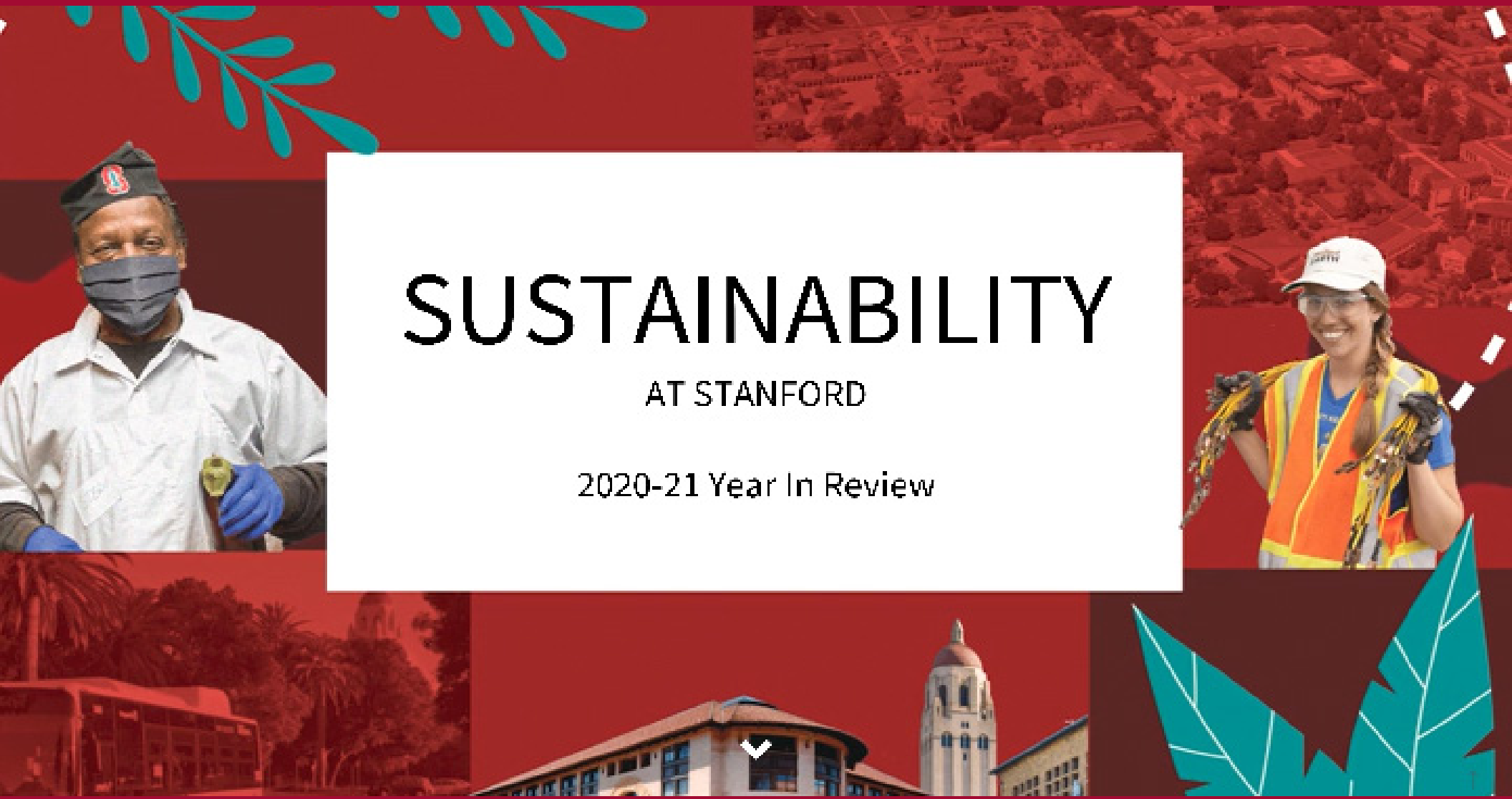
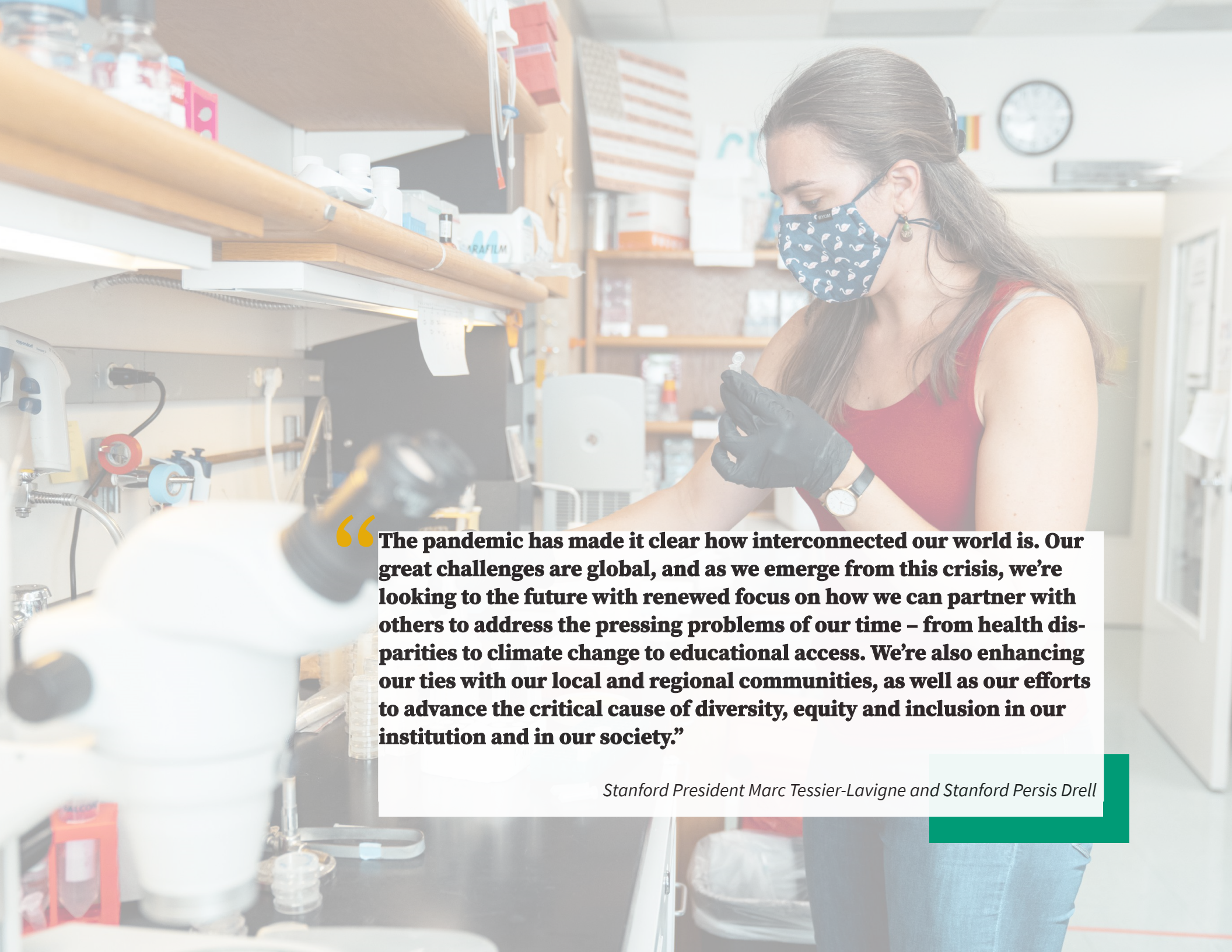


SUSTAINABILITY

AT STANFORD

2020-21 Year In Review



> **The pandemic has made it clear how interconnected our world is. Our great challenges are global, and as we emerge from this crisis, we're looking to the future with renewed focus on how we can partner with others to address the pressing problems of our time – from health disparities to climate change to educational access. We're also enhancing our ties with our local and regional communities, as well as our efforts to advance the critical cause of diversity, equity and inclusion in our institution and in our society."**
>
> *Stanford President Marc Tessier-Lavigne and Stanford Persis Drell*

As the Stanford community begins to re-engage physically, we are weaving the lessons and experiences of the global pandemic into new ways of thinking and living, with sustainability as a central motif. More people than ever are recognizing and responding to the realities of how our institutional systems and behaviors intertwine with the environmental, social, and economic health of our society and the planet. While fewer people may have been on campus over the past year, Stanford's community has been persistent in pioneering sustainability research, programs, and infrastructure improvements.

Stanford's Long-Range Vision commitment to create a school focused on climate and sustainability has continued to take shape. As part of the school's purpose is to help the university function as a living lab, it was announced this year that the school will include a Sustainability Accelerator focusing on external engagements that translate policy and technology solutions into new applications. The school will also provide grants to students to do research on key initiatives, such as environmental justice and the circular economy.

Among other sustainability initiatives at Stanford, the new school is also one of the factors leading to Stanford's newfound position as the first U.S. higher education institution to issue a bond based on environmental stewardship and social responsibility standards. This bond initiative demonstrates Stanford's commitment to enacting sustainability on campus in a measurable way over the long term. Stanford's IDEAL initiative was also noted as an element of social responsibility under the bond. In 2021, the IDEAL initiative also took the unprecedented step of launching a university-wide diversity, equity, and inclusion survey. The outcomes of this survey will aid the university in understanding and identifying gaps related to social and racial justice, which will foster further program development.

Despite the challenges of the pandemic, the Stanford community has ensured the university continues to make headway toward its goals to reduce campus greenhouse gas emissions by 80% and divert 90% of its waste from the landfill. 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. While the university has laid out a path to reducing Scope 1 and 2 emissions, Scope 3 emissions mitigation strategies are less clear. As a result, the university launched a new Scope 3 Emissions Program, sponsored by the Vice President of Business Affairs. The first of its kind within higher education, this new program aims to reduce, mitigate, or offset Stanford's Scope 3 emissions and establish a path that other institutions can follow.

As the campus will be returning to in-person courses this fall, the university is now preparing for the "new normal" with sustainability and public health principles in mind. Staff are implementing changes related to dining, waste, energy, water, cleaning, and indoor air quality. New ways of teaching and working are also being piloted on and off campus. For example, a flexible work pilot has been conducted at Stanford's Redwood City campus this summer, and resources are being shared to help instill sustainability best practices for those returning to campus.

Every member of the Stanford community plays a role in shaping the sustainable future of the university. Academic research, student behavior, and operational changes enacted on campus directly support the ability of the campus and broader community to thrive. The report below provides a glimpse of this year's endeavors.

Aurora Winslade

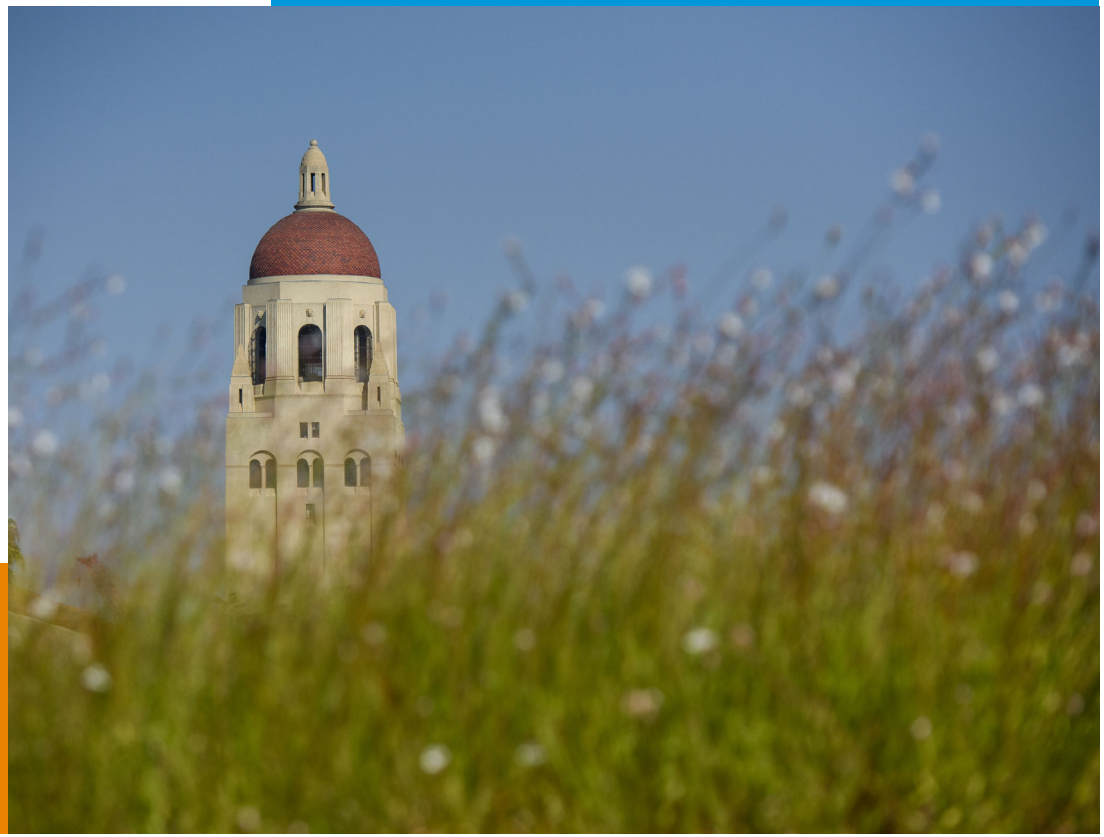
Aurora Winslade
Director, Office of Sustainability
Department of Sustainability and Energy Management (SEM)

2020-21 Year in Review

Platinum Research Institution

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. With a weighted rating of 88% across criteria for academia, administration, operations, and coordination, Stanford is **one of only nine U.S. institutions to earn this highest place among research institutions, among 1,000+ institutions reporting.**

View more awards Stanford has earned this year



2020-21 Year in Review

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.

Bridging Disciplines in Research and Academia

The realities of the pandemic have ignited even more enthusiasm among Stanford's faculty and students for conducting meaningful sustainability research. Scholars at the Woods Institute have investigated the key interlinks between healthcare, deforestation, wildfires, and climate change. Stanford researchers collaborating in the Stanford Existential Risks Initiative have focused on evaluating global risks, such as climate change, and are applying that research in innovative tools made available to the public, such as *A Guide to Engineering Buildings for the Next Pandemic*. Stanford has also engaged in meaningful discussions on resolving these issues. One such conversation focused on how to avoid a climate disaster and included Bill Gates, co-chair of the Bill & Melinda Gates Foundation and founder of Breakthrough Energy, Marc Tessier-Lavigne, Stanford's President, and Arun Majumdar, the Precourt Institute's Provostial Chair Professor.

In 2020-21—despite pandemic restrictions—30 community-engaged learning courses connected Stanford students with local organizations to develop innovative sustainability solutions. Across disciplines, Stanford regularly partners with local and regional communities on research and other projects that have broad implications beyond the Stanford campus. For example, a new initiative launched in 2020-21, Partnerships for Climate Justice in the Bay Area (PCJ in the Bay), expands opportunities for students to collaborate with partner organizations to advance climate justice in our region through community-engaged courses, internships, volunteer opportunities, and more.

Another important contribution to Stanford sustainability this academic year was the formation of multiple interdisciplinary working groups comprising faculty, staff, and students designed to oversee progress in new priority areas. For instance, the Scope 3 Emissions Working Group was launched to oversee the new Scope 3 Emissions Program. This working group will advise on emissions quantification methods, mitigation strategies, and internal and external partnerships, including living laboratory opportunities with the new sustainability school.

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

Bridging Disciplines in Research and Academia

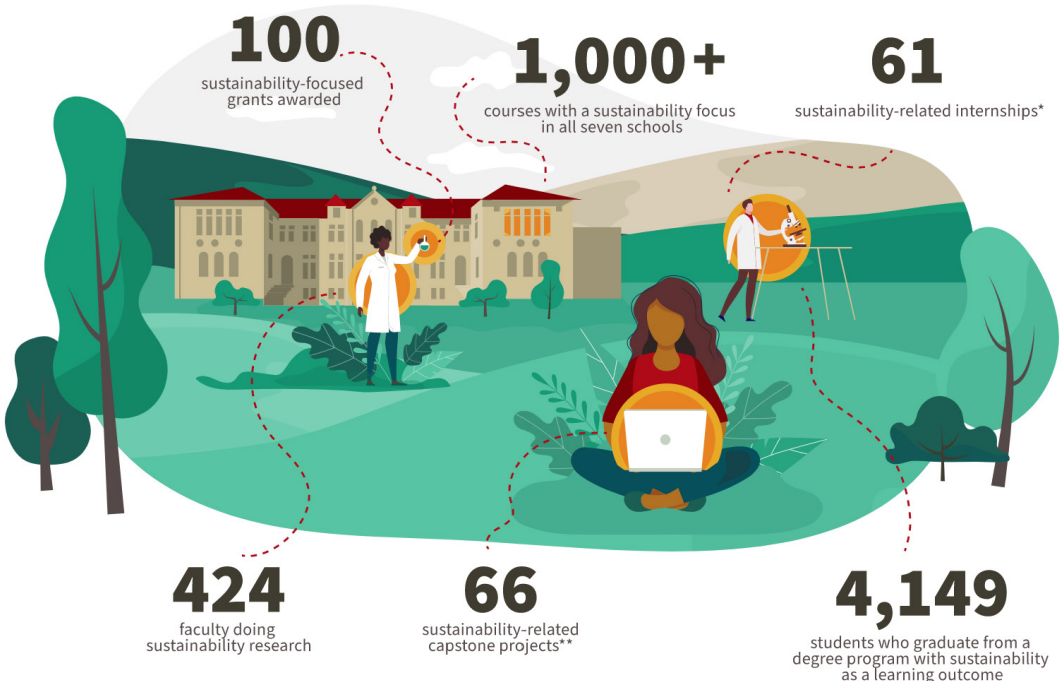
at Stanford. This initiative is critical to ensuring that Stanford's sustainability efforts can succeed by attending to problems of structural inequity and systemic racism. During 2020-21, the EJWG has continued to build a cross-campus EJ hub to support synergies across multiple learning communities. 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 will launch in fall 2021 through the Earth Systems Program. In addition, the group has supported faculty-led community-engaged research, research grants to graduate students, and a workshop series highlighting best practices in authentic EJ research. Finally, the EJWG has developed critical infrastructure for EJ research, outreach, and academic and community collaboration, including the EJ and Human Rights Lab, an email listserv with 600+ participants, a quarterly newsletter, and an EJ Blog. 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.

Bridging Disciplines in Research and Academia

In 2021, efforts made by Stanford's Environmental Justice Working Group furthered the development of environmental justice curriculum, including the creation of an Environmental Justice minor that will launch in fall 2021 through the Earth Systems Program.

Sustainability-Related Activity



** Internships counted here include sustainability-related internships undertaken by students through the Cardinal Quarter Program and as part of the Earth Systems Internship Program.*

*** Includes only those capstones offered through the School of Earth, Energy & Environmental Sciences.*

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

Expansive Evaluation, Conservation, and Engagement Programs

Creating programs to provide resources to and instill sustainability behaviors in the campus community has been a long-standing, core goal at Stanford. In addition to this goal, supporting resilient infrastructure and cultivating a spirit of resiliency in individuals are critical to the mission of the Office of Sustainability and Business Services (the Office). Tracking by the Office has made it abundantly clear that the Covid-19 pandemic has had profound effects on Stanford's energy and water use, as well as its waste and emissions generation. Partnerships between sustainability, facilities, and operational groups allowed for a coordinated effort to turn off heating and cooling in buildings unoccupied because of shelter-in-place regulations, which lowered campus electricity use. While resource consumption decreased across the board during the pandemic, decreases in some categories, such as waste, tracked more proportionally with occupancy decreases than other categories. Close evaluation of resource use trends has helped reveal opportunities to maintain some of these reductions in the future.

Already planned sustainability initiatives, such as a second solar generating station will contribute to further decreases in greenhouse gases over the long-term. The new 63-MW solar generating station, coming online in summer 2022, will include a 50-MW battery energy storage system with 200 MWh of power storage capacity. Other sustainability initiatives that accelerated as a result of the pandemic, such as remote work and virtual events, create opportunities to improve campus sustainability going forward.

In 2020-21, the Office has focused on efforts to virtualize its content to make it accessible to campus community members wherever they live, work, and play. These efforts not only have enabled the community to remain connected to the sustainability initiatives at the university but will help ensure resiliency in the programs in the long term. Just one example is the transition of the semi-annual lab share event to a virtual, ongoing program that enables lab staff to exchange lab equipment, resulting in waste and resource savings. In addition, the Office is developing resources, such as online trainings, for the campus community to encourage sustainable behaviors as the campus transitions to wider reopening.

The Office also continues to steward progress toward the three sustainability targets laid out in the Long-Range Vision: reducing Scope 1 and 2 emissions to 80% below peak by 2025, achieving net zero emissions by 2050, and reaching zero waste (defined as 90%

Expansive Evaluation, Conservation, and Engagement Programs

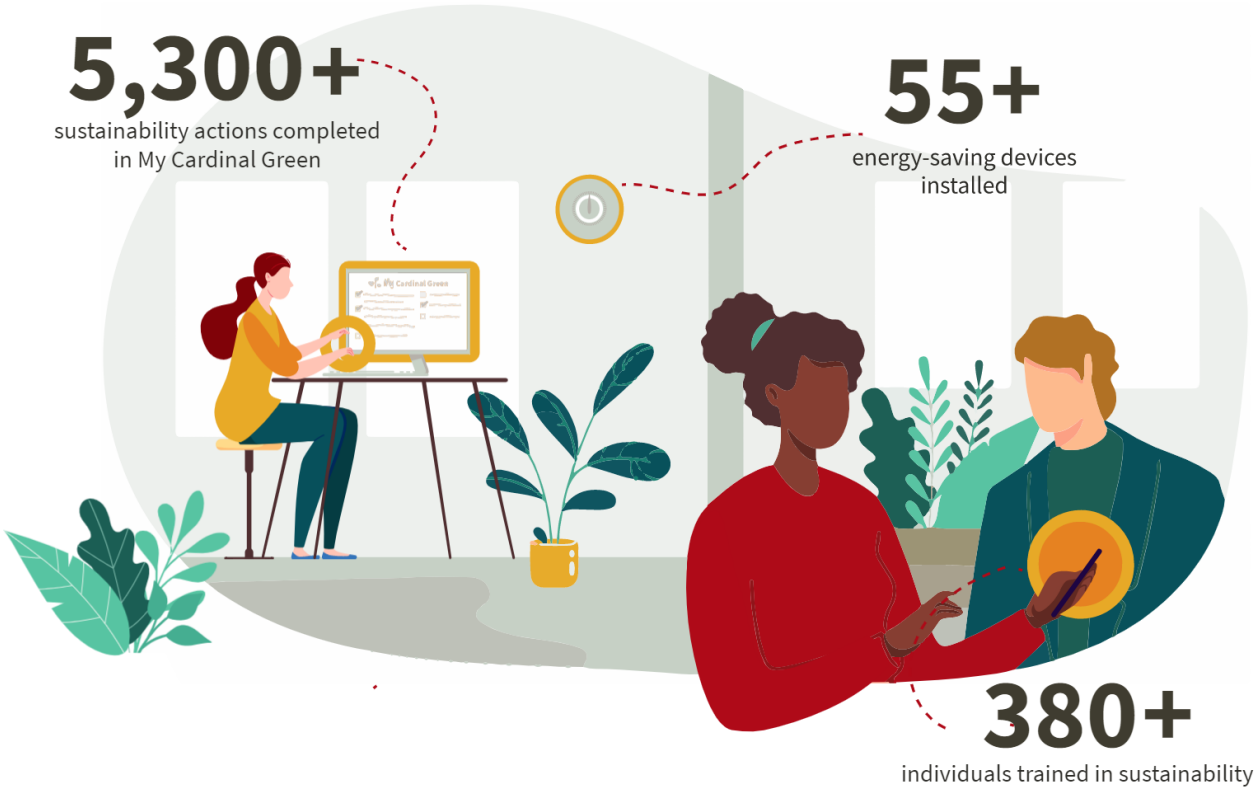
diversion or higher) by 2030. Through a comprehensive vulnerability assessment to address risks, Stanford is also preparing to both adapt (respond to impacts of climate change) and be resilient (prepare for and recover from adverse impacts) in the coming decades to sync with the realities of the changing climate.

The My Cardinal Green program, which incentivizes the campus community to incorporate sustainable behaviors into daily life, has also continued to thrive and broaden to include more actions that support sustainability for those working or studying at home. The Office ran a new Cardinal Green Anywhere Campaign this year, bringing 170 new members of the campus community into the program. Of the nearly 5,300 My Cardinal Green actions completed in 2020, nearly 40% were based on the 32 actions that are designed to be done at home. This helps demonstrate that wherever campus community members may be, they are eager to adopt sustainable practices and are active in doing so. For students, the three actions most often completed were related to composting food waste and packaging, focusing on sustainability in their curriculum or field of study, and learning about home municipal waste systems.

Expansive Evaluation, Conservation, and Engagement Programs

Savings from the Office's comprehensive conservation programs in 2020-21 total nearly $440,000, equal to the annual savings from some building retrofit projects.

Advancing Sustainability Engagement



2020-21 Highlights

2021 Idle Loads Study

Stanford Encourages Everyone to 'Live Cardinal Green, Anywhere'


ANCIENT OHLONE VILLAGES
This site was originally inhabited by the Puichon tribe of the Ohlone Indians. There were over 50 Ohlone tribes altogether, each inhabiting a specific part of the Bay Area. The watershed of San Francisquito Creek was the territory of the Puichon. Here on the West Campus area, the Puichon hunted mule elk, bear and deer, and collected several hundred species of useful plants. A typical Puichon village had about 200 people who were related to families in neighboring villages through trade and intermarriage. Fourteen village sites are located within a mile of West Campus; the oldest was inhabited more than 5,000 years ago. Today, many Ohlone descendants continue to live in the Bay Area. University buildings in this area are named after the Puichon and other Ohlone tribes in recognition of Native Californian contributions to our history. The map shows where nine village locations of the Ohlone people.
PACIFIC OCEAN

Innovative Carbon-Free Solutions

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 those from the university's direct 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. Since energy use is the primary driver of Scope 1 and 2 emissions, the university's 12% decrease in Scope 1 and 2 emissions during the Covid-19 pandemic reflects the decrease in overall energy use.

In contrast, Scope 3 emissions represent indirect emissions from activities influenced but not directly controlled by university operations, including business travel, student travel, employee commuting, and events. Emissions from these Scope 3 categories decreased by 87% during the pandemic. Shifting practices around remote work, travel, and virtual events will likely help sustain some of these reductions. The new Scope 3 Emissions Program in Business Affairs will steer emissions reductions in these categories and others in years to come. The program will focus on evaluation, communications, campus engagement, regional community engagement, and collaboration with other institutions.

On the energy supply side, Stanford's Energy Operations Department made great strides to help the campus operate more resiliently in 2020. For instance, the threat of energy reductions or outages was reduced by expanded temporary chiller equipment, which is now being used until a permanent chiller expansion is completed by fall 2022. Having reliable and efficient energy to power the research being done on campus helps to eliminate disruption to teaching and research during heat waves. This year, the temporary chiller equipment expansion helped ensure there were zero days when there was a need to curtail campus heating or cooling.

Innovative Carbon-Free Solutions

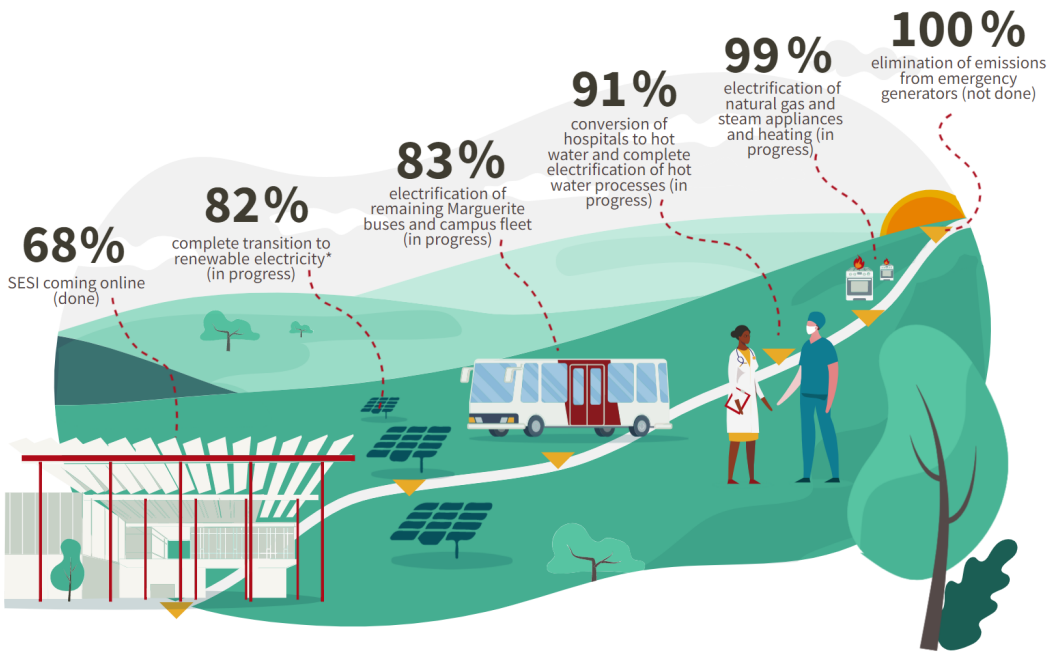
This added cooling capacity is a key component of the Stanford Energy System Innovations (SESI) program, which was launched in 2015. SESI enables the transition of the campus energy supply from a fossil fuel system to an electrically powered heating and cooling system. This will allow the university to reach its target of reducing Scope 1 and 2 emissions by 80% in 2025 from a 2011 baseline, three years ahead of the university's stated goal. At that point, Stanford will rely on 100% renewable electricity to power the campus. Through SESI, the campus has been able to model environmentally and economically sustainable heating and cooling systems at a district level.

Stanford's energy transformation puts it at the forefront of universities on the path to carbon neutrality. After conducting deep analysis to understand and strategize solutions for eliminating these remaining emissions sources, the university will undertake specific programs in the years ahead to decarbonize. One such program will assist departments with replacing natural gas equipment with more sustainable electric alternatives in buildings.

Innovative Carbon-Free Solutions

In 2020, Stanford powered the campus with 69% renewable electricity, and it will utilize 100% renewable electricity by the end of 2022.

Stanford's Emissions Reduction Path to Net Zero Operations



*The renewable electricity commitment includes the core campus operations managed by Stanford's energy administration team.

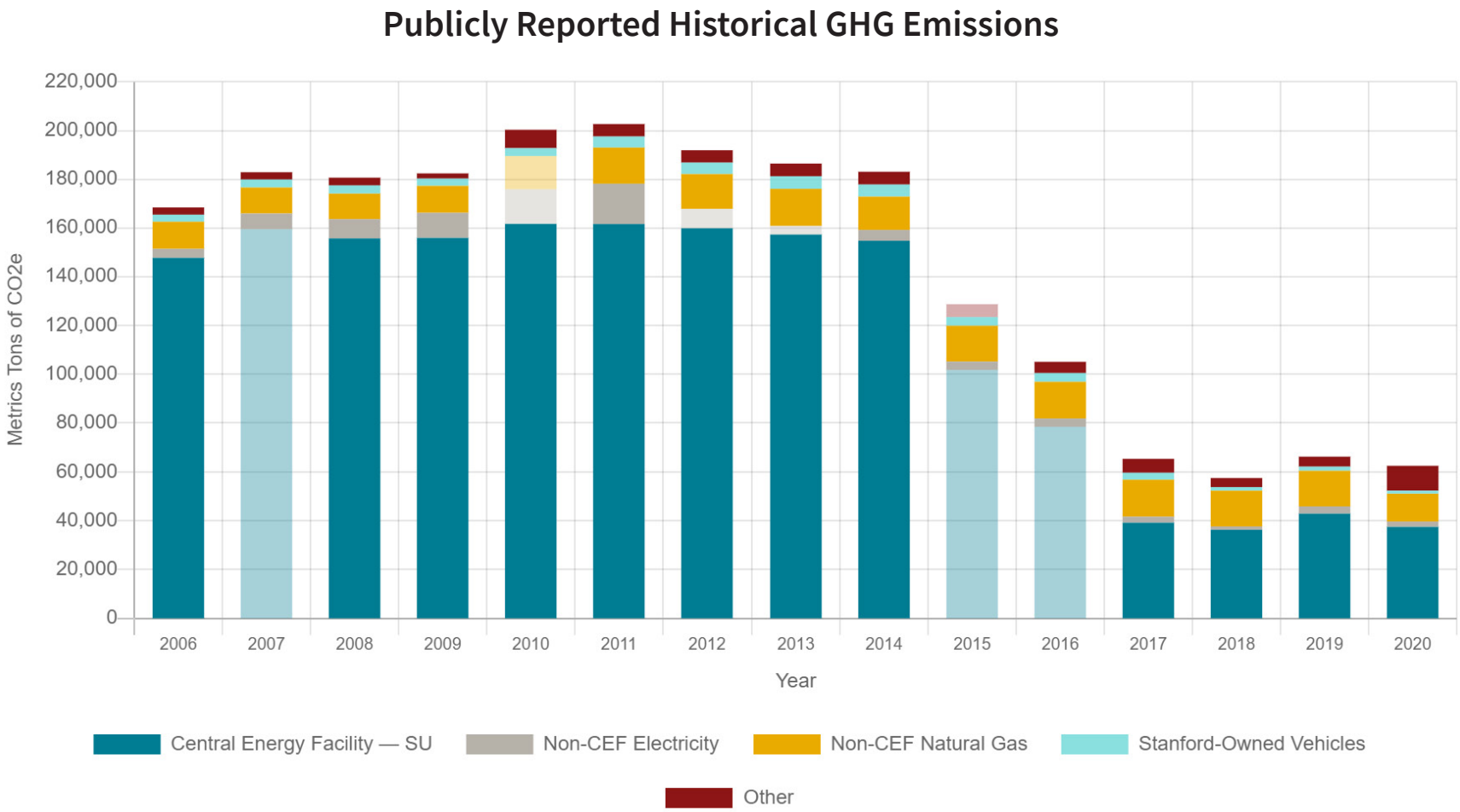
2020-21 Highlights

Reducing Campus Emissions Focus of New Stanford Program

Thermal Load Shift Commitment at Stanford Redwood City Campus' Central Energy Hub

Stanford Receives Platinum Ranking for Greenhouse Gas Emissions Reporting

Innovative Carbon-Free Solutions



This chart depicts Stanford's publicly reported and third-party verified Scope 1 and 2 emissions over time, which capture emissions associated with Stanford's building energy consumption, fleet fuel usage, and process and fugitive emissions. It does not include indirect Scope 3 emissions, which are currently under evaluation by the university's Scope 3 Emissions Program.

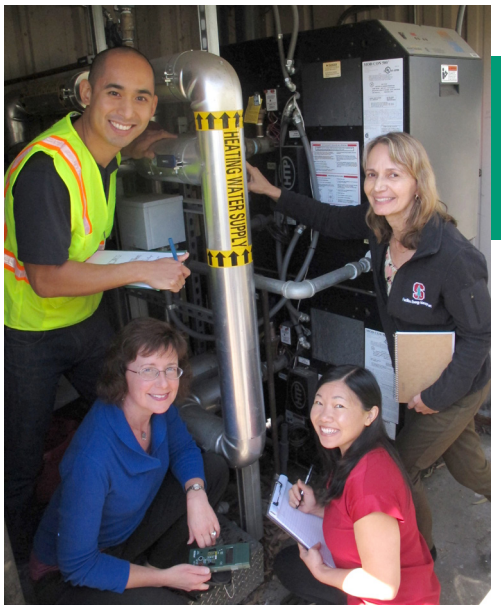
Pioneering Energy Management Solutions

Stanford has long been a leader in developing solutions to deliver maximum efficiency in buildings. To model sustainability while supporting the complex needs of its wide-ranging research initiatives, Stanford implements comprehensive, innovative energy management solutions that increasingly incorporate digital technologies to automate efficiency. It is this type of holistic approach to energy management that helped earn Stanford a Best Practice Award for Energy Efficiency and Sustainability (specifically, for Smart Direct Digital Controls Upgrades) at the California Higher Education Sustainability Conference in 2020.

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. More than 40 buildings on the main campus now rely on a new building automation system equipped with 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.

Complementing the progress enabled by SESI, demand-side management programs like the Whole Building Energy Retrofit Program and the Energy Retrofit Program have accounted for energy savings equal to nearly 16% of total energy used in 2000 and cumulatively estimated at $15.7 million, based on current utility rates, since their inception.

In 2020, facilities teams moved quickly to respond to the shelter-in-place restrictions and were able to shut off heating and cooling in 135 unoccupied buildings for several weeks—and in some cases several months. This allowed for significant reductions in energy consumption, as well as the launch of the COOLER program, through which researchers have begun chilled water load experiments in partnership with FEM in unoccupied spaces.



Pioneering Energy Management Solutions

In 2020-21, Stanford completed more than 30 Energy Retrofit Projects, avoiding more than $430,000 in energy costs. As of 2020, Stanford has reduced energy intensity on campus 36% from a 2000 baseline.

Even though some buildings were unoccupied due to shelter-in-place restrictions, overall energy use reflected only a small reduction compared to the prior year due to construction that added new building space on the campus. Increases in outside air ventilation to occupied buildings to dilute potential Covid-19 viral particles also impacted energy use. FEM worked closely with Environmental Health and Safety to develop guidelines for increasing building ventilation levels without excessively impacting energy costs and to change settings in the building automation systems to meet the guidelines. These ventilation increases utilized best practices for heating, ventilation, and air conditioning management during the pandemic. Even with the increased ventilation, the energy use intensity of campus buildings has improved over time, owing to the many initiatives pursued to improve energy efficiency.

2020-21 Highlights

New Air Handling Unit Continuous Commissioning program

Operating Suites “Sleep” at Night and on Weekends

High-efficiency Air Compressor at Beckman

Chemical Biology (Lorry Lokey) Building Automation System Gets a Refresh

Tuning Air Handlers at New Stanford Hospital Leads to Energy and Cost Savings

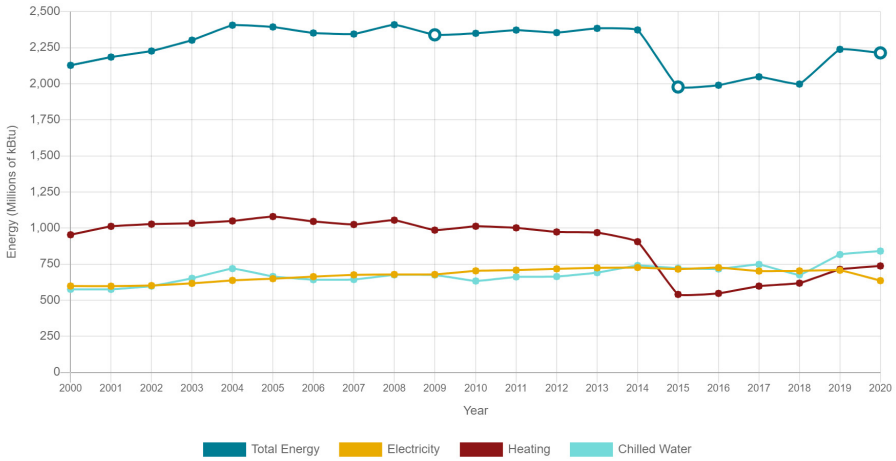
Electricity, Transformed!

Arrillaga Outdoor Education and Recreation Center Ongoing Commissioning

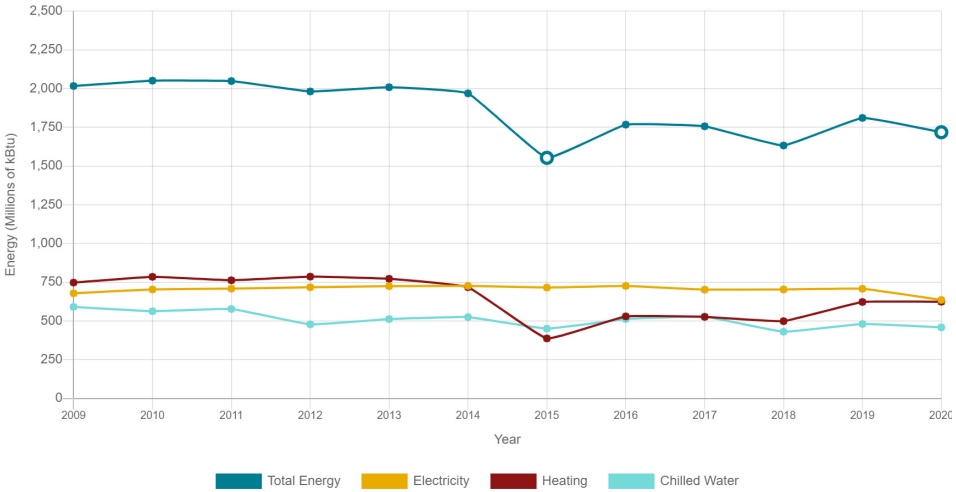
Pioneering Energy Management Solutions

Energy Demand Charts

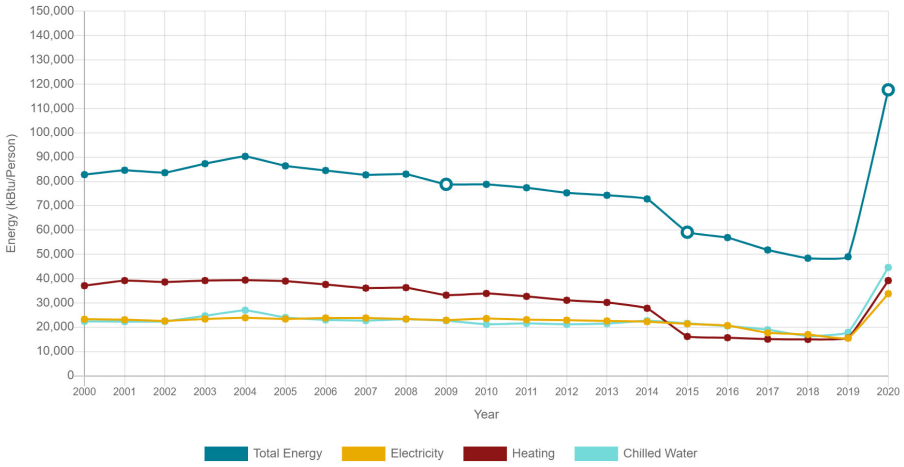
Total



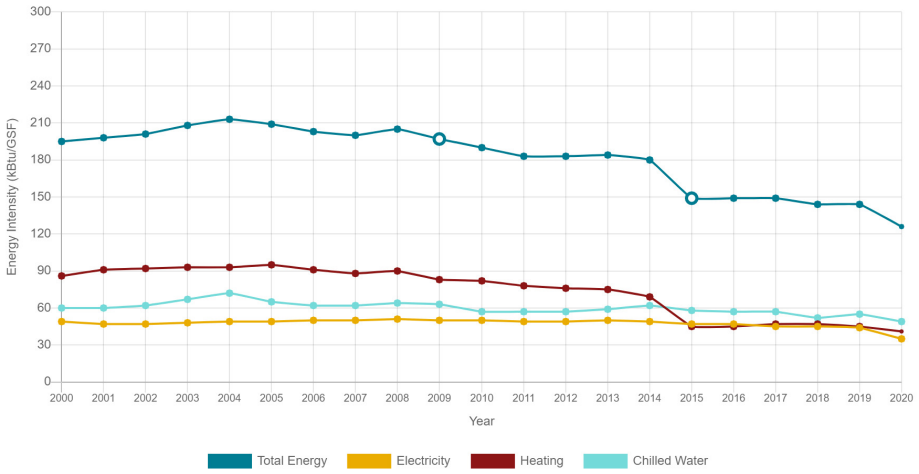
Total Without Hospital



Per Capita



Energy Intensity



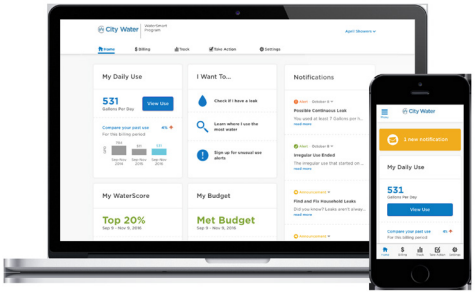
Stewarding Vital Water Resources

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.

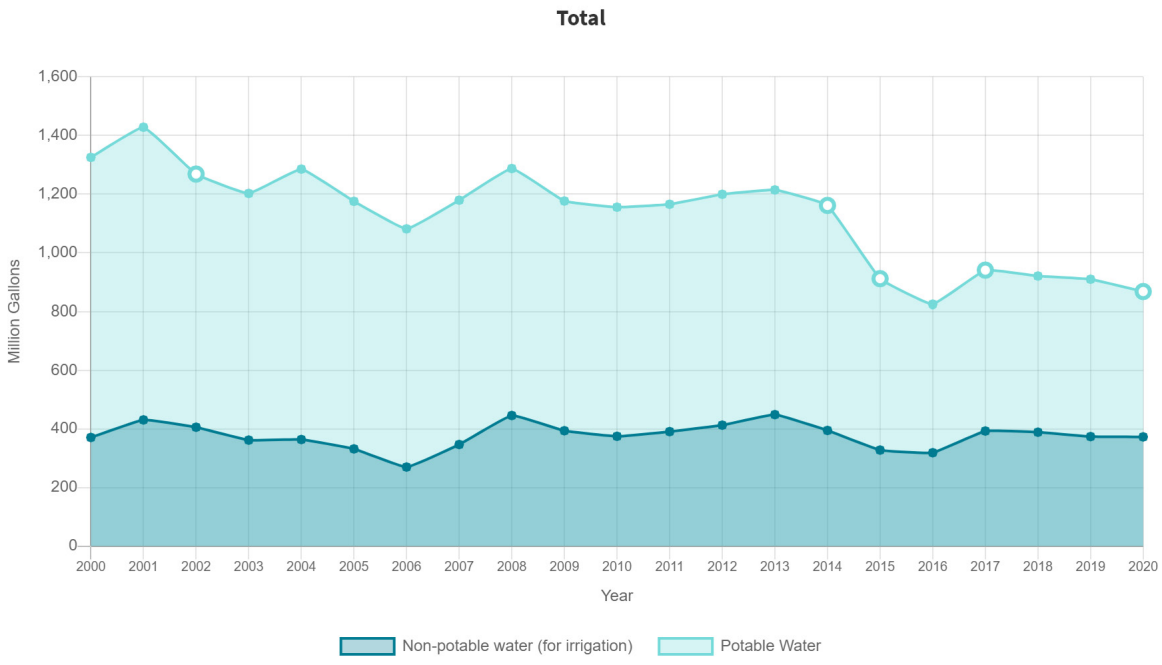
Since the university's water conservation program began in 2001, it has reduced total campus potable water use by 48%. All major campus water customers have achieved significant reductions in water consumption compared to the previous pre-drought baseline of 2013. With fewer people on campus due to the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

Stewarding Vital Water Resources

In 2020, potable water use decreased by 8% and non-potable water use stayed the same when compared to the previous year.



Water Consumption Trends



The individual point labels on this chart reflect non-potable and potable water consumption totals, respectively. Together, they comprise total water consumption.

2020-21 Highlights

WaterSmart

Water Quality on Campus

East Campus Stormwater Capture

Reduced Water Use on Campus

Increasing Waste Diversion

Stanford is actively progressing on its path toward diverting more than 90% of waste from the landfill by 2030. Managing campus resources in a way that prioritizes sustainable purchasing, reduction, and reuse, followed by recycling and composting, is critical to achieve the zero waste goal.

Even during the Covid-19 pandemic, the university achieved a diversion rate of 67%, which shows the ingrained waste reduction habits of the Stanford community. In addition, Stanford won the top award for the Per Capita category, large campus size, in the 2021 Campus Race to Zero Waste competition (formerly known as RecycleMania).

With the Office's knowledge that our campus waste characterization study showed that 26% of the waste going to landfill is recyclable and 36% is compostable, the university's Zero Waste Plan adopted a new waste system that incorporates best practices, industry standards, and efficiency standards to facilitate proper waste disposal. This new system will help the university not only reach its Zero Waste Goal, but also reduce touchpoints, keep bins more sanitary, and comply with future state regulations. Eight buildings piloted the university's new waste system, which implements eight distinct changes:

1. Increase centralized waste and recycling bins and eliminate deskside trash and recycling service
2. Replace all wheeled custodial carts with slim recycling containers to reduce touchpoints
3. Switch to single-stream recycling, where paper, plastics, metal, and glass are all combined
4. Centralize collection of flattened corrugated cardboard inside buildings
5. Add compost bins and service in breakrooms and kitchens
6. Collect paper towels from restrooms as compost (small trash bins will remain in stalls)
7. Custodians will now remove all recyclables, compostables, and landfill waste from buildings
8. Hauler will continue to service outside dumpsters and compactors

Increasing Waste Diversion

Designating responsibility for sustainable purchasing and responsible waste collection and sorting in contracts is an important part of the university's Zero Waste Plan. Therefore, a partnership between the Office and Stanford's Procurement Services Division has led to a new process to add waste reduction and sustainability language to vendor contracts.

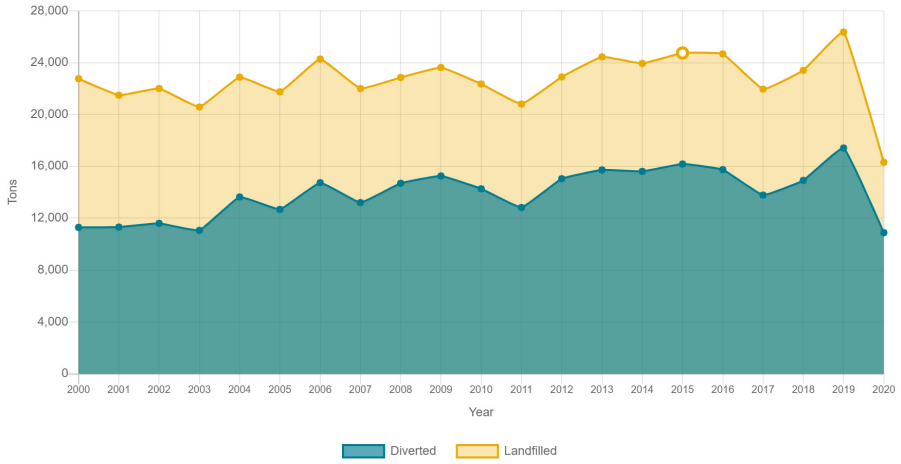
Starting in fall 2021, a new module will be incorporated into the New Student Orientation Mandatory Sustainability Training. The Office partnered with Students for a Sustainable Stanford, the ASSU, and Residential & Dining Enterprises to develop a waste sorting training module for students who are new to the campus. The training module educates them on the hows and whys of proper waste sorting and contains a quiz to check understanding. Now all students will be educated on proper waste sorting before arriving on campus and will help the university reach the Zero Waste Goal.

Increasing Waste Diversion

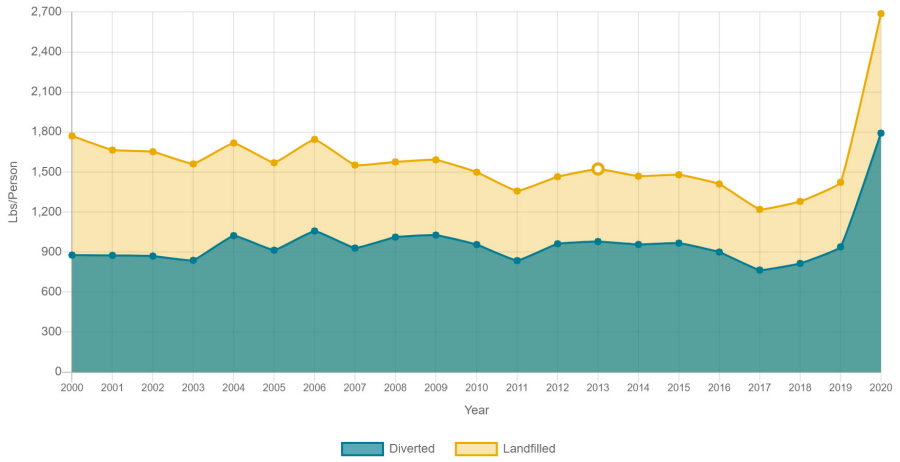
In 2020, Stanford recovered over 10,000 tons of waste, including 85 tons of reusable materials, 2,000 tons of recyclables, 6,400 tons of organics, and 1,900 tons of construction and demolition material.

Historical Waste Minimization

Total



Per Capita



The individual point labels on this chart reflect diverted and landfilled waste totals, respectively. Together, they comprise total waste generated.

2020-21 Highlights

[Newly Created Virtual Waste Tours]

[All About No Waste Community]

[67% Diversion in 2020]

[Stanford Wins 1st place for Per Capita Recycling in Campus Race for Zero Waste]

[Stanford Receives 2021 Environmental Impact Achievement Award for Lab Glove Recycling]

[Zero Waste Building Pilots]

Living and Eating Sustainably

Residential & Dining Enterprises (R&DE) is home to 15,000 residents and serves 18,000 meals per day across its more than 375 facilities for dining, catering, hospitality, and student and faculty residences. 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 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 these six pillars:

- Climate-smart dining, especially reducing food waste and advancing plant-forward diets;
- Racial equity and support for Black-owned businesses;
- Curbing deforestation through supply chain pressure;
- Thriving oceans;
- Catalyzing a circular economy of food; and
- Embracing systems thinking.

R&DE 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. R&DE 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.

This year, R&DE also released 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 student 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.

Living and Eating Sustainably

R&DE is a critical contributor in achieving the university's zero waste and climate goals. Across its eateries and cafes, R&DE Stanford Dining expanded its food waste reduction initiatives in 2020-21, utilizing multilevel strategies centered on source reduction, food waste monitoring, consumer education campaigns, and food recovery and donation initiatives. In 2019, Stanford Dining formed a Food Waste Reduction Task Force to develop a roadmap for accelerating solutions for reducing food waste. It released a new target in April, building on Stanford Dining's long-standing initiatives by committing to further reduce its food waste by 25% by the end of 2022. R&DE continues to partner with the Loaves and Fishes A La Carte food rescue program to donate excess food from dining halls, cafes, and concessions to local organizations. 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 100,000 pounds of food to the Stanford community since its inception in August 2019.

This systematic analysis to identify opportunities for efficiencies is a focus across R&DE operations. This year R&DE has experimented with several new technologies, including smart thermostats and sensors that track air quality and thermal comfort, and it has even worked with students to develop their own sensors that monitor waste production and service. Additionally, a comprehensive survey was undertaken of more than 1,000 graduate students to get an in-depth look at how they manage their waste, how much they are willing to sort, and how frequently and how far they are willing to travel to dispose of it.

2020-21 Highlights

R&DE Expands Donation Program Throughout the Year

R&DE Releases New *One Plate, One Planet* Vision for its Sustainable Food Program

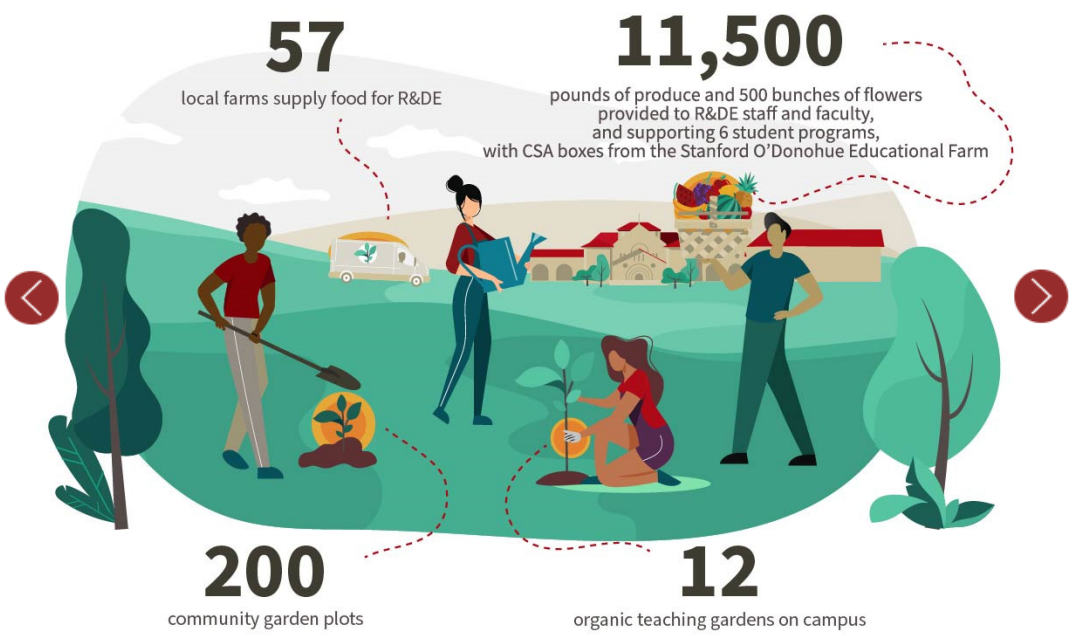
Stanford Dining Joins Drawdown Labs: First University, First Foodservice Member, Working with Bold Private Sector Leaders to Scale Climate Solutions

Stanford Dining Participates in Multi-site MCURC Study Revealing Two Untapped Solutions for Reducing Food Waste

By Sharing Insights on its Protein Portfolio and the MCURC Collective Impact Initiative, Stanford Dining Begins to Work with Student Rebecca Grekin and Faculty Sally Benson to Tackle Stanford's Next Frontier for Climate Action: Scope 3 Emissions

Stanford Dining is Recognized by the Foodservice Industry as a Model of Gender Equity, Especially as Relates to Sustainability and Supporting Small-Scale Producers, Marking the Beginnings of its New Purchasing Program with Black Farmers

Living and Eating Sustainably



In 2020-21, R&DE expanded its strategic partnerships, elevated its thought leadership in the campus dining sector and the broader foodservice industry, and released the vision and core pillars of its *One Plate, One Planet* program.

Advanced Building Design and Construction

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.

DPM completed two new buildings this year despite pandemic restrictions and extra safety precautions for construction workers. These buildings replace outdated "temporary" structures with modern facilities for medical school faculty and public safety officers.

The Center for Academic Medicine (CAM) building consolidates office and administrative space for several Stanford Medicine departments that were formerly scattered throughout the medical campus. The new center houses faculty, researchers, and administrative staff in support of the nearby Stanford-affiliated hospitals and clinics. Along Quarry Road, the CAM

embraces its verdant setting at the Stanford Arboretum to foster an environment that supports physician wellness with amenities such as a gym, a cafeteria, and concierge services. The accompanying three-story underground parking structure incorporates a demand-controlled ventilation system. It utilizes sensors and smart-control logic to detect and measure vehicle exhaust and to modulate garage exhaust fan speeds to keep carbon monoxide and nitrogen dioxide concentrations at safe levels. According to engineers from the Illinois Institute of Technology, this control approach is 84% more energy efficient than the prevalent means of garage ventilation control currently deployed in new construction nationwide and 73% more effective than "on-off" control systems installed in Stanford's older underground parking structures.

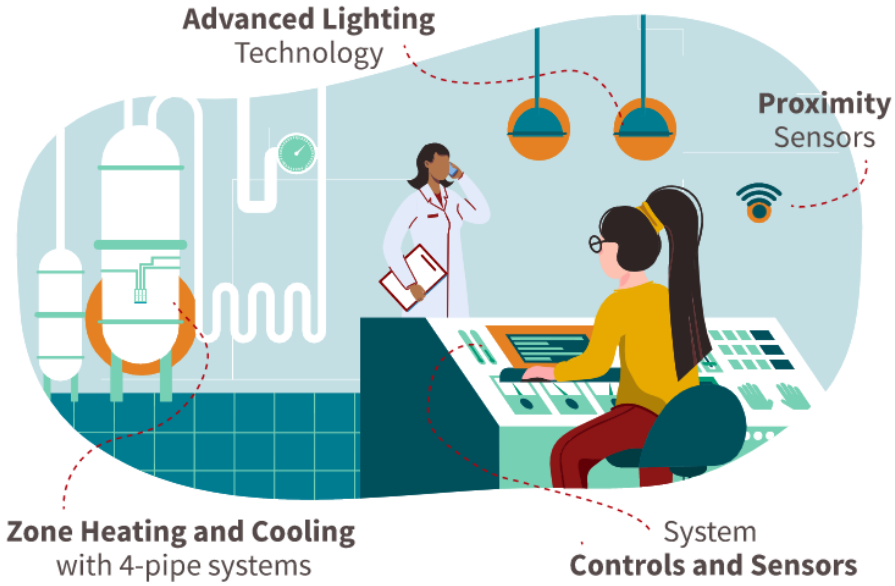
Advanced Building Design and Construction

The new Public Safety Building houses the department's programs and staff, such as the Stanford Chief of Police, deputy sheriffs, and non-sworn personnel, including community service officers, public safety officers, special events patrols, and support staff. The department was located for many years in an outdated and undersized main facility and in a variety of modular and satellite structures on the east side of campus. The 1968 Fire and Police Facility will continue to house the Stanford fire station, and the modular/satellite structures will be removed to reclaim land for other uses. The new Public Safety Building is more energy efficient than the old structures it replaces; it complies with California's strict Energy Code and is connected to Stanford's low-carbon central chilled and hot water systems.

Operations teams collaborate with the building design team to understand energy consumption and set energy targets for all buildings, working closely together to ensure buildings perform as designed. Because of the coordinated approach to achieving sustainability targets, Stanford's building portfolio operates at a LEED Gold standard.

In 2020, the Center for Academic Medicine buildings were consolidated to optimize the building space, utilizing cutting-edge ventilation and energy efficiency systems

Strategies that Contribute to Efficiency in New Construction:



Expanded Sustainable Transportation Options

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.

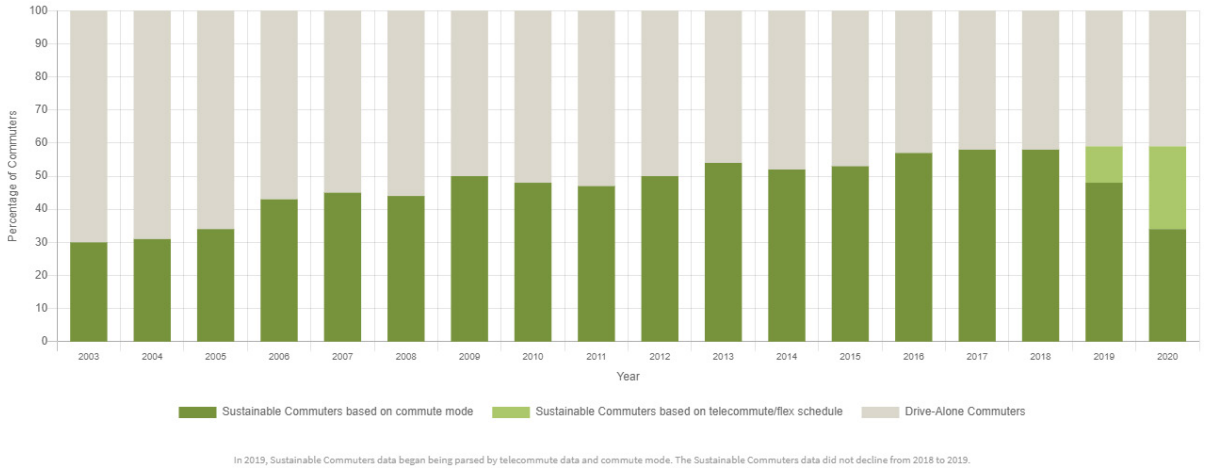
Stanford's Transportation Demand Management (TDM) program consists of innovative approaches for getting students, faculty, and staff to campus by means other than single-occupancy vehicles. Spearheaded by Stanford Transportation, the TDM program aims to reduce university-related traffic impacts, emissions,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

In 2020, many Stanford employees worked remotely on a part-time or a full-time basis due to the Covid-19 pandemic. Over this time, many Stanford Transportation programs were adjusted to reflect the shelter-in-place and stay-home orders.

Expanded Sustainable Transportation Options

In 2020, some 59% of campus commuters (employees and commuting students) utilized sustainable transportation options on a regular basis

Rate of Sustainable Transportation Commuters



2020-21 Highlights

Stanford Transportation Receives Awards for Marketing and Transportation Demand Management

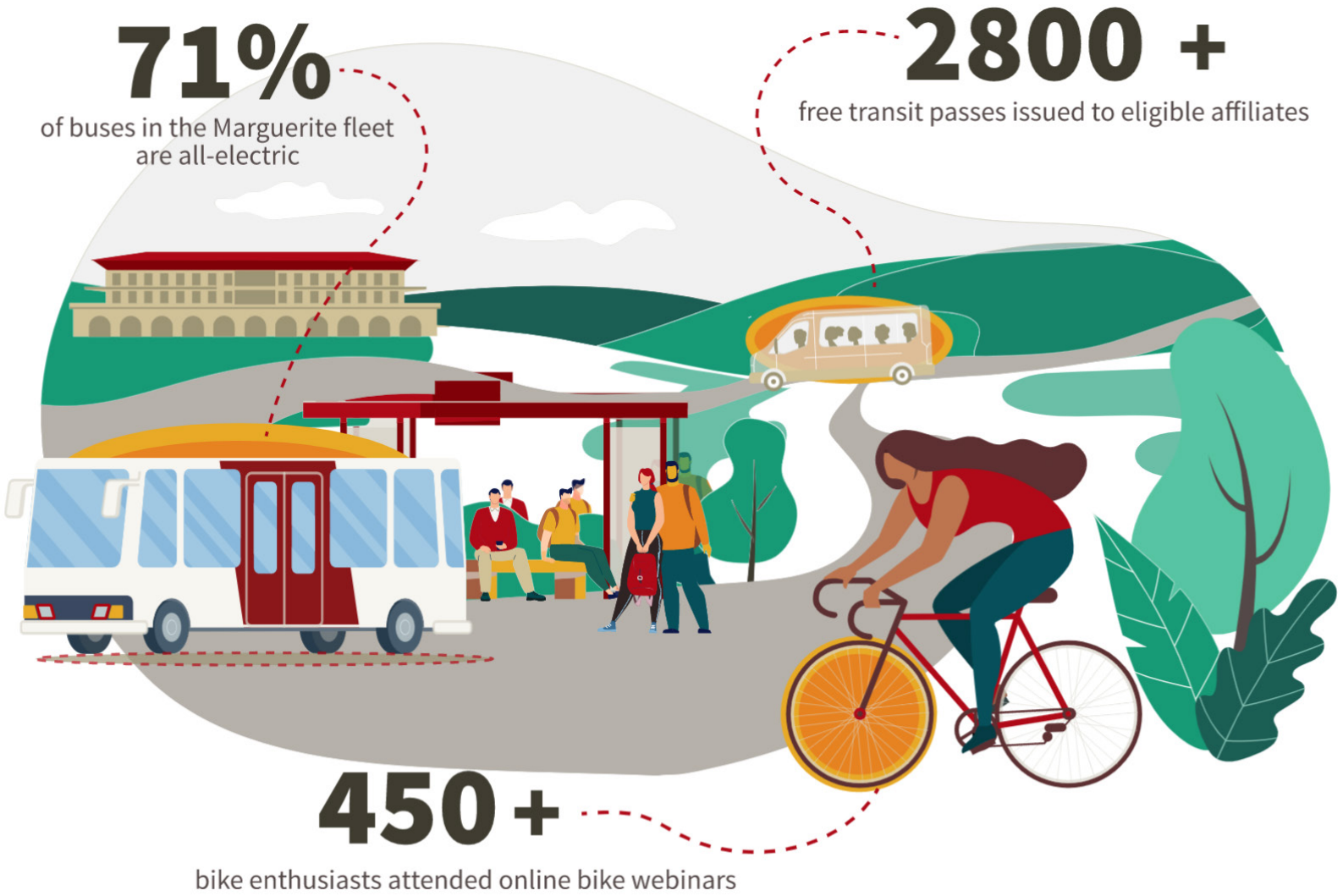
Pedal Together Pilot Program Launched

Caltrain Go Pass and VTA SmartPasses Extended Due to Shelter-in-Place

2020 Year at a Glance

Expanded Sustainable Transportation Options

Reduced Environmental Impact from Transportation



View the online version of this publication at: https://sustainability-year-in-review.stanford.edu/2021/

About Us
The Sustainable Stanford Year In Review is produced by the Stanford Office of Sustainability. The Office of Sustainability makes sustainability a core value, value-add and a tangible part of the Cardinal experience. OOS connects campus departments and entities and works collaboratively with them to steer sustainability-specific initiatives and provide a business office in service of sustainability programming, with a focus across seven key areas: infrastructural planning support; assessments, evaluations, and reporting; business systems; conservation programs; communications, training, and education; collaborative governance; and organizational effectiveness.

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For more information visit:
sustainable.stanford.edu

If you have questions, email:
becardinalgreen@stanford.edu

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