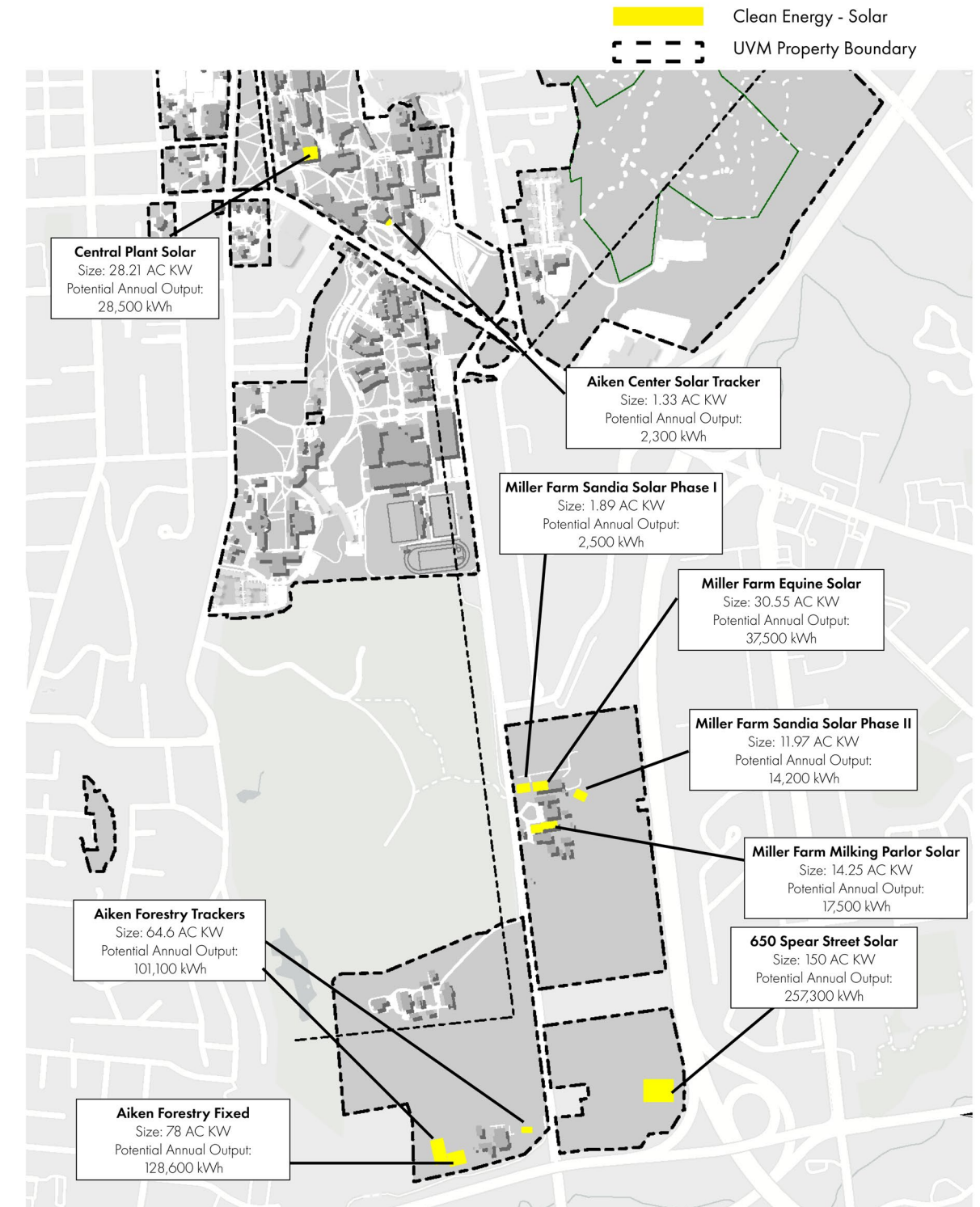
RENEWABLE ENERGY



UVM has been using 100% renewable electricity since 2015. UVM purchases electricity from two utilities with highly renewable grid mixes. To cover the non-renewable portion, UVM has purchased green-e certified renewable energy certificates (RECs), entered into on-site solar power purchase agreements, and installed UVM-owned solar arrays. The installation of many of our solar arrays has been supported by The Sustainable Campus Fund.

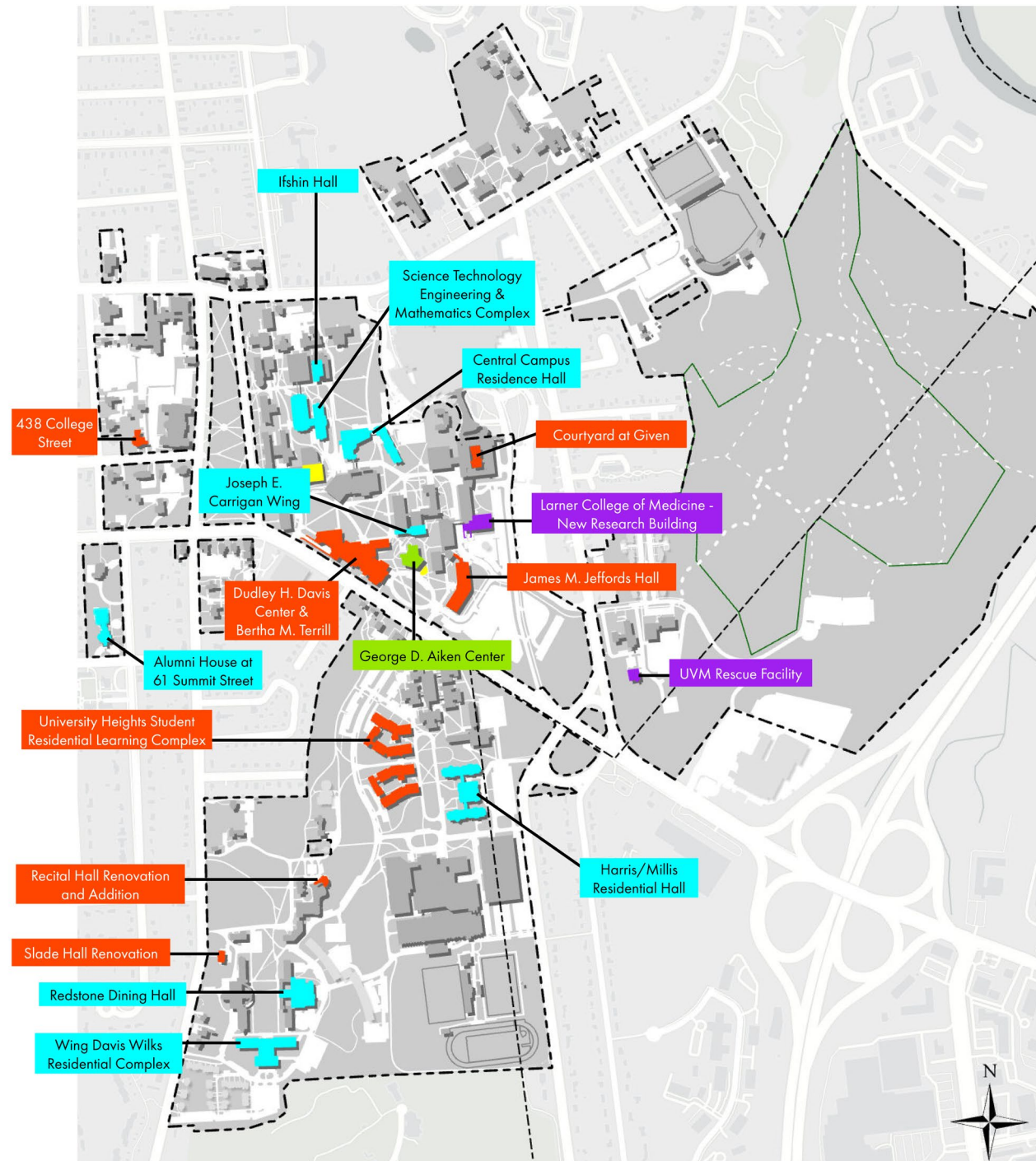
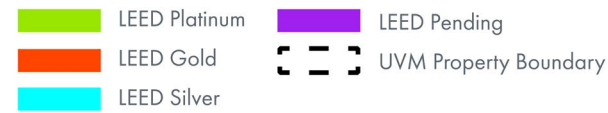
Since 2018 the Student Government Association has calculated its clubs' energy use from buildings and transportation, and bought carbon offsets to cover all of the related greenhouse gas emissions.

UVM SOLAR



APPENDIX

UVM LEED BUILDINGS



SUSTAINABLE DESIGN



In 2011, UVM established the Environmental Design in New and Renovated Buildings policy that defines UVM's commitment to a high level of environmental sustainability in all new buildings and in major renovations to existing buildings. The goal of the policy is to bring new and renovated buildings to the forefront of environmentally sustainable design, construction, and operation, thereby supporting positive impacts on natural resources and enhancing occupant health and productivity. More specifically, the policy recommends that UVM achieve a minimum rating of LEED™ Silver in the United States Green Building Council's Leadership in Energy and Environmental Design (LEED) green building rating system for all new buildings and major renovations. To date, UVM has completed 18 LEED certified projects impacting 30 buildings and two that are pending certification.