DEVELOPING A WATER ACTION PLAN FOR THE UNIVERSITY OF CALIFORNIA, SANTA BARBARA CAMPUS

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MOTIVATION

The University of California, Office of the President (UCOP) mandated that all UC campuses reduce potable water use 20% by 2020. UCSB has met this goal but expected campus growth and increasing water costs have motivated the University to further reduce potable water consumption.

OBJECTIVES

Three major objectives of the UCSB Water Action Plan:
1. Reconstruct campus historical and current water use trends
2. Identify possible water reduction strategies
3. Recommend suitable water reduction strategies for UCSB

SCOPE

Temporal: 15-year historical (Fiscal Year (FY) 1994-97 to 2010-11); 11-year planning horizon (aligned with existing Campus planning documents)

Data Collection

To achieve the objectives of the Water Action Plan three key data sources were utilized:
1. Water utility data: Aggregated water data for the 15-year historical time frame
2. Campus restroom audit and in-use testing: Inventory of restroom fixtures and sample of toilet flush volumes
3. Personal communication and water survey: Informational interviews and tours with water stakeholders, as well as a Campus community survey to determine water use habits and perceptions

DATA COLLECTION

The methodology used in crafting the Water Action Plan can be broken down into three categories:

1. Historical UCSB water use analysis: A 15-year baseline water usage period, from FY 1994-97 to 1994-97, was selected to meet UCOP requirements and serve as a timeframe from which earlier potable water savings would be measured.
2. Creation of a year benchmark period: The benchmark period, from FY 2008-09 to 2010-11, was introduced in order to determine reductions already made toward the 20% by 2020 requirement and to define a water use period from which the University will measure future reductions.

METHODS

3. Assessment of potential water conservation strategies:
Potential water conservation strategies were analyzed based on water savings and financial feasibility. For each water saving strategy, annual water savings were calculated and an economic assessment was conducted, which accounted for initial capital investments, operation and maintenance, and water cost savings.

HIGHLIGHTED RESULTS

Results reveal restroom fixture specifications and flow rates, water savings from the Baseline to the Benchmark, and the water savings potential of more than two dozen conservation and efficiency strategies.

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RECOMMENDATIONS

The Water Action Plan makes two types of recommendations: Infrastructure Recommendations and Management Recommendations.

Infrastructure Recommendations
These four potential water savings strategies are highlighted based on their initial cost, annual water and cost savings, pay back periods, and conservation potential. These four strategies represent a range of water-use sectors, including academic, residential, industrial, and irrigation.

Management Recommendations
These four management strategies are highlighted based on their potential to support and inform water conservation activities on campus. Costs and water savings for the management recommendations were estimated to reveal relative cost and impact.

FUTURE WATER REDUCTION TARGETS

UCSB has achieved the UCOP mandate of a 20% reduction in potable water use. To encourage further water conservation, a second reduction target was established: reduce total potable water use 20% from the Benchmark to 2026, with a interim reduction target of 5% by 2020. These targets were established based on the water savings potential of all recommendations implementable within 2 years. This reduction in total potable water use will offset water use attributable to anticipated campus population growth.

A LIVING DOCUMENT

The Water Action Plan is a living document and should be periodically re-evaluated to reflect campus developments, changes in technology, and new regulations and laws. In addition to annual water reporting to UCOP, UCSB should assess the Water Action Plan every 5 years to prioritize mitigation efforts and explore new technologies and conservation techniques as they emerge.

IMPLEMENTATION

The UCSB Water Action Plan was approved by the Chancellor’s Sustainability Committee and the Academic Senate in March 2013. It is now the guiding water management document for UCSB. This Plan is the first to be implemented in the UC system and is among the first comprehensive water conservation plans for a university in the nation.

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REFERENCES

1. Council on Environmental Quality, University of California at Santa Barbara, and The Santa Barbara Office of Futures Planning.