

HEIF Project History At A Glance

Project Name Shower Behavior Change	Project ID Number 17-FA XHF026	Chartfield
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[Link to Project Folder](#)

Project Description / Scope:

This project piloted 3 different kinds of 'smart' shower heads to measure whether they would have a positive impact on water conservation in Residence halls. The four hardware technologies were Amphiro b1 connect, the Hydrao shower head, the EvaDrop, and the Evolve ShowerStart TSV; however, only Hydrao, Amphiro, and Evolve were piloted. The development team surveyed students' behavior towards resource consumption, specifically shower duration.

Phase 1 consisted of a trial period including installation of 36 evaluation units in Canyon and subsequent data monitoring of shower water usage. These intended to communicate device-specific reduction potential, and further increase user awareness of resource consumption habits.

Phase 2 consisted of a treatment phase where the devices would be activated and signs would be added to the restrooms with information about water usage in the residence halls generally, how the devices worked, and where they could get more information. This phase did not/will not get implemented as the data collection and device issues demonstrated these devices are not suitable for this type of application.

If you would like to read more in depth about this project:

[Link to Project Report Summary](#)

[Link to Spring 2017 Project Proposal](#)

[Link to 2017-2018 Annual Report, see page 6](#)

[Link to 2018-2019 Annual Report, see page 11](#)

[Link to 2019-2020 Annual Report, see page 16](#)

[Staff Findings Draft](#)

Additions to Project Description / Scope

(Include date addition was approved by Committee):

This was a pilot project implemented in Canyon Residence Halls, the results of which showed that water use data was difficult to retrieve and the devices were not designed for a continuous-use commercial-style application and therefore broke frequently. **Due to these results, the devices were not implemented on a large scale across campus.**

Major Project Milestones

Stage / Phase	Description
Milestone 1: Idea Paper	
Semester & Year Idea Paper Submitted	Spring 2017
Idea Paper Author(s), Major(s), expected graduation year & Semester	Eduardo Valenzuela, Environmental Science & Management: Environmental Policy & Planning, Spring 2019 Ty Muhovich, Environmental Science & Management: Energy and Climate, Spring 2018
Date Idea Paper Voted on By Committee (Date aligns to Committee Mtg Minutes)	March 6, 2017
Approved for Development (Yes / No)	Yes
Milestone 2: Development	
Semester(s) & Year(s) Project was in Development	Fall 2017, Spring 2018 On December 7, 2017 the committee voted to extend the development for the Spring 2018 semester.
Development Team Member names, majors, expected graduation year & semester	Cassidy Barrientos Cody Hennings
Development Mentor Name	Steve McKenzie, Housing and Residence Life Staff
Estimated Savings from this Project	*Each of the devices had their own savings projections which are listed below:

	Amphiro- Average Reduction: 20%, Estimated Yearly Water Reduction: 1,740,000 gallons per year, Estimated Yearly Energy Reduction: 612,200 kWh per year Evolve- Average Reduction: 60%, Estimated Yearly Water Reduction: 5,220,000 gallons per year, Estimated Yearly Energy Reduction: 1,836,000 kWh per year Hydrao- Average Reduction: 17%, Estimated Yearly Water Reduction: 1,479,000 gallons per year, Estimated Yearly Energy Reduction: 520,300 kWh per year
Date(s) Development Proposal Voted on By Committee (Date aligns to Committee Mtg Minutes)	On May 5, 2018 the committee approved a pilot for this project.
Approved for Implementation (Yes / No)	Yes, a small pilot was approved to measure proof of concept before implementing wide-scale

Milestone 3: Funding	
HEIF Funding Amount Requested in Development	\$9,018.26
HEIF Funding Amount Approved by Committee	\$10,000
HEIF Funding Amount Approved for design services (Included in the amount above)	N/A
Match Funding Amount from other sources (State the other source)	N/A
HEIF Funding Addition Approved by Committee, (Include Date of Additional Funding Approval)	N/A
Total Project Funding Needed from HEIF	N/A
Reason for HEIF Funding Addition	N/A
Estimate Total Budget	N/A
Milestone 4: Design & Permitting	
Date Project transition to PD&C	Not needed for this project
Date Project completed Design Phase (i.e. Date Project was Permitted)	
Name of Design Manager (in house)	

Name of Outside Consultant	
Major scope element changes	
Milestone 5: Implementation	
Date Project entered Implementation Phase	Pilot/Phase 1: January 2019
Date Project completed Implementation Phase	Pilot/Phase 1 installation : 1/29/2022 Pilot/Phase 1 removal: 07/01/2022
Delivery Method (e.g. name of implementer)	Facilities Management
Name of Project Manager (in house)	Dan Bouchard
Milestone 6: Project Closeout	
Final Implementation Cost (including non-HEIF sources)	\$7221.45
Date Project Billed & Recorded in OBI	July 1, 2021
Milestone 7: Monitoring	
Final Annual Savings Calculated	No salvageable quantitative data on savings, but some students reported enjoying the polar bear graphic and tried to “save” the polar bear. This inadvertently saved some water from taking shorter showers.
Name of Person who Calculated Savings	Danika Zikas
How were savings calculated? (e.g. monitoring devices, utility bill review, etc.)	- Discussion with students living on campus - Personal anecdote from HEIF student assistant
Date Savings Metrics Calculated	11/28/2022

Pictures

(Picture 1: Existing Conditions, date photo taken)

(Picture 2: Completed Project, date photo taken)

Thank you for your participation in this Humboldt Energy Independence Fund Pilot Study!

This HEIF pilot study is intended to test the effectiveness of available shower reduction hardware technologies on the market and their ability to reduce the consumption of water and energy associated with showers.

HSU Residence Halls annually consume about **9 million gallons of water** and **500,000 kWh of energy**. From a 2017 HEIF survey, **34%** of all students in the HSU Res Halls reported that they took showers that averaged **10-15 minutes** in length. Reducing the length of the average HSU shower by introducing **behavioral awareness and change** is a promising strategy for **reducing** the impacts from campus resource use.

Amphiro b1 Connect is the selected device installed in these showers.



How the device works

1. Amphiro b1 displays water and energy consumption directly while showering. Also displays a polar bear resting on an ice sheet which gradually recedes as user shower time increases.
2. Shower user is aware of consumption.
3. Shower user reduces consumption.

For more information please visit <https://heif.humboldt.edu/implemented-projects>

If you would like to report issues or concerns, please contact:

For device/hardware issues: HSU Housing Department Phone: (707)826-3451	For negative feedback/comments about the study: Email: CanyonShowerResearch@humboldt.edu
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Signage for Pilot Study of Amphiro Shower Heads

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Hydrao showerhead is the selected device installed in these showers.



How the device works

1. Shower changes colors according to volume of water used: **Green** (0-3 gallons), **Blue** (3-5 gallons), **Pink** (5-8 gallons), **Red** (8-11 gallons), and **Flashing red** (+11 gallons)
2. Shower user is aware of consumption.
3. Shower user reduces consumption.

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Signage for Pilot Study of Hydrao Shower Heads

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Evolve ShowerStart is the selected device installed in these showers.



How the device works

1. Device stops flow of water once the temperature reaches 95 degrees Fahrenheit.
2. Shower user pulls the Evolve release cord to restart water flow.
3. Shower user has reduced consumption before shower and may continue to be aware of use during shower.

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Signage for Pilot Study of Evolve Shower Heads

*(*Include screenshots and links to non-infrastructure projects.)*

Names of People who compiled this information:

Name	Date
Theressa Lopez	July 1, 2021
Theressa Lopez	July 8, 2021
Danika Zikas	12/04/2022