Findings from UC Berkeley STARS Assessment: Building on Campus Sustainability Leadership

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Berkeley bright green
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UC Berkeley is a world leader in sustainability research and education, with its academic departments consistently top-ranked in the environmental sciences. At the same, the campus has innovated new ways to reduce its own waste, water, energy and greenhouse gas footprints while championing social and economic education for all undergraduates. That track record of innovation and leadership is reflected in UC Berkeley's first complete assessment by the Sustainability, Tracking, Assessment & Rating System, a tool used by more than 300 college and universities around the world to judge performance in a range of sustainability metrics. Completed at the end of 2018 after a year of data collection and interviews, UC Berkeley's assessment earned the campus a high Gold rating, capturing 78.5 out of 100 points. That result placed the campus 11th out of 349 colleges and universities with a current STARS rating - a notable accomplishment in UC Berkeley's first ever STARS assessment. The results of that assessment were certified by the Association for the Advancement of Sustainability in Higher Education on December 12, 2018. [1]

The assessment highlighted UC Berkeley's strengths in sustainability research, undergraduate and graduate education, diversity and affordability and environmental-themed campus educational and social activities. At the same time, the STARS results revealed areas of possible improvement for the campus. Those areas included more targeted internal assessments of sustainability literacy among students and staff, an emphasis on sustainability education in degree programs and

[1] UC Berkeley completed STARS version 2.1. STARS versions have been updated every one to three years, with version 2.2 scheduled to be released by May 2019. All UC campuses with undergraduate students have completed full STARS assessments.

the need to make operational improvements including an update the campus' aging energy infrastructure to include more sources of green and renewable energy.

Looking ahead, the STARS assessment lays a solid foundation for UC Berkeley to experiment, revise practices and otherwise take steps to earn STARS' top Platinum rating - by earning 85 or more points. The STARS assessment suggests the campus could leverage its academic, research and operational strengths in a more prominent way that better incorporates sustainability into UC Berkeley's curriculum and student life. Peer institutions such as UC Irvine and Stanford, both of which earned Platinum ratings, have taken steps at the highest levels to make sustainability a core part of their campuses.

UC Irvine, for example, explicitly lists sustainability objectives as part of its campuswide learning outcomes, which are signed off by top administration officials. Those outcomes call for students to "understand the fundamental environmental, social, and economic issues underlying sustainability," "enhance the student learning experience through the integration of sustainability principles into collaborative learning, practices, and operations" and "deepen the learning experience associated with sustainability to align with the needs of students as they leave the University." Similarly, Stanford has promoted sustainability as an integral part of its academic, planning and operations, with the campus establishing sustainability as "a core value" as directed by former Provost John Etchemendy.

As a result, both UC Irvine and Stanford declared that all of its students graduated from programs that have adopted at least one sustainability learning outcome, based on their institution-wide declarations of such learning outcomes.

That institution-wide declaration earned both institutions a full 8 out of 8 points in the Learning Outcomes field, among the highest point fields in the STARS assessment. By comparison, UC Berkeley earned 5.93 points in the field, a healthy score that nonetheless doesn't reflect the campus' strength in environmental studies, research and core values. UC Berkeley notched that score largely on the strength of its American Cultures requirement, which makes the issuance of all bachelor's degrees contingent on earning a passing grade in at least one class that principally addresses social and economic sustainability topics. UC Berkeley has not otherwise declared any campuswide learning outcome, instead leaving it to the law school, the ethnic studies departments and other individual units to declare their own learning outcomes. The university has certainly earned the bona fides to follow the examples of Stanford and UC Irvine and put sustainability at the center of its academic DNA by issuing an institution-wide sustainability learning outcome. That action, if backed by top administration officials, would earn the campus an extra 2 STARS points, a significant step toward Platinum status.

Other Platinum opportunities await if UC Berkeley inventories and touts what it's already accomplished. For example, the campus could strengthen and widen programs that enable students to teach their peers about sustainability best practices. In the STARS Student Educators field, the campus earned only .77 out of 4.0 possible points, largely because its peer-to-peer education programs reached a subset of the student community. By comparison, Platinum-certified UC Irvine earned full points in that category on the strength of its Global Sustainability Resource Center, which reaches out to the entire UC Irvine campus with co-

curricular sustainability programming. UC Berkeley so far has not launched a similar peer education sustainability program with campuswide reach, but it has the platforms in place to do so, with campus services such as the Student Environmental Resource Center or the student club of the Berkeley Energy and Resources Collaborative. Such bodies could build on the peer-to-peer education programs already on campus such as environmental DeCal classes or the Residential Sustainability Program and help them directly target their programs to the rest of the campus - the main requirement of the Student Educators field.

Similarly, UC Berkeley could use as a model some of its existing surveys on student experience and launch surveys that focus exclusively on sustainability. Such a survey would help the campus earn up to 4 points in the Sustainability Literacy Assessment field, compared to its current zero score. At the very least, the campus could earn an extra 2 points if any class on campus conducted a pre- and post-class sustainability assessment, similar to a sustainability class survey cited in UC Irvine's STARS report.

As another example of campuswide participation in the STARS process, Platinum-ranked Colorado State University delegated the completion of specific STARS fields to their appropriate campus units, which tapped the inside knowledge of the faculty and staff directly involved with those subject areas. That put campus operations managers, for example, in charge of completing information about landscaping practices or assigned individual colleges the responsibility of determining which of their classes included sustainability curricula. Again, this

strategy required top administration support of the process to ensure participation, but once in place, made the STARS process a more inclusive campuswide project.

Other fields with big potential for point gains could prove harder or costlier to tackle. For example, a greater share of campus electricity generation could come from renewable energy sources. Currently, the campus earned only .01 out of 4 possible points in the Clean and Renewable Energy field in STARS - a result of campus renewable energy sources generating less than 1 percent of total energy consumed on campus. That result reflects the limitations of UC Berkeley's compact 150-year-old urban campus, especially when compared to the newer, less dense layouts of schools such as Stanford or Colorado State. UC Berkeley draws most of its electricity from a natural gas-fired turbine generator that's been online since 1987, an example of aging technology that comes with a big carbon footprint. Dependence on the generator has hindered the campus' efforts to meet the University of California's larger goal of producing no direct carbon emissions from campus energy by 2025. Stanford, by comparison, replaced its cogeneration plant in 2016 with a $468 million waste heat-capture system that more efficiently supplies heat to labs, classrooms and other buildings. Stanford also installed more solar panels and other renewable energy infrastructure across its sprawling 8,180-acre campus - 46 times bigger than UC Berkeley's central campus. That said, such elaborate and expensive infrastructure earned Stanford only a few fractions of a point more than UC Berkeley in the Clean and Renewable Energy field in STARS, with Stanford receiving .9 out of 4 possible points. STARS' definition of on-site energy production in this

category arguably disadvantages larger research institutions that have much higher energy needs than, say, smaller liberal arts colleges.

UC Berkeley faces similar infrastructure challenges when it comes to the Building Operations and Maintenance fields in STARS, where the campus forfeited a combined 6.5 out of 15 points. Performing better in this category would require the campus seek more stringent third-party certification of the efficiency of campus buildings. UC Berkeley uses internal energy efficiency standards or those imposed by the utility's incentive programs in many of its labs and classroom buildings, rather than follow an operations and maintenance certification system established by the U.S. Green Building Council. Whatever the merits of that decision, the campus could earn an extra 3 points in the Building Operations and Maintenance field if it opted for more Green Building Council certification.

Finally, the STARS assessment can help guide UC Berkeley's long-term planning. For example, the university's current Campus Sustainability Plan focuses on operational metrics such as Energy & Climate, Built Environment and Purchasing while incorporating economic and social considerations in its criteria. STARS breaks out economic and social sustainability as their own categories. Its Sustainability Planning field, for example, asks about a spectrum of campus activities in UC Berkeley's long-term plans such as campus engagement, well-being and strategic investment. The tool's 90-some fields also asks about such campus traits as income parity between adjunct and full faculty, administration-sanctioned advocacy of international sustainability policies as well as sustainability education for campus employees. These sorts of criteria have not been generally addressed by the

university's long-term plans, but ongoing revisions of the campus' Sustainability Plan and other strategic plans could incorporate more of this focus on quality of life and equity issues. Although the highest scoring STARS fields are in more bread-and-butter categories such as research, academics and physical operations, the inclusion of this broader set of criteria points to at least what AASHE considers the appropriate definition of organizational sustainability. If nothing else, UC Berkeley's first ever complete STARS assessment could start a wider conversation about how the campus can grow as a sustainability leader.

The following are four specific policy recommendations resulting from UC Berkeley's STARS assessment:

Recommendation 1 - Specifically measure student, staff and faculty sustainability behavior

UC Berkeley has adopted a range of policies governing sustainability-themed curriculum, operational best practices and green lifestyle incentives. The campus scored full points in the STARS tool in fields such as Incentives for Developing Courses and Diversity and Equity Coordination that provide an aspirational path forward for the campus.

The school, however, falls short in the actual adoption of student community and staff service measures or peer-to-peer sustainability education. Some of this can be attributed to a need for adequate measurement of these programs. Compared to other campuses, including those in the UC system, UC Berkeley does not specifically

measure sustainability education or participation - which off the bat forfeits 4 points in the STARS Sustainability Literacy Assessment field. The campus does include a few questions on the topic in general campuswide surveys of undergraduates and other campus populations. In the same vein, UC Berkeley could earn another 2.75 points by strengthening its employee peer-to-peer sustainability education programs and including more campus employees in sustainability training.

STARS Platinum-certified campuses such as UC Irvine and Stanford have adopted specific sustainability-themed surveys that not only help their STARS entries but point them to gaps in sustainability programs. At the very least, such surveys let these campuses document the precise impact of the sustainability programs they do have. UC Berkeley could benefit from such a targeted assessment. Similarly, Platinum-certified University of New Hampshire earned a full 3 points in the Employee Educators field with its Sustainability Green Office program, which trains representatives from all campus departments to offer sustainability education to their colleagues.

Recommendation 2 - Solicit input from academic departments about sustainability-themed courses and research

Sustainability as defined by STARS (environment, social and economic) is embedded in a swath of UC Berkeley courses, although that might not be reflected in course descriptions. As a result, using those descriptions solely to complete STARS misses a large portion of the sustainability classes offered on campus. This could be

addressed by academic departments playing more of an active role in helping the campus identify sustainability-themed classes. That could not just help STARS reporting but also highlight classes for promotional and student general awareness purposes. Platinum-certified universities that have asked departments and programs to help identify sustainable courses have scored near the full 14 points for the Academic Courses category - the biggest point category in STARS. UC Berkeley earned about 11 points in that category.

Compiling a more complete sustainable course inventory could also help UC Berkeley's entry in the Learning Outcomes category. That field measures how many programs require graduates receive sustainability coursework or other type of training to earn their degrees. In this STARS assessment, UC Berkeley sustainability office staff largely used online department descriptions to complete the Learning Outcomes field, surely missing department requirements not reflected online. This type of department buy-in could also help identify more sustainability-related research, which would help maintain UC Berkeley's solid performance in the STARS research and scholarship field. The campus scored 11.33 out of 12 points in sustainability research.

Recommendation 3 - Seek more third-party certification for building operations and food and beverage purchasing

While UC Berkeley employs its own certification standards or locally based certification, STARS requires universities use the Green Building Council, the Marine

Stewardship Council and other more popularly recognized certifications to earn full points in its Building Operations and Food and Beverage Purchasing fields. The campus' STARS submission explains that UC Berkeley uses equivalent certification programs for food and beverage purchasing, but the campus could consider inviting more third-party certification into its operations not just for STARS' purposes but to help diversify the kind of third-party evaluation used to guide campus purchases. Campus officials have explained that third-party evaluation can often be costlier than using internal standards or less well-known third-party certification systems.

Recommendation 4 - Wherever possible, find ways to increase renewable energy generation and use, or purchase more renewable energy credits

The campus forfeits more than 11 out of 20 points in three STARS fields - Greenhouse Gas Emissions, Building Energy Consumption and Green and Renewable Energy. Clearly, enormous costs come with building more on- and off-campus renewable energy infrastructure. However, the STARS tool does count the purchase of Renewable Energy Credits or Guarantees of Origin in the Clean and Renewable Energy field tally, where UC Berkeley currently scores only .01 out of 4 points. Replacing the campus' co-generation plant with a more modern system would clearly go a long way to boosting the university's renewable energy and greenhouse gas performance. But buying more credits is a viable short-term solution not just for STARS but for overall energy sustainability.

Fields for Improvement

Learning Outcomes 5.93/8

Sustainability Literacy Assessment 0/4

Student Educators Program 0.77/4

Community Service 2.55/5

Greenhouse Gas Emissions 6.52/10

Building Operations and Maintenance 2/5

Building Energy Consumption 2.32/6

Clean and Renewable Energy .01/4

Food and Beverage Purchasing 2.15/6

Cleaning and Janitorial Purchasing .1/1

Campus Fleet .13/1

Waste Minimization and Diversion 5.02/8

Workplace Health and Safety .71/2

Full Score Fields

Undergraduate Program 3/3

Graduate Program 3/3

Immersive Experience 2/2

Incentives for Developing Courses 2/2

Campus as a Living Lab 4/4

Support for Research 4/4

Open Access to Research 2/2

Student Orientation 2/2

Student Life 2/2

Outreach Materials and Publications 2/2

Outreach Campaign 4/4

Assessing Sustainability Culture 1/1

Employee Orientation 1/1

Community Partnerships 3/3

Inter-Campus Collaboration 3/3

Participation in Public Policy 2/2

Outdoor Air Quality 1/1

Trademark Licensing 2/2

Sustainable Dining 2/2

Biodiversity 2/2

Sustainable Procurement 3/3

Support for Sustainable Transportation 2/2

Construction and Demolition Waste Diversion 1/1

Hazardous Waste Management 1/1

Rainwater Management 2/2

Sustainability Coordination 1/1

Sustainability Planning 4/4

Diversity and Equity Coordination 2/2

Assessing Diversity and Equity 1/1

Support for Underrepresented Groups 3/3

Committee on Investor Responsibility 2/2

Assessing Employee Satisfaction 1/1

Wellness Program 1/1