UCLA Climate Action Plan

Review Instructions and Notes

This Draft Climate Action Plan has not yet been graphically formatted. Once input has been received and incorporated from the campus community, the plan will be designed. Figures will be aligned graphically and numbered, additional images and graphic elements will be added.

Please use this form https://forms.gle/JcCYqQrApea9sa4v7 to submit your feedback.

Executive Summary

UCLA has established a long-standing commitment to environmental stewardship, with a history of leadership in sustainability and climate research spanning over fifty years. This updated Climate Action Plan (CAP) outlines the university's aggressive targets and comprehensive strategies as of 2026, aimed at mitigating greenhouse gas (GHG) emissions and developing adaptive measures to protect the campus and community from climate impacts such as wildfire and extreme heat. UCLA approaches the physical campus as a living laboratory where operational initiatives, academics, and engagement converge to demonstrate climate solutions for the region and the world. This approach aligns with the new strategic focus *One UCLA* which seeks to deepen connections with Los Angeles.

UCLA Greenhouse Gas Emissions Targets and Baseline

This updated Climate Action Plan addresses three main categories of emissions: Scope 1, which is direct combustion of fuels such as natural gas in the campus cogeneration plant and fuel used in the campus fleet; Scope 2, which is purchased electricity; and Scope 3, which are indirect emissions from sources like employee and student commutes, air travel, and landfill waste. Despite remarkable growth since 1990, including an 80% increase in gross square footage and a surge in energy-intensive medical and lab facilities, UCLA's greenhouse gas emissions have remained approximately at 1990 levels due to continuous efforts in energy efficiency, renewable energy, and sustainable transportation.

This Climate Action Plan addresses the requirements of the UC Policy on Sustainable Practice,s Climate Protection section, and establishes 2019 as the base year for setting reduction targets. [Note: the exact 2019 baseline is currently under revision based on recent acquisitions, according to formal Climate Registry protocols. This revision will be complete prior to the publication of this draft]. The current estimate for adjusted GHG emissions for 2019 (Scopes 1, 2, and 3) were 359,773 Metric tons CO2e.

UCLA has adopted ambitious targets for reducing its direct emissions (Scope 1) from the 2019 baseline of 248,826 MT CO2e:

Target Year	% Reduction Relative to 2019 Baseline	Scope 1 Metric Tons CO2e
2030	10%	223,943 (exact tons to be adjusted)
2035	50%	124,413 (exact tons to be adjusted)

2040 90% 24,882 (exact tons to be adjusted)

In addition to Scope 1 goals, UCLA is committed to achieving at least a 90% reduction in total emissions (Scopes 1, 2, and 3) from the 2019 baseline by 2040, targeting a reduction to 35,977 MT CO2e.

UCLA, along with the UC system, is also committed to achieving 100% clean electricity procurement by 2025.

Core Decarbonization Strategy: Energy Systems (Scope 1 & 2 Mitigation)

Energy efficiency is a cornerstone of any decarbonization pathway, and UCLA has a long history of efficiency initiatives. This updated CAP details energy efficiency initiatives on the main campus as well as some specialized initiatives in Housing and in the Health System. Strategies include a Smart Buildings and Labs (SBL) program that targets high-intensity lab and research buildings, which consume up to three times more energy per square foot than classrooms; an LED Lighting Program; and metering and space optimization programs to leverage real-time occupancy data to enable demand-controlled ventilation and reduce energy use in underutilized spaces.

To determine a pathway for direct decarbonization, UCLA completed a major Decarbonization Study in 2024 (funded by the State of California and conducted by WSP) to analyze strategies for deep reductions in Scope 1 emissions. This study identified the optimal pathway as Nodal All-Electric Heating and Cooling Plant with Accelerated Decarbonization, a strategy that includes decentralized electric plants at different locations around the campus, and shifts the cogeneration plant to backup power for resilience for the campus and hospital. The study noted that deploying interim solutions like the industrial heat pump early significantly reduce cumulative emissions. While capital-intensive, the phased approach spreads costs and disruptions over time. UCLA has undertaken an implementation phase focused on the top priority projects under this pathway- the installation of an all electric chiller at the cogeneration plant, the first nodal plant at the Center for Health Sciences, and the industrial heat pump. This CAP integrates the recommendations from this study into climate action planning for the university and includes details of the recommended pathway and progress.

UCLA Health has unique targets as a medical system, within the broader UCLA strategy and a target of 50% reduction in organizational emissions (Scope 1, 2) by 2030. The updated CAP for UCLA includes a section on UCLA Health initiatives including plans for an all-electric plant at Ronald Reagan Medical Center (RRMC) electrification of new facilities including the Mid-Wilshire Hospital and 5210 Pacific Concourse; and evaluating feasibility of an all electric plant at the Santa Monica Medical Center.

Mobile Sources and Other Scope 3 Emissions Mitigation

UCLA's Climate Action Plan includes mobile sources (fleet, commuting, and air travel) and new categories of Scope 3 emissions like solid waste, recognizing that these Scope 3 activities are significant contributors to the overall carbon footprint. Fleet emissions from UCLA's fleet of over 1,000 vehicles are part of Scope 1. A significant $19.85 million grant will enable the entire BruinBus fleet to transition to 100% electric, funding California's first in-road electric charging system, timed for the 2028 Olympic and Paralympic Games. In preparation for the continued electrification of the fleet and commuting vehicles, UCLA has expanded EV charging options with 474 Level 1 chargers, 16 Level 2 chargers, and 6 DC Fast Chargers on the main campus.

Commuting remains UCLA's largest mobile source of CO_2 emissions, accounting for over 79% of mobile source emissions in 2024. Emissions mitigation relies on shifting commuters away from single-occupancy vehicles (SOVs) through incentives like transit passes and parking strategies, and through telecommuting. Future transportation infrastructure, the Metro D (Purple) Line Extension, set to open in 2027, will bring a subway station directly to UCLA's doorstep, drastically enhancing regional access and reducing car dependency.

Air travel is another key source of Scope 3 emissions and mitigation strategies include prioritizing virtual participation, shifting short-haul trips to rail, and purchasing high-quality carbon offsets. Solid waste is a new Scope 3 category for UC beginning in the 2025 annual sustainability report. UCLA is developing an updated Zero Waste Plan focused on reducing landfill waste, which is the source of GHG emissions in this category. Other potential sources of Scope 3 emissions reporting are under consideration by a UC working group.

Climate Resilience Planning

UCLA has broadened its commitment to include climate resilience planning—preparation for external shocks and stressors, particularly climate impacts like extreme heat and drought.

The University of California system is guiding this effort through a framework that incorporates Justice, Equity, Diversity, and Inclusion (J.E.D.I.) to address existing inequities that make some communities more vulnerable to climate change. UCLA Health is integrating this equity-centered approach into its resilience planning. UCLA also collaborates regionally, having contributed to the development of Resilient Los Angeles and the Climate Vulnerability Assessment for LA County.

Research, Education, and the Living Laboratory

The massive energy system transition outlined in the CAP creates opportunities for applied teaching and research involving the physical campus. The Decarbonization Study identified opportunities for applied research, especially in engineering disciplines focusing on data analysis of the new energy system, but also in fields such as urban planning, economics, and sociology, which can study the wider societal impacts of a decarbonized system. Students are actively engaged through programs like the Sustainability Action Research Program and the UC President's Bonnie Reiss Leading on Climate Fellowship Program. Furthermore, UCLA students have conducted applied research to examine best practices for education and outreach strategies, as well as developing phased and practical approaches for tracking Scope 3 emissions related to the supply chain and procurement.

Implementation and Next Steps

The overall success of this plan hinges on developing strategies for financing, which is crucial given current budget uncertainties. Implementation for the core decarbonization strategy has already begun: in 2025, UCLA selected WSP to lead the detailed design and costing for the first phase of priority projects, including installing a fully electric chiller, the first nodal electric plant at the Center for Health Sciences, and the Industrial Heat Pump.

The planning and execution of these initiatives are advised and reviewed by the Climate Action Task Force, a high-level group including faculty experts, students, staff operations experts, and key Vice Chancellors. After review and input from the broader campus in Winter Quarter 2026, the finalized plan will be published in Spring Quarter 2026 on the university's Decarbonization and Climate Action Planning webpage: https://sustain.ucla.edu/climate-and-energy/ucla-decarbonization-planning/

Introduction and Background

UCLA has a more than fifty year history as a leader in sustainability and climate research and education. The university recognizes the urgency of the climate crisis and is committed to modeling climate solutions in the physical operations of the campus, including actions that will mitigate greenhouse gas emissions and developing adaptive strategies to protect the campus and community from climate change impacts such as extreme heat and wildfire. This plan outlines UCLA's climate targets and initiatives as of 2026. There is significant uncertainty related to funding

during the current budget crisis, so this plan is intended to support developing strategies for financing, and updates will be published regularly on the university's Decarbonization and Climate Planning webpage. This plan will highlight relevant research and address how to connect operational and academic initiatives in climate, and further the campus as a living laboratory. This plan will also highlight how these climate initiatives align with UCLA's new strategic focus One UCLA which includes institutional effectiveness, research innovation, and deepening connections with Los Angeles.

Across the University of California (UC), we practice what we teach on our university campuses. The physical campus serves as a living laboratory for sustainability where academics, operations, and engagement come together and we demonstrate solutions for our state, our nation, and the world. In June 2004, the University of California then-President, Robert Dynes, approved the UC Sustainable Practices Policy guidelines for the UC system to minimize its impact on the environment and decrease its dependence on non-renewable energy. In 2006 Chancellor Albert Carnesale signed the charter for the Chancellor's Advisory Committee on Campus Sustainability, now called the Sustainability Committee- a high level group of administrators, staff, faculty, and students that coordinates sustainability across the university and recommends policies and programs.

In 2007, then-President Robert Dynes and UCLA Chancellor Norm Abrams signed the American College and University Presidents' Climate Commitment (ACUPCC), now known as the Second Nature Carbon Commitment and a section on Climate Protection Practices was added to the UC Sustainable Practices Policy. UCLA's initial Climate Action Plan was published in 2008 and addressed the prior policy targets for achieving parity with year 2000 emissions levels by 2014, achieving 1990 levels by 2020, and eventual carbon neutrality. UCLA achieved that target and has maintained emissions around 1990 levels since 2020. In 2013, UC President Janet Napolitano declared that UC will be the first research university to achieve carbon neutrality, with a target date of 2025. In December 2015, Chancellor Gene Block signed an expanded Climate Leadership Commitment, building on the original Presidents' Climate Commitment to include climate resilience planning. UCLA drafted a plan in 2016 to achieve the carbon neutrality target. In 2016 UCLA also created an Executive Sustainability Committee of campus leadership to ensure high level commitment to sustainability. In 2016, a decade after the formation of the Sustainability Committee and in recognition of the growing scope of sustainability initiatives and the challenges ahead, an Executive Committee was created for the Sustainability Committee, engaging key Vice Chancellors and campus leadership.

In order to accelerate its transition away from fossil fuels, the University of California has adopted new, stronger climate action goals that prioritize direct emission reductions, limit the use of carbon offsets and align UC's climate goals with those of the State of California. This updated Climate Action Plan replaces the 2016 Carbon Neutrality Plan. In 2024, UCLA completed a major Decarbonization Study, funded by the State of California, to develop and analyze strategies for a 90 percent or greater reduction in Scope 1 emissions from fossil gas use in campus energy systems. The study was conducted by WSP, consultants selected by public RFQ, and advised by a Decarbonization Task Force that includes faculty experts, students, and staff operations experts from UCLA. That Task Force has now transitioned to a Climate Action Task Force that advised and reviewed this plan (see Task Force Membership in Appendix). The recommended solutions from the Decarbonization Study are integrated into this Climate Action Plan.

Greenhouse Gas Emissions Inventory

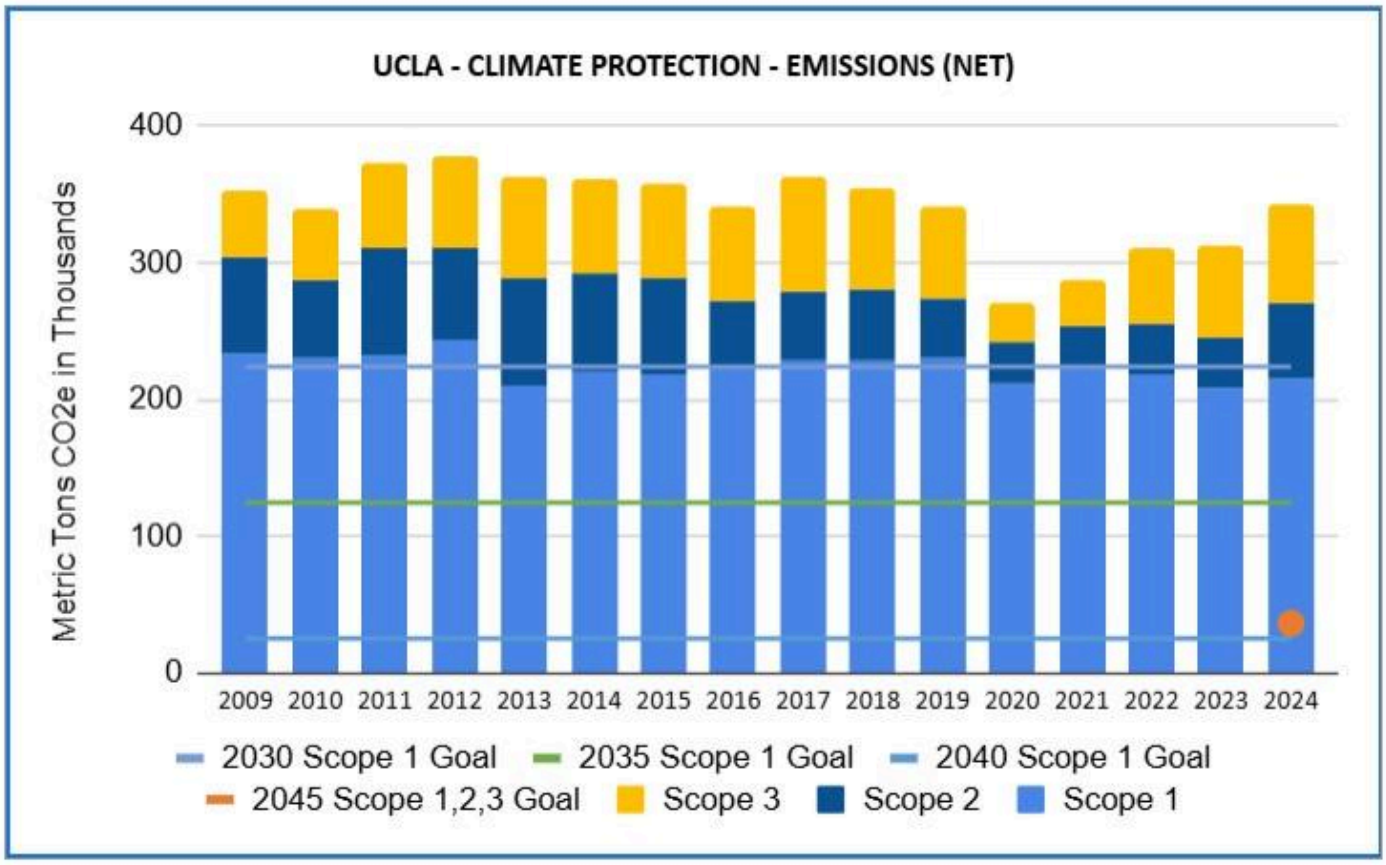
UCLA tracks greenhouse gas emissions, per the UC Sustainable Practices Policy, from the following main sources:

Scope 1 – Direct Emissions: on-site natural gas, diesel, and propane combustion; campus fleet emissions; and fugitive emissions
Scope 2 – Indirect Emissions: purchased electricity
Scope 3 – Indirect Emissions (Other): University-funded business air travel and student, staff, and faculty

commuting, and beginning with the 2024 year emissions due to solid waste. Other Scope 3 emissions are being explored.

Scope 1 and Scope 2 emissions are tracked according to The Climate Registry (TCR) general reporting protocol, financial control option. The scope includes all properties owned and operated by UCLA, on and off the main campus. Leased properties are not included. The TCR emissions inventories are then verified by a third party. UCLA also conducts greenhouse gas (GHG) emissions inventories under the California Air Resources Board (CARB) protocol for AB32/Cap and Trade compliance (Scope 1 only) and reports that inventory separately. Under TCR, UCLA currently reports under the Financial Control option- meaning that all the properties UCLA owns on the main campus and off campus are included (leased properties are not included). GHG inventories are posted on the sustainability website Climate and Energy Page.

Since 1990 UCLA has grown over 80% in gross square footage (GSF), adding over 16 million square feet to the university's footprint, the equivalent of over 8,000 average size single-family homes. Over the last two decades, UCLA research awards and grants have exploded from less than $300 million to over one billion dollars annually, adding significant energy intensity through increased medical and lab facilities. One would expect with such remarkable growth to see a parallel increase in greenhouse gas emissions. Yet, through a combination of energy efficiency, renewable energy, sustainable transportation programs and offsets, UCLA's greenhouse gas emissions remain at roughly the same level as in 1990.



Baseline- Base Year Emissions

As outlined in the UC Sustainable Practices Policy, UCLA is using 2019 as the baseline year against which GHG emissions reductions will be evaluated (UCSPP III.C.1.).

According to formal GHG protocols, the baseline year emissions have been adjusted from the previously reported amount reflected in the graph above, to the adjusted amount below, which includes historical estimates for newly acquired properties such as the UCLA South Bay campus and the West Valley Medical Center. Buildings that were built after 2019 rather than acquired are not included in the adjusted baseline. Additionally, Scope 3 emissions from commutes and air travel for the baseline year have been adjusted to match the current revised methodology to offer an analogous comparison. The baseline was also adjusted to include the newly added Scope 3 category- landfill waste. If additional categories of Scope 3 waste are added, the baseline will need to be updated accordingly.

UCLA 2019 Total Greenhouse Gas Emissions Historical	359,773
UCLA 2019 Total Greenhouse Gas Emissions – Adjusted Baseline	XXX,XXX

Business As Usual (BAU)- Growth Projections

Through the UCLA Campus Decarbonization Study, a loads analysis was conducted to review data for peak and annual heating, cooling, and power loads on campus over the last two decades. This helps us understand the trends in energy consumption, a substantial amount of which goes towards heating and cooling buildings. The historical trend, encompassing the impacts of climate change, energy efficiency, equipment power density, changes in space types, and retrofitting of building systems, among others, was formulated using data spanning from 2002 to 2022. Building gross square footage growth is also an important factor in the final campus load projections. Based on the campus' Long Range Development Plan (LRDP) and projections from UCLA, a 1% growth rate in energy usage was assumed through 2045.

The graph below shows peak load projections for campus power between 2025 and 2045:

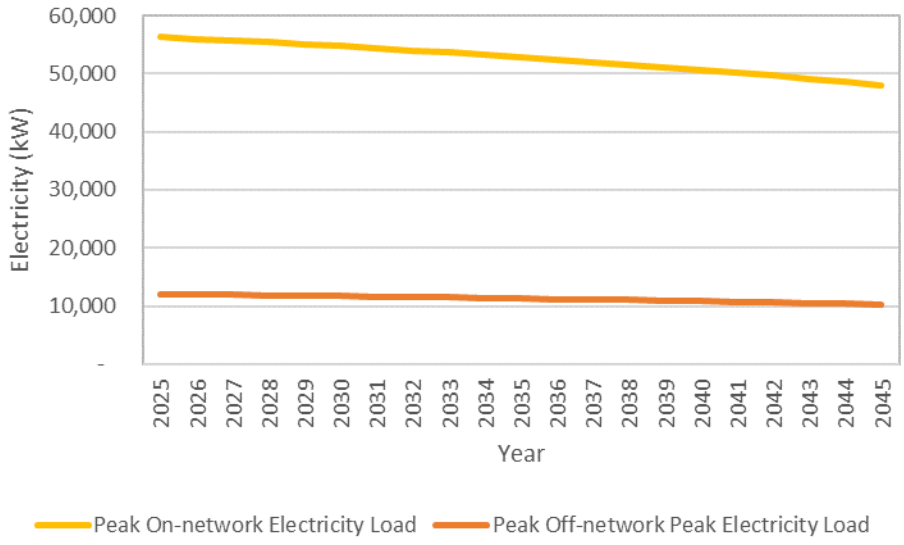


Figure - Peak campus power demand projections from 2025 to 2045. See Appendix A of the UCLA Decarbonization Study for table of values. On-network refers to buildings and electrical demand served by the primary campus electrical infrastructure and microgrid. Off-network refers to all other electrical services including those off campus.

The decrease seen is driven by historical trends and efficiency improvements across buildings and equipment in the last twenty years. The resulting growth rate in peak power demand is -3.22% through 2045. While these peak electrical loads represent the entire campus, it is important to note that this projection covers current energy end uses on campus (plug loads, lighting, existing HVAC systems), but not the steam energy currently produced from natural gas to deliver heating, cooling and power.

The following figure shows that future electricity intensity (total energy per sqft per year as compared to the peak demand above) is also assumed to decline through future years to 2045.

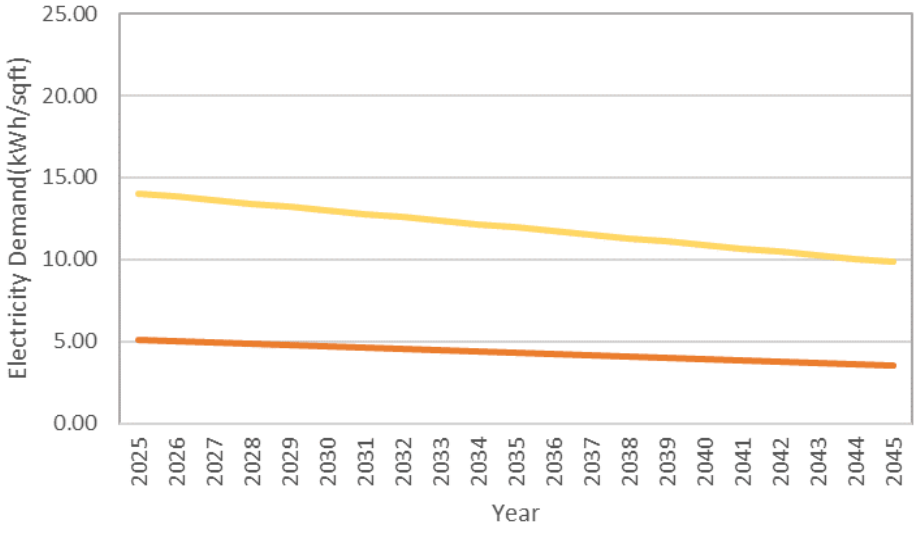


Figure - 2025-2045 Annual electricity demand per sqft projection

Note that these projections do not include new electrical loads for electrification of campus heating and cooling systems, or other potential future demands, such as growth in EV charging demand, which are addressed separately in the Decarbonization Study.

Each successive year in these projections accounts for changes stemming from climate change, equipment power density, and improvements in energy efficiency. The graph below shows peak load projections for campus chilled water between 2025 and 2045.

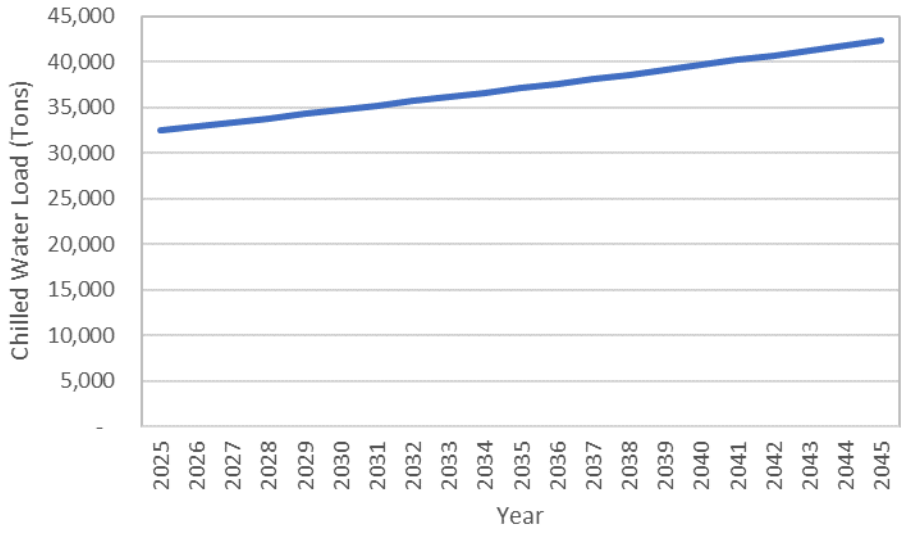


Figure – Peak campus chilled water demand from 2025 to 2045.

The following graph shows peak load projections for campus heating (via steam) between 2025 and 2045. The peak heating growth is largely due to projected increases in building area on campus.

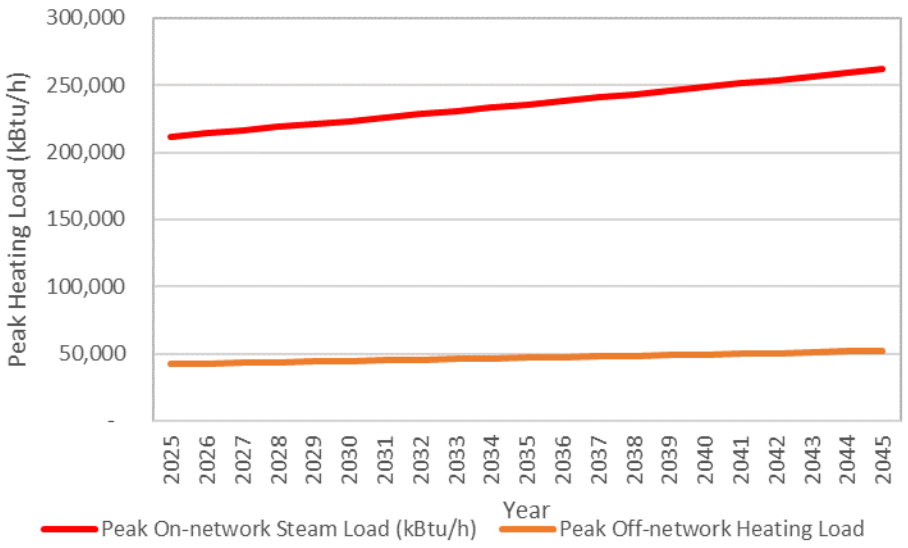


Figure – Peak campus steam demand projections from 2025 to 2045.

These projections are focused on the main Westwood campus. For overall UCLA emissions growth under a Business As Usual scenario (without mitigation measures) we assume a similar growth percentage. More detailed growth projections will be developed under the updated Long Range Development Plan (Long Range Development Plan), and the Climate Action Plan will be adjusted to align with the LRDP.

Greenhouse Gas (GHG) Emissions Reduction Targets

UCLA has set the following Scope 1 greenhouse gas emissions targets, following the Climate Protection section of the UC Sustainable Practices Policy, as percent reductions from the 2019 base year.

	Target	
Year	**% reduction relative to 2019 baseline year**	**Scope 1 Metric tons CO_2e**
2019 Baseline	N/A	248,826 - adjust
2030	10 %	223,943 - adjust
2035	50 %	124,413 -adjust
2040	90%	24,882 - adjust

In addition, UCLA is committed to achieving the Climate Action policy goal of at least a 90% reduction in total emissions (scopes 1, 2, and 3) before the policy requirement of 2045. Our goal for full decarbonization of scopes 1, 2, and 3 is as follows.

	Target	
Year	**% reduction relative to 2019 baseline year**	**Total (scope 1, 2 & 3) Metric tons CO_2e**
2019 Baseline	N/A	359,773- adjust
2040	90%	35,977- adjust

Along with other UC campuses, UCLA is also committed to other related targets in the UC Sustainable Practices Policy including 100% clean electricity procurement by 2025 and specific energy efficiency targets.

Scope 1 and 2 Greenhouse Gas Mitigation (Reduction) Strategies- Stationary Sources- Energy and Decarbonization

Energy efficiency and decarbonization are cornerstone strategies in UCLA's Climate Action Plan, given their direct impact on greenhouse gas emissions, operating cost, and climate resilience.

UCLA is leading by example in implementing these commitments and has set a stretch goal to reduce Scope 1 GHG emissions by at least 90% from a 2019 baseline by 2040 and aims to significantly reduce campus wide energy use through the following:

- Targeting Scope 1 emissions, especially from its cogeneration plant, which accounts for the majority of campus emissions.
- Committing to electrification of heating and cooling systems and phasing out fossil fuel infrastructure.
- Expanding renewable energy and energy storage, including smart metering, LED retrofits, and battery energy storage systems (BESS).
- Implementing retrofits, new controls, and demand side management.

- Increasing the share of renewable energy both on site and through clean electricity procurement and modernizing the utility systems for improved efficiency and resiliency.

The combustion of fossil fuels for electricity, heating, and cooling remains the dominant source of UCLA's Scope 1 emissions. As such, decarbonizing campus energy systems is central to achieving UCLA's climate goals.

To address this, UCLA has developed a comprehensive decarbonization strategy centered on transitioning from its natural gas–powered cogeneration plant to an all-electric central utility plant. This transition is a cornerstone of the university's long-term energy transformation and will be discussed in detail later in this chapter.

Supporting this shift are a suite of complementary programs designed to improve energy efficiency and reduce demand across campus buildings. These include the Smart Buildings and Labs Program, the LED Lighting Program, and advanced building controls—all of which contribute to reducing energy use intensity and enhancing operational resilience.

The following section provides an overview of these initiatives, including their launch timelines, progress to date, and projected energy savings. Together, they represent UCLA's commitment to leading by example in the transition to a low-carbon, energy-efficient future.

Energy Strategy Overview

Energy conservation and efficiency have long been foundational to UCLA's climate strategy and remain the most cost-effective and impactful means of reducing greenhouse gas (GHG) emissions. Since the release of UCLA's first Climate Action Plan in 2008, the campus has implemented a wide range of energy efficiency initiatives across academic, research, residential, and healthcare facilities. These efforts have not only reduced emissions but also generated substantial utility cost savings and laid the groundwork for deeper decarbonization.

Historical Progress and Programs

UCLA's energy efficiency journey began in 2003 with the formation of an Energy Task Force, which recommended limiting HVAC runtime hours. This led to the launch of two key operational programs:

Winter Shutdown: Initiated during the holiday period, this program curtails HVAC operations in 42 state-funded buildings. In 2015–16 alone, it saved $140,000 in utility costs and reduced emissions by 472 metric tons.

Weekend Shutdown: Launched in 2015, this program reduces air handling on weekends and holidays in 32 buildings, saving an estimated $500,000 annually and cutting 1,600 metric tons of carbon emissions.

Since 2008, energy efficiency projects have been completed in 32 of UCLA's 78 state-owned buildings, covering approximately 4.9 million gross square feet. These projects have reduced the campus' annual carbon footprint by 27,700 metric tons and generated nearly $5 million in annual energy savings. Lighting retrofits in all campus parking structures have contributed additional savings.

Strategic Expansion and Future Goals

In response to the University of California Office of The President's (UCOP) call for aggressive energy efficiency programs, UCLA has committed to expanding its efforts. By 2026, Energy Services aims to complete comprehensive energy audits. By 2037, they plan to retrofit the remaining 46 state-owned buildings covering an additional 4.5 million square feet—with the goal of reducing annual CO_2 emissions by over 50,000 metric tons.

These efforts are supported by a robust pipeline of projects, including:

Comprehensive Energy Audits: Identifying underperforming systems and defining operational strategies to reduce energy use.

Retro-Commissioning: Tuning building systems to match current usage and restore optimal performance.

Monitoring-Based Commissioning (MBCx): Using building automation data to continuously identify and correct inefficiencies.

Lighting Optimization: Reducing over-illumination, installing occupancy/daylight sensors, and upgrading fixtures.

Specialized Strategies for High-Intensity Buildings: Laboratory and research buildings, which consume up to three times more energy per square foot than classrooms, are a major focus. Strategies include:

- Reducing air change rates from 12 to 6 per hour (or lower with demand control ventilation).
- Upgrading to direct digital controls (DDC) for centralized energy management.
- Implementing MBCx to maintain long-term performance.

These measures can reduce lab building energy use by over 50%, though they require careful coordination with building occupants and contractors.

Energy Programs and Initiatives: Campus Decarbonization

Decarbonization Study Purpose and Scope

Based on the UCOP directive and funded by the State of California, UCLA conducted a decarbonization study led by consultants from WSP, who were selected through a public competitive process, to develop a comprehensive strategy aimed at achieving a 90% or greater reduction in Scope 1 carbon emissions by 2045.

This part of the Climate Action Plan will draw from the decarbonization study to highlight major plans that accelerate UCLA's transition away from fossil fuels, with a focus on climate action goals that prioritize direct emissions reductions and limit the use of carbon offsets.

The decarbonization study outlines a comprehensive method to reduce UCLA's scope 1 carbon emissions by at least 90% by 2045. The study evaluates 14 scenarios against 13 criteria including environmental impact, cost, reliability, and equity. The primary focus is on decarbonization of the campus cogeneration plant which at the time of the study accounted for about 87% of the scope 1 emissions.

Not covered in the study is the campus strategy for larger scale solar energy which is under development. Prior studies identified sites for solar and a path under the Los Angeles Department of Water and Power (LADWP) Feed-in-tariff program, however recently that pathway was determined to be infeasible and the university is evaluating other financing mechanisms for solar under a net metering program. The study also assumes 100 percent clean electricity procurement beginning in 2025.

Scenario Categories Overview

The scenarios assessed in the study are grouped into six major categories, each representing a distinct technological pathway:

Category 1: All-electric central heating and cooling plant (Scenarios 1.0 and 1.1)

Category 2: Nodal all-electric heating and cooling plants (Scenarios 2.0 and 2.1)

Category 3: Central plant with heat pump steam production (Scenarios 3.0 and 3.1)

Category 4: Conversion of the cogeneration plant to green hydrogen (Scenarios 4.0–4.3)

Category 5: Nodal fuel cell plants for combined cooling, heating, and power (Scenarios 5.0 and 5.1)

Category 6: Central fuel cell plant with carbon capture (Scenarios 6.0 and 6.1)

Each category explores variations in implementation speed and infrastructure transformation, such as retaining or replacing the steam network. Each category includes an accelerated decarbonization option which either incorporates an industrial heat pump to serve the campus steam network via electricity or a carbon capture technology that captures carbon from the current cogeneration plant for early decarbonization.

Recommended Pathway: Scenario 2.1 – Nodal All-Electric Heating and Cooling Plant with Accelerated Decarbonization

Overview of Recommended Scenario

Scenario 2.1 is identified as the optimal solution due to its balance of rapid emissions reduction, operational flexibility, and manageable risk. It proposes a phased transition from the existing cogeneration system to a decentralized network of all-electric nodal heating and cooling plants, supported by an industrial steam heat pump for early decarbonization. This solution allows for costs and disruptions to be spread out over time—first implementing the industrial heat pump and then appropriately phasing nodal plant construction. It also provides flexibility to incorporate changes as campus conditions change and integrate improved technology as it becomes available.

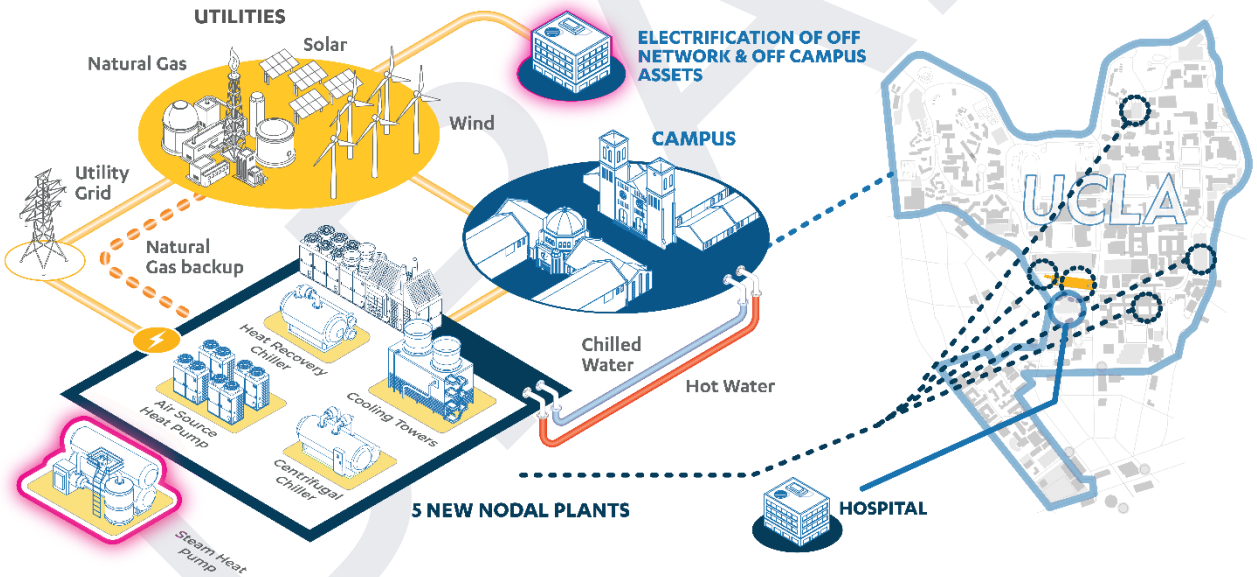


Figure - Overview of Scenario 2.1 campus energy infrastructure.

Key Features

Decentralized All-Electric Nodal Plants: Multiple all-electric-based central heating and cooling plant facilities replace the central cogeneration facility to serve the existing and future campus thermal network needs, enhancing system flexibility and resilience.

Accelerated Implementation: An electrically powered steam generating heat pump enables early emissions reductions by generating steam using renewable electricity. Steam would only be utilized for heating needs, not

power generation. The heat pump can remain in operation until the more efficient, all-electric nodal plants can be installed.

Hot Water Network: A new low-temperature heating hot water network replaces the aging steam system, improving energy and efficiency. Existing steam-to-hot-water exchangers at the building level will be removed and replaced with direct hot water connections.

Backup Resilience: The existing cogeneration plant is retained as a backup power source, allowing continuity of operations in case of grid instability or peak demand.

Point-of-use Electric Steam Generation: Laboratory and healthcare facilities requiring process steam or humidification will transition to clean, electric point-of-use steam generators. Corresponding electrical upgrades will be provided per building.

These results may be summarized as follows:

- The ultimate all-electric nodal system is very energy efficient and zero carbon. More near-term carbon is saved by rapidly implementing an electric steam heat pump (which is less efficient but still zero carbon) and transitioning to the low-temperature, high efficiency heat pump system over time. This could enable UCLA to meet its 90% emissions reduction goal by 2030
- High life cycle cost due to dual electrification projects and purchased electricity
- Resilience level can be maintained by preserving the cogeneration plant as a backup power

Several nodal plants mean implementation will take a long time. It is important to note that disruption here is scored poorly due to the long time of implementation. However, the phased timeline allows flexibility, with the steam heat pump enabling early emissions reductions while deferring some thermal network build-out to ease implementation burdens

Overall, despite the logistical complexity and high disruption score, the scenario's emissions performance, flexibility, and long-term sustainability makes it a robust recommendation.

Performance and Benefits

Carbon Reduction: Achieves a 90% reduction in Scope 1 emissions by 2030.

Energy Efficiency: High lifetime carbon savings due to early implementation and electrification.

Resilience: Maintains high resilience through backup systems and phased deployment.

Flexibility: Allows for future integration of emerging technologies, such as nodal fuel cells.

Cost: While capital-intensive, the phased approach spreads costs and disruptions over time.

Scenario 2.1 enables early progress toward the decarbonization goal by implementing the industrial steam heat pump ahead of the larger plant conversion. As illustrated in the figure that follows, emissions drop sharply around 2030 when the heat pump is activated and continues to decline as the hot water network and additional electric plants come online. The key milestone—achieving 90% Scope 1 emissions reduction—is reached by 2030, well ahead of the 2045 target.

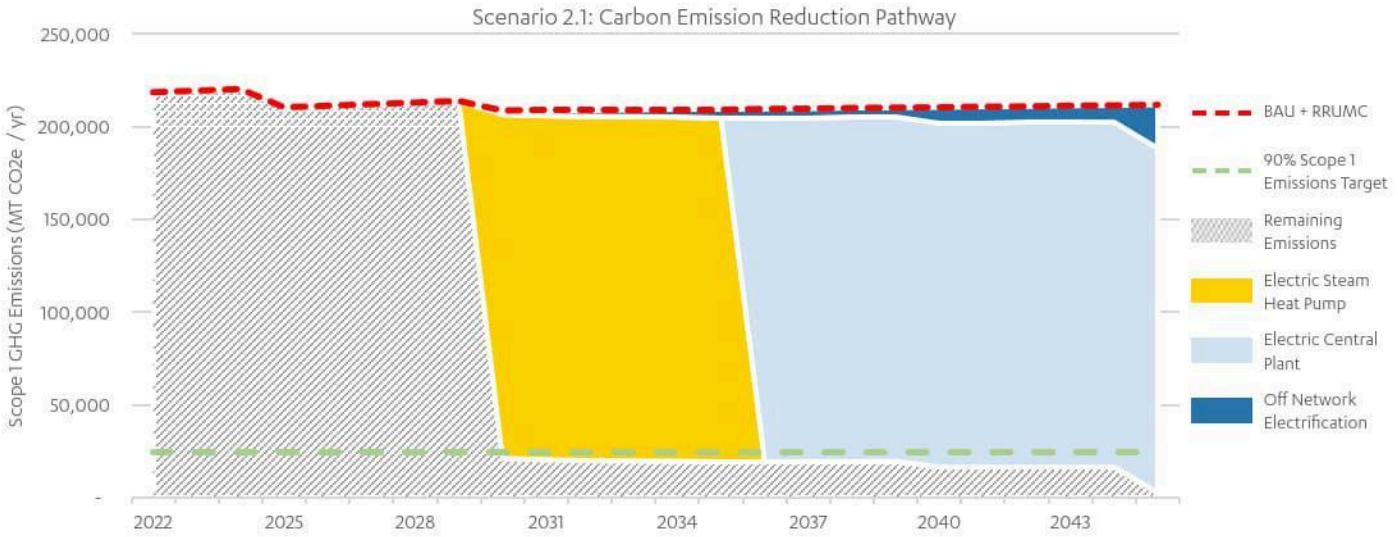


Figure – Carbon emission reduction pathway for scenario 2.1

Figure – Emissions and Operating Cost Projection for Scenario 2.1

The total cost projection through 2045 is shown in the figure below:

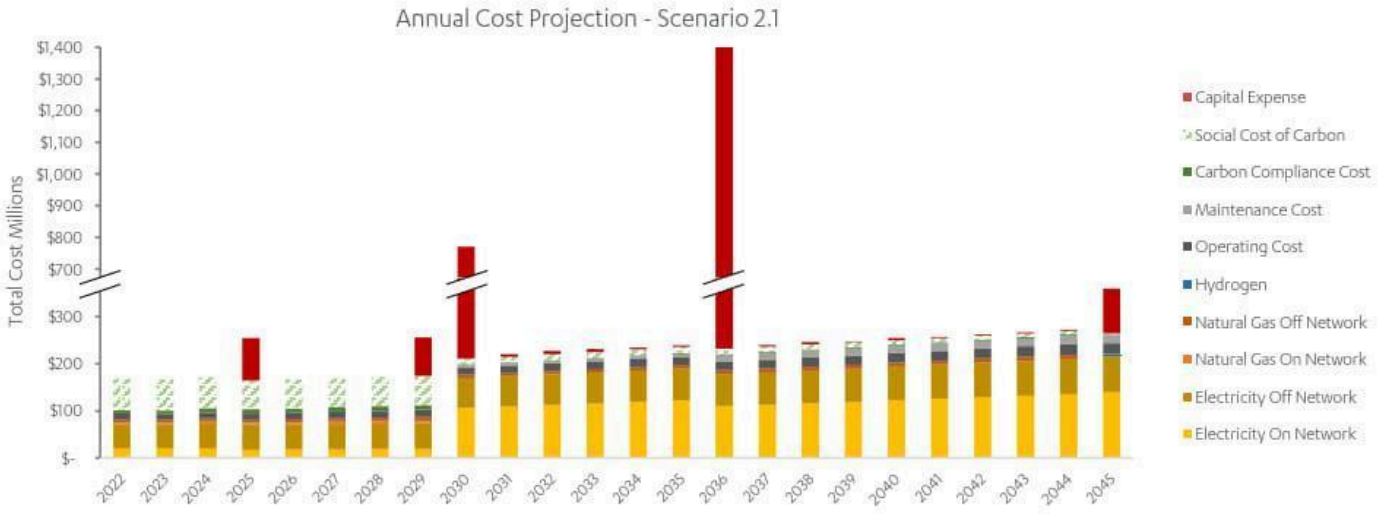


Figure – Annual Cost Projection for Scenario 2.1

Electrical Demand and Battery Storage Considerations

A central theme across all decarbonization scenarios in the UCLA study is the significant shift from fossil fuel-based energy systems to electrified infrastructure. This transition—whether through all-electric central plants, nodal systems, or fuel cell-based solutions — results in a substantial increase in campus electricity demand. Managing this demand is critical to ensuring system reliability, cost-effectiveness, and alignment with UCLA's carbon reduction goals.

Projected Electrical Demand by Scenario

Each scenario presents a different profile of electricity consumption based on the technologies deployed:

All-Electric Scenarios (Categories 1–3): These scenarios, especially those with accelerated timelines (e.g., 1.1, 2.1, 3.1), show the highest increase in electricity demand due to the use of industrial heat pumps, electric chillers, and hot water networks.

Hydrogen and Fuel Cell Scenarios (Categories 4–6): These scenarios also increase electric demand, though to a lesser extent, as they retain combustion-based systems or introduce fuel cells that may offset some grid reliance.

Business As Usual (BAU): Maintains the lowest electric demand but fails to meet decarbonization targets.

For example, Scenario 2.1 increases electricity consumption to approximately **500,000 MWh** annually by 2030—more than six times the BAU level of **74,000 MWh**.

Peak Demand Challenges

The existing campus electrical service, capped at **80 MW**, is insufficient to support the peak loads projected under most decarbonization scenarios. This creates a critical need for infrastructure upgrades (e.g., new substations or expanded LADWP service), demand-side management (e.g., load shifting, operational controls), and on-site energy storage to buffer peak loads and enhance resilience.

The study outlines several strategies for managing or expanding electrical capacity, these include:

1. Negotiating with LADWP to increase capacity at the Olympic RS-K substation.
2. Constructing a new receiving station on campus (120–150 MW capacity).

3. Reallocating existing circuits by removing other customers from UCLA's 34.5kV lines.

4. Demand-side management through operational controls and load shifting.

Role of Battery Energy Storage Systems (BESS)

To address these challenges, the study recommends integrating Battery Energy Storage Systems (BESS) across all high-demand scenarios. The BESS would reduce demand charges by flattening peak loads (peak shaving), help avoid costly upgrades to LADWP infrastructure, and provide backup power during power outages increasing resilience. Some key considerations included in the report are:

Sizing: a 160 MWh system capable of 40 MW discharge over 4 hours.

Cost: the estimated costs are approximately $70 million

Key carbon-related insights from the study include:

Accelerated implementation matters: Scenarios that deploy interim solutions like industrial heat pumps early in the timeline significantly reduce cumulative emissions between now and 2045, not just end-state emissions.

All-electric solutions outperform alternatives: Electrification-based scenarios (Categories 1–3) generally offer the highest carbon savings and lowest long-term emissions risk, especially when powered by 100% renewable electricity.

Hydrogen and carbon capture carry risks: While technically viable, scenarios relying on green hydrogen or carbon capture face uncertainties in fuel availability, storage infrastructure, and long-term effectiveness.

Time value of carbon: The study incorporates a time-weighted analysis of emissions, recognizing that reducing emissions sooner has a greater climate benefit than reductions achieved later.

Overall, the study emphasizes that early, decisive action—particularly through electrification—offers the most effective path to deep carbon reductions, while also providing flexibility to adapt to future technological and policy developments.

Next Steps: Decarbonization Implementation

In 2025 UCLA released an RFQ for the first phase of decarbonization implementation which will focus on three highest priority projects - installing a fully electric chiller at the cogeneration plant, the first nodal electric plant at the Center for Health Sciences, and the Industrial Heat Pump. Many competitive proposals were received and after screening and then interviewing five finalist firms, UCLA selected WSP as the engineering firm to lead the next phase of design concept and detailed costing to support funding and financing proposals.

Energy Programs and Initiatives: Smart Buildings and Labs Program

Program Overview

The UCLA Smart Buildings & Lab (SBL) Program aims to reduce energy consumption and scope greenhouse gas emissions through a campus-wide initiative focused on some of the university's most energy-intensive facilities. The program targets spaces that typically consume more energy per square foot than standard buildings.

The program integrates advanced building technologies, controls optimization, and deep energy retrofits. Some of the key strategies include:

Conversion of constant volume HVAC systems to variable air volume (VAV)

Installation of direct digital controls (DDC) and building automation systems (BAS)

Optimization of air change rates in labs and vivariums

Implementation of monitoring-based commissioning (MBCx)

LED lighting upgrades and occupancy-based controls

Demand-controlled ventilation and static pressure resets

The program, launched in 2017, aligns with the UC Sustainable Practices Policy and supports UCLA's goal of achieving carbon neutrality by 2045.

Progress to Date

Since its inception, the SBL Program has completed major energy efficiency upgrades in three key buildings with the Gonda Neuroscience and Genetics Research Center currently in the construction queue:

Broad Art Center (completed 2019)

Bunche Hall (completed 2020)

Terasaki Life Sciences Building (completed 2025)

Gonda Neuroscience & Genetics Research Center (projected completion 2027)

Each building underwent a comprehensive energy audit followed by implementation of tailored energy conservation measures (ECMs). These included HVAC retrofits, lab ventilation controls, lighting upgrades, and BAS enhancements. However, despite initial plans to complete work on ten buildings, the program faced delays due to COVID-19, staffing limitations, and funding constraints, resulting in six buildings being removed from the scope.

The program has demonstrated consistent success in reducing energy use and improving operational performance. For example, Terasaki achieved a 34.4% reduction in energy costs and Gonda is projected to reduce total energy use by over 50%

Next Steps

Post-retrofit monitoring has shown promising results, with energy savings of approximately 20% in the two completed buildings. The Broad Art Center (completed in 2019) and the Bunche Hall (completed in 2020) together contribute to an annual reduction of 689 metric tons of CO_2e/year. The Terasaki Life Sciences Building, completed in March 2025, is projected to save an additional 1,107 metric tons of CO_2e annually. Once the retrofit project is completed in 2027, the Gonda Neuroscience and Genetics Research Center is expected to deliver the most substantial impact, with projected annual savings of approximately 2,042 metric tons of CO_2e/year.

The SBL Program has delivered substantial reductions in energy use and GHG emissions across participating buildings:

Building	Electricity Savings (kWh/yr)	Steam Savings (lbs/yr)	Chilled Water Savings (ton-hrs/yr)	GHG Reduction ($mtCO_2e$/yr)	Utility Cost Savings ($/yr)
Gonda	2,061,255	10,266,443	1,002,348	2,042 (projected)	$892,043
Terasaki	1,344,737	4,179,176	538,637	1,107	$497,176
Bunche	177,341	1,435,016	226,136	359	$120,695
Broad	231,446	1,106,405	200,293	330	$119,562

Building	Electricity Savings (kWh/yr)	Steam Savings (lbs/yr)	Chilled Water Savings (ton-hrs/yr)	GHG Reduction ($mtCO_2e$/yr)	Utility Cost Savings ($/yr)
Total	**3,832,420**	**1,949,773**	**16,987,039**	**3,839**	**$1,615,973**

These savings are equivalent to curtailing close to 10 million miles driven by an average gasoline-powered passenger vehicle annually. The program's cumulative avoided utility costs are projected to exceed $17 million by 2034.

Funding

The SBL Program is financed through a combination of campus capital investment, utility incentives, and debt financing. Key funding highlights include*:

Gonda: $2.5M total implementation cost (net of incentives: $0.5M), simple payback of 5.1 years

Terasaki: $2.05M total cost, supported by a $322K LADWP incentive, with a simple payback of 3.5 years

Broad: $837K total cost, with a simple payback of 7.68 years

Bunche: $4K total cost, with a simple payback period of 2.4 years

**All data has been extracted from "Energy and GHG reductions from SBL projects" Excel Sheet provided by UCLA*

The program leverages LADWP's incentive structure and SEP participation to maximize financial returns. Rising utility costs further improve the long-term value of these investments.

Energy Programs and Initiatives: LED Lighting Program

Program Overview

Initiated in 2020, UCLA's LED Lighting Retrofit Program is a campus-wide effort to enhance energy efficiency, lighting quality, and sustainability by replacing outdated fluorescent fixtures with high-efficiency LED lighting. With approximately 500,000 fluorescent bulbs across campus, the program is projected to retrofit thousands of fixtures over the coming years—primarily through in-house efforts led by UCLA Facilities Management. Once fully implemented, these upgrades are expected to yield annual energy savings of around 40 million kWh, which would account for 10.8% of the campus' total electricity usage—enough to power roughly 5,510 Los Angeles homes for a year.

To support cost-effective implementation, the program leverages utility rebate incentives such as the LADWP Commercial Lighting Incentive Program (CLIP). Estimated costs are $34 million for STATE buildings and $47 million for Recharge buildings, with simple payback periods of 12 and 11.75 years respectively, excluding rebates.

Next Steps

Initial installations planned for high-traffic areas like Boelter Hall, and the Math-Science Complex are expected to deliver over 214,500 kWh in annual energy savings and reduce costs by approximately $25,000. By focusing on corridors, stairwells, restrooms, and elevator lobbies, the program aims to maximize return on investment. Future phases will expand retrofits to include recharge-funded buildings, with a full LED conversion projected to reduce total campus electricity consumption by about 11%. Additionally, advanced lighting control systems will be integrated to ensure compliance with California Title 24 energy code requirements.

Energy Programs and Initiatives: Cogeneration Utility Plant Upgrades

Program Overview

UCLA's 86,000-square-foot cogeneration plant supplies 85% of the campus' electricity and provides steam and chilled water to over 60 buildings through a vast network of underground pipes. As the heart of UCLA's energy infrastructure, in 2024, the cogeneration plant began undergoing a major upgrade to enhance performance and operational reliability, reduce emissions, conserve water, and align with the UC Carbon Neutrality Initiative. The project is scheduled for completion by Q1 2026, with phased construction, commissioning, and stakeholder engagement already underway.

In March 2025, following an 11-month demolition and construction effort, a new gas turbine engine was brought into operation, replacing the aging unit that had been in service since 1994. A second replacement unit is currently being installed and is scheduled for completion by November 2025. In addition to the new gas turbines, this project also included replacement of other major components like carbon monoxide catalysts, selective catalytic reduction catalysts, and the nitrogen oxide (NOx) emissions control system. A continuous emissions monitoring (CEM) system was also replaced and upgraded to track and ensure ongoing regulatory compliance. Supplemental duct burners were also replaced in the heat recovery steam generators (HRSG) to provide additional heat input beyond what is available from the gas turbine exhaust alone.

The upgrade was driven by three factors: the need to comply with newly introduced South Coast Air Quality Management District (SCAQMD) emissions standards, the existing turbines were at the end of their service life, and the opportunity to invest in more sustainable and efficient technology.

This overhaul resulted in substantial operational savings, with an estimated $5.5 million in annual energy cost reductions and approximately 23.5 million gallons per year in water usage. The new engine brings the system into compliance with the new SCAQMD standard, and it is anticipated that with the installation of the second engine, the engine efficiency will increase by 2.7% - increasing the electricity produced while decreasing the natural gas consumption and carbon emissions. The new NOx control system ensures that NOx emissions are below the required threshold of 2.0 ppm at just 0.8 ppm, actively reducing air quality pollution and greenhouse gas creation. Furthermore, the lower CO, NOx, and ammonia slip all contribute to less chemical consumption and air pollution. Consider the table below comparing the CO and Nox emissions from before and after the first engine went online in March 2025.

	2024 (before)		2025 (after)	
	CO (lbs)	NOx (lbs)	CO (lbs)	NOx (lbs)
CoGen System #1	1,691	4,160	tbd	555
CoGen System #2	5,217	20,551	tbd	2,740

**values estimated based on reduction of NOx emissions ppm from 2024 to 2025 (6 ppm to 0.8 ppm)*

Next Steps

To achieve at least a 90% reduction in Scope 1 emissions, as outlined in the decarbonization study section of this plan, it is imperative to transition from the existing natural gas-based cogeneration plant to an all-electric central utility plant.

BMS and Metering Program

Program Overview

UCLA's Building Management Systems (BMS) and Metering Program form the backbone of the campus' energy efficiency initiatives. Data collection, analysis, and controls are essential to operating the campus' building and energy consuming systems efficiently. The campus, organized into North and South zones, is undergoing a phased migration to a newer BMS platform with higher speed communication and more advanced capabilities.

Progress To Date

Complementing the BMS, the Metering program has successfully installed over one thousand meters, with 60% being smart meters connected to a custom Raspberry Pi-based UBeam cloud platform. The remainder includes manual meters and Direct Digital Control (DDC) meters not yet integrated into UBeam. All these meters serve critical functions, from validating energy conservation measures and monitoring chilled water and steam usage to billing recharge customers and supporting deferred maintenance efforts.

The smart metering expansion is currently in its work planning and coordination stage. An electrical contractor has been engaged to progress the program into the implementation phase.

Forecasted Energy & Carbon Savings

The act of smart metering itself is not expected to result in energy savings but the data that becomes available from smart metering is expected to contribute other actions e.g., early detection of energy-wasting equipment failure. It's been established that metering can lead to an average of 10% energy savings, so the anticipated saving for this project is $100k-$200k per year.

Next Steps

The BMS and Metering program is expected to continue its expansion in the coming years, with plans to fully transition to a next-generation BMS platform and increase the number of smart meters campus-wide. Future metering efforts will prioritize replacing remaining manual and DDC meters, integrating all systems into the UBeam platform to enable centralized, real-time data access. Estimated expansion costs for complete metering integration are projected at $1-2 million.

Energy Programs and Initiatives: Space Optimization Pilot Program

Program Overview

As part of goal 5 of the UCLA Strategic Plan 2023-28 UCLA has committed to becoming a more effective institution. This includes the initiative to allocate spaces based on the opportunities and benefits that flexible work environments can provide. Efficient space allocation not only reduces administrative and facility management burden, but also has the potential to save energy by only conditioning and lighting the spaces that are actively in use. This initiative currently includes two main pilot programs: the Summer Session Space Pilot and the Space Occupancy Pilot programs.

The Space Occupancy Pilot Program was launched in October 2024, and the Summer Session Space Pilot was launched in Summer of 2025. Both pilots are overseen by the Space Oversight Committee. Both programs leverage real-time occupancy detection systems, such as OccuSpace plug-in devices and Butlr infrared sensors, to gather data on space utilization. These initiatives are part of UCLA's effort to create a more efficient, sustainable, and adaptable

campus. While OccuSpace devices rely on Bluetooth and Wi-Fi signal detection to estimate space utilization, Butlr sensors are mounted above doorways, detecting entry/exit activity, dwelling time, and room density with high accuracy. Sensors are currently installed in fifteen buildings across campus: 10 as part of the summer session pilot program and 5 as part of the space occupancy pilot program.

Next Steps

As the pilots progress, UCLA aims to scale up the use of traditional HVAC occupancy sensors across campus buildings, focusing on enabling demand-controlled ventilation in large classrooms and conference rooms where current occupancy is 20% of the maximum. This in turn reduces heating, cooling, and fan energy. Several long-term strategies under discussion include transitioning from dedicated offices to shared or hoteling models, as well as repurposing or decommissioning underused classrooms and administrative spaces.

Energy Programs and Initiatives: Housing & Hospitality (H&H) Energy Initiatives

Housing & Hospitality (H&H) continues to advance toward carbon neutrality through a comprehensive set of infrastructure upgrades, equipment replacements, and operational best practices.

HVAC Modernization

A central focus area is HVAC system upgrades. Boiler replacements are in progress across both on-campus and off-campus properties, with higher-efficiency models prioritized to reduce energy demand and emissions. In addition, H&H is conducting a feasibility study to evaluate electrification of boilers greater than 400 MBTU, in alignment with South Coast Air Quality Management District (SCAQMD) Rule 1146.2 compliance requirements.

Several renovation projects are underway, including installation of a Daikin Rebel Applied unit at the Northwest Auditorium. While full performance data is still being collected, the system is expected to deliver significant energy savings due to three design advancements:

- Variable-speed compressors and fans – improve efficiency and load matching.
- High-efficiency microchannel coils – reduce overall energy use.
- R-32 refrigerant – delivers higher efficiency with a significantly lower global warming potential than R-22.

H&H is replacing fan coil units to support a refrigerant phase-out program. Planned HVAC upgrades at Rieber Terrace, Rieber Vista, and De Neve Plaza will also retire older water-sourced heat pumps and transition them to more efficient and lower global warming potential refrigerants.

Energy Efficiency and Monitoring

In addition to HVAC upgrades, H&H is reducing electricity demand through lighting and monitoring improvements. The department continues its large-scale lighting retrofit initiative, replacing outdated fixtures with high-efficiency LED technology across both residential and administrative facilities. H&H is also upgrading earlier-generation LED fixtures with newer, lower-wattage models to achieve additional efficiency gains.

To further enhance energy performance tracking, 80% of smart utility meter installations are now complete. Once fully deployed, these meters will provide real-time energy data and enable advanced analytics to support data-driven energy management strategies.

Sustainable Construction and Retrofits

Aligned with the UCLA wide green building practices detailed in that section of the plan, sustainability measures are being incorporated into new housing developments. Upcoming projects including 901 Levering and Gayley Towers are designed as all-electric buildings, eliminating direct fossil fuel use and supporting UCLA's decarbonization goals. At University Village, firewood-burning fireplaces are being replaced with electric alternatives, eliminating localized emissions of smoke and particulates that contribute to poor air quality.

Transportation and Fleet Transition

H&H is also reducing emissions in transportation operations. Four existing box trucks are being replaced with all-electric vehicles, while one truck has been removed from the fleet entirely to improve overall efficiency. Grounds and maintenance operations have already transitioned to fully electric leaf blowers, and the department is actively assessing additional exterior maintenance equipment for electrification. More details on UCLA wide fleet initiatives in the Fleet section of the plan.

Preventative Maintenance and Operational Practices

Ongoing preventative maintenance continues to play a critical role in reducing energy demand and extending equipment lifespan. Regular filter replacements, exhaust fan inspections, and proactive system adjustments optimize HVAC performance, minimize unnecessary energy consumption, and ensure peak operational efficiency. Additionally, Housing recently completed its building automation system upgrade on the Siemens Desigo platform. This identified required controller upgrades at older buildings. Once completed over the next few years, those upgrades will allow building engineers to impact energy savings with the newer monitoring and scheduling tools.

Through these targeted upgrades along with new construction standards are shared in the new construction section, fleet electrification, and ongoing operational improvements, H&H demonstrates its commitment to advancing carbon neutrality and long-term climate action.

Energy Programs and Initiatives: UCLA Health Energy Initiatives

In addition to contributing to overall UCLA climate targets, UCLA Health has a goal that is specific to the Health System- a 50% reduction in organizational emissions (Scope 1,2) by 2030 per the Health Sector Pledge (https://www.hhs.gov/climate-change-health-equity-environmental-justice/climate-change-health-equity/actions/health-sector-pledge/index.html)

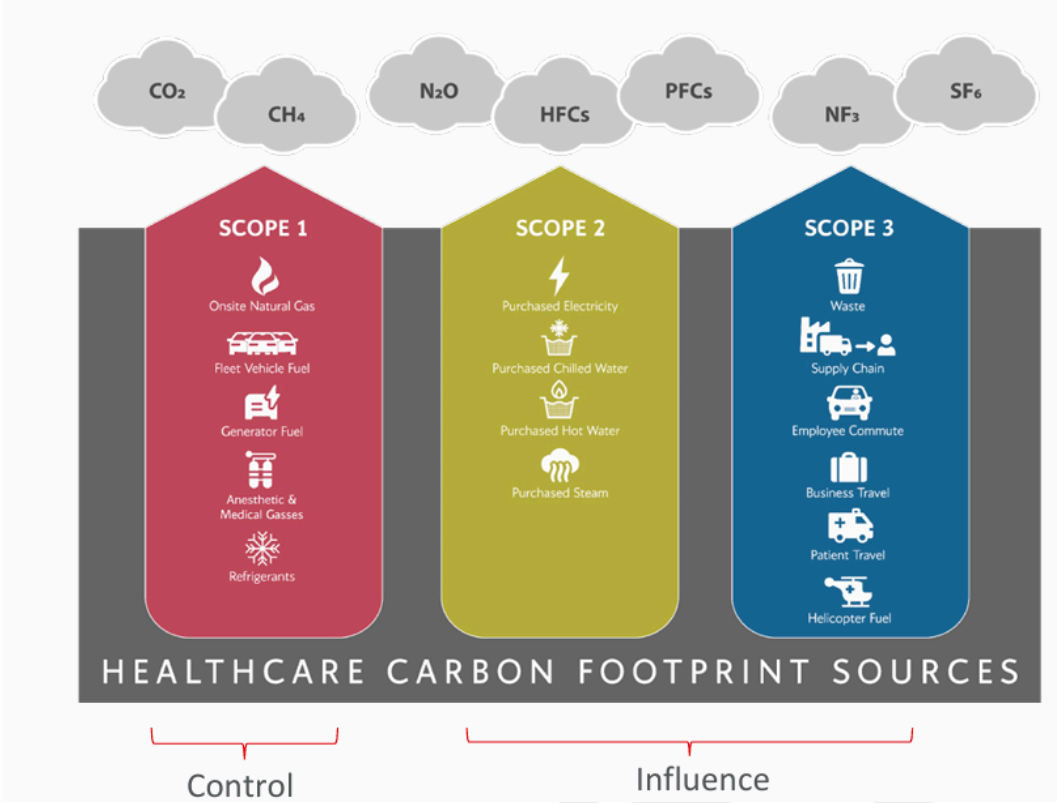


Figure : Source: Stanford Medicine Children's Health; CleanMed 2024 Presentation

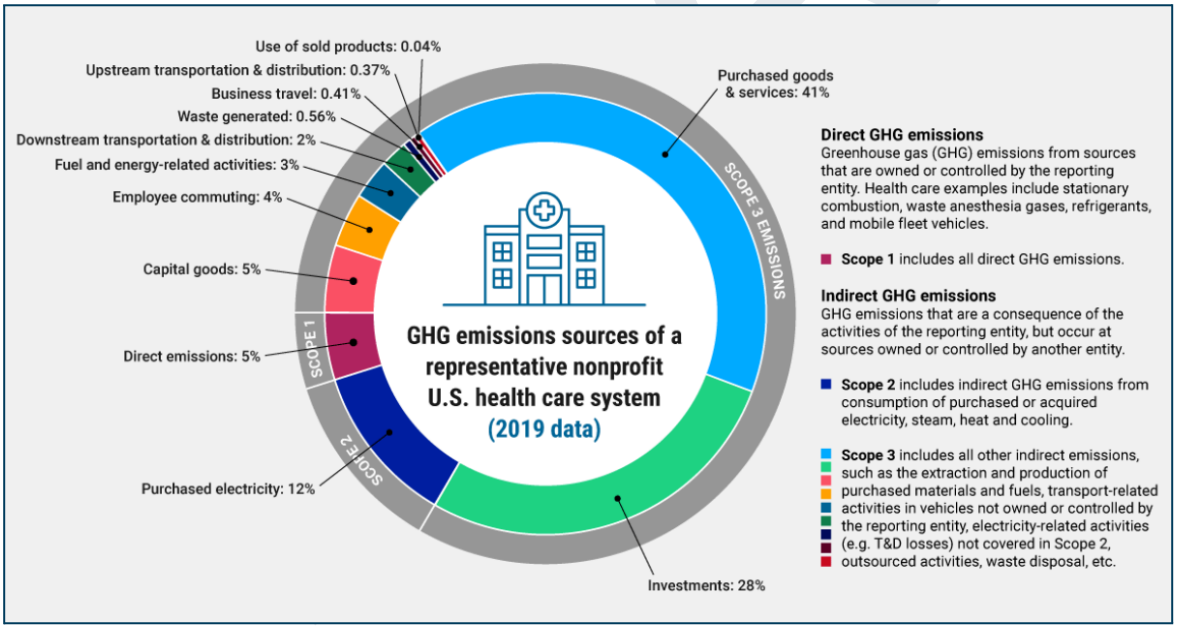


Figure: Source: PGH Scope 3 Emissions Accounting Tool

UCLA Health Facilities and Inventory Summary

UCLA Health is in the process of gathering data and conducting inventory for Scope 1 and 2 emissions that will be inclusive of recent acquisitions. The percentage increase and impact in emissions of recent acquisitions and new growth will be partially estimated where data cannot be obtained.

Scope 3 emissions inventory and data gathering is ongoing. Relevant Scope 3 2022 Baseline data is included in the Scope 3 section of the plan.

Ronald Reagan Medical Center & Medical Plazas:

- Meter data and purchasing information associated with utilities incorporated into 2019 baseline
- Anesthetic gases, fleet vehicles included; refrigerants not included
- CUP Electrification

Santa Monica Medical Center and MOB's:

- Meter data and purchasing information associated with utilities incorporated into 2019 baseline
- Anesthetic gases, fleet vehicles included; refrigerants not included
- CUP full/partial electrification under review and will be proposed to UCOP

West Valley Medical Center Campus:

- Updated 2019 Baseline Data
- Full year of utility data and other operational data will be available for Fiscal Year 2026
- CUP Electrification and new construction estimated 2033

Mid-Wilshire Neurophsychiatric Hospital Campus:

- Mid-Wilshire Behavioral Health Hospital and Medical Office Building with Parking Structure
- Acquisition and major renovation project
- Updated 2019 Baseline data to incorporate Mid-Wilshire Hospital
- Estimated Completion 2026
- All-electric Hospital Plant

5210 Pacific Concourse:

- Largely unoccupied acquisition – commercial building
- Major build out of surgery center, clinic, and laboratory space
- Estimated completion 2028

Will be treated as new growth, assuming all-electric design and purchase of 100% renewable energy

Offsite Ambulatory Clinics:

- Varied in scope of services and building structures
- Obtaining utility data for these facilities to bundle as portfolio

UCLA Health Baseline Emissions and Targets

Scope 1 & 2 Emissions by Facility & Reductions Targets

Facility	2019 Total Baseline (MTCO2e)	2024 Scope 1 Emissions	2024 Scope 2 Emissions	2024 Total	2030 Target Reduction	2030 Total	2035 Target Reduction	2035 Total	2045 Target Reduction	2045 Total

Ronald Reagan UCLA Medical Center; Medical Plazas*	37,660	3,344.89	32,497.56	35,842.45	15%	32,011	82%	6,779	95%	1,883
Santa Monica UCLA Medical Center; SM Surgery Center; MOBs*	11,577	8,476.05	0	8,476.05	10%	8,476.05	93%	728	93%	728
UCLA West Valley Medical Center**	4,445	Available 2026	Available 2026	N/A	10%	4,000	10%	3,600	90%	360
UCLA Mid-Wilshire Neuropsychiatric Hospital***	3,743	N/A	N/A	N/A	100%	0	100%	0	100%	0
UCLA Pacific Concourse	N/A Natural Growth	N/A	N/A	N/A	0%	0	-	0	-	0
Owned Ambulatory Clinics	Obtaining	N/A	N/A	-	-	-	-	-	-	-

*Emissions data is inclusive of the following: Fleet vehicles, anesthetic gases, gas, diesel, electricity, chilled water, and steam; Exclusions include: refrigerants

** Emissions data is estimated from available historical data for main WVH and includes the following: anesthetic gases, gas, and electricity

***Historical data is not available. Emissions data is estimated from regional acute care hospital average EUI. Does not currently include any estimates for anesthetic gas or refrigerants.

UCLA Health Facility and Health Campus Overviews: Current and Future States

Ronald Reagan UCLA Medical Center (RRMC) & Medical Plazas

About: 520 bed medical center level 1 trauma center, Mattel Children's Hospital, Resnick Neuropsychiatric Hospital, Medical Plazas

Current state:

- Facility Details: Re-Constructed and Opened in 2014
- All major utilities provided by UCLA Cogeneration Plant
- Medical Plazas 200 and 300 are fed by their own LADWP connections and have independent chillers and boilers; Med Plaza 100 uses own LADWP connection
- RRMC Campus currently houses 15 MRI/CT scanners; 42 operating roomss total

Future State:

- Resnick Neuropsychiatric Hospital will be relocated/transfer to the new Mid-Wilshire Hospital in 2026 – the existing space for Resnick on the 4th floor of RRMC will be reconstructed to general acute care, which may increase overall energy load
- RRMC continuously operates over 100% daily census over the last 3-5 years
- All-electric nodal central utility plant for RRMC – estimated completion in 2033
- Medical Plazas are not included in assumptions for go live of RRUMC CUP
- Ongoing study for locations of plant – to be completed in 2025 with proposed locations

Energy Project Descriptions, Westwood Campus (2025-2030)

Ronald Reagan

- **HVAC Upgrades and Pressurization Project:**
  - Improves the operation of the HVAC systems by optimizing the controls, sequences, pressurization, and return fan tracking of all of the major units in the building.
- **Lighting Retrofits:**
  - Changing out older fixtures in the building with LED light bulbs or replacement fixtures where needed.
  - Brings us in compliance with AB 2208
- **RRMC Central Utility Plant (CUP):**

- New all electric CUP is being built to provide all of the cooling and heating needs of Reagan Hospital.
- 200/300 Med Plaza

- **Lighting Retrofits:**
  - Changing out older fixtures in the building with LED light bulbs or replacement fixtures where needed.
  - Brings us in compliance with AB 2208

Medical Plazas Central Utility Plant (CUP):

To comply with GHG reductions the central plant will need to move away from the use of the existing gas fired steam boilers. This will likely be accomplished by an all-electric central plant. This plant is not expected to be completed until after 2035 and this is reflected in the table above.

Santa Monica UCLA Medical Center, Surgery Center, MOB's

About: 281 bed medical center, ambulatory surgery center, Pain Management Clinic

Current State:

- Facility Details:
  - 281 beds, 16 Operating Rooms
  - 8 OR's in Surgery Center (50,000 SF)
  - 5 MRI/CT Scanners
  - Three (3) Gas-Fired High Pressure Steam Boilers (14,000 lb/hr)
  - Two (2) 640 ton Electric Centrifugal Chillers
  - One (1) 480 Steam Absorption Chiller

Future State:

- Feasibility Studies for Partial or All electric central plant, utilizing Heat Recovery Chillers
- Assume potential construction or updates by 2035 due to age of existing equipment

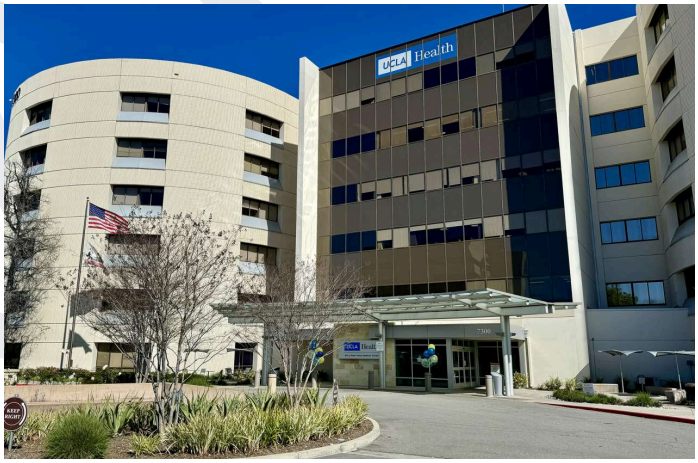
***Based on inclusion of SMMC and RMMC campuses, does not include WVMC campus, Mid-Wilshire Hospital (2026), Pacific Concourse (2028), owned Ambulatory Clinics**

Energy Project Descriptions: Santa Monica Campus

- **Retro-commissioning Project:**
    - Improves the operation of the existing HVAC equipment by improving operations, sequences, and repairing previously unknown maintenance items.
    - Equipment that will be improved includes the boilers, chillers, air handling units, pumps, and terminal air boxes.
- **Lighting Retrofits:**
    - Changing out older fixtures in the building with LED light bulbs or replacement fixtures where needed.
    - Brings us in compliance with AB 2208
- **SMMC Central Utility Plant (CUP):**
    - Under current SCAQMD rules, the existing plant has no sunset date. However, new SCAQMD rules are expected to be adopted, which could put the plant out of emissions compliance as early as 2037.
    - An all new all-electric CUP is being consider to replace the existing equipment as all the equipment is over 20 years old and could use replacement. However, there are significant cost, access, and logistics issues with replacing the existing plant that need to be addressed as part of any study of the plant.

UCLA West Valley Medical Center Campus

About: 260 bed facility, 24/7 emergency department, Center for Rehabilitation, Women's Diagnostic Center, Advanced Wound Care, Surgical Center



Current state:

- Facility Details: Constructed and Opened in 1973
- Seismic exemption in place for the facility – master planning process to determine retrofit vs reconstruction
- 14 Acre Campus with several facilities acquired
- 7 Operating Rooms, 33 ICU beds, 30 ED rooms; 2 Hyperbaric chambers, 2 Cardiac Cath Labs
- UCLA Health is expanding the capacity and operations of existing facility relative to 2019 operations
- Incorporation into CAP:
    - UCLA Health is obtaining utility data for 2019 (or as close to) to incorporate into 2019 baseline
    - Full year utility data will be available for CY2025
    - Incorporate facility and campus into CAP once baseline data is obtained
    - Scope 1 data for refrigerants and anesthetic gases will likely need to be estimated

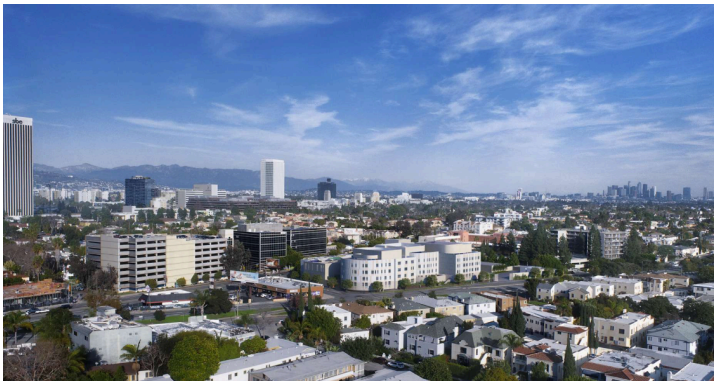
Future State:

- Master Planning commenced in September 2024

- All-electric CUP – various systems under evaluation
- Estimated Completion of central plant – 2032
- Estimated Completion of WVMC retrofit/reconstruction 2034

UCLA Mid-Wilshire Behavioral Health Campus

About: Comprehensive behavioral health care services for adult, geriatric, pediatric, and adolescent patients, as well as a dedicated area for crisis stabilization services, Hospital, Medical Office Building, and parking structure



Current/former state:

- Planning/Development commenced in 2021
- Previously Olympia Medical Center; under major renovation
- Incorporation into CAP:
- Obtaining LADWP utility data to update 2019 baseline

Future State:

- All-electric hospital
- 5 story, 119 beds
- HVAC Design – 100% Electric Heat Pumps – 100% Outside air was enhanced during design to include (removable) carbon filters at all supply vents. Less energy efficient but prudent re: air quality issue
- Medical Office Building: Interior Build out only (office building) - air handlers and air cooled chillers/gas boilers)
- Final Construction and Opening Summer 2026

5210 Pacific Concourse - Future site of Sports Medicine Center

About: Steel frame, low-rise construction building with lab improvements, 9.2-acre site; Master Planning for Sports Medicine Facility

Current/former state:

- 169,791 SF Facility, Steel frame, low-rise construction; lab build-out
- Baseline assumptions – 0 emissions from fleet/anesthetics/refrigerants
- Will be incorporated into emissions inventory in 2028 as New Facility

Future State:

- HVAC Design – 100% Electric Heat Pumps – 100% Outside air was enhanced during design to include (removable) carbon filters at all supply vents. Less energy efficient but prudent re: air quality issue
- Master planning and building use:
- Lab spaces, 10 ORS, 1 procedure room, 2 MRis, 6 xray (4 built out and 2 shell)
- 30 Exam rooms
- Operating 16/7, lab operating 24/7
- Lab space will be using 100% outside air
- Could design setbacks for OR's
- Final Construction and Opening Summer 2028

Energy Consumption by UCLA Health Facility and Reduction Targets

Facility	2019 Energy Use (kBtu)	2024 Energy Use (kBtu)	2019-2024 Reduction	2025-2030 Target Reduction	2030 Target Total Usage (kBtu)
Ronald Reagan UCLA Medical Center; Medical Plazas	661,204,158	673,729,970	2%	10%	606,356,973
Santa Monica UCLA Medical Center; SM	215,978,013	222,606,622	3%	10%	200,345,960

Surgery Center; MOBs					
UCLA West Valley Medical Center	70,278,699 *	Available 2025	N/a	N/a	N/a

*This number is for the main hospital location at 7300 Med Center Dr and is not yet fully inclusive of the West Valley Hospital Campus locations.

Key UCLA Health Energy Reduction Targets

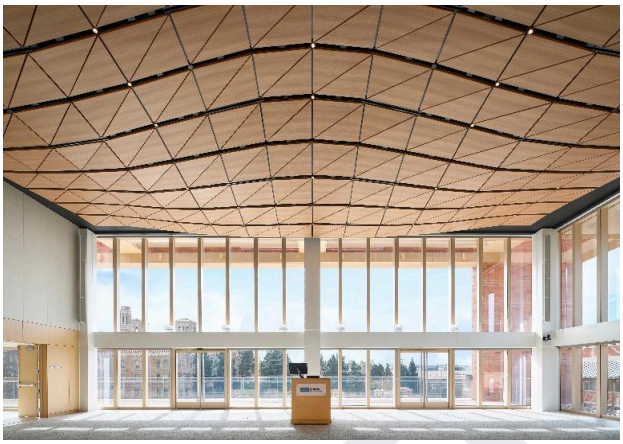
Facility	Project Description	Overall Energy Reduction Potential (kBtu)	Emissions Reduction Potential (MtCO2e)	Estimated Capital Cost	Estimated Payback Period (After local incentives)	Estimated Annual Energy Savings	% Energy Reduction Over Baseline
SMMC	Retro-commissioning, Lighting Retrofits	75,977,466	4,594	$11,000,000	5.0	$1,600,000	34%
RRMC	HVAC pressurization project	59,988,043	3,730	$2,500,00	1.0	$1,700,000	9%
RRMC	Lighting Retrofits	25,000,000	1,770	TBD	TBD	TBD	4%
16th Street MOB	Retro-commissioning	6,255,042	378	$600,000	2.0	$175,000	3%

The above identified projects for UCLA Health's Westwood (Ronald Reagan Medical Center and Medical Plazas) and Santa Monica (Santa Monica Medical Center and Medical Buildings) are under review for implementation and will contribute to energy reduction and efficiency, yielding Scope 1 & 2 emissions reductions as well.

Green Building Practices in New Construction

In addition to energy efficiency and conservation initiatives, and the development of the campus cogeneration facility, the other major reason that UCLA has been able to keep emissions steady despite significant growth has been green building practices. UCLA ranks 4th internationally for Green Building performance in the 2024 AASHE STARS program (see page 8 here) and was honored with a Green Portfolio Award from the U.S. Green Building Council California (USGBC-CA) as the second largest LEED portfolio in the State, which currently stands at 70 LEED projects.

LEED Platinum Renovation of Pritzker Hall



LEED Platinum Marion Anderson Hall

In recent years, the campus has added significant quantities of housing and new off-campus properties. Many on-campus projects have been upgrades to labs and medical spaces that intensify usage but also result in overall energy savings and new all-electric buildings have been constructed. In the coming years, space usage in existing buildings will further intensify. New demands, such as the 2026 World Cup and 2028 Olympics in Los Angeles will bring large numbers of visitors to campus, and the completion of Metro rail transit connections to campus will expand access for a wider daily population. These new construction efforts affect Scope 2, purchased electricity, as well as Scope 1.

UCLA projects Energy Use Intensity as a metric to project energy consumption into planning efforts for individual buildings and the campus overall. EUI measures energy consumption per gross square foot per year (kBTU/GSF/yr). UC Energy Benchmarks cap the projected annual utility consumption levels of future projects by building type and energy intensity: Academic/non-complex, Housing/Non-complex, and Lab/Complex. These maximums are lowered every two years to help campuses pursue Carbon Neutrality. Because EUI can be directly tracked through utility meters, actual consumption levels can be easily compared to design levels. This improves performance verification, troubleshooting, and goal-setting. Recent projects, such as LEED Platinum Pritzker Hall and Marion Anderson Hall have already been substantially outperforming their EUI benchmarks, and similar momentum is expected to continue with other projects. Increasingly, UCLA projects also seek to lower embodied carbon emissions attributable to manufacture, transportation, and installation of materials during construction. Through careful selection and sourcing of construction materials, new campus buildings will also limit the carbon intensity at the start of their life cycle, while waste diversion of demolished material through campus zero-waste policy efforts will reduce industrial carbon emissions at the end. Life Cycle Analysis of campus projects has helped to identify such savings, and in 2024-25, campus projects diverted 86.41% of construction waste (2,314 tons of waste, representing approximately 1,200 tons of CO_2 emissions avoided).

As discussed in the introduction, goals and projections regarding new growth are being developed through the LRDP process, but some major new projects will include new and renovated housing options, a Neuropsychiatric Replacement Hospital, and a major Research Park in Westwood. Expansion of off-campus facilities has been on the rise. As most on-campus projects will continue to be remodels or additions, they should result in energy reductions, even where they intensify space use, due to substantially more efficient lighting, controls, and mechanical systems.

Renewable Electricity Procurement

UCLA, along with the UC system is committed to 100 percent renewable electricity procurement by 2025 in the UC Sustainable Practices Policy. In 2019 the UCLA Santa Monica Medical Center transitioned to 100% renewable

electricity through the Clean Power Alliance. UCLA signed a historic renewable rate agreement in October 2019 with the LA Department of Water and Power (LADWP) that provided 10 MW off-site solar energy 2020 to 2024. That agreement will sunset in 2025.

Beginning in 2025, UCLA will obtain Renewable Energy Credits through the University Office of the President for all electricity purchased that is not already covered by other clean electricity programs. This will continue through at least 2035 at which time the Los Angeles Department of Water and Power, the main utility serving UCLA is aiming for 100 percent clean energy. A multidisciplinary group of researchers completed LA100 Equity Strategies, which will guide the city in implementing its transition to renewable energy in a way that benefits all Angelenos.

Scope 1 Greenhouse Gas Mitigation (Reduction) Strategies– Mobile Sources-Fleet

While fleet is the smallest source of mobile emissions, UCLA addresses it first due to the clear mandate to transition to zero-emission vehicles and fully decarbonize operations by converting the entire fleet to electric. Unlike commute and air travel emissions, fleet fuel is owned and managed directly by UCLA, making it a Scope 1 emissions source and fully within the University's operational control. As shown in Figure, UCLA's fleet fuel consumption remains heavily reliant on unleaded gasoline, which accounts for approximately 94% of all fuel use by volume in gasoline gallon equivalents. Although the overall contribution of the fleet to campus-wide greenhouse gas emissions is relatively small, about 0.67% of mobile source emissions, the operational footprint includes over 1,000 mobility assets, ranging from vans and service trucks to low-speed electric vehicles,transit shuttles, and even marine devices. Based on fuel type estimates presented in Table, fleet emissions are driven primarily by traditional fuels, with smaller shares from compressed natural gas (CNG), diesel, and biodiesel. These figures are based on 2024 fleet composition and reference 2019 as the baseline year for fuel consumption, when the fleet used over 440,000 gallons of fuel. UCLA's growing investment in electric and alternative fuel vehicles has been critical to reducing this impact and aligning fleet operations with long-term climate goals.

Figure:

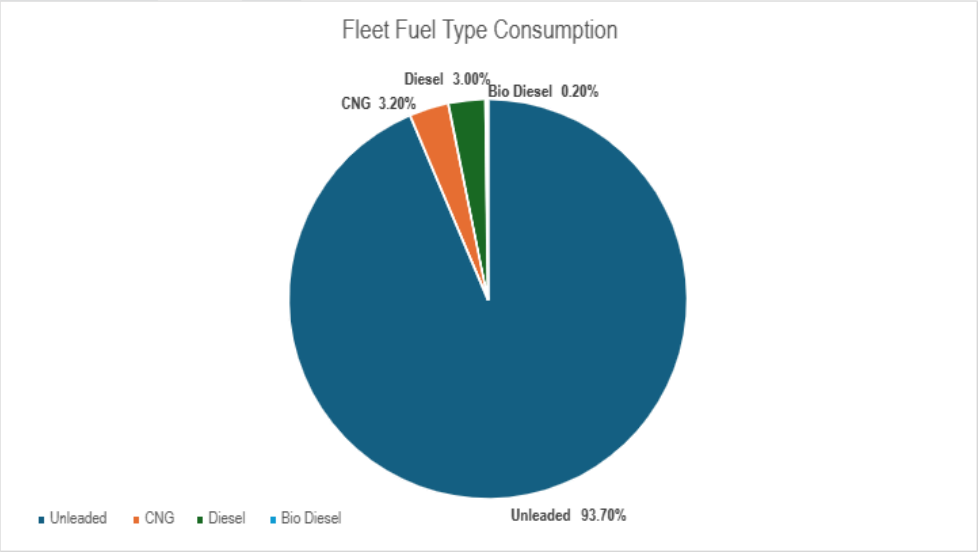
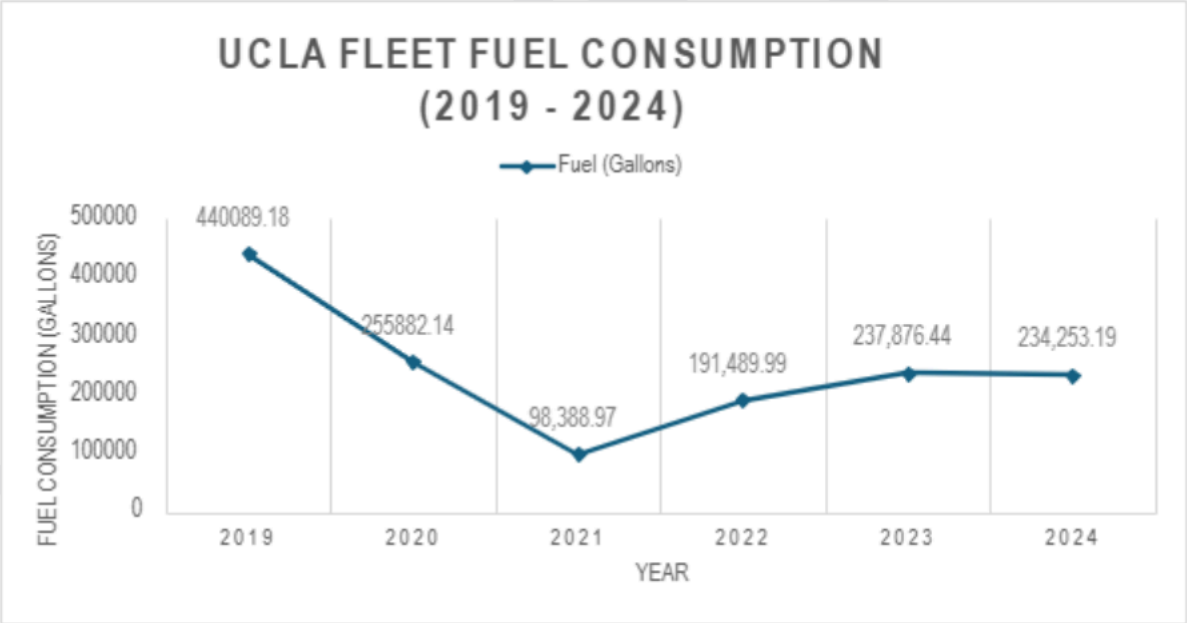


Table: 2019 Fleet Fuel Consumption

Fuel Type	Gallon Equivalents
Unleaded	440,000
CNG	15,000
Diesel	14,000
Bio Diesel	1,000

Fleet fuel consumption at UCLA has shown an overall decline over the past decade, reflecting a combination of operational changes, efficiency improvements, and a shift toward more sustainable transportation options. Between 2019 and 2024, fuel usage dropped from 440,089 gallons to 234,253 gallons, a reduction of nearly 47% (46.8%). During this same period, the cumulative total fuel consumption reached approximately 1.5 million gallons.

Figure



As shown in Figure , fleet operations consumed approximately 440,089 gallons of fuel in 2019, representing the highest usage within the 2019–2024 period. While the fleet's contribution to total campus GHG emissions remains relatively small, the scale of vehicle operations, with almost 900 vehicles including buses, vanpool vans, and specialized service units, means that changes in fuel consumption have a measurable impact on overall emissions. Most fuel use is attributable to unleaded gasoline for conventional internal combustion engine vehicles, though other fuels, such as compressed natural gas (CNG) for campus shuttle buses, also contribute to the fleet's carbon footprint.

These downward trends in fuel use highlight the university's commitment to reducing emissions from campus

operations. Continued investment in electric and zero-emission vehicles, along with data-informed fleet management, will be critical to sustaining this progress and aligning fleet operations with the university's climate action goals.

Baseline fleet greenhouse gas emissions and current trend (MT CO_2e)

Emissions Source	2019	2024	Percent Change
Fleet Vehicles	4,361	1,770	-59.4%

The year 2019 serves as the baseline for UCLA's fleet fuel consumption, marking the highest level of recorded use before major shifts in operations and sustainability initiatives. That year, the campus fleet consumed a total of 440,089 gallons of fuel. This detailed breakdown provides a comprehensive picture of UCLA's fleet operations at their peak, establishing a critical reference point for measuring progress in reducing fuel use and transitioning to lower-emission alternatives.

Despite a significant overall decrease, Fleet emissions experienced a slight increase in recent years due to operational demand, despite ongoing electrification and integration of alternative fuel vehicles (AFVs). Notably, the use of compressed natural gas (CNG) sharply decreased, demonstrating a positive shift toward vehicle electrification.

Future actions will focus on full fleet electrification, expansion of on-campus charging infrastructure, right-sizing vehicle inventory, and integrating electric buses into high-demand routes.

Fleet Emissions: Business as Usual

From 2019 through 2024, reductions in Fleet emissions were driven by two main things: elimination of the UCLA-owned vanpool fleet, which was a significant consumer of the unleaded fuel used each year by the overall vehicle fleet (as much as half of unleaded fuel consumption in some years), and the switch to electric vehicles as internal combustion engine vehicles were replaced. The BAU trend line, therefore, shows a significant decrease across this recent period and includes changes that won't be replicated in the future (vanpool elimination). Therefore, the trend line should not be considered as indicative of future progress if things stay the same. A better forecast line for BAU is to remove GHG emissions caused by the vanpool program and recalculate the emissions trend with only the pace of electrification as the influencing variable. With even that approach, it is clear that if the Fleet unit continues on a similar progress path to electrify its vehicle fleet, the BAU emissions will be approximately 426 MT, reducing more emissions (90.2%) than the targeted 90% reduction level.

- 2024 Fleet Emissions: 1,770 MT CO_2e
- Projected 2040Fleet Emissions (BAU): ~426 MT CO_2e

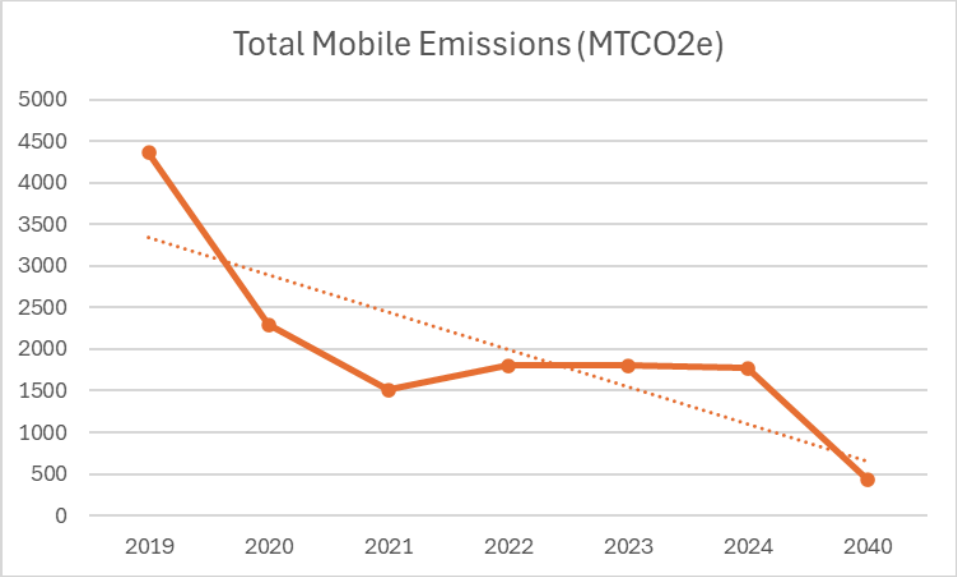
Fleet Emissions Mitigation

UCLA's diverse fleet, including service trucks, vans, shuttles, and low-speed electric carts has been in transition since 2019, and the campus has significantly increased the share of electric and alternative fuel vehicles (AFVs), with over 46% of the fleet now powered by non-traditional fuels such as electricity, compressed natural gas (CNG), and biodiesel.

Key strategies include:

- Prioritizing the replacement of internal combustion vehicles with zero-emission vehicles (ZEVs)
- Reducing vehicle miles traveled (VMT) through right-sizing and shared vehicle programs

- Phasing out diesel and unleaded vehicles by expanding charging infrastructure and vehicle availability



Figure

Past Progress

UCLA has made measurable progress since 2019:

- **Fleet Transition**: As of 2023–24, 58% of new fleet acquisitions met the University of California's sustainable vehicle goals. This includes 42 fully electric vehicles and a total of 44 clean transportation vehicles out of 76 acquired.
    - Total Fleet: 893 vehicles
    - Battery Electric Vehicles (BEVs): 332
    - Clean/Low Emission Vehicles (ZEVs, PHEVs, Clean Fuels): 363
- **Fleet Subcategories**:
    - **Sedans & Minivans**: 38% are ZEV or PHEV
    - **Light-Duty Vehicles**: 48% meet clean transportation standards
- **EV Infrastructure**: UCLA has expanded EV charging options with 474 Level 1 chargers, 16 Level 2 chargers, and 6 DC Fast Chargers on the main campus. The health system has added 20 Level 2 chargers but lacks DC Fast or Level 1 options.

Fleet Innovation

UCLA Events and Transportation has received significant funding from the California State Transportation Agency's Transit and Intercity Rail Capital Program. A $19.85 million grant received in collaboration with CALSTART — a nonprofit dedicated to accelerating clean transportation — and wireless charging provider Electreon will enable UCLA's BruinBus fleet to transition to 100% electric and expand service, and will fund California's first in-road electric charging system, all in time for the 2028 Olympic and Paralympic Games.

Scope 3 Greenhouse Gas Mitigation (Reduction) Strategies - Commutes and Air Travel

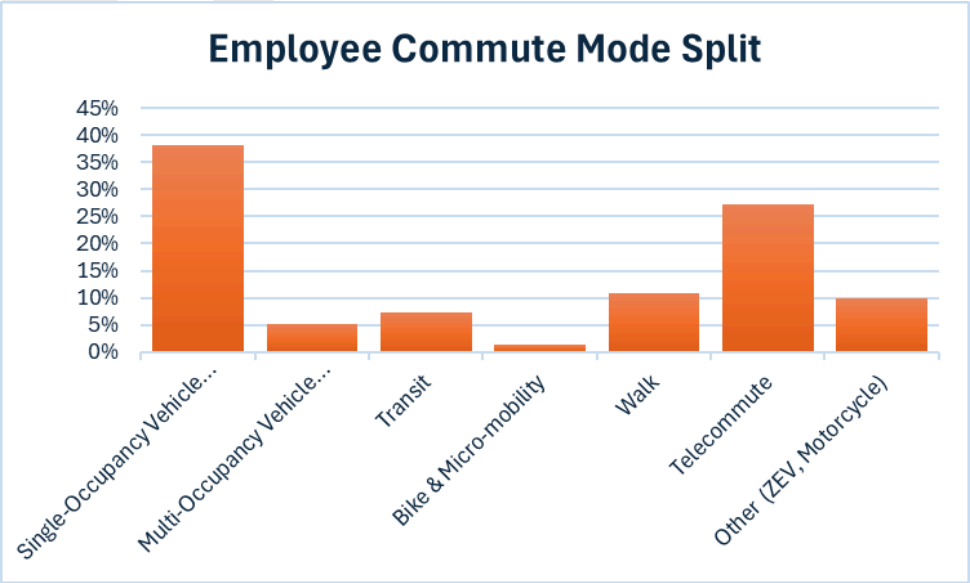
Mobile Source Emissions Background

UCLA, located within one of America's most challenging travel corridors, is home to a diverse population of over 90,000 students, faculty, and staff. As a result, the university generates greenhouse gas (GHG) emissions from several mobile sources, including fleet vehicles (Scope 1) and for Scope 3 - employee and student commuting, and business air travel. Understanding these emissions is key to developing effective strategies for reduction within the broader goals of the campus' Climate Action Plan. Commute emissions encompass a broad set of travel modes, including driving alone, carpooling, public transit, biking, walking, ride-hailing, and remote work. Air travel emissions include UCLA business-related flights. As we continue to grow as a region, we must continue advancing strategies that target fleet efficiency, expand low-carbon commuting options, and reduce reliance on carbon-intensive travel to achieve meaningful reductions in transportation-related emissions.

Emissions by Mobile Source Type – Commutes

In 2024, commuting patterns to and from UCLA reflected both a continuous shift toward sustainable transportation and the ongoing impacts of hybrid work and learning environments. On an average academic weekday, while campus population tallies approximately 90,000 individuals, an average 83,529 daily vehicle trips are recorded, down from 102,123 in 2019. This reduction is influenced by expanded remote work opportunities, the growth of campus transit programs, increased on-campus student housing, and a broader cultural movement toward low-carbon travel. Employee commuting data from 2024 shows a significant increase in sustainable transportation use among those who physically commute to campus. While 38.2% of employees reported driving alone, a notable 10.9% walked, and 7.3% relied on public transit. An additional 1.4% used bikes or other micromobility options, and 5.2% carpooled. Telecommuting accounted for 27.1% of employees, indicating a continued reliance on flexible work arrangements.

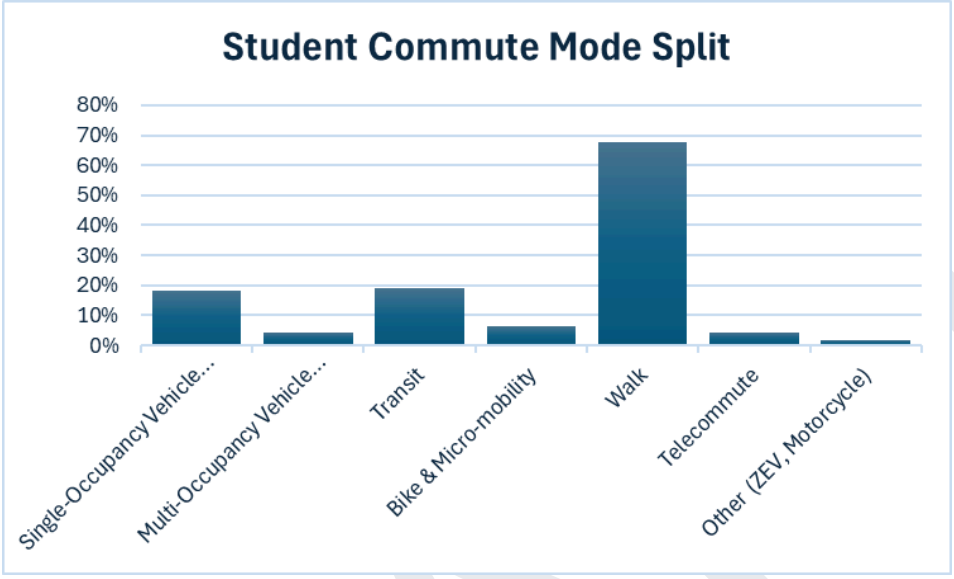
Figure



Student commuting behavior reflects similar trends. Walking remained the dominant mode of travel, used by 67.8% of students. Public transit usage rose to 19.1%, exceeding the percentage of students commuting via single-occupancy

vehicle (SOV) (18.4%). Use of bikes and micromobility increased to 6.6%, while 4.3% reported carpooling and 3.8% telecommuted.

Figure



UCLA's investments in sustainable commuting, including the Bruin U-Pass, Bruin Grad Pass, and Commuter All-Access Pass, continue to support and incentivize lower-emission travel. Although solo driving remains a factor, the availability of daily parking (i.e., purchased on days when driving is necessary, rather than maintaining a monthly parking permit at a fixed cost that encourages frequent driving) has helped reduce the need for daily driving. In 2024, there were over 668,000 daily parking transactions, indicating that many commuters are choosing to drive only when necessary and are integrating multiple transportation modes into their weekly routines.

Emissions by Mobile Source Type - Air Travel

In 2024, UCLA-related airline travel accounted for approximately five percent of total university greenhouse gas emissions and represented about 20 percent of mobile source emissions. This equates to 12,474 metric tons (MT) of CO_2, a decrease from 2019 levels of 17,179 MT, with significant fluctuations during the pandemic years. UCLA business-related airline travel is defined as travel paid for directly by or through the university, encompassing staff travel, faculty travel for activities such as government panel participation, conference attendance, and expert testimony. It excludes travel related to personal consulting or any travel funded by external entities for purposes unrelated to university business.

Airline emissions fluctuate with travel volume, flight distances, and the mix of short-haul versus long-haul routes. In 2020 and 2021, the pandemic caused steep declines in air travel, with emissions dropping to 3,457 MT and 1,940 MT respectively. By 2022, emissions rebounded to 10,876 MT and continued to increase in 2023 and 2024 as university activities normalized.

Table

UCLA-Related Airline Travel CO_2 Emissions ($MTCO_2e$)

Year	MTCO2e

2019	17,179
2020	3,457
2021	1,940
2022	10,876
2023	10,960
2024	12,474

To achieve 2040 climate targets, reducing airline travel emissions will require a combination of strategies: prioritizing virtual participation in meetings and conferences, shifting short-haul trips to lower-emission rail where feasible, and purchasing high-quality carbon offsets, ideally through UC-wide or locally administered programs. In the long term, industry transitions to sustainable aviation fuels and more efficient aircraft technologies are expected to further reduce emissions per passenger-mile, complementing demand-reduction measures already in place. However, airline travel emissions are expected to continue to be one of the more challenging areas to reduce emissions.

Current Trends and Baseline Conditions

Recent trends in UCLA's greenhouse gas (GHG) emissions from mobile sources indicate slight reductions overall, driven by successful strategies implemented over recent years. Between FY 2019 and 2024, emissions have modestly decreased by approximately 3.9%, despite some increases in the commute individual sector. Table and Figure illustrate these trends clearly, highlighting sector-specific changes in emissions.

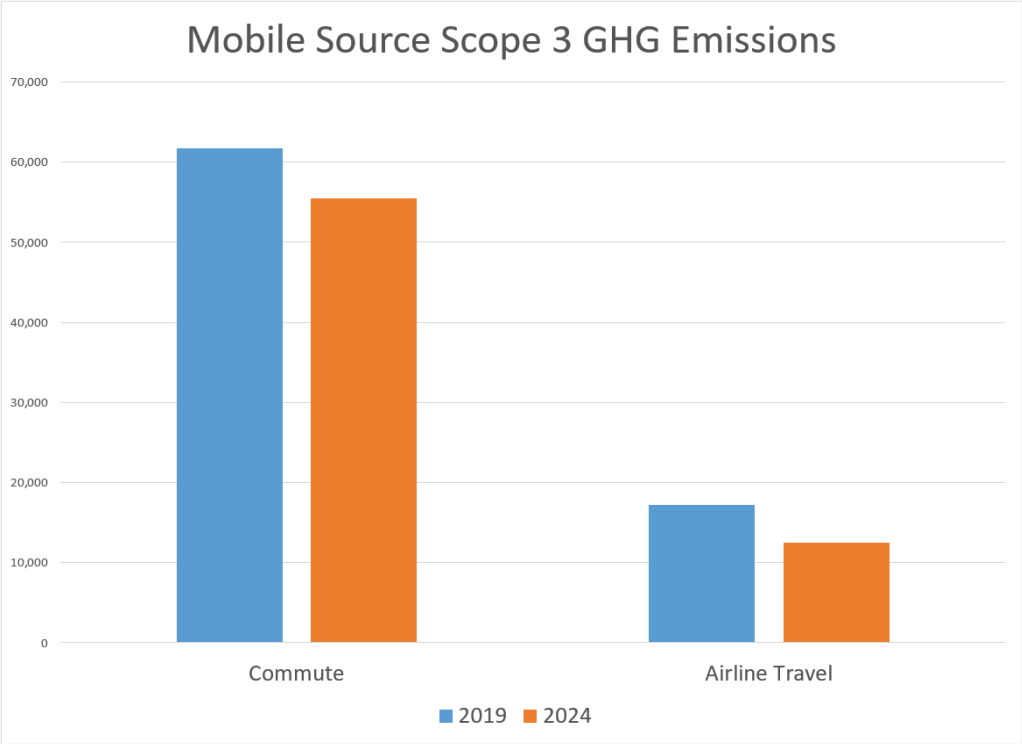
The increase observed in commuting emissions is primarily due to the factoring of public transit in the emissions calculations. However, increased adoption of telecommuting and alternative transportation modes such as electric vehicles has kept the SOV rate steady. Between FY 2019 and 2024, the single-occupancy vehicle (SOV) commuting rate increased from roughly 25.9% to about 36.7%. This shift emphasizes the importance of UCLA's continued investment in sustainable commuting programs, enhanced telecommuting practices, and improved public transit access.

Table

UCLA Scope 3 Mobile Source Emission Trends (MT CO_2e)

Emissions Source	2019	2024	Percent Change
Commute	61,768	55,473	-10.2%
Airline Travel	17,179	12,474	-27.4%
Total	**78,947**	**67,947**	**-13.9%**

Figure



Emission Reduction Goals

UCLA's mobile source greenhouse gas (GHG) emissions in 2024 remain slightly above the 2019 baseline despite pandemic-related reductions in intervening years. In 2019, total mobile source emissions were approximately 78,947 MT CO_2e, with the majority from commuting. By 2024, emissions decreased marginally to 69,717 MT CO_2e, representing an almost 14% overall reduction from baseline. However, without intervention, emissions are projected to rise steadily, surpassing 2019 levels by 2040 under a business-as-usual (BAU) scenario.

The university's target is to reduce emissions back to a 90% reduction from 2019 levels by 2040, avoiding the upward trajectory of the BAU projection. Achieving this goal will require coordinated strategies in all three key sectors: fleet, commute, and air travel.

Commute Emissions Mitigation

Commute emissions account for over 79% of mobile source emissions in 2024. Strategies will center on reducing single-occupancy vehicle trips through expanded telecommuting policies, improving transit access, and investing in active transportation infrastructure. Initiatives include providing bicycles to employees living within 10 miles, increasing transit subsidies, implementing parking policies that favor sustainable commuting, and building more workforce and student housing near campus.

Air Travel Emissions Mitigation

Air travel emissions declined from 17,179 MT CO_2e in 2019 to 12,474 MT CO_2e in 2024, following a rebound from pandemic lows. Reductions will focus on eliminating short-haul flights where feasible, substituting virtual meetings for in-person travel, prioritizing rail for regional trips, and supporting credible carbon offset programs, including the

University's Air Travel Mitigation Fund program. Over time, advances in sustainable aviation fuels will also contribute to reductions.

Greenhouse Gas Emission Projections

Without continued or expanded intervention, UCLA's mobile source emissions are projected to increase. These projections are based on anticipated growth in population, academic activity, and business travel, without further shifts in behavior or infrastructure.

Commute Emissions: Business as Usual (BAU)

With campus population growth and no improvements in telecommuting or transportation mode shifts, commute emissions will rise moderately:

- 2024 Commute Emissions: 55,473 MT CO_2e
- Projected 2035 Commute Emissions (BAU): 66,730 MT CO_2e

Air Travel Emissions

Airline travel emissions are expected to increase with international research, recruitment, and administrative travel needs:

- 2024 Airline Emissions: 12,474 MT CO_2e
- Projected 2035 Airline Emissions (BAU): 13,953 MT CO_2

Absent intervention, UCLA's mobile source emissions would grow alongside campus expansion. If 2019 commuting patterns persisted unchanged, drive-alone commuting would increase total emissions beyond 2019 levels.

Table

Year	Commute ($MTCO_2$)	Air Travel ($MTCO_2$)	Total
2019	61,768	17,179	78,947
2024	55,473	12,474	67,947

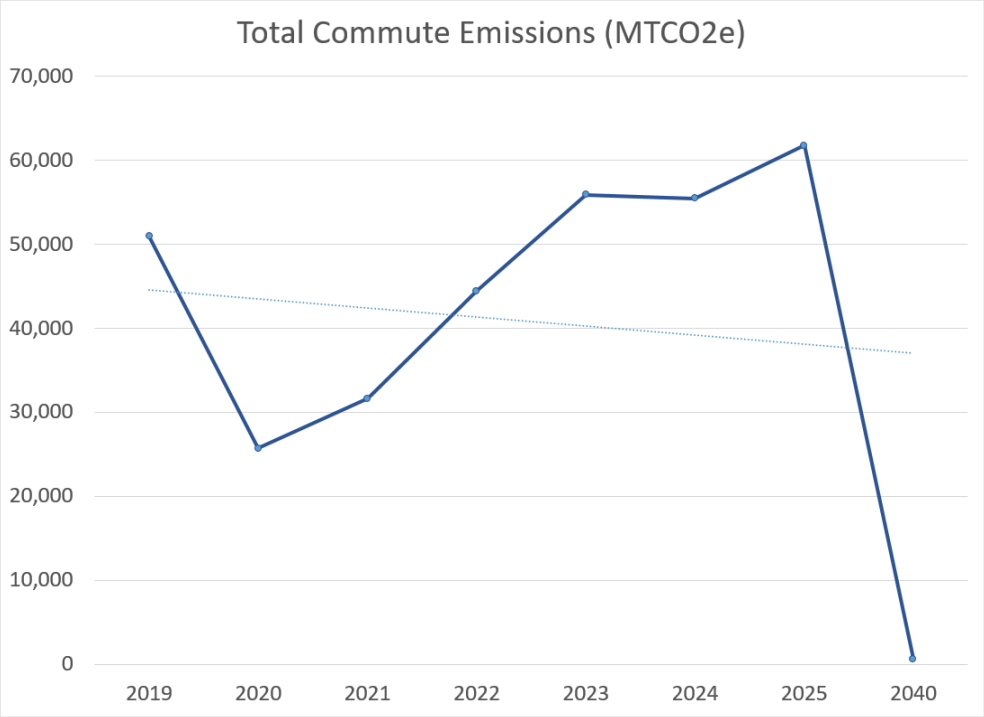
2019: Baseline Year
The baseline for mobile emissions is set in 2019, before the COVID-19 pandemic disrupted commuting patterns.

- **Fleet**: The year 2019 serves as the baseline for UCLA's fleet fuel consumption, marking the highest level of recorded use before major shifts in operations and sustainability initiatives. That year, the campus fleet consumed a total of 440,089 gallons of fuel. This detailed breakdown provides a comprehensive picture of UCLA's fleet operations at their peak, establishing a critical reference point for measuring progress in reducing fuel use and transitioning to lower-emission alternatives.
- **Commute**: 2019 saw over 102,000 daily trips, with more SOV travel and fewer transit subsidies or hybrid work options.

- **Air Travel**: Emissions from air travel were significantly higher due to frequent in-person meetings, conferences, and events.

2024 Emissions
As of 2024:

- Total mobile emissions: **69,717 MT CO_2e**
  - Commute: **55,473 MT CO_2e**
  - Business-Related Air Travel: **12,474 MT CO_2e**
  - UCLA Fleet: **1,770 MT CO_2e**



The graph illustrates a clear downward trend in commute-related GHG emissions from 2019 (61,768 MT CO_2e) to 2024 (55,473 MT CO_2e). If UCLA continues with a business-as-usual (BAU) approach—without significant changes in transportation mode share, housing proximity, or telework policies—emissions would likely remain near current levels or even increase as campus population grows. To meet the 2040 target, UCLA must scale up efforts such as achieving a 30% telecommute rate, significantly increasing transit pass uptake, providing active transportation incentives (e.g., bikes for commuters within 10 miles), and accelerating nearby workforce housing development. These interventions are essential to bending the curve toward deep decarbonization.

With regional transit expanding and UCLA continuing to lead in sustainable transportation planning, there is strong momentum toward our mobility-related climate goals.

Updated Emissions Mitigation Approach

UCLA's mobile source mitigation strategy is organized into three categories: fleet (covered in Scope 1), commuting, and air travel. The following sections outline specific goals and projects for each.

- **EV Infrastructure**: UCLA has expanded EV charging options with 474 Level 1 chargers, 16 Level 2 chargers, and 6 DC Fast Chargers on the main campus. The health system has added 20 Level 2 chargers but lacks DC Fast or Level 1 options.
- **Commuting Trends**:
    - Average trips have dropped by nearly 19% since 2019.
    - Single-occupancy driving continues to decrease.
    - Telecommuting accounted for 27% of employee work schedules in 2024.
    - Transit use, especially among students, continues to rise due to student fee-based transit passes and the partial subsidy provided by Events & Transportation.
- **Transit Advocacy**:
    - UCLA has partnered consistently with regional transit agencies to improve access and prevent service cuts.
    - Major infrastructure improvements are on the horizon. The Metro D (Purple) Line Extension, which will bring a subway station to UCLA's doorstep, is set to open in 2027. The Sepulveda Transit Corridor project, slated for completion in approximately 14 years, will further enhance regional access to campus and reduce car dependency.

Commute Emissions Mitigation

Employee and student commuting remains UCLA's largest mobile source of CO_2 emissions. However, recent commuting surveys show significant mode shifts. In 2024, only 38.2% of employees and 18.4% of students drove alone to campus, with most choosing sustainable modes like walking, transit, or biking.
Key strategies include:

- Continued investment in subsidized transit passes (Bruin U-Pass, Commuter All-Access)
- Expansion of remote work and hybrid schedules
- Improved biking and pedestrian infrastructure
- Increased on-campus housing to reduce long-distance commuting

What UCLA is Doing Now

UCLA employs a broad range of Transportation Demand Management (TDM) strategies to reduce vehicle trips, improve equity, and support clean travel:

- **Transit Incentives**: Universal access passes for students (Bruin U-Pass and Bruin Grad Pass) and employees (Commuter All-Access Pass) encourage sustainable transit use.
- **Parking Strategy**: Discounted carpool permits and daily decision ad hoc parking—pro-rated per day and pre-tax--discourage habitual driving while offering flexibility for drivers.
- **Telecommuting**: Hybrid schedules reduce peak traffic and emissions from employee commutes.
- **EV Readiness Plan**: Centering equity, this plan expands infrastructure and incentives for zero-emission vehicle adoption, especially for lower-income Bruins.
- **New Employee Outreach**: Special attention is paid to onboarding new employees with sustainable commuting habits before they set car-dependent routines.
- **Fleet Electrification**: The university prioritizes the purchase of low- and zero-emission vehicles and is aligned with both UC system and California state climate targets.

Emission Reduction Goals

As campus population and activities grow, it becomes even more essential to implement targeted, innovative strategies to reduce emissions. UCLA's goal is to reduce mobile source emissions well below 2019 levels by 2030 and continue declining toward net-zero emissions by 2050.

Our approach is centered on five pillars: telecommuting, electric vehicle (EV) adoption, public transit access, campus-proximate housing, and active transportation. While some elements, like telecommuting rates, may be influenced by broader workforce trends and are partially out of institutional control, UCLA can project, support, and plan for a range of future outcomes using available levers and programs.

The graph illustrates UCLA's projected greenhouse gas emissions under a business as usual scenario compared with a target pathway aimed at returning to 2019 emission levels by 2040. The business as usual projection reflects the trajectory that would occur if no additional mitigation actions are implemented, resulting in a steady and substantial rise in emissions that could approach 190,000 MT CO_2e by 2040. In contrast, the target pathway represents a deliberate and sustained effort to reduce emissions to the 2019 baseline of 50,980 MT CO_2e over the next sixteen years. The dotted vertical lines between the two curves represent the wedge, or the cumulative reductions that must be achieved to close the gap between these two futures.

Reaching the 2019 levels will require a multifaceted approach that addresses all major mobile source categories. One key strategy is the continued expansion of telecommuting policies to maintain a significant proportion of the workforce working remotely, which directly reduces commuter emissions. Parallel to this, investments in public transit access, active transportation infrastructure, and housing closer to campus will encourage a shift away from single-occupancy vehicle travel. The university fleet will undergo a complete transition to zero-emission vehicles, supported by a charging network that prioritizes electricity from clean, renewable sources. Airline travel emissions will be addressed through a combination of replacing short-haul flights with more sustainable alternatives, expanding the use of virtual collaboration, and implementing carbon offset programs for unavoidable trips. These approaches will require sustained policy. commitment, financial investment, and community engagement. If implemented effectively, they will bend the current trajectory away from the business as usual outcome and toward a future where UCLA meets its 2040 emissions goal.

Environmental Impact of EV Power Sources

As UCLA transitions its fleet and campus mobility programs toward electrification, the source of electricity powering electric vehicles (EVs) becomes critical to determining their overall environmental benefits. While EVs eliminate tailpipe emissions, their true climate impact depends heavily on the carbon intensity of the electricity used to charge them. When vehicles are charged on UCLA's campus, beginning in 2025, all purchased electricity will be renewable, however when residents are charging at home the emissions and power mix may vary.

UCLA Transportation conducted a utility analysis to assess the greenhouse gas emissions intensity of electricity consumed by Bruin commuters based on their residential utility providers. As shown in Figure , most Bruins are served by the Los Angeles Department of Water and Power (LADWP) and Southern California Edison (SCE), with respective emissions intensities of 567 lbs CO_2e/MWh and 552 lbs CO_2e/MWh. These two utilities alone account for over 2,700 permit holders, making their performance pivotal in assessing the broader impact of EV adoption.

However, emissions intensity varies significantly among smaller municipal utilities. For example:

- City of Glendale (472 lbs CO_2e/MWh) performs better than both SCE and LADWP.
- City of Pasadena (861 lbs CO_2e/MWh), Burbank Water & Power (714 lbs CO_2e/MWh), and the City of Anaheim (1,015 lbs CO_2e/MWh) emit substantially more CO_2e per MWh—up to 1.8 times that of SCE.
- A Bruin EV driver commuting from Anaheim could generate over 120 lbs of CO_2e per one-way trip if charging exclusively at home.

This disparity underscores a key strategy for emission reduction: increasing access to on-campus charging infrastructure powered by cleaner electricity. Home charging, which often occurs at night, is more likely to draw electricity from carbon-intensive sources due to reduced renewable availability and higher grid demand.

This principle extends to electric buses and other fleet vehicles. Transitioning to battery-electric transit buses, if powered with clean daytime electricity, can dramatically reduce lifecycle emissions from campus transportation. Coordinating fleet charging with solar generation periods will be essential to maximizing the climate benefits of electrification.

As peer agencies and utilities, including LADWP, set aggressive clean energy targets (e.g., LADWP's goal to achieve 100% clean energy by 2035), UCLA must align its transportation planning with these grid decarbonization pathways. Electrification without clean power risks simply shifting emissions from tailpipes to smokestacks.

Scope 3 Greenhouse Gas Mitigation (Reduction) Strategies- Solid Waste

Solid waste is a new category of Scope 3 emissions in 2024 included in UC greenhouse gas emissions inventories and Climate Action Plans. UCLA has a long history of zero waste planning and is developing an updated Zero Waste Plan for the university that is focused on reducing landfill waste, the source of greenhouse gas emissions for this category. You can learn more at: https://sustain.ucla.edu/zero-waste/ . Future climate action plans will include more detail on mitigation related to landfill gas emissions.

Scope 3 Greenhouse Gas Mitigation (Reduction) Strategies- Other Sources

UC Health conducted an inventory of scope 3 (corporate value chain) greenhouse gas (GHG) emissions for the University of California Health system (UC Health) in calendar year 2022 (CY 2022). As part of UC Health, UCLA Health conducted a Scope 3 Emissions inventory amongst existing portfolio and operations for 2022. Acquisitions and operations post-2022 are not included.

2022 UC Health Scope 3 Inventory (MT CO2e)								
UC Academic Health Center	Category 1 – Purchased Goods and Services	Category 2 – Capital Goods	Category 3 – Fuel- and Energy-Related Activities	Category 4 – Upstream Transpor-tation and Distribution	Category 5 – Waste Generated in Operations	Category 6 – Business Travel	Category 7 – Employee Commuting	TOTAL
UC Davis	232,049	139,210	10,524	1,460	2,098	2,252	19,665	**407,259**
UC Irvine	160,359	43,377	2,777	1,576	680	1,008	7,572	**217,350**
UC Los Angeles	261,818	141,187	8,363	7,854	2,072	2,853	12,363	**436,511**
UC San Diego	322,559	36,922	8,398	3,895	2,008	1,609	7,842	**383,233**
UC San Francisco	379,833	121,732	6,605	3,204	2,280	2,429	14,060	**530,143**
TOTAL	**1,356,618**	**482,429**	**36,667**	**17,990**	**9,138**	**10,151**	**61,502**	**1,974,496**

The report, available online, aims to serve as a comprehensive manual for ensuring that future progress, compared to the baseline year 2022, can be accurately tracked by the University of California Office of the President (UCOP) and UC Health and address seven scope 3 categories:

- Category 1: Purchased goods and services
- Category 2: Capital goods
- Category 3: Fuel- and energy-related activities
- Category 4: Upstream transportation and distribution
- Category 5: Waste generated in operations
- Category 6: Business travel
- Category 7: Employee commuting

While there are 15 official categories of scope 3 emissions defined by the U.S. Environmental Protection Agency (EPA), only the first seven are considered in-scope for this report due to data availability and limited downstream supply chains for UC academic health centers ("Scope 3 Inventory Guidance"). The calculation methodology employed was decided based on data availability, using tools and recommendations provided by Practice Greenhealth (PGH), a nonprofit organization that seeks to reduce the environmental footprint of the health care industry. Data sources also varied depending on the category in question. For example, categories 1 and 2 employ spend data from UC Health accounts payable (AP) records; category 3 sources data from utility bills; category 4 sources data from a mix of distributors and AP records; category 5 data is tracked in Key Green Solutions (KGS), a metrics-tracking software; category 6 data is tracked in Connexxus, the UC systemwide travel program; and category 7 data is sourced from annual commuter transportation surveys, cordon counts and parking permit registries. See report linked below for more details.

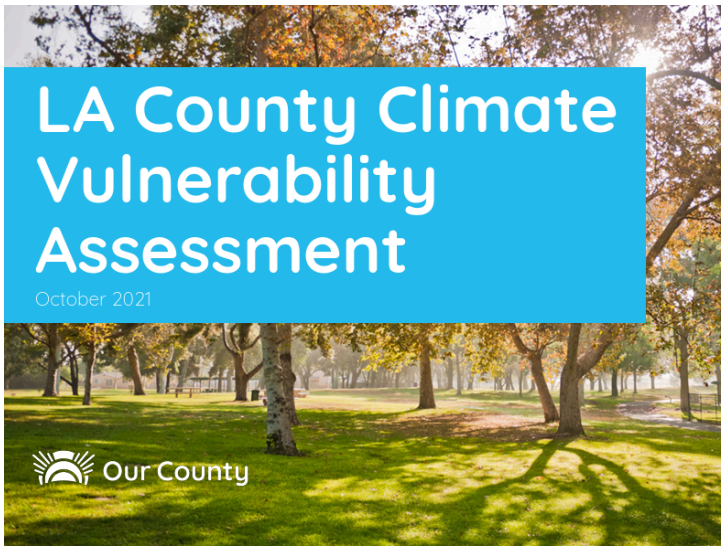
In addition to the UC Health effort, UCLA Sustainability engaged a team of UCLA Anderson Executive MBA (EMBA) students to examine best practices . See the Living Laboratory: Education and Research Section for more details on this effort.

Climate Resilience Planning

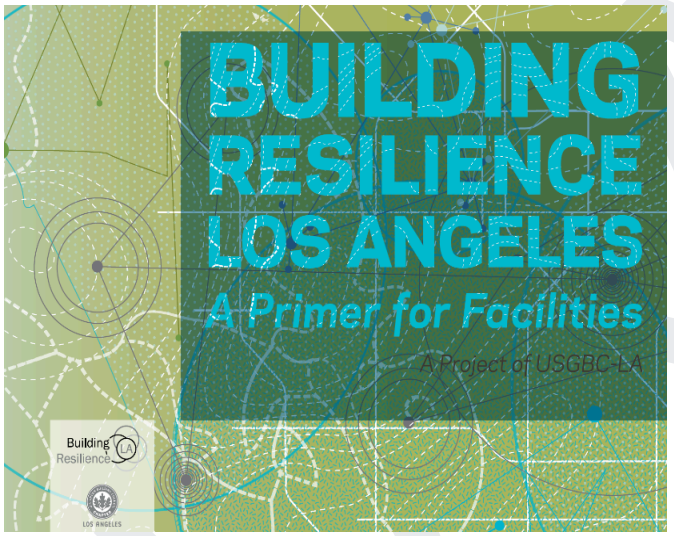
In December 2015, Chancellor Block signed the Climate Leadership Commitment under Second Nature, expanding on the original 2007 American College and University Presidents Climate Commitment (ACUPCC). UCLA was the first UC campus to sign the integrated commitment.

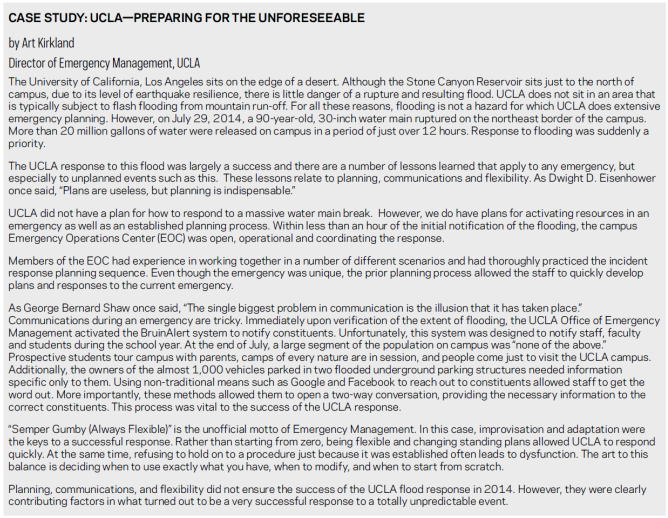
Resilience planning is a systems approach to developing an organization that is well prepared to respond to external shocks and stressors including climate change. It includes emergency management, business continuity, infrastructure planning, and community building. Climate Resilience planning is the intersection of resilience and sustainability/climate planning and refers to the part of resilience planning that focuses on climate adaptation-preparing for climate impacts such as heat, drought, and sea level rise. There is an Executive Order requiring State agencies to do adaptation planning, and the President's office is beginning to look into how campuses are addressing this issue, and what, if any, system wide commitments or actions should be considered.

UCLA convened stakeholders in 2016 and UCLA undergraduate students completed some initial best practice research through the Sustainability Action Research Program. Then a graduate student of urban and regional planning worked with UCLA Sustainability is evaluating frameworks to apply to university resilience planning. To be effective, resilience planning requires regional collaboration. In recognition of this, UCLA's Chief Sustainability Officer served on the for the development of Resilient Los Angeles, the first resilience plan for the City of City of Los Angeles, as well as the Climate Vulnerability Assessment for LA County



UCLA also collaborated with USGBC's Building Resilience LA initiative to develop a guidebook for building owners on resilience. A case study on the major flood at UCLA in 2014 was featured in the guide, authored by UCLA's Director of Emergency Management. The guide was released at the national GreenBuild conference which was hosted in Los Angeles in October 2016.





CASE STUDY: UCLA—PREPARING FOR THE UNFORESEEABLE

by Art Kirkland

Director of Emergency Management, UCLA

The University of California, Los Angeles sits on the edge of a desert. Although the Stone Canyon Reservoir sits just to the north of campus, due to its level of earthquake resilience, there is little danger of a rupture and resulting flood. UCLA does not sit in an area that is typically subject to flash flooding from mountain run-off. For all these reasons, flooding is not a hazard for which UCLA does extensive emergency planning. However, on July 29, 2014, a 90-year-old, 30-inch water main ruptured on the northeast border of the campus. More than 20 million gallons of water were released on campus in a period of just over 12 hours. Response to flooding was suddenly a priority.

The UCLA response to this flood was largely a success and there are a number of lessons learned that apply to any emergency, but especially to unplanned events such as this. These lessons relate to planning, communications and flexibility. As Dwight D. Eisenhower once said, "Plans are useless, but planning is indispensable."

UCLA did not have a plan for how to respond to a massive water main break. However, we do have plans for activating resources in an emergency as well as an established planning process. Within less than an hour of the initial notification of the flooding, the campus Emergency Operations Center (EOC) was open, operational and coordinating the response.

Members of the EOC had experience in working together in a number of different scenarios and had thoroughly practiced the incident response planning sequence. Even though the emergency was unique, the prior planning process allowed the staff to quickly develop plans and responses to the current emergency.

As George Bernard Shaw once said, "The single biggest problem in communication is the illusion that it has taken place." Communications during an emergency are tricky. Immediately upon verification of the extent of flooding, the UCLA Office of Emergency Management activated the BruinAlert system to notify constituents. Unfortunately, this system was designed to notify staff, faculty and students during the school year. At the end of July, a large segment of the population on campus was "none of the above." Prospective students tour campus with parents, camps of every nature are in session, and people come just to visit the UCLA campus. Additionally, the owners of the almost 1,000 vehicles parked in two flooded underground parking structures needed information specific only to them. Using non-traditional means such as Google and Facebook to reach out to constituents allowed staff to get the word out. More importantly, these methods allowed them to open a two-way conversation, providing the necessary information to the correct constituents. This process was vital to the success of the UCLA response.

"Semper Gumby (Always Flexible)" is the unofficial motto of Emergency Management. In this case, improvisation and adaptation were the keys to a successful response. Rather than starting from zero, being flexible and changing standing plans allowed UCLA to respond quickly. At the same time, refusing to hold on to a procedure just because it was established often leads to dysfunction. The art to this balance is deciding when to use exactly what you have, when to modify, and when to start from scratch.

Planning, communications, and flexibility did not ensure the success of the UCLA flood response in 2014. However, they were clearly contributing factors in what turned out to be a very successful response to a totally unpredictable event.

Building Resilience Los Angeles Cover and Case Study

The University of California (UC) is a leader in higher education climate action.. But as climate change wreaks havoc in communities across California and the world, planning for resilience in the face of climate impacts has become just as important as climate mitigation action. Furthermore, because climate change disproportionately affects vulnerable communities, including communities of color, climate resilience planning must work to address inequities so that all communities have an opportunity to survive and thrive. The UC Office of the President solicited consultant support in designing and facilitating climate resilience planning workshops for each UC campus and medical center. This climate resilience planning effort centers the need for Justice, Equity, Diversity, and Inclusion (J.E.D.I.) in order to address existing inequities that make some communities more vulnerable to the impacts of climate change. Framework for J.E.D.I.-Centered Climate Resilience Planning (Framework) to guide each campus and medical center in understanding the key concepts and steps. The framework also helps to align climate adaptation efforts with the broader definition of resilience in emergency management planning.

UC Health, as a signatory to the White House Health Sector Climate Pledge, is working to develop comprehensive and equity-focused climate resilience plans across the system. You can review progress in this 2023 Progress Report, Health Sector Climate Pledge. University of California (UC) Health recognizes the imperative to act on climate change through responsible mitigation, adaptation, and the incorporation of social equity principles. We are committed to delivering exceptional clinical care to all those we serve, educating future generations of health professionals, and conducting research that improves the health and quality of life for all Californians. Being prepared for future climate extremes and hazards will enable us to continue serving our patient populations and help protect human health, safety and well-being, while also limiting operational disruptions and mitigating damage and cost of remediation. UC Health is working towards more equitable and resilient healthcare services under the guidance of multiple UC-wide initiatives

UCLA Health is committed to integrating an equity-centered approach into climate resilience planning. The UCLA Health initiative engages departments from across the health system, including Sustainability, Emergency Preparedness, Facilities, and Health Equity and Inclusive Excellence, ensuring a comprehensive and inclusive strategy. By actively involving vulnerable on-campus groups and key stakeholders, we prioritize the needs of those most impacted by climate hazards. The process includes thorough impact assessments, robust engagement efforts, and actionable plans to mitigate risks and enhance resilience. Together, UCLA Health strives to create a health system that is not only prepared for climate challenges but also fosters equity and inclusivity at its core.

Research, Education, and Engagement: Living Laboratory Opportunities

UCLA has a long history of leadership in sustainability and is the home of the first environmental studies program in the UC system which began in the early 1970s. In recent years the university has conducted comprehensive assessments of academic programs and identified over 600 researchers from every corner of campus engaged in sustainability related research through more than 30 centers and institutes including the interdisciplinary Institute of the Environment and Sustainability, and over 500 courses across more than 60 different departments. In recent years new research centers and initiatives such as the Center for Healthy Climate Solutions, the Climate and Wildfire Research Initiative, and the Institute for Carbon Management are working on addressing the toughest issues in climate change and addressing the impact of climate change on vulnerable communities. The Emmett Institute on Climate and Environment and the Luskin Center for Innovation address key issues in climate law and policy.

UCLA has multiple undergraduate and graduate degree programs focused on sustainability including a Climate Science Major and the B.S. in Environmental Science where students engage in a Senior Practicum and work with clients across the region and the world. A new Environmental Humanities program and classes in the arts reflect the breadth of sustainability education. The undergraduate Sustainability Action Research program has been recognized nationwide as a model for creating a living laboratory where students collaborate with staff and faculty on applied sustainability research on campus. Graduate programs include a PhD in Environment and Sustainability and a D.Env in Environmental Science and Engineering as well as focuses within a range of disciplines, such as Environmental Health Sciences in Public Health, an Environmental Law specialization, and a social impact specialization in business. The Leaders in Sustainability graduate certificate has been recognized as a groundbreaking interdisciplinary program.

As part of the Decarbonization Study, the consulting team interviewed UCLA faculty both individually and in collective meetings. The tables that follow are excerpted from the study. As described in the study: “Several research opportunities for UCLA faculty and students may be created through the campus energy transition. Opportunities for Living Lab-type research based on new campus energy systems are likely concentrated within engineering disciplines, but UCLA is encouraged to explore the potential for research in fields such as environmental science, urban planning, economics, and sociology, all of which have the potential to study the wider impacts of a new decarbonized energy system.

Engineering studies that focus on analysis of data gathered from the campus energy system benefit from the fact that the system suffers no direct interference. Due to the importance of the energy system to all campus operations, its reliability remains paramount. This emphasis on reliability also tends to mean the testing of newly developed technology or fundamental engineering research tends to be harder to implement as part of the campus energy system. However, opportunities may be found in topics such as carbon capture, in which the byproduct of energy generation (carbon dioxide) may be captured and used for research, without putting campus operations at risk."

Potential Research Opportunities (source: UCLA Decarbonization Study)

THEME	LIVING LAB RESEARCH DESCRIPTION	SOURCE / CONTACT
Carbon capture	Explore carbon capture in building materials and pilot low-carbon concrete plant or similar. See related initiatives: Institute for Carbon Management (ICM) | UCLA - Explore UCLA's ICM Initiatives	Gaurav Sant, Heny Samueli School of Engineering
Carbon capture and Hydrogen production	Equatic catalyzes and powers the green economy. Our seawater electrolysis couples carbon dioxide removal (CDR) from the atmosphere with the production of green hydrogen at the lowest costs. Equatic	Gaurav Sant, Heny Samueli School of Engineering
Carbon capture	Explore sequestering carbon in bio-landfills using salt per the 2023 published article by Eli Yablonovitcha and Harry W. Deckmana.	Bruce Dunn, Heny Samueli School of Engineering
Water recycling plant	A water recycling plant that produces renewable biogas for use in the campus cogen plant. Helps UCLA meet its potable water reduction goal as well as its carbon reduction goal.	Eric Hoek, Department of Civil & Environmental Engineering, Institute of the Environment & Sustainability and the California NanoSystems Institute.
Campus energy systems	Energy systems "control center", which would showcase the campus energy system, providing access to system operations, advanced data collections and analysis capabilities. This is envisioned as a substantial project, forming a permanent campus hub, which could act as a venue for research and data analysis, as well as providing an opportunity for broader education, tours etc.	Dean Alissa Park, Heny Samueli School of Engineering
Steam tunnel re-purpose	Make use of the residual volume within the existing steam tunnel network once that loop gets converted for less-space intensive water delivery. Perhaps making (re)use of some of that pre-existing steam tunnel space by repurposing it could provide an opportunity for carbon sequestration, or maybe even if use in some of the other scenarios (like more water storage. Storing Renewable Energy, One Balloon at a Time - The New York Times (nytimes.com)	Todd Lynch, UCLA Capital Programs
Bioconversion of CO2	Autotrophic organisms have capabilities to carbon dioxide into value-added chemicals using hydrogen as the major energy source. By studying and engineering the metabolic networks of such biological systems using analytical, genetic, and mathematical tools, we can accelerate the bioconversion of CO2 and green energy into drop-in liquid biofuels (biodiesel and bio-jet fuels) and natural products that can serve as building blocks for polymers, agrochemicals, and medicines. The potential carbon upcycling endeavors are not only environmentally but also economically beneficial for the University and California.	Jun Park, Heny Samueli School of Engineering
District energy and central plant operation	Comprehensively monitor the operation of the new campus energy system. Many potential mechanical and electrical engineering studies could be developed.	WSP
Fuel cell operation	Performance assessments of fuel cells is likely to yield valuable new information, for this developing technology.	WSP

Additionally the study recommended using infrastructure locations for class tours to demonstrate broader climate action, consider climate justice teaching opportunities, and building tours, studies, capstone projects etc. including in architecture and urban design. As the decarbonization projects advance, UCLA Sustainability will continue to engage

faculty and students to develop additional living laboratory opportunities. There are significant opportunities related to Scope 3 emissions as well.

Each year, UCLA also engages student fellows in Climate Action related projects through the UC President's Bonnie Reiss Leading on Climate Fellowship Program. The program funds student fellow positions on UC campus with the goal to actively engage students in:

• Shaping the University's climate action programs and supporting the University's aggressive goals for reducing greenhouse gas emissions while creating a more equitable, sustainable, resilient and healthy world;

• Conducting projects and engagement that support the University's sustainable food procurement goals and sustainable agricultural practices.

In addition to examining potential research and education intersections with future decarbonization and climate action, UCLA Sustainability engaged in two Masters level applied research projects related to developing the climate action plan. A team of Masters of Policy Students for their Applied Policy Project, conducted best practice research into education and outreach strategies to support UCLA's Climate Action Plan and highlighted these initiatives in their report. A team of Executive MBA students for their Strategic Management Research project examined approaches to Scope 3 emissions tracking for supply chain, a potential area of Scope 3 that is under consideration for future reporting for UC. Their report outlines a phased and practical approach to initiating Scope 3 emissions tracking at UCLA, with a particular focus on procurement. The findings and recommendations are grounded in procurement data analysis (FY22–FY25), benchmarking of peer institutions such as Harvard and MIT, interviews with internal and external stakeholders, and review of Scope 3 accounting frameworks such as those from the EPA, SPLC, and GHG Protocol. The report is intended to support decision-making by offering realistic, actionable strategies to begin addressing Scope 3 emissions from procurement—without overreliance on precision or supplier data that may not yet be available. It focuses on prioritization, feasibility, and systems alignment to help UCLA build internal capacity, prepare for policy changes, and support system-wide collaboration.

Disclaimer- California Environmental Quality Act (CEQA)

The UCLA Climate Action Plan (CAP), prepared consistent with the UC Sustainable Practices Policy, is not legally binding and does not commit the University to the implementation of any specific greenhouse gas (GHG) reduction measure or related development project, and as such are not "projects" as defined under the California Environmental Quality Act (CEQA). To the extent such studies and plans could be construed as a "project" under CEQA, they are exempt from CEQA as planning and feasibility studies. In addition to facilitating the reduction of UC-related GHGs, CAPs are intended to serve as a guide to achieving the campus' broad climate goals, including in the areas of resilience, transportation, and diversity, equity, and inclusion.

Long Range Development Plans (LRDPs) are comprehensive land use plans that guide the siting and development of buildings and infrastructure needed to support a projected campus population levels through a defined horizon year. Pursuant to CEQA Statute 21080.09, Environmental Impact Reports are prepared to evaluate the environmental effects of LRDPs and thereby satisfy the requirements of CEQA for general development and population growth of a particular campus or medical center. The specific GHG reduction measures and the environmental effects of related projects identified in CAPs are generally incorporated into LRDP EIRs and any subsequent tiered document pursuant to CEQA. All University projects, whether or not they are evaluated in a LRDP EIR remain subject to environmental review pursuant to CEQA at the time of project approval.

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Acknowledgements

Many staff across UCLA departments contributed to this report including major sections from Sustainability, Facilities Management, Transportation, Health, Housing and Hospitality, and Capital Programs. We are grateful to the Climate Action Task Force for review and advising the development of the plan and the decarbonization study. Full membership of the Task Force is listed in Appendix A. This draft plan has also been reviewed by the Sustainability Committee and Executive Sustainability Committee: https://sustain.ucla.edu/sustainability-committee/

Appendix A

Climate Action Taskforce Membership

Technical Subcommittee members are indicated with an asterisk * before their names.

*Nurit Katz, Chief Sustainability Officer, Sustainability (Co-Chair)

*Bonny Bentzin, Deputy Chief Sustainability Officer (Co-Chair)

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Alexander Nguyen, graduate student, Bonnie Reiss Climate Action Fellow (Health)

Alison Hewitt, Writer, Senior Media Relations Officer, Strategic Communications

Angel More, undergraduate student, Bonnie Reiss Climate Action Fellow

*Ara Aroyan, Director, Construction Management Services, Capital Programs

Ariella Gaughan, undergraduate student, USAC Sustainability Director 22-23

*Arturo Sanchez, Administrative Director of Health System Environmental Services & Sustainability, Health System

*Ashley Rogers, Director, Environmental Planning, Capital Programs

Cara Horowitz, Executive Director, Emmett Institute on Climate Change and Environment

*Carl Newth, Director, Engineering Services, Capital Programs

Carrie Bearden, Professor, Departments of Psychiatry and Biobehavioral Sc

iences & Psychology

Charles Turner, Executive Director, Financial and Organizational Services

*Christophe LaBelle, Analyst, UCLA Sustainability Office

Curtis Plotkin, Assistant Vice Chancellor, Environment, Health, and Safety

David Karwaski, Director, Mobility Planning &Traffic Systems, Events &Transportation

Deepak Rajagopal, Professor, Urban Planning and Institute of the Environment and Sustainability (appointed by Academic Senate)

Elizabeth Ashforth, Director of Student Research, Interim I-Track Department Chair, Geffen Academy

Eric Fournier, Research Director, California Center for Sustainable Communities

Gaurav Sant, Professor, Engineering, Director, Institute for Carbon Management (appointed by Academic Senate)

Gregory Pierce, Adjunct Associate Professor, Department of Urban Planning, Co-Director, Luskin Center for Innovation

Jared Meyer, Senior Director, Housing Maintenance, Housing and Hospitality

John Carpenter, Energy Manager, Health System

Julia Wu, undergraduate student, Bonnie Reiss Climate Action Fellow

Kayla Shirey, Assistant Athletics Director, Event Operations, Athletics

Kelli Walters, Staff Assembly Representative, Sustainability Committee

Kira Fish, Graduate Student Researcher in the Atmospheric and Oceanic Sciences

*Kelly Schmader, Assistant Vice Chancellor, Facilities Management

*Kurt Alexander, Director, Health System Facilities, Health System

Kyle Nelson, postdoctoral fellow, UCLA/VA COE on Veteran Resilience and Recovery, Semel Institute

Leo Dong, undergraduate student, Co-President, Ecology, Economy, Equity (E3)

Liz Kennedy, Director of Fair Labor and Sustainability, ASUCLA

Michael Cahn, Lecturer, History Department

Naren Ramesh, undergraduate student, Bonnie Reiss Climate Action Fellow (Health)

Nicholas Tinoco, PhD student, Sociology

*Norm Lantz, Senior Director, General Services, Health System

Peter Angelis, Associate Vice Chancellor, Housing and Hospitality

*Peter Hendrickson, Associate Vice Chancellor, Design and Construction and Campus Architect

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*Sean Wilder, Director, Energy Systems, Facilities Management

Susan Ransome, Assistant Clinical Professor, Department of Ophthalmology, David Geffen School of Medicine

Todd Lynch, Principal Project Planner, Capital Programs