A Comprehensive Study of Water Usage and Conservation Opportunities at UC Berkeley: What Does It Mean to be a Water Efficient Campus?

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AGENDA

- INTRODUCTION
- DATA COLLECTION
- ANALYSIS AND RESULTS
- FEASIBILITY STUDY
- RECOMMENDATION & NEXT STEPS
- Q & A



INTRODUCTION

• 2009 California Delta-Water Bill

- Chancellor's Advisory Committee on Sustainability (CACS) at University of California, Berkeley
- A Comprehensive Study of Water Usage and Conservation Opportunities at UC Berkeley



3-STEP PROCESS



STEP 1: DATA-COLLECTIO

Hard Data

-Campus Services Data

- East Bay Municipal Utility District

- Student Projects

Soft Data

- Extrapolation
- Regression
- Assumptions
- Attendance Based Method

DATA COLLECTION

Year	1990	2009	% change
Total Consumption	739,296,692	639,886,496	-13%
Main Campus	504,155,740	435,620,240	-14%
Other Accounts	77,067,566	30,697,172	-60%
Residence Halls	158,073,386	173,569,084	10%

DATA COLLECTION & ANALYSIS







Approximately **half is domestic usage (**which is divided equally between residence halls and all other campus buildings). About **one-fifth** of usage was in campus lab buildings

STEP2: BREAKDOWN ANALYSIS

2009 Residential Halls Usage Breakdown



More than **one-third** of total residential hall usage was University Village Usage

STEP3: FEASIBILIT

	Annual	Annual		Net Annual		
	Water	Water	Upfront	Costs	Simple	Total Net
	Savings	Savings	Capital	(Savings)	Payback	Present
Proposed Project	(gallons)	(%)	Cost (\$)	(\$)	(years)	Value (\$)
General Education & Awareness Campaign			\$20,000	-\$10,000		
Install Water Meters in Large Buildings			\$200,000			
Enhanced Leak Reduction Efforts	4,265,372	0.6%	\$10,000	\$18,989	0.53	\$127,917
Expand Sink Aerator Installations	6,548,025	1.0%	\$3,841	\$29,151	0.13	\$126,636
Campus Toilet Conversion	25,940,000	3.9%	\$527,742	\$115,482	4.24	\$2,079,414
Campus Urinal Conversion	5,640,000	0.8%	\$265,698	\$25,109	7.54	\$534,963
Replace Heat Exchangers (2)	2,102,400	0.3%	\$100,000	\$9,360	10.68	\$228,834
Replace Heat Exchangers (10)	10,512,000	1.6%	\$500,000	\$46,798	10.68	\$1,144,168
Subtotal w/ 2 Heat Exchangers Replaced	44,495,797	6.7%	\$1,127,281	\$188,090	5.99	\$3,097,763
Behauhtotal py/10* Heat Exchangers Replaced	52,905,397	8.0%	\$1,527,281	\$225,528	6.77	\$4,0 <mark>13,0</mark> 97
Auxiliaries	16,000,000	2.4%	TBD	\$71,229.95	TBD	TBD

Campus: 6-7 years at a cost of \$1.1 to 1.5 million, and a reduction of 7-8% Auxiliary: no cost estimate currently available, and an estimated saving of 2-3% Total: ~ 10% of 2008 usage.

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STUD

RECOMMENDATION NEXT STEPS

CACS

- Commit the University to reduce potable water usage by 20% (from 2008 levels) and to use no potable water for irrigation by 2020
- Establish a working group to oversee the analysis and implementation of reduction projects
- By 2020, ensure all buildings larger than 50,000 ft² have water meters that allow realtime monitoring of usage and are web enabled
- Beginning June 1, 2010, maximize the number of LEEDTM credits achieved under Water Use Reduction Credits #3 and #4 by all new construction and major renovation

RESEARCH

- Setting a reduction target with specific planned projects
- ➢ Installing water meters on major campus buildings that allow realtime monitoring of usage and are web enabled
- Promoting education and awareness campaigns
- ➢Investigating other recycle and reuse options.

RECOMMENDATION



SPECIAL THANKS

University of California, Berkeley



PHYSICAL PLANT - CAMPUS SERVICES

A Sustainable Water Plan for the University of California Berkeley

A Professional Report, For the Chancellor's Advisory Committee on Sustainabili

> Jubilee Daniels May 2005





AND MANY OTHERS!



residential & student service programs

12/9/2010

Questions?

