SUSTAINABILITY AT STANFORD

2021 - 22 YEAR IN REVIEW


“The issue of climate change and the need to create a sustainable future for our planet and for our children and their children is the defining issue of the 21st century, and we as a university have a responsibility to tackle it head on.”

Stanford President Marc Tessier-Lavigne and
Stanford Provost Persis Drell

SUSTAINABILITY AT STANFORD

INTRODUCTION - 2021-2022

At the beginning of the academic year, despite the lingering impacts of the pandemic, we came back to campus eager to pursue the excitement of new beginnings and build on the momentum from the previous year.

A prime example of this is the **Stanford Doerr School of Sustainability**, the university's first new school in more than 75 years, which officially launched this September to advance scholarship critical to the long-term prosperity of the planet. The school has a distinctive three-part structure that includes rigorous academic departments, interdisciplinary institutes, and a **Sustainability Accelerator** to drive technology and policy solutions at a global scale. Through its education and research, the school will dramatically amplify the university's impact in tackling the urgent climate and sustainability challenges facing all people.

Another one of Stanford's Long-Range Vision commitments is on its way to fruition. The Office of Sustainability ushered in a Zero Waste Building Systems Transition that elicits full campus community participation. These new initiatives ensure greater progress towards **diverting 90% of campus waste from the landfill**. Stanford also continues to make headway with other goals such as **reducing Scope 1 and 2 greenhouse gas emissions by 80%** by 2025 and eliminating Scope 1, 2, and 3 greenhouse gas emissions by 2050. As a step toward these goals, Stanford achieved 100% renewable electricity in March with the addition of a second solar generating station, which includes a 50-megawatt battery energy storage system with 200 MWh of power storage capacity.

The recently launched **Scope 3 Emissions Program**, sponsored by the vice president of business affairs, worked with several units across campus this past year to evaluate Scope 3 emissions and establish a path for their reduction and mitigation of the university's indirect emissions.

Stanford carries on the environmental stewardship and social responsibility standards of its first-of-its-kind, dual verified **Climate Bond Certified and Sustainability bond**, which was issued in **May 2021**, and is used for qualifying capital projects. This work includes the ongoing efforts with the **IDEAL initiative** and completion of chilled water expansion at the Central Energy Facility. Stanford also renewed its Platinum rated status through the **Sustainability Tracking, Assessment, & Rating System (STARS)** administered by the Association for the Advancement of Sustainability in Higher Education (AASHE) and is currently one of only ten U.S. institutions to earn this highest place among research institutions, among 1,100+ institutions reporting.

With perseverance, bright minds, and an innovative spirit, all members of the Stanford community–faculty or student scholar, operational staff, and alumni–plays a role in shaping the sustainable future of the university and its broader community. The report below showcases exciting efforts that not only build on past work but also strive to break new ground.

Aurora Winslade

Aurora Winslade
Director, Office of Sustainability
Department of Sustainability and Energy Management (SEM)

THINKING GLOBALLY, ACTING LOCALLY

UN SUSTAINABLE DEVELOPMENT GOALS

In 2015, the United Nations adopted a plan to help create a prosperous future for the planet and guide the UN's work through 2030. The agenda establishes **17 Sustainable Development Goals (SDGs)** toward which countries are working. The SDGs cover a broad range of topics and help countries and industries consider the impacts of their operations in a uniform manner. **Throughout this report, you will see icons where Stanford's work to innovate solutions maps and aligns with the SDGs.**

CULTIVATING KNOWLEDGE FOR PLANETARY CHALLENGES

ACADEMICS

On September 1st, 2022, Stanford launched its first new school in more than 70 years as the Stanford Doerr School of Sustainability–recognizing a $1.1 billion gift from John and Ann Doerr–dedicated to creating a future where humans and nature thrive in concert and in perpetuity.

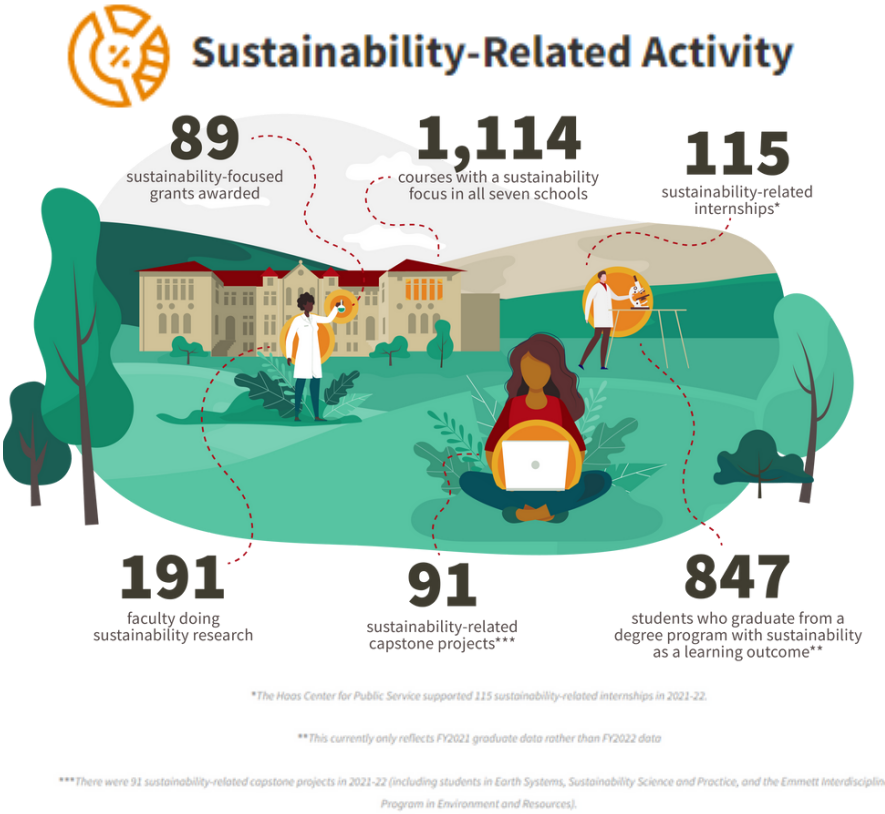
Galvanized by the September 2022 launch of the **Doerr School of Sustainability** – Stanford's first new school in 75years – sustainability research and teaching continued to expand and deepen during 2021-22. AAn extensive planning process engaged faculty, staff, and students from across the university, leading to the launch of faculty cluster hires in climate science, sustainable development, and environmental justice; new courses to fill gaps in existing sustainability and climate curricula; and the creation of a new **Sustainability Accelerator** that has already funded **30 multidisciplinary projects** involving partnerships at global, regional and local scales.

The academic year also saw the expansion of environmental justice education with the launch of a new environmental justice minor, as well as the premiere of an environmental justice teaching workshop and creation of an **Oceans Department**, and more. Thirty-one community-engaged learning courses connected Stanford students with local organizations to develop innovative sustainability solutions. With leadership from the **Haas Center for Public Service** and the **Office of Community Engagement**, Stanford regularly partners with local and regional communities on research and other projects that have broad implications beyond the Stanford campus.

For example, the **Partnerships for Climate Justice in the Bay Area (PCJ in the Bay)** initiative supports partnerships between community organizations and the Stanford community through community engaged-courses, fellowships, research, and volunteer opportunities. Examples include honors' research on clean air centers in support of a local organization seeking to build resilience to wildfire smoke, and a project to help design communications materials about climate risks in East Palo Alto, and PhD-level research about the intersection of equity and greenhouse gas emissions inventories to inform state-wide climate change policy.

Living-laboratory opportunities in sustainability, including internships, class projects, and research, abound across the university. For example, the **Scope 3 Emissions Program** partnered with a group of student volunteers to develop a proposal for an **air travel carbon fee** at Stanford. Similarly, a Residential & Dining Enterprises (R&DE) student intern developed and broadcasted a proposal for an on-campus compost facility. These opportunities and many others across campus help educate students on applying sustainability concepts in the real world.

Additionally, the **Environmental Justice Working Group** (EJWG), an intergenerational collective of faculty, staff, and students, has been working to embed environmental justice (EJ) into research, teaching, and community engagement at Stanford. This initiative is critical to ensuring that Stanford's sustainability efforts can succeed by attending to problems of structural inequity and systemic racism. This work includes creating a culture within our EJ community at Stanford that prioritizes healing and repair for frontline communities that have been historically marginalized in environmental spaces. During 2021-22, the EJWG has continued to build a cross-campus EJ hub to support synergies across multiple learning communities. It has also worked to create a template for integrating EJ into the foundation of the new school of sustainability.



The EJWG has also led the development of EJ curriculum, including a gateway Introduction to Environmental Justice course and an Environmental Justice minor that launched in fall 2021 through the Earth Systems Program. In addition, the group has continued to support faculty-led community-engaged research, research grants to graduate students, and events. These include the EJ Education and Teaching Workshop in September 2021, the Joint Research Workshop on EJ and Human-Planetary Health, and the fourth annual EJ Symposium in November 2021.These workshops helped us to launch our **National EJ Teaching and Curriculum database and website**, serving teachers, scholars, community leaders and other experts advancing EJ movements. The EJWG has also developed critical infrastructure for EJ research, outreach, and academic and community collaboration, including the **EJ and Human Rights Lab**, an **email listserv** with 650+ participants, a **quarterly newsletter**, and an **EJ Blog** series – student blogs gave a platform to vibrant local-to-global EJ initiatives from the Caribbean, Hong Kong, Rural India, and the Russian Arctic to Detroit, San Francisco, Chicago, and the Klamath River. Building upon this foundation, during 2021-22, the EJWG worked to ensure that education and engagement around environmental justice would be an integral part of the new Doerr School of Sustainability. A recent accelerator grant will enable the EJWG to build further support for EJ education and research in collaboration with community partners for 2022-23. Together with the **Haas Center for Public Service**, the group has built regional connections with other Bay Area universities and colleges, especially cross-institutional partners in the Northern California Environmental Justice Network of Community-Academic Partnerships.

ACADEMIC PARTNERS

- Stanford Woods Institute for the Environment
- Precourt Institute for Energy
- Haas Center for Public Service
- Hasso Plattner Institute of Design
- Freeman Spogli Institute for International Studies
- Graduate School of Business
- Graduate School of Education
- School of Earth, Energy & Environmental Sciences
- School of Engineering
- School of Humanities and Sciences
- School of Law
- School of Medicine
- Doerr School of Sustainability
- Environmental Justice Working Group

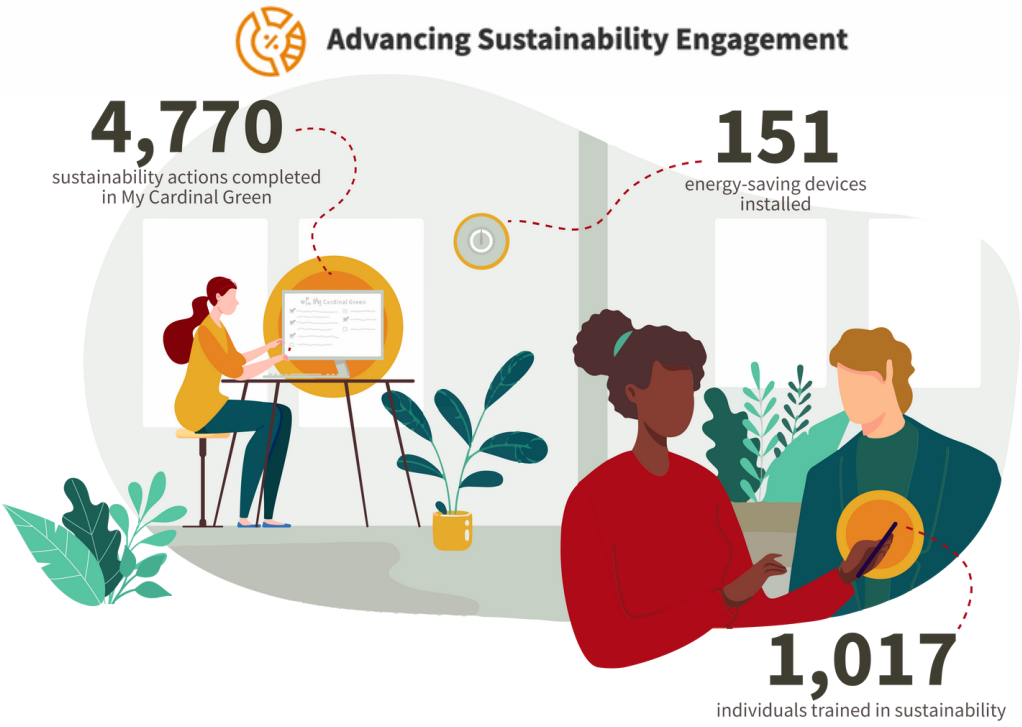
LEADING ORGANIZATIONAL CHANGE

CENTRAL OFFICE

Savings from the Office of Sustainability's comprehensive conservation programs in 2021-22 totaled nearly $500,000, close to the annual savings from some building retrofit projects.

Stanford is a Platinum-rated institution through the **Sustainability Tracking, Assessment, & Rating System (STARS)** administered by the national Association for the Advancement of Sustainability in Higher Education (AASHE). With a weighted rating of 85.88% across criteria for academia, administration, operations, and coordination, Stanford is one of ten U.S. institutions to earn this highest rating. Stanford is featured in the **AASHE Sustainable Campus Index** as a top performer in Diversity & Affordability (1st), Energy (2nd), Curriculum (5th), Food & Dining (5th), Doctoral institutions [overall] (7th), and Water (tied for 9th place).

In conjunction with tracking and reporting the institution's sustainability activities, the Office also continues to steward progress toward the three sustainability targets laid out in the Long-Range Vision: reaching zero waste (defined as 90% diversion or higher) by 2030, reducing Scope 1 and 2 emissions to 80% below peak by 2025, and achieving net zero emissions by 2050. We've been able to make great strides with our emissions commitment–not only due to Stanford Energy System Innovations, affectionately known as SESI, but also to Stanford's second solar generating station, which came online in March 2022. This 63-megawatt system with 200 megawatt hours (MWh) of power storage capacity, along with 5 megawatts of campus rooftop solar power and the first solar generating station of 54 megawatts, produces renewable electricity equivalent to the university's annual consumption.



While continuing to press forward on the university's commitments, the Office of Sustainability, like many other departments across campus, is in a time of transition. The Office has been rebuilding and restructuring its team and is in the midst of an internal strategic planning process that will extend into 2023. Through a campus-wide engagement strategy, the Office is receiving input from 125+ academic and operational sustainability partners and collaborators that will guide its work and programs over the coming years.

The Office of Sustainability Strategic Plan will focus on achieving Stanford's:
1. Carbon neutrality and zero waste goals,
2. Impact as a global leader in sustainability operations, research, and education,
3. Goals to advance climate resilience,
4. Ambitions to expand and formalize its offerings as a living lab, and
5. Stewarding the Sustainable Stanford brand and sharing best practices.

Stanford Energy System Innovations — SESI

Moreover, to showcase one of Stanford's best use cases of the university functioning as a living lab, Sustainability and Energy Management (SEM) premiered a refresh video of SESI. The SEM department also broadened its scope by embracing a new campus unit, Resiliency and Response and began more formally partnering with the **Office of Community Engagement** to feature external relationships and projects. The **My Cardinal Green** program, which incentivizes the campus community to incorporate sustainable behaviors into daily life, has continued to promote actions for those working or studying at home, as well as behaviors that impact campus life. The platform, along with the Sustainable Stanford website and brand, will evolve with the Office's internal strategic planning process.

2021-22 CENTRAL OFFICE HIGHLIGHTS

- Stanford transitions to 100 percent renewable electricity
- Stanford Energy System Innovations - SESI
- Sustainable Stanford on Instagram
- Office of Community Engagement Hub Map
- AASHE Sustainable Campus Index

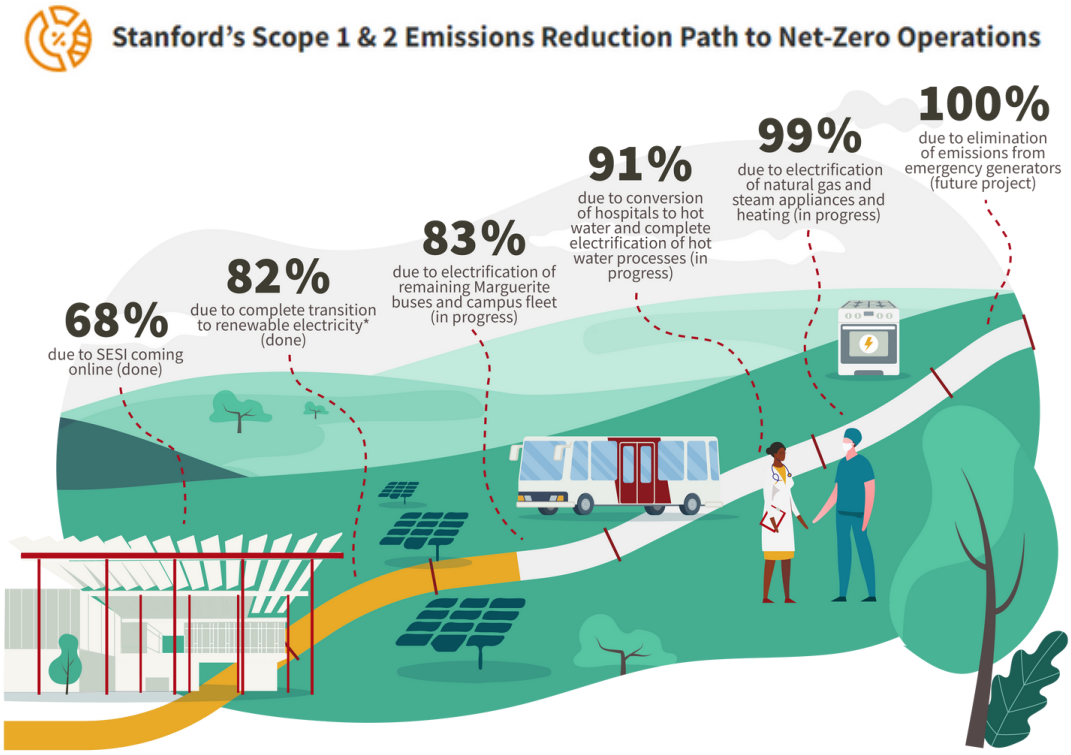
INNOVATIVE CARBON-FREE SOLUTIONS

CLIMATE AND ENERGY

In 2021, Stanford powered the campus with 69% renewable electricity, and it will utilize 100% renewable electricity by the end of 2022.

In June 2020, the Board of Trustees passed a resolution calling for the university to eliminate its Scope 1, 2, and 3 greenhouse gas emissions by 2050.

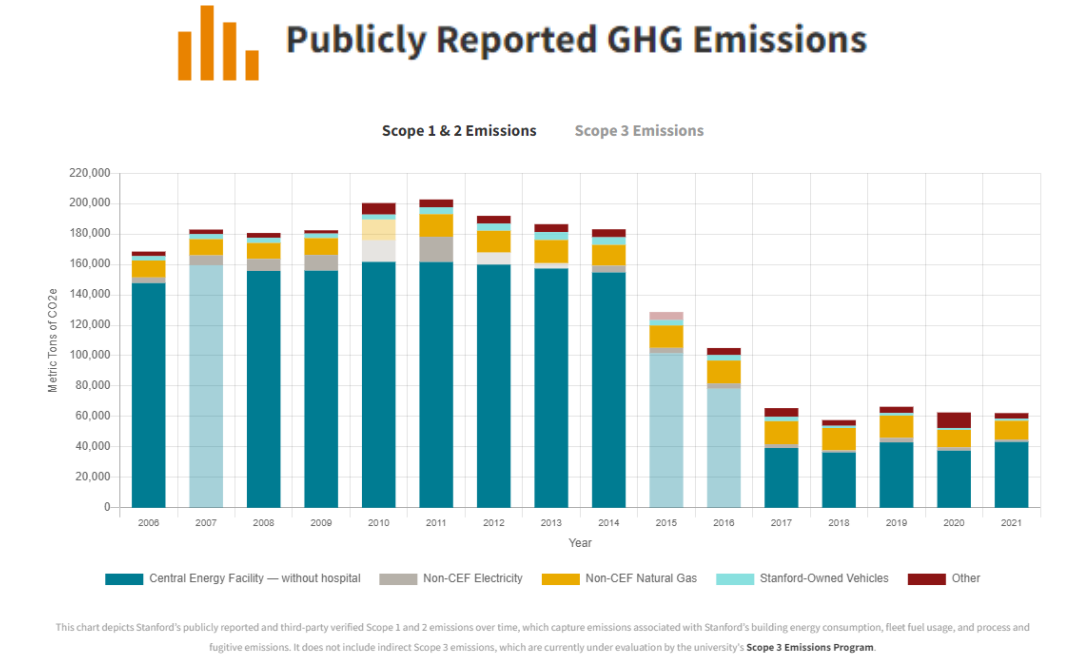
Scope 1 and 2 emissions include direct emissions from the university's energy, fuel, and refrigerant use, as well as those from some minor sources. Over the past decade, Stanford has reduced these emissions by 69%, and it is on track to eliminate 100% of them. In contrast, Scope 3 emissions come from activities influenced but not directly controlled by university operations, including purchased goods and services, **construction**, **business travel**, **student travel**, **employee commuting**, **leases**, **fuel and energy activities**, and **waste**.

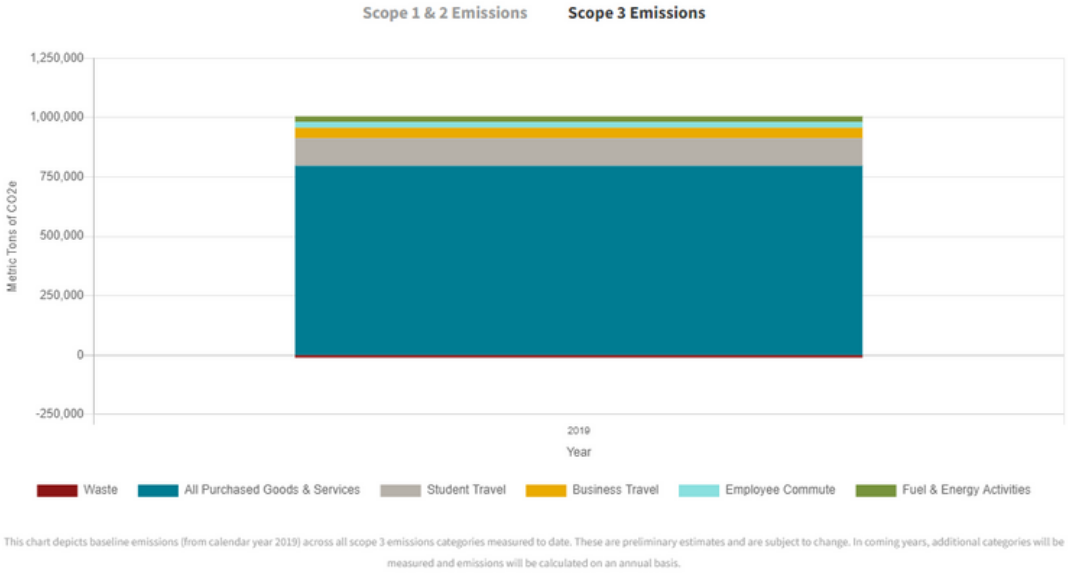


Launched in 2021, the **Scope 3 Emissions Program** in Business Affairs is systematically measuring emissions in each of these categories, quantifying the emissions impact of existing reduction programs across the university, and developing new mitigation strategies, with a goal not only to achieve Stanford's net-zero target, but also to establish a path other institutions can follow. In 2021-22, the program released white papers documenting the definitions, boundaries, and calculation methodologies in four categories and worked closely with campus stakeholders and student teams to explore options for reducing emissions.

On the energy supply side, Stanford's Energy Operations Department made more great strides to help the campus operate more resiliently through permanent, expanded chiller equipment at the Central Energy Facility (CEF). Having reliable and efficient energy to power the research being done on campus helps to eliminate disruption to teaching and research during heat waves and threats of power outages.

This added cooling capacity is a key component of the **Stanford Energy System Innovations (SESI)** program, which was launched in 2015. SESI enables the transition of the campus energy supply from a fossil fuel system to an electrically powered heating and cooling system. The university achieved a major milestone under SESI in 2022, transitioning to 100% renewable electricity as its **second solar plant went online**.





This will help the university meet its stated goal of reducing Scope 1 and 2 emissions by 80% by 2025 compared to a 2011 baseline. SESI is a prime example of Stanford's modeling of environmentally and economically sustainable heating and cooling systems at a district level.

2021-22 CLIMATE & ENERGY HIGHLIGHTS

- **Stanford transitions to 100 percent renewable electricity as second solar plant goes online**
- **Stanford Receives Platinum Ranking for Greenhouse Gas Emissions Reporting**
- **How you can help reduce our campus carbon footprint (and your own!)**

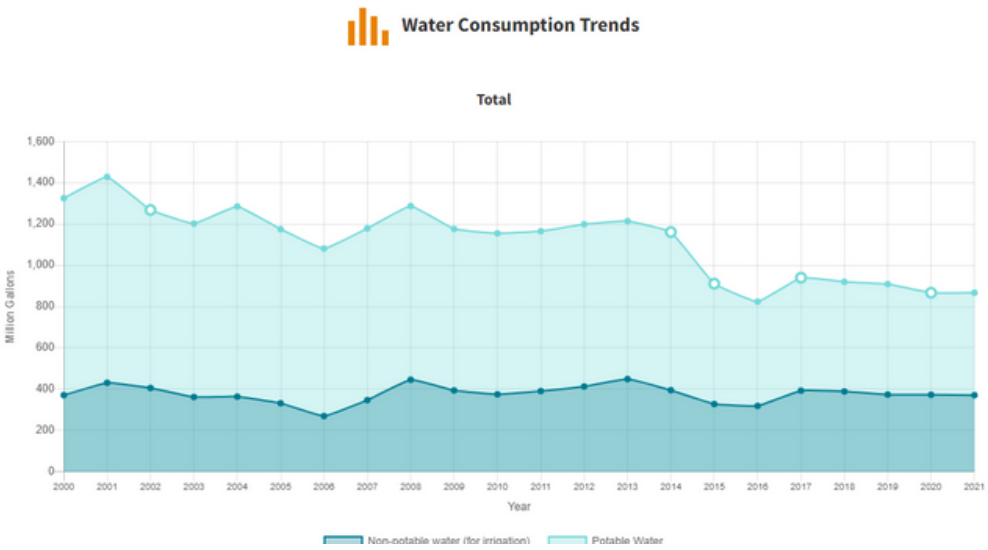
STEWARDING VITAL WATER RESOURCES

WATER

In 2021, potable water use stayed the same and non-potable water use decreased by 1% compared to the previous year.

Stanford has an expansive history of efficient water management practices. These are stewarded by the **Water Resources and Civil Infrastructure (WRCI) group**, which also manages water quality, water systems infrastructure, roads, bridges, and dams on university land. The group proactively works to meet the needs of both the university community and the ecological systems Stanford encompasses.

Since the university's water conservation program began in 2001, it has reduced total campus potable water use by 48%. All major campus water customers have achieved **significant reductions in water consumption** compared to the previous pre-drought baseline of 2013. With fewer people on campus due to the COVID-19 pandemic shelter-in-place orders, water use on campus was reduced even further. Future water planning efforts continue through the active development of a Sustainable Water Management Plan, for which WRCI has completed nearly 20 technical studies related to alternative water supplies, demand projection, and water conservation.



2021-22 WATER HIGHLIGHTS

- WaterSmart
- Water Quality on Campus
- East Campus Stormwater Capture
- Reduced Water Use on Campus
- Stanford's Response to Drought
- Leak Notifications
- Leaks in Lab Buildings

SYSTEMIC CHANGES TOWARDS ZERO WASTE

WASTE

In 2021, Stanford recovered 11,197 tons of waste, including 181 tons of reusable materials, 2,663 tons of recyclables, 7,167 tons of organics, and 873 tons of construction and demolition material.

Since the initial launch of the Stanford recycling program in the 1970s, there have been immense improvements in recycling and composting throughout the campus and the world at large. With advancement in technology and continuous effort throughout, Stanford's waste diversion rates have soared, and the university now diverts about two-thirds of its waste from the landfill. For the second year in a row, Stanford won the top award for the Per Capita Category for Large Campus in the **Campus Race to Zero Waste competition** (formerly known as RecycleMania).

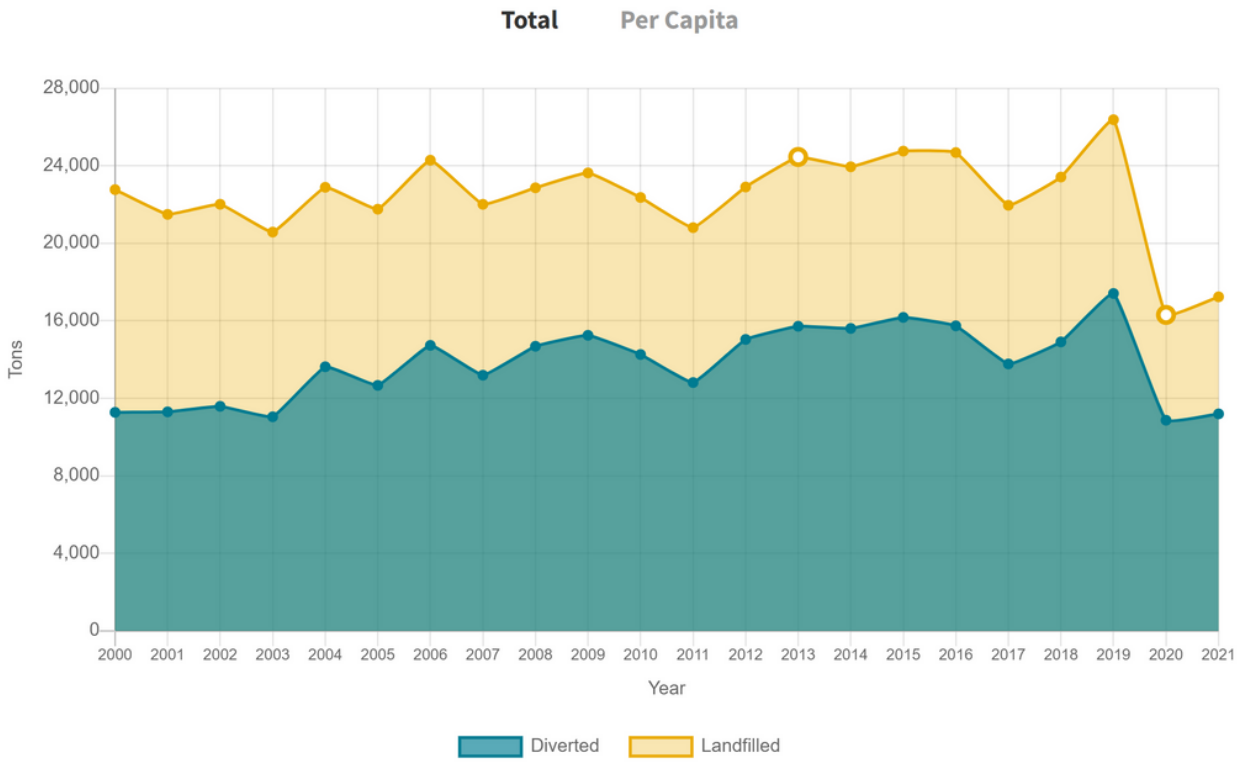
For the last decade, Stanford's diversion rates have been stable around 65%. In order to achieve our Zero Waste by 2030 goal, the Office has set in motion significant programmatic changes to the overall waste system that adopt best practices and industry standards. In conjunction with these changes, the Office launched a Zero Waste Campus Committee in July 2022. The committee will act as an advisory board, providing guidance for the Office.

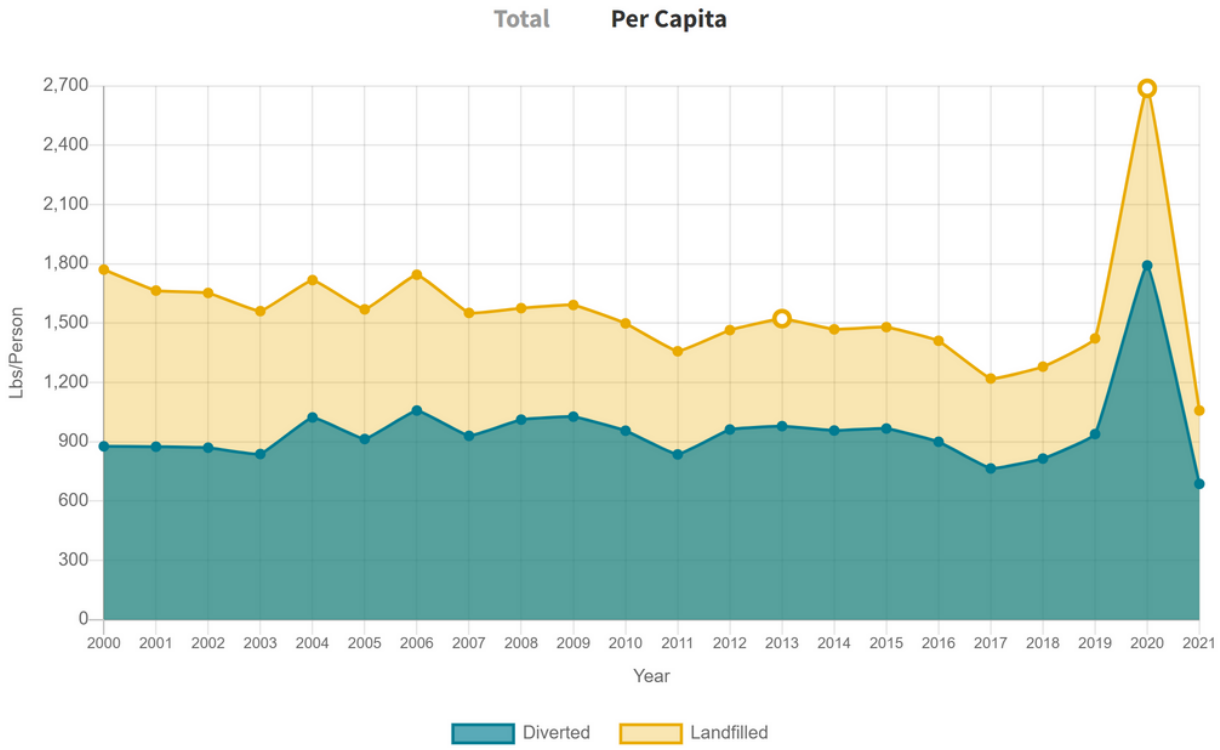
The Zero Waste Building Systems Transition will help streamline the collection system, increase efficiency, and incorporate best practices. This program transition was initially piloted in 14 buildings across campus. On average, the diversion rate of the buildings increased by 38%, proving the effectiveness of the systemic changes adopted under the program. These include:

- Use of centralized waste stations and self-service of desk-side bins. Daily service to labs, kitchens, conference rooms, and common spaces has continued and will not change.
- Switch to single-stream recycling (combining paper with plastics, metal, and glass)
- Centralized collection of flattened corrugated cardboard in or next to recycling bins
- Compostables collection in break rooms and kitchens
- Collection of paper towels from restrooms as compostables
- Custodial removal of all recyclables, compostables, and landfill waste from common spaces in buildings daily (5x/week)

The past year's incoming class was the first to be offered a **waste sorting training** through Axess as part of New Student Orientation. Over 850 students participated in the training which taught proper sorting and introduced resources to reduce waste generation. The Office of Sustainability partnered with **Students for a Sustainable Stanford**, the **Associated Students of Stanford University (ASSU)**, and **Residential & Dining Enterprises** to educate and encourage students to contribute to our Zero Waste by 2030 goal.

Historical Waste Minimization





2021-22 WASTE HIGHLIGHTS

- Stanford wins 1st place for Per Capita Recycling in Campus Race for Zero Waste
- Zero Waste Building and Behavior Program
- New Student Orientation Mandatory Sustainability Training (Stanford Login Required)
- All About No Waste community

PIONEERING ENERGY MANAGEMENT SOLUTIONS

ENERGY DEMAND

In 2021-22, Stanford completed more than 30 energy retrofit projects, avoiding more than $530,000 in energy costs. As of 2020, Stanford had reduced energy intensity on campus 36% from a 2000 baseline.

The Facilities Energy Management (FEM) team utilizes multiple dynamic operating systems and efficiency programs to optimize energy consumption in existing buildings and incorporates best practices into all new buildings. The past year saw the reoccupancy of many buildings on campus following the COVID-19 shutdowns. This presented the unique opportunity to revisit the HVAC scheduling in these buildings to rightsize the operating hours to match the latest programmatic needs of the occupants. Upgraded control systems allow much more granularity in provision of heating and cooling. For example, COOLER program research suggests that cooling rooms even 2 degrees less when they are unoccupied could yield measurable savings in chilled water.

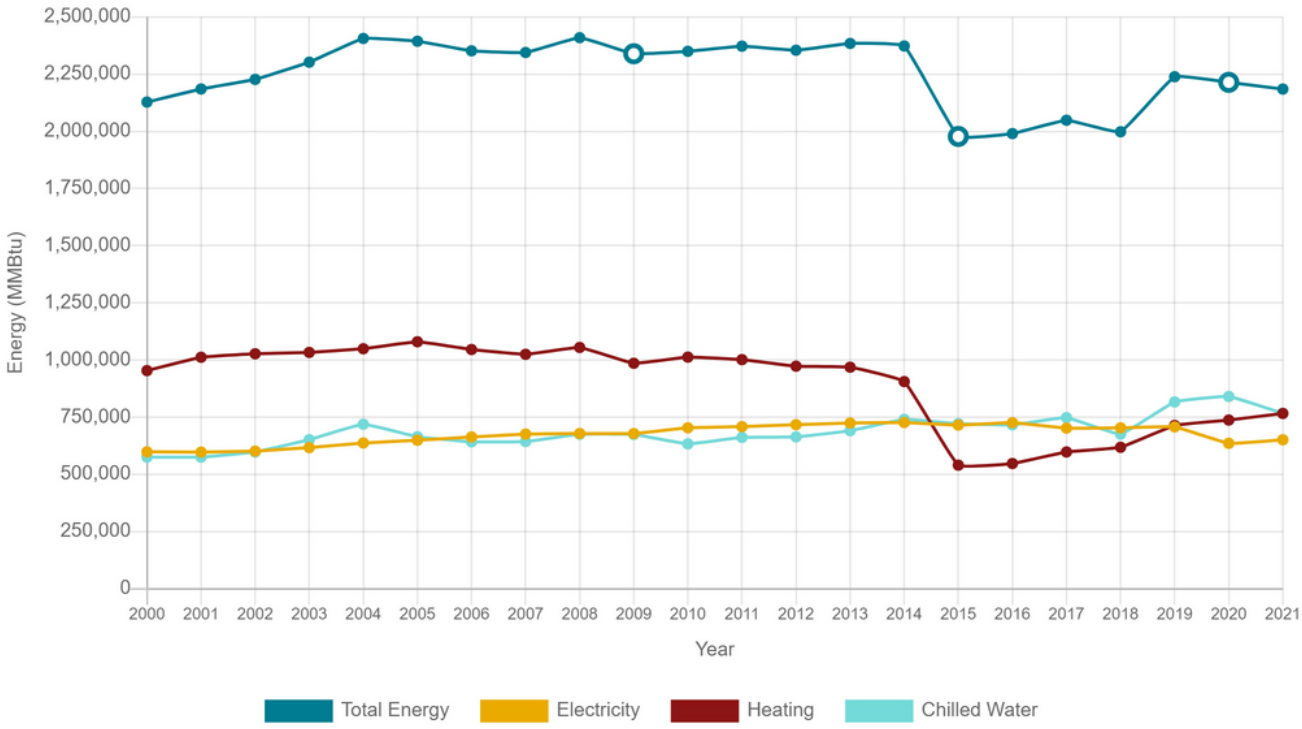
More than 50 buildings on the main campus now rely on a new building automation system equipped to use advanced fault detection and diagnostic tools. These tools enable smart analytics on multiple fronts, including building commissioning, new-construction post-occupancy studies, chilled and hot water return temperature management, chilled water resilience planning, and tracking of ventilation modes for air handlers.

In 2022, FEM's various energy retrofit programs achieved $530,000 in new annual energy cost savings. Efficiency upgrades included an array of measures and project sizes. Examples include the LED lighting upgrades at School of Medicine, ongoing commissioning of air handlers at Stanford Hospital and the main campus, and high-efficiency ultra-low temperature freezers in labs across campus.

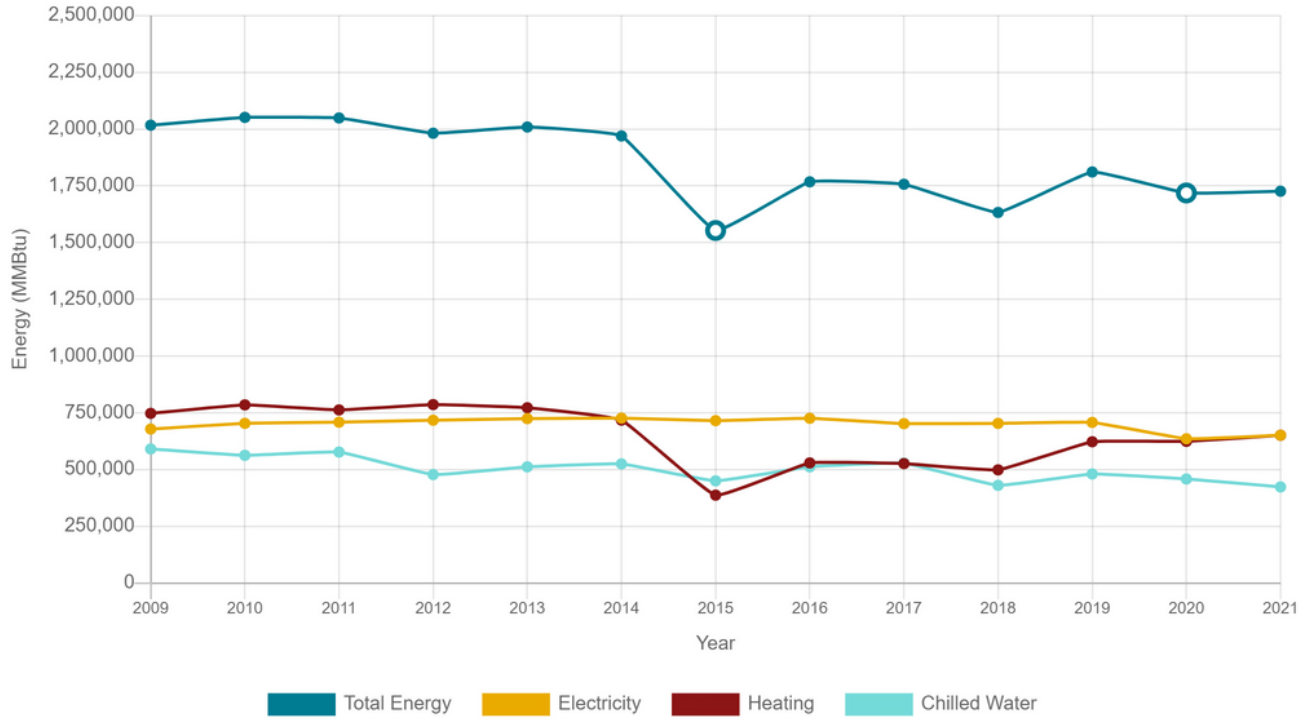
The FEM team has also been growing the young Return Temperature Optimization Program (RTOP). With thermal heating and cooling energy being delivered to buildings via water from the Central Energy Facility (CEF), managing the flow of water is a critical task. Using energy efficiently at buildings now also entails using the heating and cooling water efficiently. The CEF and the water distribution systems are most efficient when the buildings maximize the amount of energy they draw from each gallon of water received, just as a car is when it gets the most miles from a gallon of gas. For heating water, this means that the buildings pull as much heat as possible from the water, thereby returning the coolest water possible to the distribution system. Effectively managing return temperatures significantly reduces the volume of water that must be distributed across campus. For reference, most buildings could still reduce heating and cooling water flows by 10% to 50% while still meeting heating and cooling needs. Such building improvements can dramatically expand the capacity of existing distribution systems, thereby saving millions of dollars in system expansions and avoiding construction disruptions to campus.

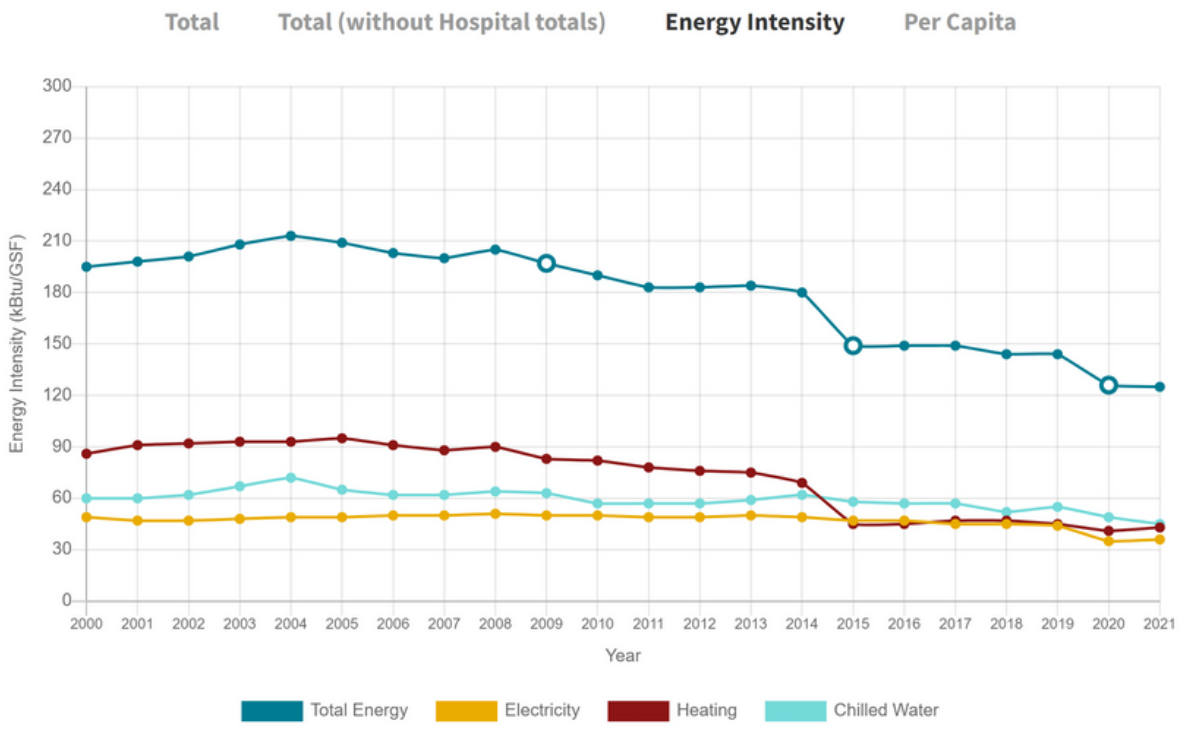
Energy Demand Charts

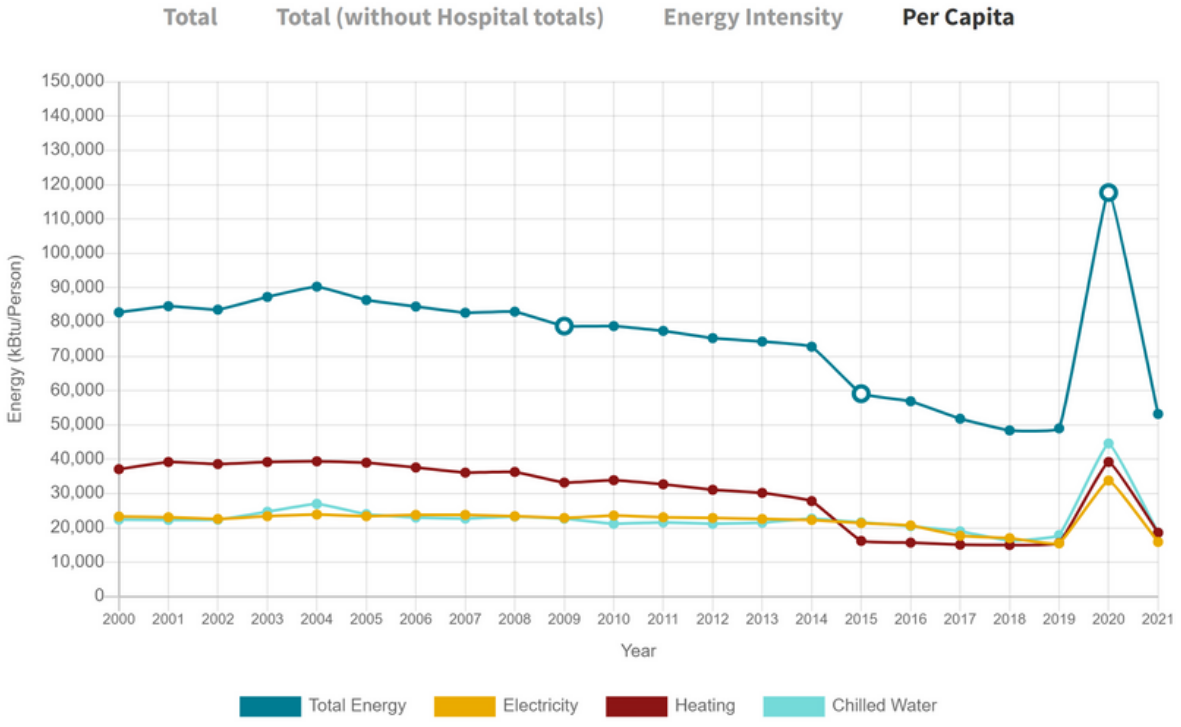
Total | Total (without Hospital totals) | Energy Intensity | Per Capita



Total | **Total (without Hospital totals)** | Energy Intensity | Per Capita







2021-22 ENERGY DEMAND HIGHLIGHTS

- Gates Gets an Energy-Efficiency Refresh
- School of Medicine Lights the Way!
- Color Me Bright: Softball Gets LEDS
- Rebates for a Lab Staple
- COOLER Summer 2022 Update

LIVING AND EATING SUSTAINABLY

FOOD & LIVING

In 2021-2022, R&DE Stanford Dining doubled down on its food waste reduction target; released two pioneering thought leadership publications in support of climate-smart dining; relaunched public programming for the Stanford Food Institute (SFI); hosted its inaugural cohort of SFI interns; earned acclaim for its plant-forward culinary leadership; and deepened partnerships with Drawdown Labs, REGEN1, Food Tank, and the Menus of Change University Research Collaborative.

Residential & Dining Enterprises (R&DE) houses 15,000 residents and serves 25,000 meals per day across its more than 375 facilities for dining, catering, and hospitality. R&DE collaborates with faculty, students, and staff to foster behavior change, reduce energy and water consumption and waste production, educate students through teaching academic classes and hosting community events, and integrate long-term sustainability thinking into how it operates. **R&DE Stanford Dining** prioritizes sustainably produced, local, organic, humanely raised, and fairly traded food, as well as food from family-owned farms and sustainable fisheries. R&DE's efforts directly influence student learning and the overall campus culture, as well as the lives of Stanford's students as they move into new communities after graduation.

R&DE Stanford Dining's award-winning sustainable food program—**One Plate, One Planet**—collaborates on many aspects of complex global food systems, from equitable supply chains, climate-smart dining, and regenerative agriculture to reducing food waste and shifting diets towards plant-forward options. One Plate, One Planet represents six pillars:

- Climate-smart dining, especially food waste reduction and plant-forward diets;
- Racial equity and supporting Black businesses;
- Curbing deforestation through supply chain pressure;
- Thriving oceans;
- Catalyzing a circular economy of food; and
- Embracing systems thinking, upstream thinking, and minimizing unintended consequences.

Stanford Dining believes that each plate it serves and each meal students eat offers the opportunity to create a better future for this planet together. Stanford Dining demonstrates that sustainable, ethical, and healthy food systems can be deployed at scale, while simultaneously inspiring the next generation to improve how Earth's precious resources are managed.

In 2021-22, R&DE relaunched public programming offered by the Stanford Food Institute (SFI), which was a resounding success in the campus community. An in-person event, "From Temple Cuisine to Campus Dining and Home Cooking: Korean Temple Food—Flavors & How-Tos," was hosted at the O'Donohue Family Stanford Educational Farm and featured inspiring plant-forward culinary education from Jeong Kwan Seunim, world-renowned chef and Buddhist nun. A virtual event, "Every Job a Climate Job," was held in collaboration with Drawdown Labs and the Stanford Doerr School of Sustainability.

Jeong Kwan and her assistant Yoon Hee Kim at the O'Donohue Family Stanford Educational Farm. Photo Credit: Dexter Simpson

In support of the academic mission of the university, and across the institute's three core pillars—research, education, and flavor and innovation—SFI collaborates with faculty and students at all seven schools on campus. This year, R&DE also welcomed the inaugural cohort of SFI interns. Students gained real-world experience across Stanford Dining's operations and programs; they also conducted Impact Projects covering nutrition and sustainability topics such as food waste messaging and student perceptions of plant-based proteins.

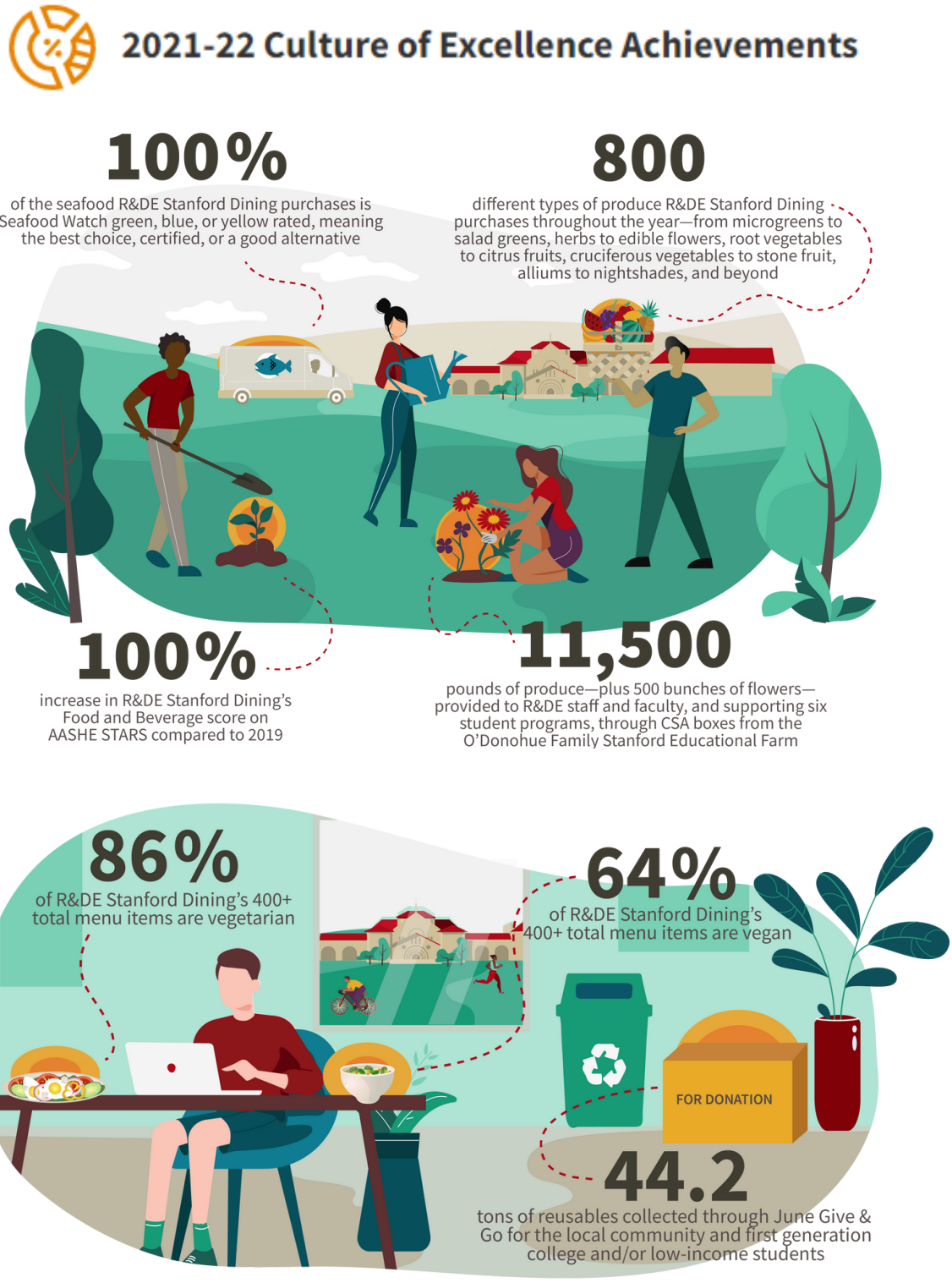
Continuing this year, R&DE promoted a new sustainability concierge service. Students can text and get immediate responses on issues such as how to sort a particular item of waste, how to use a green cleaning machine, or how to operate their thermostat. R&DE's **Cardinal Clean** program expanded access to a free, powerful, and green laundry detergent and cleaning solution to students at the Wilbur and Stern complexes. In total, more than 3,000 students have access. In addition, in support of the university's net-zero emissions goal, the Murray House kitchen was converted from gas to electric cooking appliances. To further explore opportunities to electrify commercial kitchens on campus, SFI has begun collaborating with Rob Jackson—professor, Earth System Science, and senior fellow, Stanford Woods Institute and Precourt Institute for Energy—to study the benefits of and barriers to transitioning from gas to electric.

To build upon that legacy of work and provide further thought leadership to other institutions surrounding these two climate imperatives, this year R&DE Stanford Dining released two pioneering publications:

The **Food Waste Prevention Playbook** captures the full array of strategies R&DE Stanford Dining employs to not only reduce food waste but prevent it in the first place—from committing to long-term action to collecting and analyzing data, from cultivating a culture of food waste prevention and engaging students to operationalizing best practices.

Chef Tami Lin juicing pineapple cores–a creative upcycling technique to reduce food waste. Photo Credit: Alice Pyo

The **Food Choice Architecture Playbook** outlines strategies for promoting a healthier and more sustainable campus food environment, with a focus on enabling plant-forward food choices. R&DE Stanford Dining knows that the campus food environment plays a critical role in determining the health and well-being of students and the environmental impact of food programs. Food choice architecture encompasses all aspects of how foods are offered and framed in the dining halls, and how these considerations influence food selection. R&DE Stanford Dining utilizes food choice architecture strategies to design health and sustainability into dining programs, making healthier and more sustainable choices easier, more prominent, and more desirable while still offering a wide range of food options.



R&DE is a critical contributor in achieving the university's zero waste and climate goals. For example, R&DE Stanford Dining is proud to serve as the pilot for the university's **Scope 3 Emissions Program**. Within its One Plate, One Planet pillar of climate-smart dining, R&DE Stanford Dining has long focused on reducing food waste and advancing plant-forward diets—two of the top climate solutions globally, according to *Project Drawdown*.

Across its dining halls, R&DE Stanford Dining expanded its food waste reduction initiatives in 2021-22, utilizing multi-level strategies centered on source reduction, strategic portion design, food waste monitoring, student engagement campaigns, and food recovery and donation. These initiatives will help the division reach its target to further reduce food waste by 25% by the end of 2022. R&DE continues to partner with a student-led group, Stanford Food Recovery, and local food recovery partners such as Daylight Foodsto donate surplus food from dining halls, cafes, and concessions to food-insecure families. R&DE manages the food pantry program for undergraduate and graduate students and their affiliates who self-identify as food insecure, in collaboration with the Graduate Student Council, the ASSU, and the Stanford Solidarity Network. The program has distributed over 600,000 pounds of food to the Stanford community since its inception in August 2019.

A systematic analysis to identify opportunities for efficiencies is a focus across R&DE operations. R&DE continued to experiment with, and promote, several new technologies with residents, including smart thermostats and sensors that track air quality and thermal comfort, and it has worked with students to develop their own sensors that monitor waste production and service.

2021-22 FOOD AND LIVING HIGHLIGHTS

- **Dr. Shirley J. Everett, senior associate vice provost of R&DE and senior adviser to the provost on equity and inclusion, wins the coveted Cuthbertson Award** The award honored her more than 30 years of distinguished leadership and service to Stanford, including her vital role in supporting students through the residential learning mission of the university and for building R&DE to be the "industry gold standard."
- **R&DE Stanford Dining's leadership on climate-smart dining featured in Edible Silicon Valley**
- **"Buddhist Nun Jeong Kwan Seunim teaches Korean temple cuisine at the Farm"**
- **Christina Betondo, senior associate director of student culinary excellence for R&DE Stanford Dining, wins 2022 Produce Excellence in Foodservice Award for Colleges & Universities**
- **Groundbreaking consumer insights report—2022 Plant-Forward Opportunity Report—published by Menus of Change University Research Collaborative, in partnership with Datassential, The Culinary Institute of America, and Food for Climate League**
- **"How Stanford Dining cultivates a culture of camaraderie in an industry scarred by mental health issues"**
- **"How Campus Dining Supports Stanford's New Neighborhood Model"**
- **Sophie Egan. director of SFI and Sustainable Food Systems, named to Food Tank's Academic Working Group**

DECONSTRUCTING BUILDINGS

BUILDINGS

In 2021, Stanford's biggest construction sites were actually "destruction" projects, responsibly demolishing several buildings that had come to the end of their useful lives.

The built environment at Stanford is critical in supporting the academic mission, providing appealing, functional spaces that enable cross-disciplinary collaboration to connect research, practice, and action around some of the world's most pressing challenges. **The Department of Project Management (DPM)** oversees major construction on campus and continually works to elevate the application of sustainable practices in building and design. Its **holistic method of benchmarking** drives improvement so that each new building coming online can perform better than the last. Lessons learned from post-occupancy studies of each new building inform the target-setting process for future buildings.

Herrin Hall

DPM focused on demolishing buildings this year in order to pave the way for future construction, namely Herrin Hall and Herrin Labs, Mudd Chemistry, and the Lou Henry Hoover Building. The projects diverted at least 11,000 tons of demolition waste to concrete and steel recyclers. Additionally, Stanford completed an **embodied carbon study** in design and construction projects.

2021-22 BUILDING HIGHLIGHTS

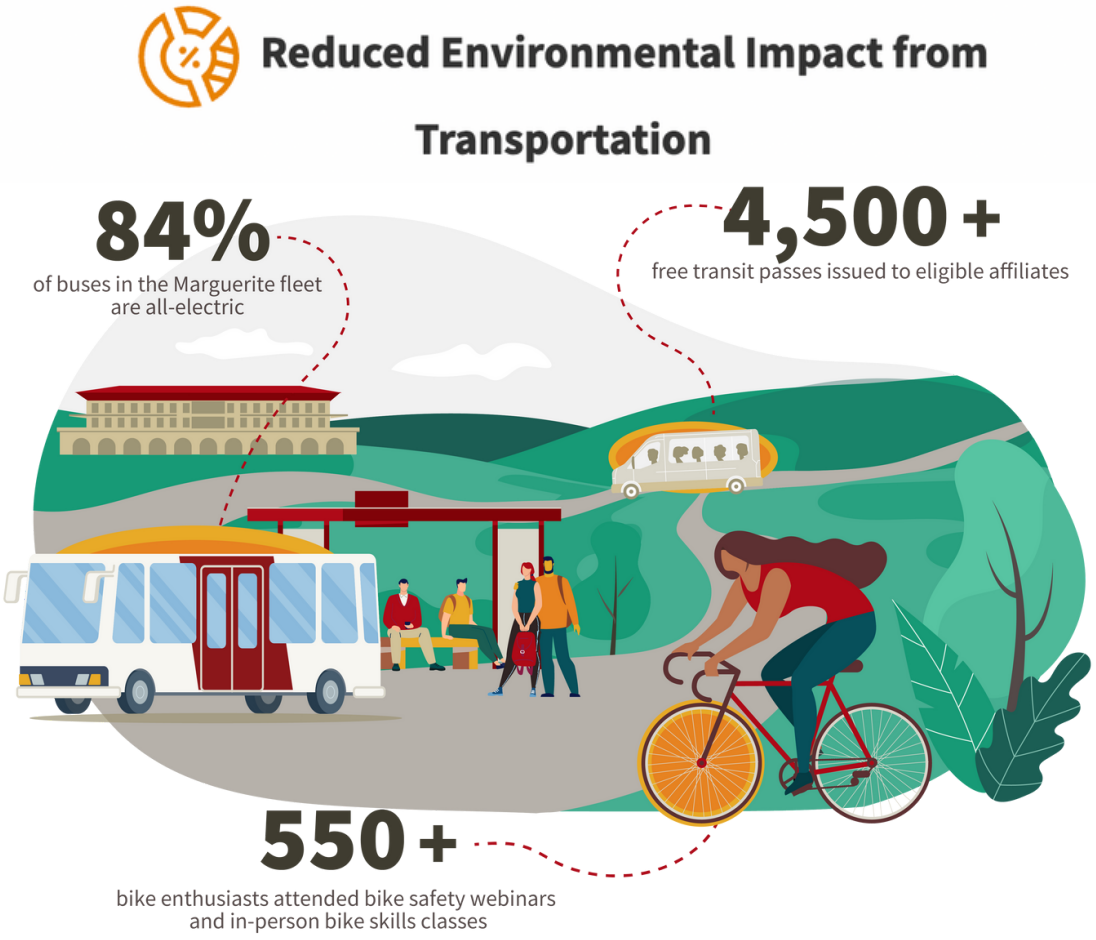
- Deconstructing Herrin Hall and Herrin Labs
- Deconstructing Mudd Chemistry
- Deconstructing Lou Henry Hoover Building
- Embodied Carbon in Buildings

EXPANDED SUSTAINABLE TRANSPORTATION OPTIONS

TRANSPORTATION

In 2021, some 61% of campus commuters (employees and commuting students) utilized sustainable transportation options on a regular basis.

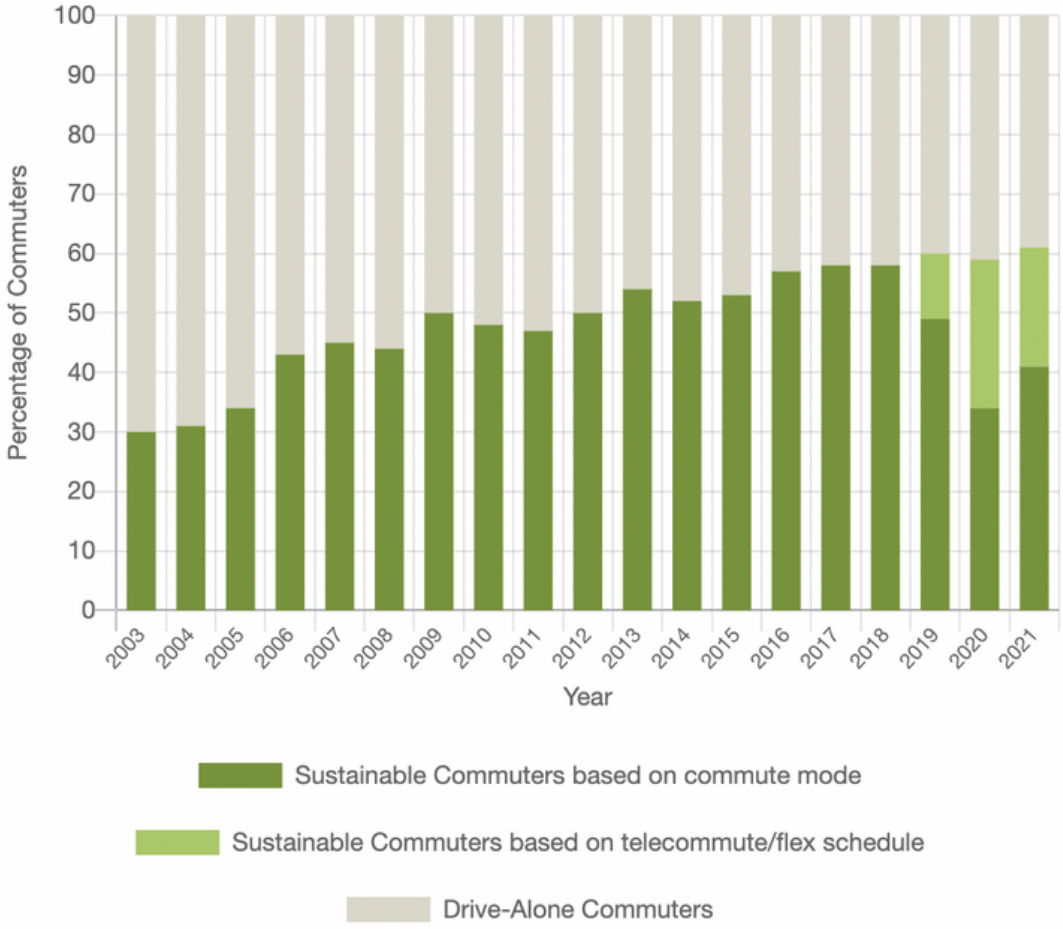
Stanford is committed to achieving the "No Net New Peak-Hour Commute Trips" standard, which is defined by the Stanford Community Plan as no additional trips above a measured baseline during peak commute hours in the campus commute direction. Stanford has met and plans to continue to meet this standard, as described in its **General Use Permit**.



Stanford's Transportation Demand Management (TDM) program consists of innovative approaches for getting students, faculty, and staff to campus by means other than single-occupancy vehicles. Spearheaded by Stanford Transportation, the TDM program aims to reduce university-related traffic impacts, emissions, and parking demand while the campus continues to grow.

In 2021, many Stanford employees worked hybrid schedules, and some Stanford Transportation programs were adjusted to reflect the new norm.

Rate of Sustainable Transportation Commuters



In 2019, Sustainable Commuters data began being parsed by telecommute data and commute mode. The percentage of Sustainable Commuters data did not decline from 2018 to 2019.

2021-22 TRANSPORTATION HIGHLIGHTS

- Stanford Receives its Third Platinum Bicycle Friendly University Award
- Introducing the Latest Addition to Our Fleet: Petite Marguerite
- New Bike Lane Pilot on Santa Teresa
- Stanford Recognized as One of the Best Workplaces for Commuters in 2022
- International Parking & Mobility Institute (IPMI) Recognized Stanford Transportation as Organization of the Year
- Executive Director Brian Shaw Was Recognized as the James M. Hunnicutt, CAPP, Industry Professional of the Year
- 2021 Year at a Glance

ACKNOWLEDGEMENTS

Sustainable Stanford thanks all its campus partners for contributing content for the 2021-2022 Year in Review, and for their ongoing efforts to create a more sustainable campus environment.

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Alice Pyo
Andrew Brodhead
Cara Uy-Segal
Cypress Wessberg
Dexter Simpson
Jose Mercado
Linda Cicero
Michael Huang
Patrick Archie
Susan Vargas