

USC Sustainability Strategy 2030

Prepared by: Academic Senate Sustainability Committee Taskforce

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INTRODUCTION

Environmental sustainability is one of the most critical challenges facing humanity in the 21st century. USC’s Mission—“the development of human beings and society as a whole through the cultivation and enrichment of the human mind and spirit”¹—calls on us to develop a University-wide strategic response. We are therefore inspired to see that the Provost has identified “security and sustainability” as one of four key university-wide initiatives he plans to launch. We similarly appreciate the fact that the University has adopted a Sustainability 2020 Plan² and that the Los Angeles Memorial Coliseum has a zero waste program.

However, given the magnitude, urgency, and multifaceted nature of the sustainability challenge, these efforts need to be embedded in a broader vision and longer-term strategy. Such a strategy would enable us to approach systematically both long-range planning needs and near-term implementation steps. Our strategy should, we argue, position us as a leader in research and education—which is, after all, our primary responsibility—and it would turn the campus into a beacon of sustainable operations and facilities—since we are one of the largest private employers in a region and a city that have made sustainability a top priority.

It is recognized within and beyond the Trojan Family that USC is currently lagging behind many of our peer institutions in implementing sustainability practices, and that we lack a comprehensive sustainability strategy.³ With the goal of catalyzing the development of such a strategy for the University, the Senate offers the following ideas. We hope this document will inspire and bring together the many constituencies of the University to articulate an imaginative and leading-edge long-term sustainability strategy that takes advantages of the strengths and commitment to innovation of our university.

The following document addresses in turn:

- The current and likely-future sustainability gap
- Proposals for USC’s Sustainability Mission, Vision, and Values
- Considerations on Implementation planning
- Proposed Sustainability Strategic Goals in 7 key domains
- Appendix on background to the proposed goals

¹ <https://about.usc.edu/policies/mission-statement/>

² Link to the USC Sustainability 2020 plan:

file:///C:/Users/druddell/AppData/Local/Temp/Sustainability2020_Booklet-1.pdf

³ Link to collection of peer institutions’ sustainability strategy documents:

https://www.dropbox.com/sh/5p0ydrmkukrtqo4/AACXgBic4ZNTpyjOAq5_O9Pma?dl=0

THE GAP

We are far behind our peers in addressing environmental sustainability. In 2012, the USC Office of Sustainability collected data that allowed us to assess our performance in sustainability using the system developed by the Association for the Advancement of Sustainability in Higher Education (AASHE) (<http://www.aashe.org/>). Established in 2006 as the first professional higher education association for campus sustainability, AASHE developed the Sustainability Tracking, Assessment & Rating System (STARS) model to rank sustainability efforts at higher education institutions. This is the most commonly used model to rank "green" colleges and universities across the world with approximately 250 US universities and colleges publicly reporting their performance on various indicators and criteria in Academics, Engagement, Operations, and Planning & Administration.

Results of this assessment placed USC's sustainability performance in the Bronze category, although the Office of Sustainability did not report the sustainability scores to AASHE. Building upon lessons learned from the STARS self-assessment, and using the STARS reporting system as a guide, the University's Sustainability Steering Committee and the Office of Sustainability mobilized staff, faculty, and students to identify ambitious but achievable goals for a university improvement plan. The result of this effort was the USC Sustainability 2020 Plan. The 2020 Plan and its goals were endorsed by the university in late 2015, and since then, the Office of Sustainability has led several working-groups to identify projects and proposals to achieve stated goals.

The 2012 self-assessment also served as an opportunity to compare USC's sustainability performance with peer institutions. Unfortunately, The Office of Sustainability is not able to regularly update data for sustainability assessments—another symptom of the relatively low priority and paucity of resources USC has accorded sustainability—but when we compare our 2012 performance with the 2014 results recorded by 21 peer institutions (peers were selected based on university rankings from the Wall Street Journal College Rankings and from the U.S. News National Universities Rankings), the comparison is disheartening. While a 2012-2014 comparison is admittedly flawed, it is striking that overall, USC is the lowest-scoring institution. The results of this assessment identified some areas of strength and progress—for instance, USC performed well in the areas of Engagement (67.6), Transportation (63.3), Waste (74.6), and Water (83.5)—but our total score across the AASHE criteria is 36%, as compared to a mean of 60% among peer institutions, and a high of 81% at Stanford. (See appendix for full details.)

As we move forward, a host of environmental challenges will surely intensify both locally and globally. Our lagging position will become an increasingly burdensome liability, be it in attracting students, faculty, and donors, or in our role vis-à-vis the community, Los Angeles city government, the State, or relative to our aspiration to be a world-class university.

We already have some valuable assets for efforts to address this gap. We have some world-class faculty, passionate and skillful administrators, and motivated students. But our capabilities are dispersed and we are as yet ill-equipped to exploit them. Nor do we have a coherent long-term strategy for augmenting these capabilities. The 2020 Plan is a valuable first step in coordinating our efforts, but to fulfill USC's declared ambition, we need a sustained commitment to becoming a leader in the environmental sustainability arena. This should be guided by a longer-term vision and strategy.

PROPOSED SUSTAINABILITY MISSION, VISION, VALUES

What should USC's mission be in the sustainability arena? What is our fundamental purpose in this arena? Without wanting to preempt the discussion among a broader range of stakeholders that we hope to catalyze with this document, here is a proposal: ***USC aims to develop the knowledge, people, and practices needed to lead the way in responding to the major environmental sustainability challenges facing our city, region, country, and planet.***

What is USC's **vision** in the sustainability arena? That is, what would USC look like if we fulfilled this mission? USC's 2011 Vision focuses on three legs: (a) Transforming Education for a Rapidly Changing World, (b) Creating Scholarship with Consequence, (c) Connecting the Individual to the World."⁴ Building on this foundation, our vision in the sustainability arena could be to: (a) Become an education leader in building the disciplinary and interdisciplinary skills and knowledge that our students will need to confront the environmental challenges ahead; (b) Become an indispensable source of scientific, engineering, and policy expertise in the environmental sustainability field; (c) Connect our institution, faculty, and students to others working in this field in the city, region, and world.

What **values** should guide our efforts in this arena? Our founding core values will serve us well in this endeavor: "free inquiry, the search for truth, appreciation of diversity, service to community, respect and care for others, and ethical conduct." We need to look to these values in evaluating and balancing long-term and difficult-to-quantify benefits and costs--such as the reputational benefit of demonstrated leadership in an increasingly critical policy arena, the costs of our vulnerability to environmental pressures, and the costs of adjusting to dramatic regulatory changes that are likely to arise in response to those pressures. The temptation is strong to ignore these longer-term considerations and base our decisions on shorter-term, easier-to-quantify costs and benefits. Values play a key role in the governance of large complex institutions such as ours precisely because they help us avoid this pitfall and guide us to wiser decisions. We propose as a guiding principle that the University adopt a triple-bottom-line (TBL) decision rule.⁵ Relative to simpler rules (like Net present value and Payback period) this would be more complex, but in recognizing economic, environmental, and equity considerations of any major action, it will help us capture the real costs and benefits involved in both the short- and long-term.

PROPOSED SUSTAINABILITY STRATEGY GOALS – 2030

Guided by this Mission, Vision, and Values, we have reviewed USC's performance in each of the 7 AASHE domains, compared ourselves to our peers, assessed our progress in the 2020 Plan, and identified a set of plausible longer-term strategic goals and priorities. (The foundation for these goals is explained in the Appendix.)

⁴ <https://strategic.usc.edu/files/2013/01/USC-Strategic-Vision.pdf>

⁵ The TBL is an accounting framework that incorporates three dimensions of performance: social, environmental and financial. This differs from traditional reporting frameworks as it includes ecological (or environmental) and social measures that can be difficult to assign appropriate means of measurement.

<http://www.ibrc.indiana.edu/ibr/2011/spring/article2.html>

We offer these goals with the aim of opening a conversation. We are aware that they would need more extensive discussion before the University commits to them. In summary, we propose that by 2030...

- Education & Research: USC will be widely recognized regionally, nationally, and internationally as a leader in teaching and research on a wide range of environmental sustainability issues.
- Community Engagement: USC will regularly develop, lead, and engage in strategic partnerships on campus and in the community to promote sustainability practices and education.
- Energy Conservation: USC will achieve carbon neutrality across all campus buildings.
- Transportation: USC will reduce by 50% single occupancy vehicles (SOVS) from 2014 levels; convert the university motor fleet to zero emissions (excluding emergency vehicles and large trucks); reduce by 50% the university's carbon footprint; and position USC as a visible and progressive participant in local, regional, and international sustainable transportation activities.
- Procurement: USC will be a recognized leader among higher education institutions in using its purchasing power to encourage environmentally sustainable operations in its supply chain.
- Waste: USC will achieve campus-wide "zero waste" (90% waste diversion) from 2014 levels on all USC campuses.
- Water: USC will reduce potable water usage by 50% from 2014 levels across all USC campuses.

To reiterate: the Senate is proposing these goals to catalyze discussion. We do not claim to have undertaken the comprehensive analysis that would be needed before the University adopted them.

FROM STRATEGY TO IMPLEMENTATION

Implementing a Sustainability Strategy of this magnitude and complexity will require a much enhanced level of coordination and collaboration across the various functional areas of the Administration and across the various Schools. Unlike other strategic priorities at USC, sustainability implicates all the areas of responsibility currently dispersed across the Provost and our two University Senior Vice Presidents.

At present, the only formal responsibility for sustainability activity at USC falls under the Associate Senior Vice President for Administrative Operations. This administrator's responsibilities include the Department of Public Safety (DPS), Health & Safety, IT & HR, as well as Environmental Health & Safety. To assist this Associate SVP, we have a Sustainability Office staffed by a single administrator. The Sustainability Office in turn coordinates the activity of a Sustainability Steering Committee that is composed of volunteers, operating with little if any authority or responsibility.

To ensure a more appropriate level of strategic leadership, and to integrate the various dimensions of our sustainability efforts—education and research, operations, facilities and finances—we propose a Sustainability Leadership Council, comprised of the Provost, two or three select Deans, the two university SVPs, and a Chief Sustainability Officer (CSO).⁶

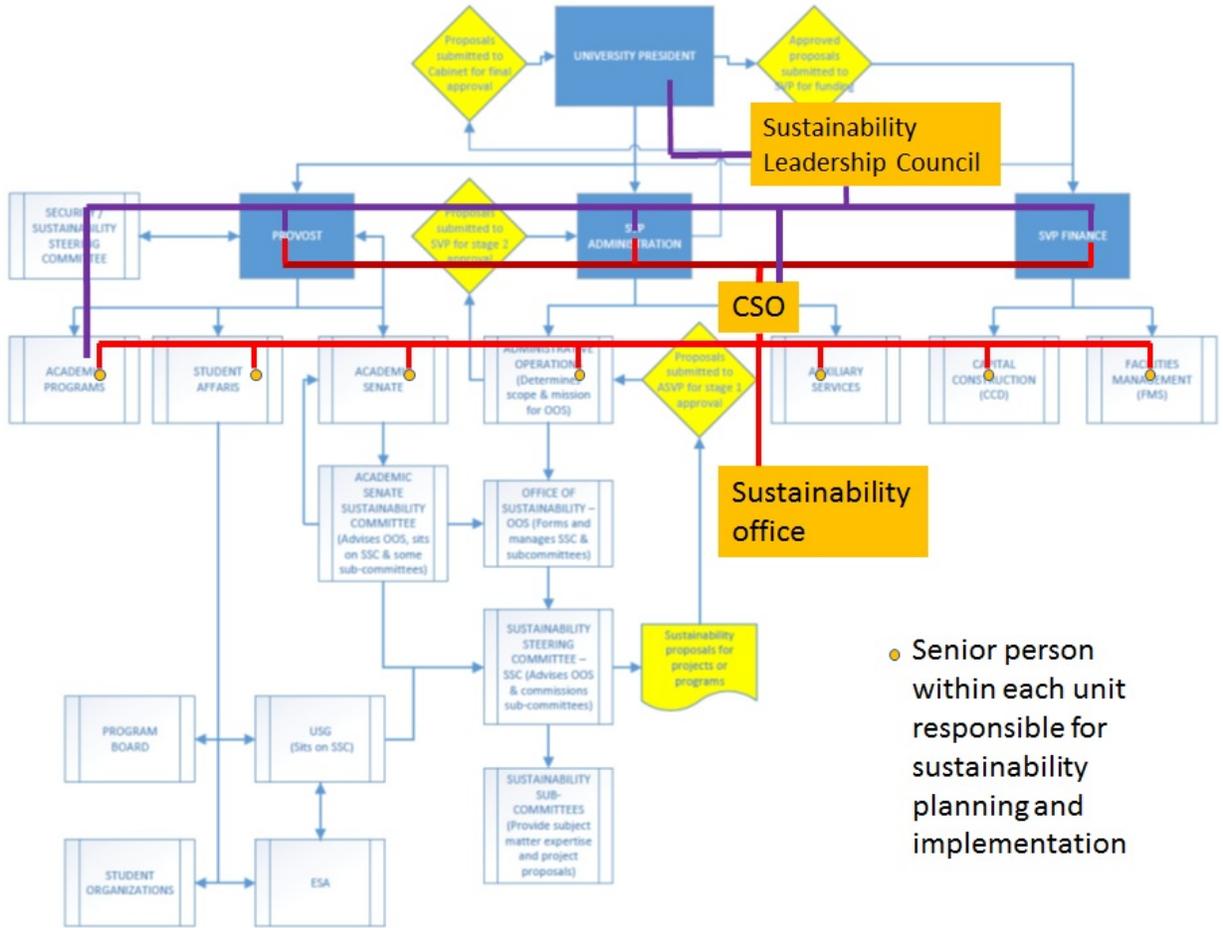
We recommend an organizational structure where the CSO reports to the Provost or SVP. The CSO would need a staff to guide planning and drive execution across our complex institution. Apart from the CSO's full-time staff,⁷ we recommend that each of the major components of the university (e.g., Provost, Administrative Operations, Auxiliary Services, Capital Construction, and Facilities Management) designate someone responsible for sustainability initiatives in their field. Each such representative might have a dual reporting relationship to both their unit head and to the CSO. The CSO's office should also engage the Faculty Senate, Student government, and Staff Assembly in the governance of our sustainability efforts—to help set goals, allocate resources, and track progress relative to our strategic and operational goals.

Figure 1 shows the proposed new organizational structure, laid over the extensive network of actors already engaged in sustainability activity. USC's current organization shows the unfortunate lack of centralized leadership of our sustainability efforts. Without a more senior level of leadership and accountability, university sustainability efforts will remain under-resourced and continually subject to competing claims for the time and labor needed to effectively coordinate, implement, track and report efforts to help advance the university.

⁶ A review of peer institutions' organizational structure for sustainability efforts is provided in Appendix 2

⁷ Harvard's sustainability office has a full-time staff of 17. See <https://green.harvard.edu/group/our-team>

Figure 1: Proposed organization chart for USC



- Senior person within each unit responsible for sustainability planning and implementation

PROPOSED STRATEGIC GOALS BY DOMAIN

DOMAIN 1: EDUCATION AND RESEARCH

Proposed 2030 Goal: USC will be widely recognized regionally, nationally, and internationally as a leader in teaching and research on a wide range of environmental sustainability issues.

USC will become an educational environment where a systematic emphasis on sustainability informs, enables, and engages campus communities through knowledge, involvement opportunities, and outreach. We will train leaders with a deep awareness of sustainability issues and the ability to translate sustainability concepts into action. As an institute of higher education and learning, we will strive to develop distinctive education programs and research related to increasing environmental literacy and sustainability.

Reminder: Goals from Sustainability 2020:

- **Goal 1:** encourage the development of environmentally literate students and faculty and Trojan community. Incorporate sustainability into the breadth of knowledge expected of graduates. Assess student and faculty understanding of sustainability principles.
Progress Report (as of March 2017): An assessment of sustainability principles was conducted of students from USC Housing (not the entire USC student population); no faculty survey has been administered.
- **Goal 2:** develop degree programs that train students to be practitioners of sustainability studies and science with a curriculum that embodies breadth and depth. Provide incentives for developing sustainability courses on campus. Develop an interdisciplinary sustainability curriculum committee.
Progress Report (as of March 2017): No tangible progress.
- **Goal 3:** develop excellence in research that includes cross-disciplinary studies, promotes competitiveness in grant applications and produces transformative findings. Recruit prominent scholars to help establish USC as a leading institution of sustainability research. Support a community of interdisciplinary sustainability researchers with assured long-term funding.
Progress Report (as of March 2017): No tangible progress.

Proposed 2030 Strategic Priorities

- **Priority 1:** Make environmental literacy a General Education requirement among all our students.
- **Priority 2:** Increase access for interdisciplinary training in sustainability across the University.
- **Priority 3:** Increase opportunities for students to participate in applied learning opportunities related to sustainability.
- **Priority 4:** Promote cooperation among research institutes and academic departments to position USC as a research leader in emerging interdisciplinary fields that address the

balance between environmental, economic and societal needs for sustainable development.

- **Priority 5:** Capitalize on the varied ecological habitats found in the immediate Los Angeles and Southern California region to provide a focused regional leadership and expertise.

Benchmarks

Priority 1: Develop environmental literacy among all our students.

- Make environmental literacy a General Education requirement.
- Increase the percentage of students, faculty and staff who understand basic sustainability concepts to 50% as measured by surveys and other instruments.
- Promote courses that integrate past, present and future scenarios to provide context and relevancy for students into specific majors.
- Develop a mechanism to recognize graduating students that can demonstrate environmental literacy.

Priority 2: Increase access for an interdisciplinary training in sustainability across the University.

- Identify sustainability courses taught across the campus every three years through surveys of each Department and independent review of course content.
- Evaluate the number of students taking sustainability-related courses initially and every three years to evaluate the impact of a sustainability focus in training.
- Promote cross-listing of appropriate courses for different majors.
- Prioritize hiring faculty who can contribute to a campus-wide sustainability teaching and research portfolio.
- Develop new, innovative undergraduate courses in sustainability that provide focused learning (interdisciplinary on-campus block semester program, seminar series, sustainability-themed interdisciplinary courses, etc.).
- Integrate sustainability practices as an integral part of academic curriculum, research practices, and extracurricular activities to increase awareness of values by connecting the larger vision of sustainability to daily actions across campuses.
- Provide professional development training for faculty to facilitate incorporation of sustainability themes across the curriculum.
- Acquire funds for student/faculty grants to encourage innovative projects to promote sustainability.

Priority 3: Increase opportunities for students to participate in applied learning opportunities related to sustainability.

- Promote student cross-training and innovation through promotion of science and policy fellowships, internships, research opportunities and experiential learning opportunities that enhance professional training and development.
- Integrate data-driven learning activities that promote student ownership of the educational process and more effective learning.

- Adopt campus technologies that enhance teaching and research activities.

Priority 4: Promote cooperation among research institutes and academic departments to position USC as a research leader in emerging interdisciplinary fields that address the balance between environmental, economic and societal needs for sustainable development.

- Foster interactions between relevant faculty who would be willing to pursue opportunities for a center or other large-scale grants that address complex interdisciplinary topics related to sustainability.
- Promote innovative research on sustainable technology and practices.
- Promoting (incentivizing) interdisciplinary research leadership to achieving campus sustainability goals.

Priority 5: Capitalize on the varied ecological habitats found in the immediate Los Angeles and Southern California region to provide a focused regional leadership and expertise.

- Better integrate USC resources across Schools and campuses to address pressing environmental challenges.
- Utilize research expertise associated with existing campus centers and institutes to develop innovative research funding proposals and programs.

DOMAIN 2: COMMUNITY ENGAGEMENT

Proposed 2030 Goal: USC will develop, lead, and engage in strategic partnerships on campus and in the community to promote sustainability practices and education.

USC is the largest private employer in Los Angeles and is uniquely positioned to implement wide-reaching sustainability programs to influence and engage the campus and broader community. With a staff of over 20,000, more than 4,000 full time faculty, and 44,000 students, along with a pre-existing network of neighborhood schools, the potential for promoting sustainability action and education is high. This potential will be tapped via the organization and promotion of existing programs in sustainability, data collection on current engagement of all campus groups (students, faculty, and staff) and the implementation of new programs to enhance campus and community action toward a more sustainable Los Angeles.

Reminder: Goals from Sustainability 2020:

- **Goal 1:** increase awareness of existing campus sustainability practices and set targets to increase activity. Develop metrics for sustainability engagement and set relevant targets. Develop an awareness campaign. Develop annual sustainability programming. Implement ongoing programming for sustainable behaviors in USC Housing.
Progress Report (as of March 2017): The USC Office of Sustainability plans to launch an effort to advance this goal in April 2017.
- **Goal 2:** establish the USC campuses as living laboratories for sustainability. Connect courses and research to campus projects. Expand access to students and faculty

regarding utility information. Expand the student Green Engagement Fund, enabling students to implement sustainability projects on campus.

Progress Report (as of March 2017): The USC Office of Sustainability plans to launch an effort to advance this goal in April 2017.

- ***Goal 3:*** engage the community in sustainability practices. Foster external partnerships with local government. Develop an Urban Sustainability Extension/Sustainability Clinic. Develop a Sustainability Alumni Network.

Progress Report (as of March 2017): The USC Office of Sustainability plans to launch an effort to advance this goal in April 2017.

Proposed 2030 Strategic Priorities

- ***Priority 1:*** Document and track current engagement on campus with a long-term goal of increasing participation in sustainability activities to 80% documented annual engagement across all campus groups.
- ***Priority 2:*** Streamline existing activities and sustainability efforts across campus and create a centralized means of documenting, promoting, and developing sustainability programs.
- ***Priority 3:*** Achieve recognition of USC as a model for a sustainable workplace, a living laboratory for sustainability research, and a leader in sustainability education.
- ***Priority 4:*** Engage the community in sustainability programs and efforts through education and outreach.
- ***Priority 5:*** Develop strategic partnerships with organizations and government offices to enable the University, city of Los Angeles, and state of California to meet aggressive sustainability goals.
- ***Priority 6:*** Align our University's investment policy with our responsibilities to lead in the environmental sustainability arena by adopting Triple-bottom-line principles in the management of our endowment portfolio.

Benchmarks

Priority 1: Document and track current engagement on campus. Increase engagement to 80%.

- Create a university-managed database to document engagement in sustainability activities by faculty, staff and students.
- Create guidelines for what constitutes a sustainability program/activity.
- Obtain accurate data on current levels of participation in sustainability activities and update this information on an annual basis to track growth.
- Provide training to graduates on how to live sustainably after college, and track alumni data.

Priority 2: Streamline existing activities and sustainability efforts.

- Create a comprehensive list of all sustainability committees, offices, research efforts, courses, student organizations, etc.

- Ensure that there is an up to date website that provides a centralized location for information on sustainability activities.
- Utilize the aforementioned website to promote sustainability efforts at USC, host a calendar of events, and provide regularly updated statistics and information on progress toward goals.
- Develop a curated and well-maintained social media presence for sustainability at USC.

Priority 3: Develop USC into a model for sustainability in Los Angeles.

- Implement mandatory sustainability training for all employees.
- Designate a university body to provide information and resources for sustainable practices and certify campus workspaces (offices, classrooms, labs) as “green”.
- Implement “green workplace” and sustainable housing and dining initiatives at a facilities level.
- Include sustainability efforts in faculty/staff performance reviews.

Priority 4: Community engagement and education.

- Work with the USC family of schools to create community gardens and provide sustainability education for K-12 students in the USC neighborhood (in cooperation with existing efforts such as Mission Science and Discover Engineering, STEM Spotlight, SHINE, and the Good Neighbors Campaign).
- Develop service learning courses in sustainability through the JEP program.
- Utilize USC facilities to screen educational films and host speakers and community education events.

Priority 5: Develop strategic partnerships.

- Align efforts and develop relationships with existing California and Los Angeles non-profits (i.e. California Greenworks, TreePeople, Sustainable Works etc.) and companies (i.e. Southern California Edison).
- Work directly with the city of Los Angeles to take the steps necessary to achieve and exceed government-mandated sustainability goals.

Priority 6: Align our University’s investment policy with our responsibilities in the environmental sustainability arena by adopting Triple-bottom-line principles in the management of our endowment portfolio.

- Develop guidelines for investment and licensing.
- Create an Advisory Panel on Investment Responsibility and Licensing.⁸
- Ensure sufficient transparency in our investment and licensing practices to allow real community engagement.

DOMAIN 3: ENERGY CONSERVATION AND GREENHOUSE GAS REDUCTION

Proposed 2030 Goal: USC will achieve carbon neutrality across all campus buildings by 2030.

⁸ Stanford provides an interesting contrast with USC’s current practice: see: <http://irsr.stanford.edu/>

This *Energy Conservation and Greenhouse Gas Mitigation* strategy outlines a campus-wide strategy to achieve carbon neutrality across USC's campuses by 2030. The strategy increases the sustainability of USC's physical infrastructure and operations, while promoting community engagement and collaboration between USC's operational and academic units. Progress is tracked through rigorous data collection, analysis and reporting.

Reminder: Goals from Sustainability 2020:

- **Goal 1:** reduce greenhouse gas emissions per square foot by 20% from 2014 levels by 2020. Track and report greenhouse gas emissions. Implement a Climate Action Plan.
Progress Report (as of March 2017): Two proposals have been submitted by the Energy Conservation sub-committee, and if approved, it is anticipated that these efforts will help USC advance by 10% to achieving this 2020 goal.
- **Goal 2:** capitalize on energy risks and opportunities. Reduce the financial risk of utility costs through conservation. Reduce the financial risk of utility costs through renewable energy generation. Exceed state energy efficiency standards in new construction. Create a Green Revolving Fund.
Progress Report (as of March 2017): The USC Office of Sustainability reports that 20% of this goal has been achieved.

Proposed 2030 Strategic Priorities

- **Priority 1:** Execute a detailed energy audit and carbon budget study of USC's University Park and Health Sciences Campuses and our other facilities.
- **Priority 2:** Create financing strategies for sustainability-related projects.
- **Priority 3:** Achieve Carbon Neutrality across all buildings on USC campuses by 2030 through energy conservation, demand-side management strategies and community engagement, renewable energy generation and procurement, and carbon offset programs.
- **Priority 4:** Develop building energy efficiency standards for all new campus buildings and residences.
- **Priority 5:** Create sustainability research testbeds to bridge operational and research activities.

Benchmarks

Priority 1: Baseline Energy and Greenhouse Gas Accounting.

- Measure, track, and archive building-level smart meter data in all buildings that are not currently on the existing building monitoring system.
- Make smart meter data available for download on a university-managed website to promote research and analysis, as well as cap and trade and incentive programs.
- Perform an annual energy audit to report progress on energy efficiency and greenhouse gas mitigation goals.

- Support cross-disciplinary undergraduate research by creating sustainability-based research positions and in-class projects that challenge participants to create smart energy analytics for the campus.

Priority 2: Sustainable Funding Mechanisms.

- Develop a Green Revolving Fund to provide up-front capital for sustainability projects, with payback periods of 10 years or less, to recipients that will repay the fund through cost savings achieved by reduced utility bills.
- Implement a principled approach where benefits and cost-burdens are shared across all components and sectors of the USC community (individual and units of the U.) with close attention to need and ability to pay.
- Create a portfolio-based methodology to evaluate sustainability projects such that projects with short Return on Investments (ROIs) can be used to leverage projects with longer ROIs, and ROI is balanced against the other two legs of the Triple-Bottom-Line.

Priority 3: Moving Towards Campus-wide Carbon Neutrality.

Building Energy Conservation:

- Achieve carbon neutrality across all USC buildings by 2030, meaning that all energy-related greenhouse gas emissions must be offset by renewable energy generation/credits or carbon offset programs.
- Reduce greenhouse gas emissions per square foot by 20%, 30% and 40% from 2014 levels by 2020, 2025, and 2030, respectively.
- Add smart automation to the built environment such that lighting and HVAC systems are optimized based on real-time building occupancy.
- Upgrade all lighting fixtures to LEDs.

Demand-side Management and Community Engagement

- Implement demand-side management programs to reduce energy usage during peak hours.
- Evaluate storage opportunities for offsetting peak energy usage (e.g. batteries, hot water heaters, chilled water, etc.).
- Create an internal cap and trade program across USC's campuses such that units can trade credits to achieve carbon neutrality.
- Create data-driven and rewards-based incentive programs to engage students, faculty and staff to reduce their energy usage and support demand-side management programs, particularly in residential colleges.

Renewable Energy Generation and Carbon Offsets:

- Collectively offset 10%, 50% and 100% of university energy requirements from on-site renewable generation, off-site renewable energy purchasing, and or storage by 2020, 2025, and 2030, respectively.
- Purchase carbon offset credits to counterbalance any remaining building-related greenhouse gas emissions in 2030 or invest in community-based programs (e.g. The Good Neighbors Campaign) to implement energy efficiency projects in low-income neighborhoods, as an alternative to carbon credits to offset greenhouse gas emissions.

Transportation Emissions Reductions:

- Establish strong subsidy or reward programs for employees utilizing public transportation, carpools, and zero-emissions vehicles.
- Install more electric vehicle charging infrastructure.
- Charge carbon offset fees for students using parking infrastructure.
- Adopt technologies to facilitate state of art teleconferencing to reduce air travel.

Priority 4: New Building Construction.

- All new buildings must meet LEED Silver standards and at least 30% less energy use than ASHRAE standards.
- These LEED achievements should be certified, so that USC is seen as taking a leadership role in transforming the country's buildings.
- Guarantee energy neutrality.

Note: LEED Silver Requirement: Consistent with Cornell and requirement for all new LA County buildings >10k sq. ft. after 2007. <https://energy.gov/savings/los-angeles-county-leed-county-buildings>

This bullet is very similar to Cornell's goal, which states: "Support policy of LEED Silver for all new buildings and renovations over \$5 million with a goal of achieving 50% less energy use."

Priority 5: USC Testbeds to Promote Sustainability Research.

- Dedicate several buildings as "living laboratories" so that USC researchers with sustainability-related interests can build innovation testbeds to implement new technologies (e.g. advanced controls for HVAC, smart sensing devices, internet of things, advanced metering infrastructure, solar glass, passive energy systems, cool roofs, etc.).
- Create an office within facilities management dedicated to facilitating these collaborations between USC operations and USC researchers.

DOMAIN 4: SUSTAINABLE TRANSPORTATION

Proposed 2030 Goal: USC will reduce by 50% single occupancy vehicles (SOVS), convert the university motor fleet to zero emissions, reduce by 50% the university's carbon footprint, and position USC as a visible and progressive participant in local, regional, and international sustainable transportation activities.

The Sustainable Transportation strategy summarized below describes a course of action that will substantively reduce USC energy usage and operating costs, modernize and upgrade USC's motor fleet, reduce the university's carbon footprint, and establish USC as a visible and progressive participant in local, regional, and international sustainability activities.

Reminder: Goals from Sustainability 2020:

- **Goal 1:** reduce the number of single occupancy vehicles (SOVS) traveling to and from the USC campuses. Augment commuter data to provide meaningful benchmarks. Formally adopt a USC bike plan addressing connectivity, safety, and storage.
Progress Report (as of March 2017): No tangible progress.
- **Goal 2:** increase student, faculty, and staff participation in alternative transportation programs. Increase communication about transportation programs. Include information about transportation alternatives at orientation.
Progress Report (as of March 2017): The USC Office of Transportation is currently working on a promotional campaign to promote alternative transportation; campaign is scheduled to launch in Fall 2017.

Proposed 2030 Strategic Priorities

- **Priority 1:** an integrated transportation database for USC campuses consisting of a current and accurate inventory of the service fleet (cars, trucks, carts, buses, etc.).
- **Priority 2:** Develop a prioritized upgrade/replacement approach to the existing fleet that achieves conversion of the USC service fleet to one powered by alternative fuels.
- **Priority 3:** Inventory USC personnel transportation use and aggressively pursue, through incentivized programs, conversion of the largely single-driver mode of transport to campus to a public transit-oriented, carpool, non-single driver transit system.
- **Priority 4:** an expanded, integrated bicycling environment on and around USC campuses.
- **Priority 5:** Reduced university-related travel through increased availability and use of improved remote conferencing facilities on USC campuses.

Benchmarks

Priority 1: an integrated transportation database.

- Annually-updated inventory of USC vehicle fleet with accelerated salvage/replacement of low-use frequency vehicles.

Priority 2: conversion of the USC service fleet to alternative fuels.

- prioritized replacement scheduling (15% per year of the oldest vehicles annually) to modernize the USC vehicle fleet to an alternative fuel-based operation.
- prioritized conversion and advertising of the cleanest inter-campus and off-campus bus fleet possible (upgraded every 4 years).
- vendor negotiations to motivate/incentivize clean-vendors'-fleet-campus delivery visits.

Priority 3: conversion of predominant single-driver transport mode to/from campus to a public transit, multiple occupancy, non-single driver transit system.

- Re-invigoration of the annual carpool matching service activity.
- Annually-increasing prioritized parking for carpools (5 more parking spaces in each USC parking lot per year).
- Incentivized (reduced) costs for carpools.

- Prioritized parking for alternative-fuel vehicles.
- Additional charging stations for electric vehicles (two additional stations/parking lot/year).

Priority 4: an expanded bicycling infrastructural environment on and around USC campuses.

- (in concert with city & regional planners) protected bike lanes on streets leading to/from USC campuses.
- Additional on-campus bike infrastructure (bike racks, storage areas, commuter bike lockers, shower facilities for commuters, repair facilities, air pumping stations).
- Expanded free on-campus-shared bike system.
- On-campus rent-a-bike facilities (coherent with surrounding city-wide rent-a-bike systems).
- Incentivized public transit usage for students, staff, faculty (discounted train, bus, and subway usage cards).
- Improved outreach efforts regarding public transportation options, availability, scheduling.
- improved interfacing between university route scheduling and local/regional train/bus travel schedules for seamlessly-timed connections.

Priority 5: Reduced travel through improved on-campus teleconferencing facilities.

- Increased number of AND improved teleconferencing facilities on all USC campuses (goal of one state-of-the-art conference facility in each school unit building by 2030).
- Improved mandatory planning of conferences to accommodate provision for public transit access for conference attendance.

DOMAIN 5: SUSTAINABLE PROCUREMENT

Proposed 2030 Goal: USC will use its purchasing power to build a sustainable procurement model that emphasizes sustainable product and services while contracting with companies committed to sustainability.

By its nature, *Procurement* overlaps with all other domains (especially energy, transportation, waste, and water) and has big impact on their execution. In the 2020 strategic plan, the only two items listed under sustainable procurement goals were food purchase (the goal was to purchase 20% of food from sustainable sources by 2020) and engagement of 75% of USC departments and offices in responsible purchasing practices by 2020 (which focused on recycled paper and other greener office supply). In 2015, USC accounts payable purchased \$4,849,020 in office supply; if we compare this number with \$454,726,000 budget for current expenses in 2015-2016, it is obvious that enormous potential for increase in sustainability of procurement practices was left untapped. USC should use its purchasing power to build a sustainable procurement model that emphasizes sustainable product and services and supports companies committed to sustainability.

Reminder: Goals from Sustainability 2020:

- **Goal 1:** purchase 10% of food from sustainable sources by 2017 and 20% by 2020. Develop metrics for sustainable food sources and measure progress.
Progress Report (as of March 2017): Goal achieved.
- **Goal 2:** engage 75% of USC departments and Offices in responsible purchasing practices by 2020. Implement a purchasing policy of 50% minimum post-consumer cut sheet paper. Implement a Sustainable Shipping Program and Green Items Online Pages with Office Depot. Revise purchasing and waste procedures to incorporate USC surplus. Enroll departments and offices in a Green Purchasing Commitment. Specify preferred vendors with sustainable purchasing and disposal practices. Create 'Responsible Purchasing at USC' section in Trojan Learn for New Employee Orientation and distribution to existing employees. Work with on-campus retailers and Food Services to reduce costs and waste to consumers.
Progress Report (as of March 2017): Efforts to advance this goal have not yet started due to pending approval and completion of current proposal assignment.

Proposed 2030 Strategic Priorities

- **Priority 1:** Develop Sustainable Procurement Guidelines that should be used for all University purchasing.
- **Priority 2:** Establish tracking and verification system for all Sustainable Procurement Guidelines.
- **Priority 3:** Measure the effect of implementation of Sustainable Procurement Guidelines, update if needed, and implement them as a requirement.
- **Priority 4:** Use campus as a living laboratory.

Benchmarks

Priority 1: Develop Sustainable Procurement Guidelines.

- Define sustainable purchasing of products and services.
- Set quantifiable goals with timeframes.
- Establish baselines for current purchases.

Priority 2: Establish tracking and verification system.

- Develop university-wide reporting and tracking system for purchases.
- Establish methods to facilitate compliance.
- Establish training process.

Priority 3: Measure the effect of implementation of Sustainable Procurement Guidelines, update if needed, and implement them as a requirement.

- Monitor purchasing.
- Aggregate purchases to establish volume discounts.
- Encourage vendors to find sustainable alternatives at comparable or lower costs.

Priority 4: Use campus as a living laboratory.

- Engage students, faculty and staff whenever possible.
- Use innovative practices for sustainable procurement.
- Reduce energy use on campus and increase purchase from renewable sources.
 - Purchase electronic equipment that meets highest energy standards.
 - Purchase only energy efficient electrical equipment and lighting.
 - Purchase vehicles with lowest environmental impact.
 - Use local suppliers.
- Reduce water usage on campus.
 - Purchase appliances with highest water efficiency.
 - Use draught tolerant plants in landscaping.
- Reduce the use of toxic material and pollutants on campus.
 - Use natural cleaning supplies whenever possible.
 - Eliminate usage of products containing lead and mercury whenever possible.
- Increase the use of product from renewable and recyclable sources.
 - Purchase only biodegradable plastic products.
 - Increase minimum recycled content in office paper.
 - Increase purchasing of supplies with reclaimed content.
- Purchase only certified wood product.
 - Purchase only wood products coming from sources certified by Forrest Stewardship Council or similarly reliable third party.
- Reduce the amount of packaging.
 - Eliminate (when possible) or reduce the amount of packaging.
 - Maximize the share of reusable packaging.
 - Increase the share of recyclable packaging when reusable packaging is not applicable.
- Buildings and their maintenance must follow Green building practices (e.g. LEED).
 - Construction of new buildings and renovation of existing buildings must follow LEED green building practices.
 - Carpets used in buildings must be recyclable.

DOMAIN 6: WASTE DIVERSION

Proposed 2030 Goal: USC will achieve campus-wide “zero waste” (90% waste diversion) on all USC campuses by 2030.

This *Waste Minimization* plan outlines a campus-wide strategy to achieve “zero waste” (90% waste diversion) on all USC campuses by 2030. The plan increases the sustainability of USC’s physical infrastructure and operations, while promoting community engagement and collaboration between USC’s operational and academic units. Progress is tracked through rigorous data collection, analysis and reporting.

Reminder: Goals from Sustainability 2020:

- **Goal 1:** achieve 75% waste diversion levels by 2020. Develop a University-wide, comprehensive integrated waste management plan by 2016. Review metrics and standards for waste audits. Evaluate waste management companies.
Progress Report (as of March 2017): USC has proposed a new waste protocol that would achieve the 75% waste diversion goal, but the waste protocol is pending approval from the administration as well as the new waste hauler.
- **Goal 2:** increase education of waste reduction and recycling and expand diversion and recycling programs. Create educational campaigns about waste reduction and recycling that resonate with specific campus stakeholders (i.e., faculty, students, staff, visitors). Improve the recycling program by increasing and standardizing waste disposal bins with a pilot program in USC Housing. Develop a campus-wide composting program. Increase education about methods to reduce waste (e.g., bottle-filling stations, etc.). Apply the recycling polity to demolition and construction programs and implement waste diversion policies in new construction.
Progress Report (as of March 2017): The proposed new USC waste protocol would achieve this goal if approved by the administration and new waste hauler.

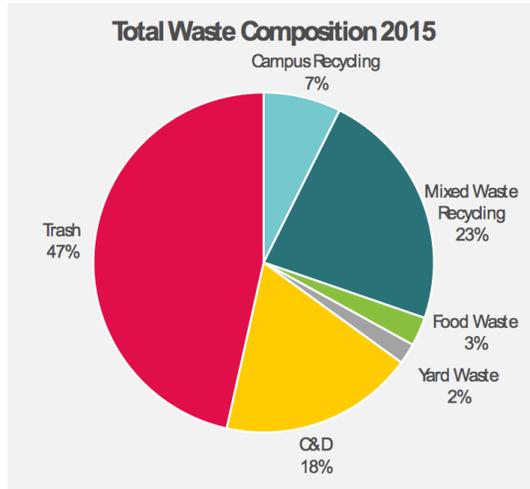
Proposed 2030 Strategic Priorities

- **Priority 1:** Annual implementation of waste audits.
- **Priority 2:** Design and disseminate waste minimization education modules for students, staff and faculty.
- **Priority 3:** Establish a Waste Minimization Mechanism or Committee that collects and analyzes data pertinent to waste collection, diversion and reduction and designs plans to realize waste minimization goals.
- **Priority 4:** Establish a mechanism or committee to collect data and design best practices for discarded electronics (E-waste) minimization and management.

Benchmarks

Priority 1: Annual waste audits.

- Our most recent data also show there is much room for improvement in recycling, with only 53% diversion.
- Starting in 2017, perform waste audits covering all campus areas to establish an analytical baseline.
- Audits need to be performed annually there after to provide data on effectiveness of waste reduction plans and revise target areas.
- Data from waste audits will be made available to both FMS and to student groups and classes engaged in sustainable learning and research.



Priority 2: Community education.

- Waste is a product of community habits, so community education about how to minimize waste and properly dispose of them is crucial to successful reduction.
- Beginning with academic year 2017-18, educational material will be disseminated to all students (including during orientation), staff and faculty regarding current best practices for waste minimization and recycling on USC campuses.
- These materials will be updated and improved upon annually, and reintroduced to the campus community at the beginning of each academic year.

Priority 3: Waste Minimization Committee.

- USC’s waste management currently covers only post-consumer waste diversion, but it is impossible to realize a “zero waste” goal without strategies for waste **aversion**: the planned reduction of and stewardship over the procurement and use of goods. In short, we need to transform our current model from waste diversion to one of waste minimization.
- A Waste Minimization Committee will be formed as soon as possible to bring together data and staff from procurement, waste management, events planning, etc.
- The Committee will be tasked with devising strategies to maximize efficiency and minimize waste through such methods as:
 - minimize the purchasing of non-reusable and non-recyclable materials.
 - establish standards for reducing packaging.
 - compile data on life cycles of durable goods (tires, furniture, carpeting, electronics, etc.) as the basis for planning measurable reductions.
 - Investigate best practices for reducing solid waste production (ex: reducing paper use in courses; encouraging use of re-usable containers by USC patrons and on campus vendors, etc.).

Priority 4: E-waste management.

- At present USC collects no data on the use and life cycle of electronics it procures. E-Waste (discarded electronics, appliances and computers) makes up a large, highly

valuable and potentially highly hazardous waste stream. Management of E-Waste presents many economic, educational, and charitable opportunities. An effective program in this area will yield cost savings and put USC on the cutting edge of sustainability in higher education.

- A conference of stakeholders around the issue of E-waste should be organized for 2107 to kick off a process for building a program for sustainable E-waste management at USC.
- The conference will result in the creation of an E-waste management committee that will coordinate with the IT services of each school.
- The E-waste management committee will collect and analyze data on electronics procurement, use, replacement, repair and disposal, yielding a life-cycle assessment baseline.
- Based on these findings the committee will draft a set of best practices.
- The committee will be charged with exploring opportunities for re-use, repair, education and community donation, vetted for cyber security and environmental sustainability.

DOMAIN 7: WATER CONSERVATION

Proposed 2030 Goal: USC will reduce potable water usage by 50% across all USC campuses by 2030.

California is experiencing a water crisis. Although USC has been implementing measures such as drip irrigation to conserve water, the persistence of drought conditions underscores an urgent need for USC to adopt technologies and cultural mechanisms broadly to conserve water and safeguard the university against future periods of low rainfall. By taking additional steps to conserve water and educate users, USC can help alleviate the stress on the state water system and act as a model for other universities and institutions facing similar problems.

Reminder: Goals from Sustainability 2020:

- **Goal 1:** decrease potable water use 10% by 2017 and 25% by 2020. Expand metering on UPC and HSC buildings. Prioritize mitigation strategies by cost and effectiveness (gallons/dollar).
Progress Report (as of March 2017): The USC Sustainability sub-committee on Water Conservation has developed a proposal that would achieve a 10% and 25% reduction in potable water by 2017 and 2020; proposal pending approval and implementation.
- **Goal 2:** increase awareness of current water conservation practices. Develop and implement an awareness campaign.
Progress Report (as of March 2017): The USC Sustainability sub-committee on Water Conservation has developed a proposal to promote water conservation awareness; proposal pending approval and implementation.
- **Goal 3:** implement audience appropriate educational campaigns designed to modify behavior and increase conservation. Create conservation campaigns that resonate with

specific campus stakeholders (i.e., faculty, students, staff, visitors). Increase water conservation messages in higher use areas.

Progress Report (as of March 2017): The USC Sustainability sub-committee on Water Conservation has developed a proposal for a water conservation campaign; proposal pending approval and implementation.

Proposed 2030 Strategic Priorities

The goals noted were excerpted from Sustainability 2020. In the context of the current drought, campus management of water resources is a critical issue for the University's future as well as for the state of California as noted in Governor Brown's Executive Order B-29-15, requiring campuses to reduce water consumption by 25%.⁹

- **Priority 1:** Replace academic and student housing bathroom fixtures with water-efficient alternatives, including low-flow showerheads, sink aerators, high efficiency low flow or dual flush toilets and urinals (waterless?), and water efficient front-loading washing machines in hospitals (?) and halls of residence.
- **Priority 2:** Meter all buildings across USC campuses and provide a central database for performance monitoring, research, and teaching purposes.
- **Priority 3:** A) Irrigate landscaping with reclaimed water, e.g., at UC Irvine, 230 million gallons of potable water are saved annually by using recycled water for irrigation;¹⁰ B) Install integrated irrigation control and water control system(s). For example, UT Austin has a \$2.1M irrigation control and water control system (made in Vista, CA) that manages 2300 "water zones" and has reduced water use from 170 million gallons to 70 million gallons per year.¹¹
- **Priority 4:** Establish a USC Residential College focused on a broad range of water conservation issues.
- **Priority 5:** Establish water reclamation programs across all USC campuses. Not much rain for capture, but does technology exist to reclaim the 25-30% of water that goes down sewers as storm runoff or graywater?

Benchmarks

- Create water efficiency goals and benchmarks for new buildings and major retrofits.¹²
- Report annual cost savings, especially in terms of the payback period.
- Develop targets as a function of historical data available through peer institutions in Southern California. Analyses of data collected (see priority item 1), may allow more accurate modeling of water and costs savings.

⁹ https://www.gov.ca.gov/docs/4.1.15_Executive_Order.pdf

¹⁰ <http://sustainability.uci.edu/sustainablecampus/water/>

¹¹ <http://www.dallasnews.com/news/texas/2013/10/30/university-of-texas-getting-high-tech-help-to- conserve-water>

¹² http://lbre.stanford.edu/sem/sites/all/lbre-shared/files/sem/files/shared/sem_WE_PerformanceGoals.pdf

APPENDIX: DATA ON OTHER UNIVERSITIES

{NOTE: the STARS comparisons below are between USC as self-assessed in 2012 and other universities as reported to AASHE in 2014. They therefore do not reflect accurately the current situation. USC has moved ahead on some aspects, but so have our peers, so we do not know with great accuracy where we currently stand.]

OVERALL PERFORMANCE

Scores from AASHE's STARS Assessment

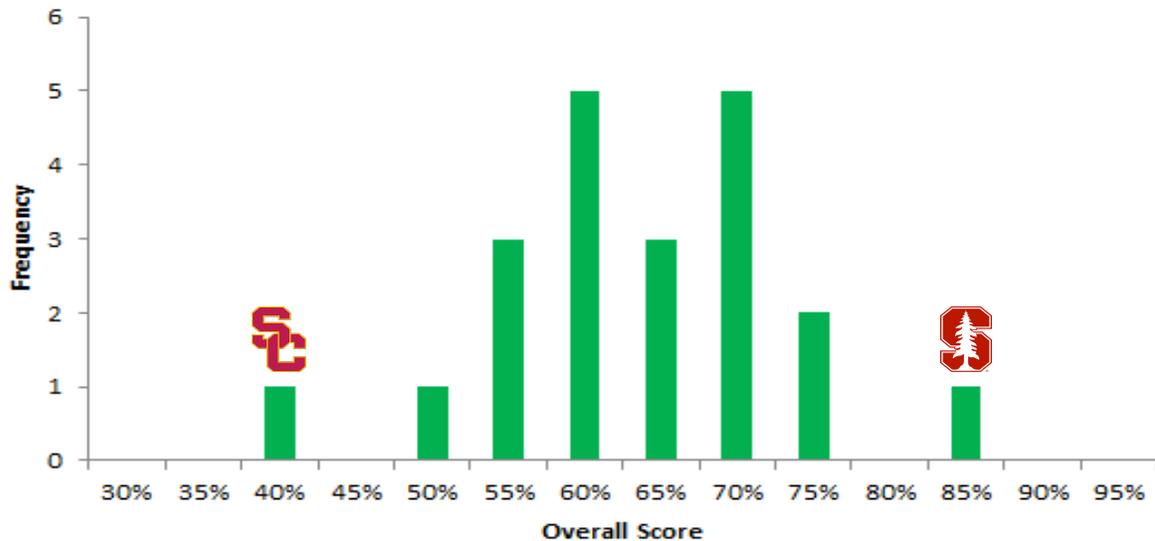
Ave: 60.8

High: 81.0

Low: 36.8

USC: 36.8

Overall Score Histogram



APPENDIX 1.1: EDUCATION & RESEARCH

AASHE STARS Report: An Assessment of USC and Peer Institutions

Measurement: Academics

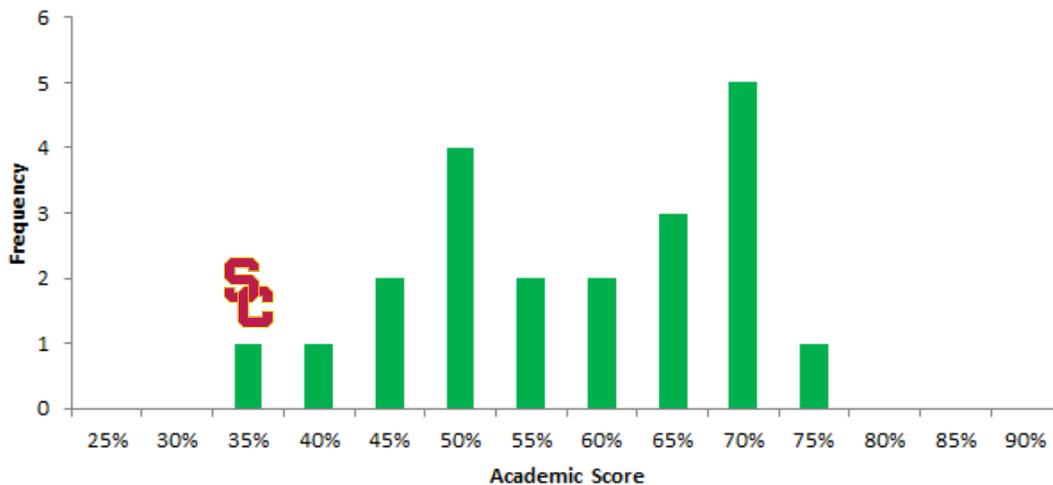
Ave: 55.6

High: 74.5

Low: 31.4

USC: 31.4

Academic Score Histogram



Models from other Universities and Institutions

- **University of Colorado, Colorado Springs:** Comprehensive plan with measurable outcomes to train faculty, students and staff in environmental literacy. Provides an example of how to increase faculty, staff student involvement in community sustainability initiatives.
- **Yale:** provides a model of changing campus wide and departmental-specific practices and approaches for achieving increased actions in sustainability.

APPENDIX 1.2: COMMUNITY ENGAGEMENT

AASHE STARS Report: An Assessment of USC and Peer Institutions

Measurement: Campus Engagement

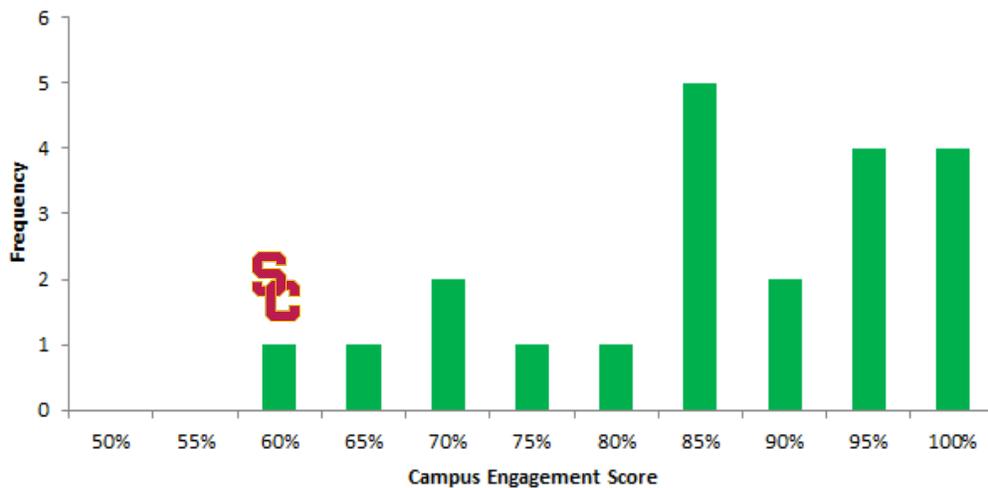
Ave: 84.2

High: 100

Low: 58.7

USC: 67.6

Campus Engagement Score Histogram



Models from other universities/institutions (line-by-line details below)

- **Harvard:** Four community gardens across the Harvard campus built by students and staff with educational and practical outcomes (i.e. educating students and the community about medicinal herbs, providing work opportunities for students, growing herbs and vegetables for use in dining halls and donation to local food kitchens).
- **Cornell:** Introduction of a sustainability themed website and targeted social media presence. Priority action to host one “community-wide educational experience on campus that highlights the connection between diversity and sustainability.” Introduction of “Green Offices” program and incorporation of sustainability into new employee training.
- **Arizona State University:** Goal of 60% of campus community participating in one sustainability volunteer event per year and 100% of staff participating in sustainability literacy and programs and job-specific training. Sustainability metric in faculty performance review.
- **Kansas University:** Service learning programs and community gardens. Lecture series, workshops and conferences.

APPENDIX 1.3: ENERGY CONSERVATION AND GHG REDUCTION

AASHE STARS Report: An Assessment of USC and Peer Institutions

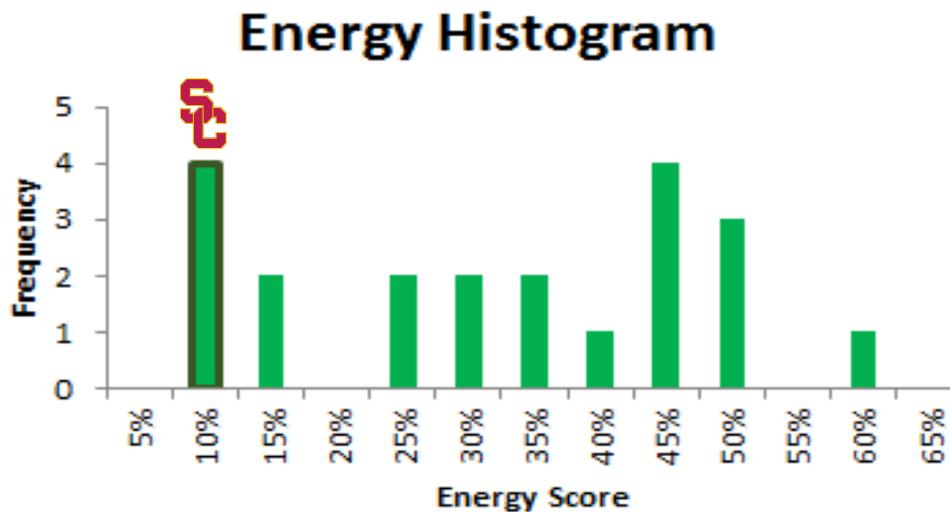
Measurement: Energy

Ave: 29.8

High: 55.7

Low: 5.7

USC: 7.8



Models from other universities/institutions (line-by-line details below)

- **Arizona State University:** Strong plan of quantitative goals to achieve carbon neutrality based on strong benchmarking and a timeline of goal targets. Most comprehensive plan targeting onsite renewable energy generation & off-site renewable energy procurement, energy efficiency, transportation emissions, agricultural emissions and waste emissions.
- **Cornell:** integration of operations and academic activities to engage students, while achieving energy reduction and climate mitigation goals.
- **Kansas University:** Attention on data collection, benchmarking and annual reports to make wise investment decisions, while enabling data-driven engagement through energy reduction incentive programs. Exploring sustainable infrastructure investments and off-site RE energy credits.
- **Ohio State University:** Targets climate neutrality through energy efficiency and automation strategies, alternative transportation, onsite and off-site renewable energy procurement, and building codes. Publicly available data collection and annual auditing used for benchmarking and accountability

[Note: most content below is copy and pasted from other plans]

ASU: Defines 6 strategies for carbon neutrality with target year goals in 2012, 2018, and 2015:

- Energy Consumption and Efficiency- Reduction goals of 10-35% per square foot below 2007 levels in 2012 to 2025, respectively.
- On-Site Renewable Energy Generation- Ramps up RE generation over time (10-35% btw 2012-2025)
- Off-site Renewable Energy Generation Purchases- Ramps up RE purchases over time. (10-65% btw 2012-2025)
- Transportation- conversion of university owned vehicles with alternative fuels vehicles; offset all commuter, air/business travel and shuttle vendor partnerships.
- Campus Operations- Elimination of agricultural related emissions and refrigerant related emissions; near elimination of solid waste related emissions.
- Carbon Offsets- offsets for any remaining transportation and non-transportation emissions

Cornell:

- Buildings Energy Consumption- Refine energy modeling and building energy intensity standards to serve as an integral process within design and construction via LEED Silver, 30% less energy than ASHRAE standards, with goal of 50% energy reductions.
- Energy Engagement- Reduce energy consumption through a college-level engagement campaign including green office and lab certification, building dashboards, renewable energy courses and energy conservation initiative projects
- Renewable Energy- Look for opportunities for solar and biofuels generation.

KU:

- Efforts to date:
 - Established a new construction efficiency target of 30% above the minimum guidelines established by the ASHRAE Standard 90.1 - 2004 Energy Efficient Design of New Buildings
 - Invested more than \$40 million in upgrades to lighting and building systems through performance contracting
 - Established other creative funding sources such as the Renewable Energy & Sustainability Fee, a required student fee allocated to energy projects, and a Revolving Green Loan fund, which will capture and reinvest savings from funded conservation and efficiency projects
 - Implemented changes to evening and summer building use and equipment operations to shed peak energy loads during periods of high consumption and began a load-shedding program for campus cooling systems to reduce electrical consumption
 - Engaged service-learning courses in quantifying energy impacts and outlining solutions for reductions, including drafting a climate action report and designing potential improvements to building systems

- Increased education and awareness efforts through partnerships between the Center for Sustainability, student organizations, and Energy Services Companies (ESCOs) as part of performance contracts
- Future Goals:
 - Create Comprehensive Management Plan: Conduct annual energy auditing for all campus buildings, understand pros and cons of current energy systems, publish annual reports, etc.
 - Create a Funding Mechanism to Fund Plan- Increasing revolving green fund loan, explore outside performance contracting, etc.
 - Campus-wide energy conservation- reducing peak demand, providing all campus residents with data to make responsible decisions, incentives for energy conservation, develop methods for energy budgeting and rewards for energy savings.
 - Increasing onsite RE generation plus infrastructure projects such as utility infrastructure, streets, parking lots, EV charging, and site lighting
 - Engage in multi-year contracts to purchase electricity from renewable sources and explore potential for off-site development of large-scale renewable energy generation through private-public partnerships.

OSU:

- Develop a plan, including action items and interim goals, for climate neutrality
- Implement a “turn-off the lights” drive to change behaviors and culture. Reduce building energy consumption by changing temperature settings for both heating and cooling, and by powering down in off-peak time
- Encourage green computing practices
- Pursue policy for the purchase of Energy Star-certified products where appropriate
- Complete comprehensive inventory of all greenhouse gas emissions and report results annually
- Conduct energy and environmental audits, and develop campus operating guidelines
- Pursue travel tax/carbon offsets as part of a travel policy
- Support the University Energy Conservation Initiatives proposal
- Adopt a plan to meet House Bill 251 requirements, which includes targeted reductions in energy use by 2014 and a 15-year plan for energy efficiency.
- Expand the university’s renewable energy portfolio by purchasing more green energy and increasing its generation on campus
- Add HEV and PHEV cars and buses to fleet, improve public transportation, reduce campus traffic, encourage carpooling, create a more pedestrian and bike friendly campus, and reduce the number of state vehicles on campus.
- Expand energy metering and publish energy usage for each building on the web. Invest in improving the energy performance of our existing buildings.
- Install automatic sensor light switches, where appropriate.
- Support and encourage the improvement and development of undergraduate and graduate curriculums in energy, environment, and sustainability

- Design and implement new ways to make units more responsible and accountable for their energy use.
- Identify, implement and investigate options for renewable energy
- Reduce dependence on non-renewable energy
- Develop and test new PCS Short and Long Term Goals 4/09
- Install meters on an ongoing basis
- Life cycle energy systems and cost analyses shall be primary considerations
- Exceed new and current ASHRAE standards technologies
- Strive to conserve energy
- Facilitate alternative modes of transportation
- Incorporate energy efficiency and other sustainable principles into planning and operations of facilities
- Design to LEED silver or higher in projects > \$4m
- Provide annual reports on success of energy and sustainability programs
- Consider life cycle costs in project planning
- Incorporate flexibility in buildings for long functional life

APPENDIX 1.4: SUSTAINABLE TRANSPORTATION

AASHE STARS Report: An Assessment of USC and Peer Institutions

Measurement: Transportation

Ave: 66.3

High: 87.4

Low: 40.4

USC: 63.3

Transportation Histogram



Models from other universities/institutions (line-by-line details below)

Kansas University Sustainable Transportation Approaches:

Achievability	Action Steps	Related Strategies
Achievable with Available Resources	Work with admissions officers to encourage students and their parents that living on campus as a first year benefits the student and campus in many ways	T 3.2.1
	Develop a plan with contracted vendors to minimize the number of deliveries to campus per week	T 4.1.1
	Apply for "Bicycle Friendly Campus" status through the League of American Bicyclists and develop an action plan for improvements based on feedback from the application process	T 2.1.1
	Incorporate information about alternative transportation in education programs (See ADP 1.4 and SL 1)	T 2.4.3
	Establish a network of service stations throughout campus	T 4.1.2

	to provide maintenance staff with access to shared equipment and break areas	
	Initiate a study of University-owned vehicles to identify underutilized vehicles or vehicles that are mismatched to their use and identify opportunities to share, eliminate or replace vehicles to create a more efficient fleet	T 1.1.1
	Develop a limited use parking permit option to allow occasional parking for commuters who walk, bike, or bus to campus as their primary mode of transportation	T 2.3.1
Achievable with Additional Resources	Establish a centralized carpool program for campus commuters	T 2.3.3
	Update the Accessibility Map to include the most efficient routes for movement throughout campus	T 2.4.1
Achievable through Policy Change	Develop campus-wide policies related to telecommuting to work and flex hour schedules	T 3.1.1 T 3.1.2
	Develop standards for new construction and redevelopment to incorporate enclosed or covered bike storage, shower facilities and bike route identification (See BE 1)	T 2.1.2 T 2.1.3
	Develop a pilot project that allows students the opportunity to attend large lecture classes via web connection	T 3.1.3
	Develop a best-practices guide for vehicle purchases to ensure the most efficient vehicles are purchased in the future	T 1.1.3 T 1.1.4 T 1.1.5
Achievable through Institutional Investment	Identify funding for GPS technology for campus buses to provide riders with real time information about bus schedules	T 2.2.2
	Evaluate current funding practices for parking and transit to make recommendations for alternative funding strategies that minimize the conflict between reducing single-occupancy vehicles and increasing transit services	T 2.5.1 T 2.5.2

Ohio State University Transportation Approaches:

- Intra-campus shuttles
- Incentives and preferential parking for carpools and vanpools
- Emergency Ride Home programs for carpool and vanpool users (using car-sharing, taxi vouchers and similar means)
- Relatively high parking rates for single- occupant vehicles
- Cash incentives for using public transportation
- Shuttles from public transportation to campus destinations
- Car-share programs like Zipcar® for short- term transportation needs
- Designated bike and pedestrian lanes and road crossings, to make non-auto travel safer and thus more desirable

- Bike racks or secure bicycle storage, bicycle lockers, and shower facilities (these might often just be the campus student/staff athletic facilities)
- Bike rental and repair programs

Arizona State University Approaches:

- Implement incentive program for carpools & owners of hybrid or alternative fuel vehicles
- Charging stations and alternative fuel pumps for alternate fuel vehicles
- Improved access and availability of video conferencing capabilities to reduce business travel
- Transition all shuttle vendor contracts to alternative fuels or electric vehicles
- Reduce 100% of diesel emissions from university vehicles through waste-oil-sourced bio-diesel
- Ban on-campus parking for freshman students who reside on campus within 5-10 years
- Replace all university-owned vehicles with alternative-fuel vehicles by 2018
- Mitigate 100% of transportation emissions related to university fleet by 2020
- Mitigate 100% of (commuter, air/business travel, shuttle vendor partnerships) emissions by 2035

Cornell Approaches:

- Increase number of electric vehicle charging stations
- Implement low-emission vehicle parking program
- Add more bike racks on campus
- Continue program support for regional mass transit
- Expand on-campus bike access and usage system (student-managed bike usage system - "Big Red Bike")
- Bike infrastructure program review & update

APPENDIX 1.5: SUSTAINABLE PROCUREMENT

AASHE STARS Report: An Assessment of USC and Peer Institutions

Measurement: Purchasing

Ave: 51.5

High: 84.7

Low: 6.7

USC: 6.7

Purchasing Histogram



Models from other universities/institutions (line-by-line details below)

- **Arizona State University:** Developed Green Procurement Guidelines aimed to establish a policy for the procurement of environmentally preferred products and services in 2007; revised in 2015
- **Cornell:** Established procurement team; uses its purchasing power to help build a sustainable economy in areas such as recycled paper in the library printers to ENERGY STAR products.
- **Kansas University:** Established 10 working groups, including one for procurement, made up of students, faculty and staff. Developed an overview of the issue including history, accomplishments, and challenges, and articulated a vision for where the University hopes to be in the next century specific to the topic. They also developed an outline of goals, objectives, and strategies to help the University achieve that vision.
- **Ohio State University:** A task force for environmentally responsible purchasing was in place and established the university's 30% recycled content policy for paper, but disbanded afterward. Green teams are in place in all business units but current university-wide purchasing policies do not address sustainability beyond the recycled paper content policy. The goal is to develop sustainable purchasing guidelines that balance cost, community and ecological footprint and to establish sustainable purchasing policy by 2012.

ASU: Created sustainability practice network (SPN) that consists of several working groups; procurement working group is comprised primarily of procurement related personnel, with additional participation from faculty experts, University Business Services as well as Budget and Planning. The plan was written in 2011.

- By 2012, they want 50% of new university contracts to be in compliance with ASU Green Procurement Guidelines; by 2013, all new contracts should be in compliance
- Initial sustainability-based targets to be established for on-campus food sales (to include organic, local, natural and fair trade as appropriate for our community and region) by 2012
- 100 percent of products used by vendors and service providers on campus (food, cleaning, etc.) to comply with ASU Green Procurement Mandates by 2014
- 90 percent of cleaning products and non-lab chemicals used on campus to be biodegradable, organic and low packaging content by 2015
- 100 percent of electronics to be EPEAT Gold, ENERGY STAR[®] products or those certified by the Federal Energy Management Program as energy efficient by 2015
- 80 percent of durable and consumable goods used on campus by university employees and service providers to be comprised of recyclable, renewable, fair trade, sustainably farmed or local material by 2020
- 90 percent of trademarked wear include organic recycled, fair trade or other eco-friendly contents by 2020

Cornell: Each purchasing decision represents an opportunity to choose environmentally and socially preferable products and services and support companies with strong commitments to sustainability.

- *PRIORITY ACTION:* Continue to work with R5 group and Dining groups to communicate contracts with sustainable suppliers.
- Increase awareness of paper buying on campus through workshops offered at annual vendor show.
- Expand the availability of e-invoices to suppliers w/ limited IT capabilities via web form.
- Increase percentages of Ecologo & Green Seal usage specifically.

KU:

- Efforts to date:
 - Purchasing contracts call for computers that are Energy Star certified
 - More competitive pricing has been established for 30% post-consumer recycled content paper, encouraging an increase in purchases of recycled paper
 - The Department of Student Housing, KU Athletics, KU Memorial Unions, KU Dining Services, and Recreation Services use Green Seal certified products, and Facilities Operations uses products that meet green cleaning standards
 - Student Housing purchases paper products certified by the Forest Stewardship Council Departmental, and KU Memorial Unions uses recycled-content paper towels
 - KU Dining has been a leader in making progressive food purchasing decisions and

- integrating healthier, more sustainable food including fair trade, local, organic, and vegetarian options into its menus, and maintains a rooftop garden that grows herbs, tomatoes, and peppers
 - The Better Bites program features healthy food options at campus dining locations and convenience stores
 - KU Dining Services is using biodegradable or recycled-content materials for their disposable dining ware and all dishwashing machines have recirculation capabilities, re low-water volume models
 - The new KU Transportation Facility was completely furnished with surplus furniture obtained through the Surplus Property Recycling Program
- Future Goals:
 - Reduce the use of disposable goods. Reducing our purchase of disposable goods will reduce greenhouse gas emissions and use of resource
 - Maintain and utilize assets to their fullest potential. Using products fully and for as long as possible will reduce the need to purchase replacement goods.
 - Increase environmentally and socially preferable purchasing practices. Buying products that are local, organic, fair trade, recycled content, etc. support the local economy and socially responsible business practices as well as reducing our negative impact on the environment.

OSU:

- Develop sustainable purchasing policy by 2012
 - Define sustainable purchasing of products using LEED EBOM and other criteria as a guide within the context of current OSU policies (e.g. Buy Ohio, MBE, etc)
 - Define sustainable purchasing of services within the context of current OSU policies
 - Clarify responsibilities for goal setting and compliance
 - Implement task force for guidance and training
 - Further leverage influence on prime vendors
- Reduce volume of purchases
 - Encourage judicious spending
 - Promote use of more durable goods
 - Increase reuse opportunities
- Align construction purchasing goals with established OSU policies (Green Building Policy etc.)
- Make process more transparent to insure compliance
 - Promote OSU's work and successes
 - Raise awareness through guidance and training
- Use campus as a living laboratory-involve students, faculty and staff whenever possible
 - Implement, test and learn from innovative practices regarding purchasing sustainability on campus

APPENDIX 1.6: WASTE DIVERSION

AASHE STARS Report: An Assessment of USC and Peer Institutions

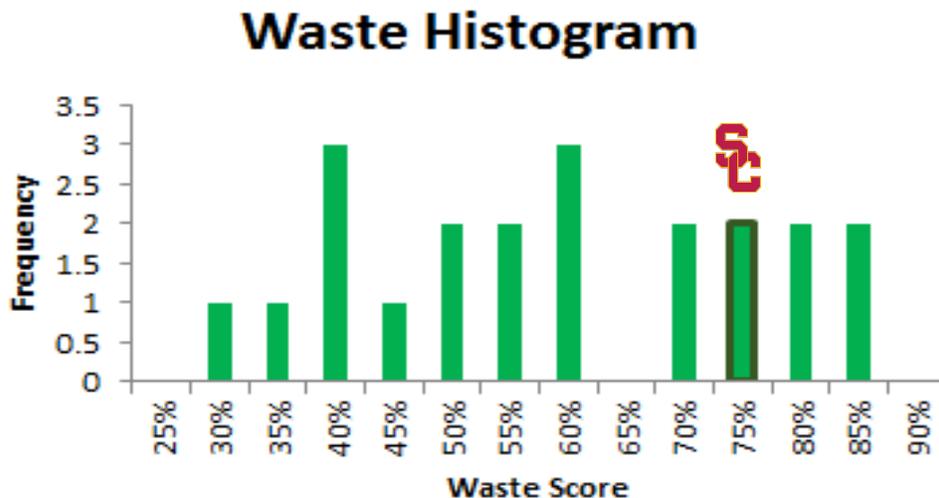
Measurement: Waste

Ave: 56.7

High: 82.4

Low: 27.5

USC: 74.6



Models from other universities/institutions

- **Arizona State University** is aiming to achieve “zero waste” based on 30% reduction and 60% diversion within the coming year.
- The **University of California (UC)** system plans for all its campuses to reach “zero waste” by 2020, with each campus designing and implementing detailed metrics and strategies.
- **Colorado University**, Boulder will reach “zero waste” in 2020. In addition to opening a recycling center on campus, their plan involves creating their own off-site composting system in conjunction with city and county governments.
- **Stanford University** currently composts or recycles 65% of their solid waste with a 75% goal by 2020. Waste minimization efforts include a “lab share” event where over 100 labs exchanged over \$100,000 worth of equipment that would have otherwise gone to disposal; and a “Give and Go” move out event at dorms where tons of clothes, books and other items were donated during move out days.

APPENDIX 1.7: WATER CONSERVATION

AASHE STARS Report: An Assessment of USC and Peer Institutions

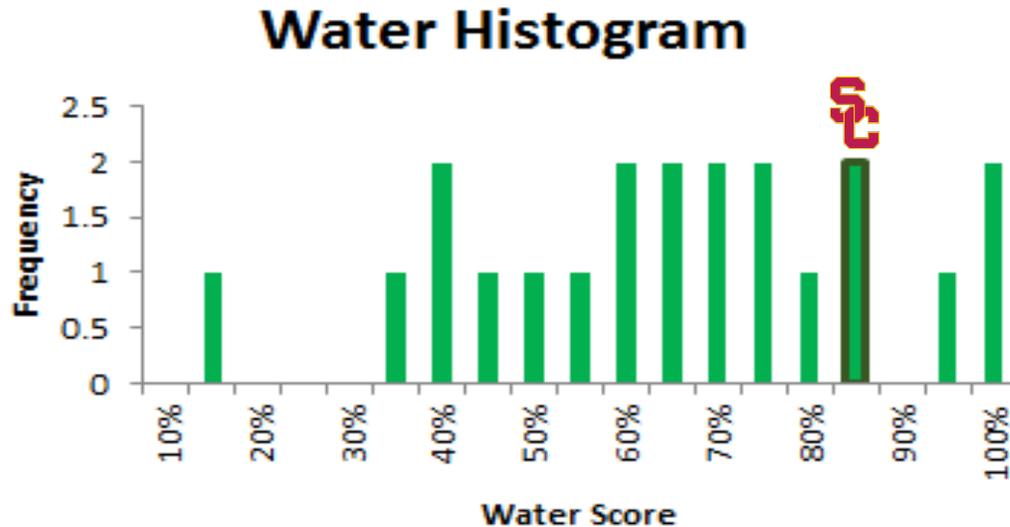
Measurement: Water

Ave: 62.9

High: 100

Low: 14.3

USC: 83.5

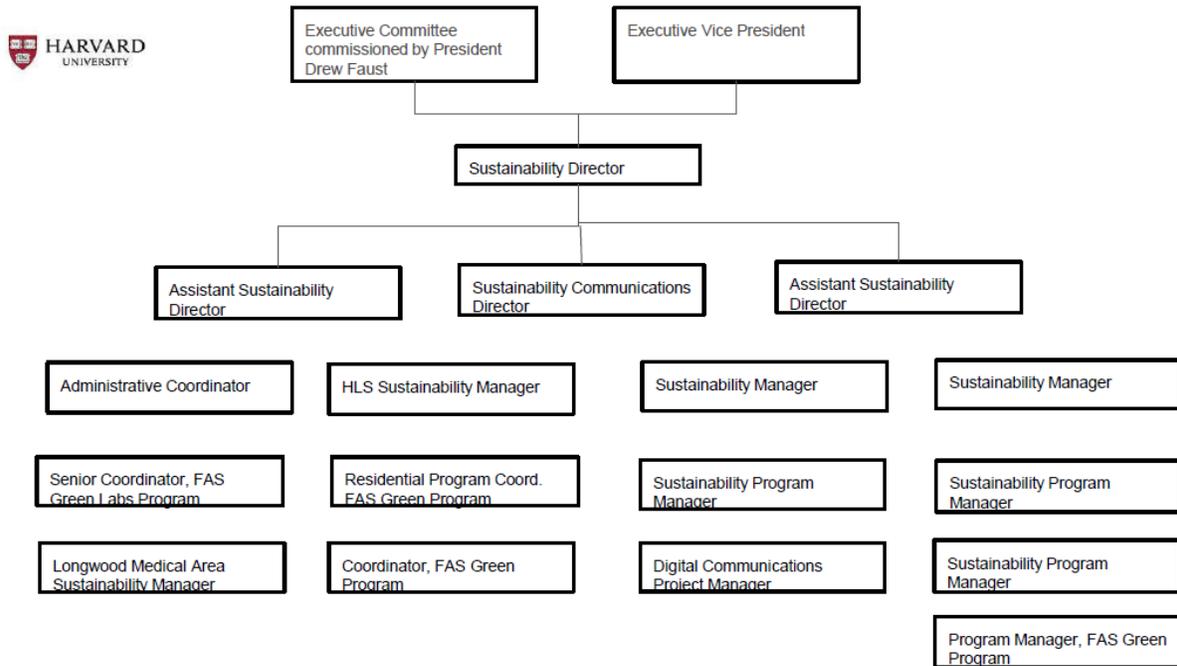


Models from other universities/institutions

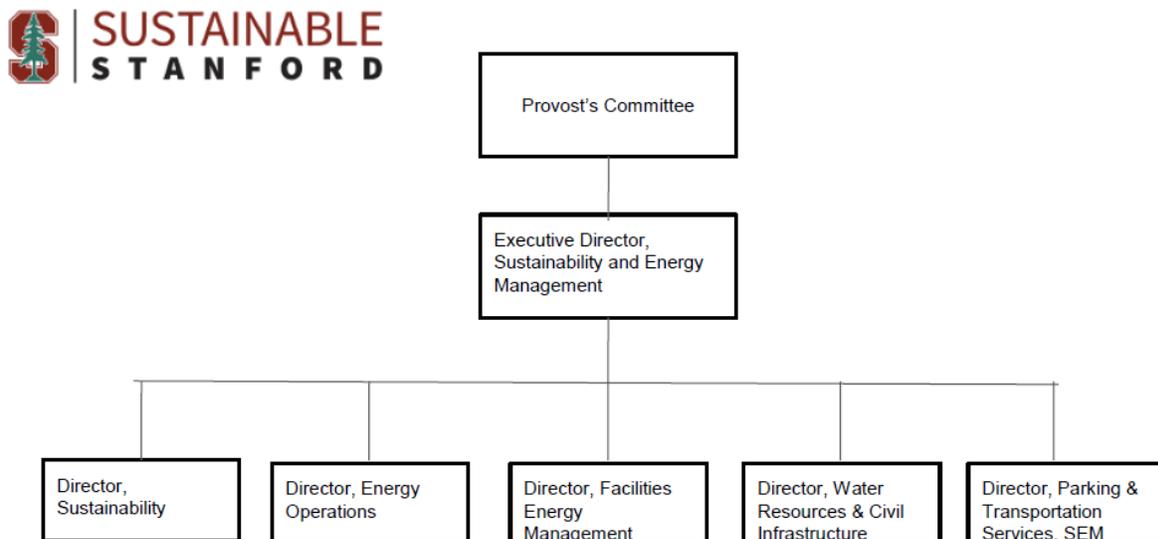
- **USC Viterbi** has strong academic credentials in the field of water conservation as highlighted in <http://www.viterbi.usc.edu/water/>, which explores several concerns related to Los Angeles Water Issues. Content areas include energy consumption of the water supply (Sanders), wastewater reclamation and reverse osmosis reclamation/desalination (Childress), re-use of agricultural water (Smith), predicting the spread of contaminants in water (de Barros), and applications of bacteria to decontaminate water (Pirbazari).
- **Pepperdine** <https://www.pepperdine.edu/sustainability/current-practices/water.htm>
- **UC Irvine** <http://sustainability.uci.edu/sustainablecampus/water/>
- A composite summary of water conservation initiatives at **many US colleges and universities**: <http://www.mnn.com/money/green-workplace/stories/40-important-ways-that-colleges-are-conserving-water>

APPENDIX 2: ORGANIZATIONAL STRUCTURE OF SUSTAINABILITY EFFORTS AT PEER INSTITUTIONS

Harvard University: Sustainability Director

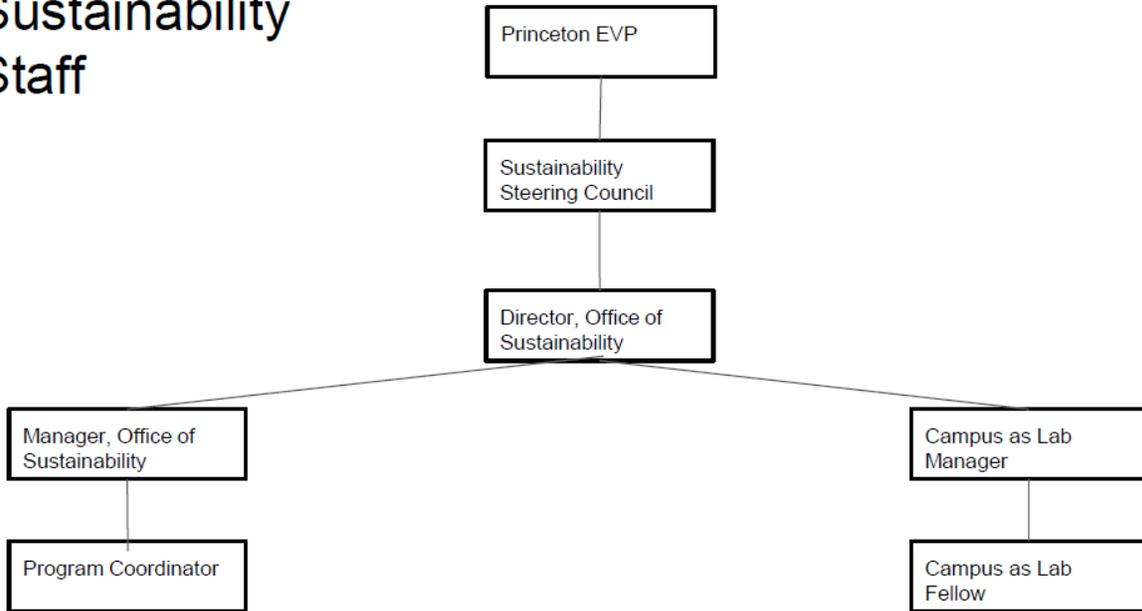


Stanford University: Executive Director, Sustainability and Energy Management

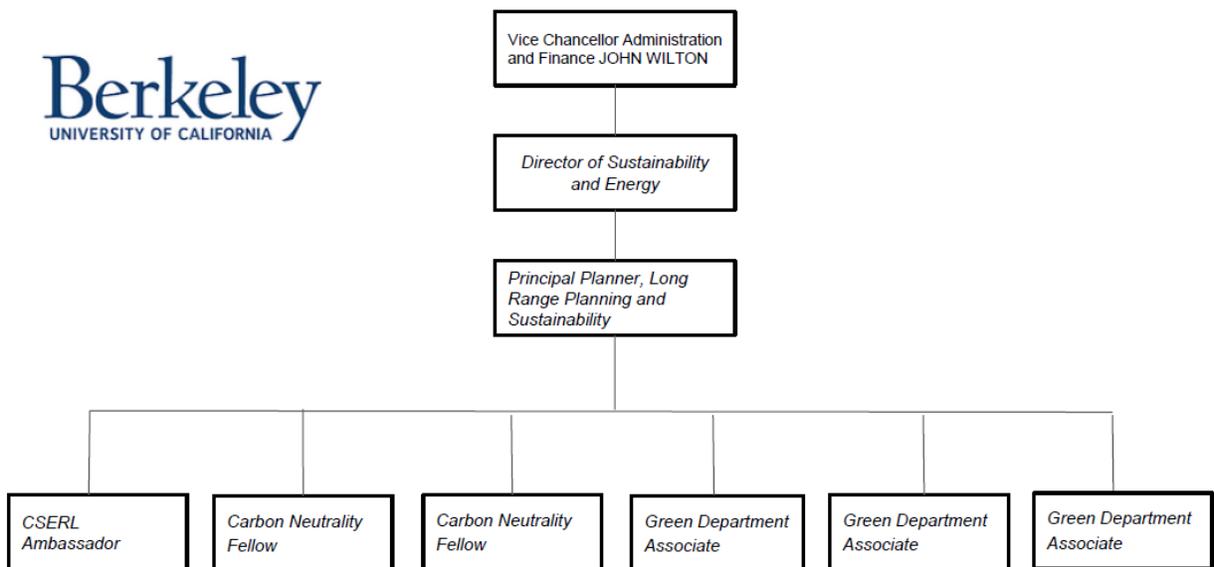


Princeton University: Director, Office of Sustainability

Princeton Sustainability Staff



UC Berkeley: Director of Sustainability and Energy



UCLA: Chief Sustainability Officer

