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# LUCID SCREENS

Qualitative Study: Observation Research Report



# 01

## EXECUTIVE SUMMARY

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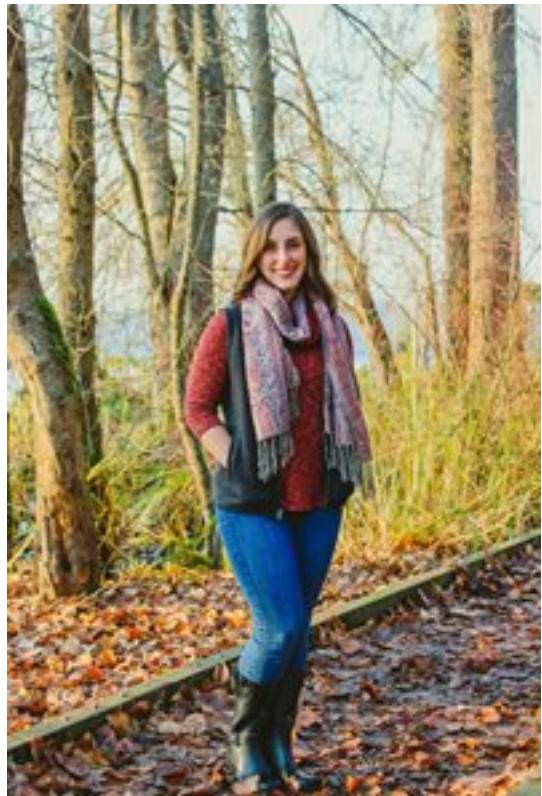
The goal of the user and observation study on the Lucid screens is to collect enough data to come up with possible solutions that could increase the overall student engagement with the screens and knowledge of campus sustainability. Through observations and interviews, we gained a clear understanding on why there are low interactions with the screens; our noticeable findings were that students who passed by the screen wouldn't notice them or didn't realize that the screens could be interacted with. The screens also didn't provide information that students would generally like to use everyday. We've identified some problems and created Personas and Use Case Scenarios to help create possible solutions.



# ABOUT OUR PARTNER

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Alexa Russo, the Sustainability Coordinator at the University of Washington Bothell (UWB) Campus and stakeholder for this project asked us to look into why the Lucid screens weren't being utilized and wanted us to provide her an administration guide and possible solutions. The Lucid screens run off of a company called Lucid that uses BuildingOS (their operating system that they've made) to help collect, build, and visualize data of energy consumption and sustainability.

# ABOUT OUR TEAM

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Our team was organized based on interest in this topic. We all attended and discussed with Alexa her goals and plans for the screen for our first meeting and each worked diligently to create the content and needed documents for the project. As a team, we worked together to create a plan for qualitative observation because of our problem with the lack of people to use the screens. We also worked together mostly in pairs for the observation studies and research before coming back and writing more in-depth notes and research analysis. These studies and analysis of the research will allow us to design a possible solution to increase engagement in campus sustainability.



Param Hehar



Su Li



Julian Ngo



Chelsea Tao



Tammy Tran

# RESEARCH METHODS

# 04

## Lucid Screens Background

The Screens are found at UWB in UW1 main lobby, Discovery Hall outside of the Makerspace, Library entrance lobby, and the 3rd Floor of the Library. These screens show information of sustainability around UWB and how much energy and resources each building uses. It also shows weather and has a competition tab to compare energy usages to the other buildings.



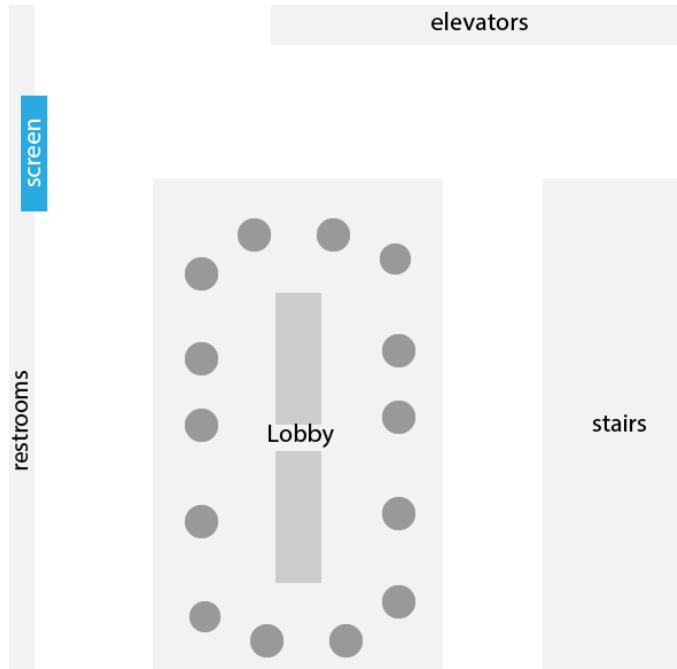
The screens provide information regarding campus sustainability, energy usage and energy conservation.

# RESEARCH METHODS

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# 05

The Screens are found at UWB in UW1 main lobby, Discovery Hall outside of the Makerspace, Library entrance lobby, and the 3rd Floor of the Library. These screens shows information of sustainability around UWB and how much energy and resources that each building uses. It also shows weather and has a competition tab to compare energy usages to the other buildings.



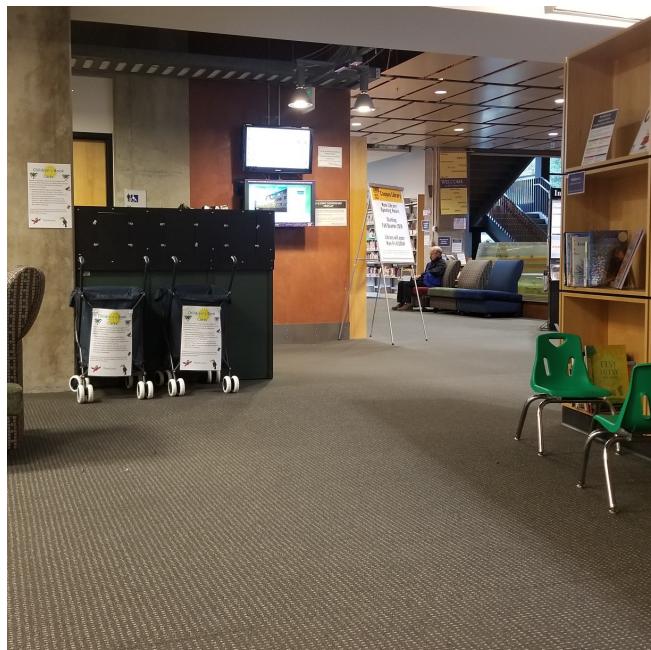
Discovery Hall Second Floor (lobby area)

# RESEARCH METHODS

06



UW1 First Floor (Entrance)



LB1 First Floor (lobby area)

stairs

reception

screen

entrance

bus time screen

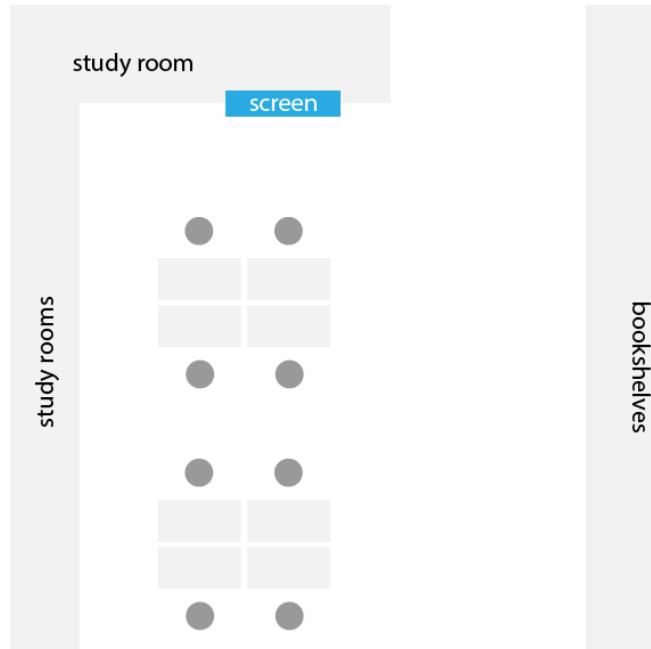
restrooms

lucid screen

entrance

# RESEARCH METHODS

07



LB2 Third Floor (Study rooms area)

## Challenges

The Lucid screens around campus are hardly used making it difficult to take qualitative observation notes. Most qualitative research (or at least the one we read about in class) is where the observers would observe without interacting with the environment or subject unless it is further understand the groups and people.

# RESEARCH METHODS

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## Solution

In order to get effective user feedback and insights, we changed our method of qualitative research approach that we learned in class and had to create the environment for us to observe. We learned in BIMD 481, Integrative Studio Design 1: Design, often, in naturalistic research, the researcher observes the environment without intervening with the participants or setting [1]. In order to observe and take qualitative notes, we asked groups of people to come up and interact with the screens for us to observe and then interview them after. We were able to have three effective observation and interview sessions this way. Our fourth and last observation session had a more observational approach where we observed the area and didn't directly interact with the people in

# DATA ANALYSIS

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From the results of the observation studies, it is clear that the Lucid screens do not attract students' interests and are therefore left untouched. The main reason why people do not interact with the Lucid screens is because the screens do not stand out in the environment. Another major finding from the study is that after people have used the screens, they stated that they are not likely use them again because they do not think that they will be benefited from the screen content. A lot of the feedback we got included adding content that was much more student related and relevant. The students think that they are not benefited by learning about campus sustainability related information.

On our overall observations, the problem with the screens is based on its content. The people in our first three observation sessions were mostly disinterested with the content. Nothing engages users to use the Lucid screens and nothing would keep them engaged if they were use them.

# DATA ANALYSIS

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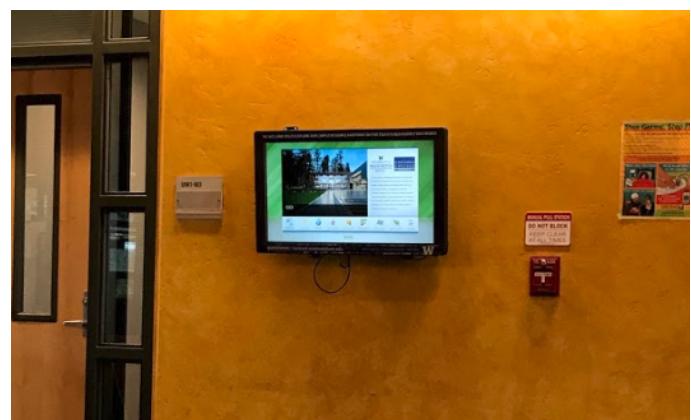
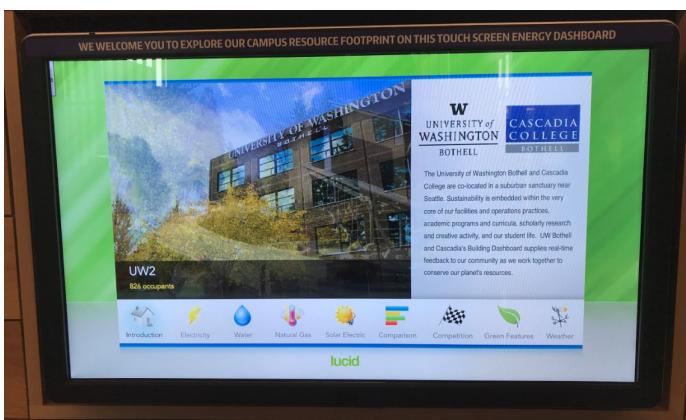
The data we mainly collected were written observations of the users interacting with the screens, interviews with the users about specific questions we had, and field observations of the location and context surrounding each Lucid screen. From our observations, we wrote more in depth paragraphs of the observations before coding them. We coded them based on the AEIOU outline [2] from our BIMD 491 class and noted any special, important and unique information.

We do believe that the general placements of the Lucid screens are effective; they've been placed in well populated areas with a lot of foot traffic. However, we don't think that the screens are very accessible. The screens don't give non-visual feedback when being used and the height of the screen on the wall is too high for people in wheelchairs. It is also difficult to infer whether the screens have a touch interface and the only thing that indicates this is a small sticker above the screen. Users fail to interact with the screen because of this miscommunication.

# KEY FINDINGS

Students don't use the screens because they hardly notice them or don't realize that they can be interacted with.

We found that during the first few observations, many students who had to go look at the screens from Mark's class were not even sure if they were at the right place. Without the assignment they were given, the students were unaware that the screens could be interacted with.



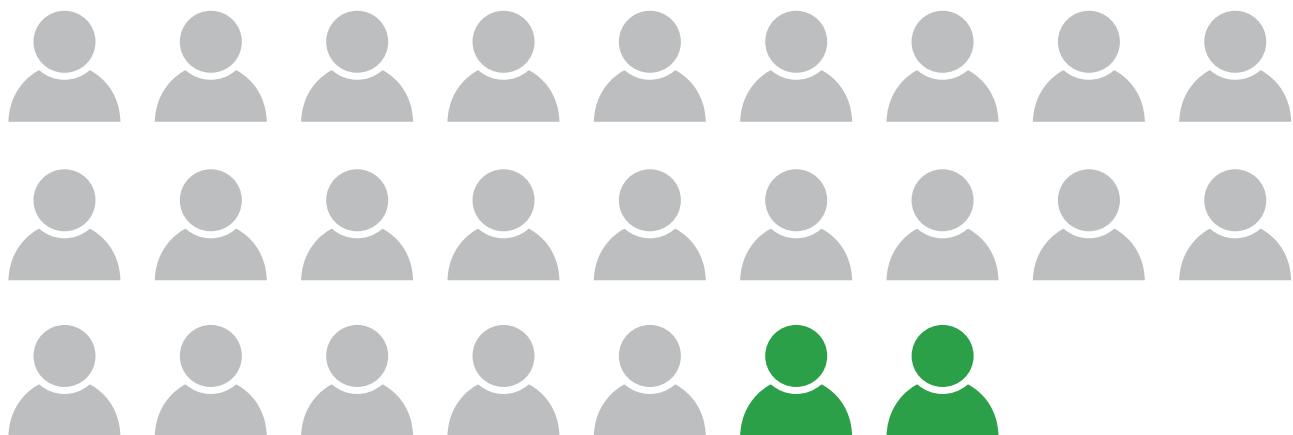
# 12

## KEY FINDINGS

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Students who do use the screens tend not to use them again because it doesn't have information on them that benefit them on a day-to-day basis.

During the interviews, a significant question we asked was if the interviewee would ever see themselves using the screens again on their own volition. Almost all of them said that they wouldn't use the screen again because of the lack of information that they find valuable to them on a daily basis. They felt that it was not very relatable and they would like to see better references that connect to them as students.



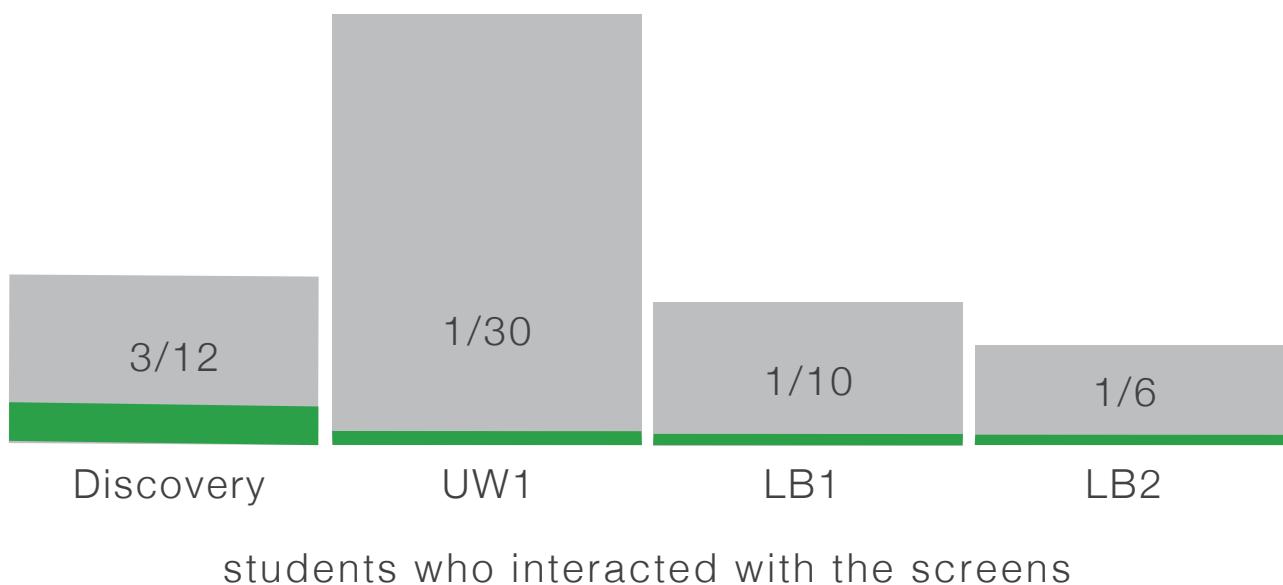
Out of **28** students we have interviewed, only **2** people said they will use the screens again.

# KEY FINDINGS

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In general, people(not being asked to interact with the screens) will glance at them but do not interact with them. Some are unaware of the screens.

From our fourth observation, we saw that the students who walked by the screens wouldn't look at the screen, and the ones who did glance, didn't interact or even stop to look at what it was. We also tried to interact the screen to display that they were interactive in order to spark interests of students in the environment. However, most students were focused on their own business and some would glance over for a quick moment before looking back to what they were doing.



# AUDIENCE & STAKEHOLDER

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Based on the data we have gathered. We have put together two personas to present the two main archetypes of our audience and stakeholder who are relevant to our design research goals.

## Audience

Ximena is an international student who transferred to UW Bothell from Brazil and is starting her first quarter here. She's interested in environment/sustainability and is currently taking an introduction to environmental issues core class. Her first assignment was to use the Lucid screens around campus and research the different types of energy consumption from each building. These Lucid screens are located at three different locations on campus: UW1, Discovery and two in the Library. While visiting the first Screen at UW1 with her group, she had difficulty reading the screen and interacting with the touch interface. The Screen was too high and she had to crane her neck to read and reach up to touch the different parts of the interface. The same thing occurred at the Lucid screens in Discovery Hall, the first floor and the third floor of the Library. Though Ximena couldn't read the screens without having to constantly reach up and look up all of the time, she was able to complete the assignment with her group mates.

# AUDIENCE & STAKEHOLDER

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## Ximena



*"I love how UWB (University of Washington Bothell campus) is very accessible and has passionate teacher for classes I am interested in!"*

### Background

- New to UW Bothell
- Taking core classes (intro to Environmental issues)
- Not very social or comfortable talk to people
- Currently working on a project that needs outside research
- Is not able to walk and uses a wheelchair to get around

### Age

18 years old

### Gender

Female

### Intended Major

Environment/  
Sustainability

### Location

Bothell,  
Washington

### Goals/Needs

- Would like to learn more about the school and campus events
- Interested in learning about sustainability efforts in the local area (Bothell)
- Needs to find & use data about the environment for project in core classes
- Able to move around and use all the technologies around campus

### Questions

- When I try to use the screens, they're hard to use, I have to lift up my arms and tilt my head back in order to interact with them
- Where can I learn and get more involved with the campus and environmental information?

# AUDIENCE & STAKEHOLDER

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## Stakeholder

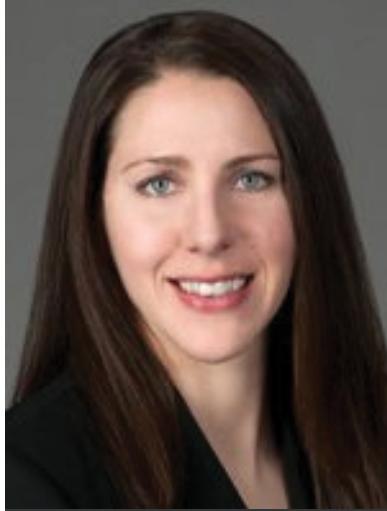
Valarie is a graduate student with a master degree in Environmental Studies. She is an Assistant Coordinator for UC San Diego 's Department of Sustainability. She is responsible to assist the Lead Coordinator of Sustainability to promote and engage students in campus sustainability. Students on campus generally do not seem to be too interested in sustainability topics and not a lot of students are willing to spend time to be more involved in the campus sustainability community. Valarie thinks that there needs to be a more effective, creative way to promote campus sustainability in order to engage and attract the students to be more involved in the community. Recently the department has considered putting investments in technology that helps with the department's mission. However, Valarie is experiencing some difficulties because she is unfamiliar with tools that might help which make it difficult for her to start researching. With her busy schedule and other tasks, she is unable to spend extra time and effort to learn complicated, non-user friendly technology.

# AUDIENCE & STAKEHOLDER

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## Valarie



*"Environmental sustainability is important now with how much energy we use. Guiding and raising awareness to the students and faculty around campus can help create a more sustainable future"*

### Background

- A Graduate Student with a master degree in Environmental Studies
- Department of Sustainability Assistant Coordinator
- Is not well versed with complicated technology
- likes caramel macchiato and pumpkin spice lattes

### Age

26 years old

### Gender

Female

### Occupation

Assistant  
Coordinator  
UCSD's  
Department of  
Sustainability

### Goals/Needs

- User friendly, easy to understand technology that is beneficial
- Promote and engage students in campus sustainability
- Increase the amount of uses with the students and existing technologies
- Design an effective, yet creative solution to engage students in campus sustainability

### Questions

- How can we effectively teach students and faculty about sustainability? (Including the ones who are not interested in sustainability)
- Replacing the screens are out of the question, but are there more ways than just the screen to teach sustainability?

# POTENTIAL SOLUTIONS

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Lucid screens around campus are targeted towards the general students to inform them of the energy use but it isn't effectively capturing the intended audience. However, based on our research on the Lucid screen, we know it is possible to show more information than what was originally shown before and hope to remove content that isn't needed. We've come up with two solutions: a practical solution that our stakeholder Alexa can easily implement based what Lucid screens is capable of and an ideal solution that would increase the interactions with students who walk by.

## Practical

In order to retain a use for the screens, we need to include content that students would want to use or know on a daily or weekly basis. We would like to include information on campus announcements and events on the screen.

Lucid displays its information by storing data in cards and placing them onto a storyboard. Since cards can hold any information so we wanted to utilize the cards to hold the content we thought were important to show on each tab.

# POTENTIAL SOLUTIONS

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The home screen will be inviting for the user because it will display quick relatable information such as weather and current events. Each energy screen will also have accompanying cards that pertain to the type of energy and will display more information than just the graphs of data.

## WELCOME!



Touch to interact



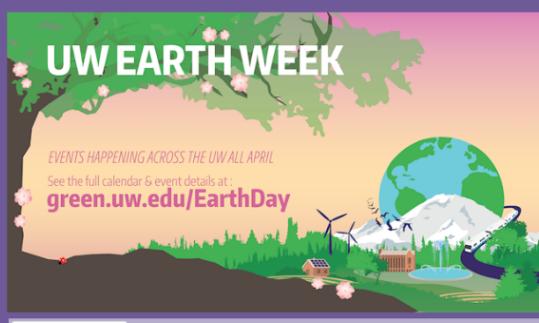
Tuesday 11:00am

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Bothell, WA

Wind: 2 mph  
Humidity: 35%

## EVENTS



### Earth Week at UWB/CCC

Join us on April 18th-April 22nd for our Earth Week activities hosted by UW Bothell and Cascadia College! We will be hosting a variety of activities all around campus from film screenings to informational booths and campus tours. For the complete list of activities, please take a look at our Earth Week schedule here!



Introduction



Electricity



Water



Natural Gas



Solar Electric

# POTENTIAL SOLUTIONS

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**UW1**  
1602 occupants  
**1,601** Kilowatt-hours  
PERFORMANCE NOW

Time	Usage (KWh)
12 am	~70
3 am	~60
6 am	~80
9 am	~140
12 pm	~170
3 pm	~140
6 pm	~180
9 pm	~150
11 pm	~120

**What are you doing to lower your electricity use?**

Submit

**Today's Results:**

- Lorem ipsum dolor sit amet, consectetur adipiscing elit.
- Maecenas vel felis vitae augue euismod tincidunt elementum ut tortor.
- Praesent euismod mauris ut finibus aliquet
- Nulla elementum purus vitae sem ultricies iaculis
- Sed bibendum turpis in neque sodales hendrerit. Duis convallis mollis odio, vitae congue erat feugiat sit amet
- Suspendisse lorem augue,

**UW BOTHELL'S EFFORTS**

**What can you do?**

Tip: Completely power off electronics

Plug equipment into a surge protector-power strip, then turn off the power strip at the end of the day to completely power down these devices

1 of 4

**Introduction** **Electricity** **Water** **Natural Gas** **Solar Electric**

## Ideal

We want to take the information that Lucid screens currently has and transform it into a more attractive and interactive experience for its users. We wanted to do a full U.I. overhaul because of how limiting the Lucid screen backend is when designing the content layout. So with our ideal mockups, we created a cleaner and simpler layout.

# POTENTIAL SOLUTIONS

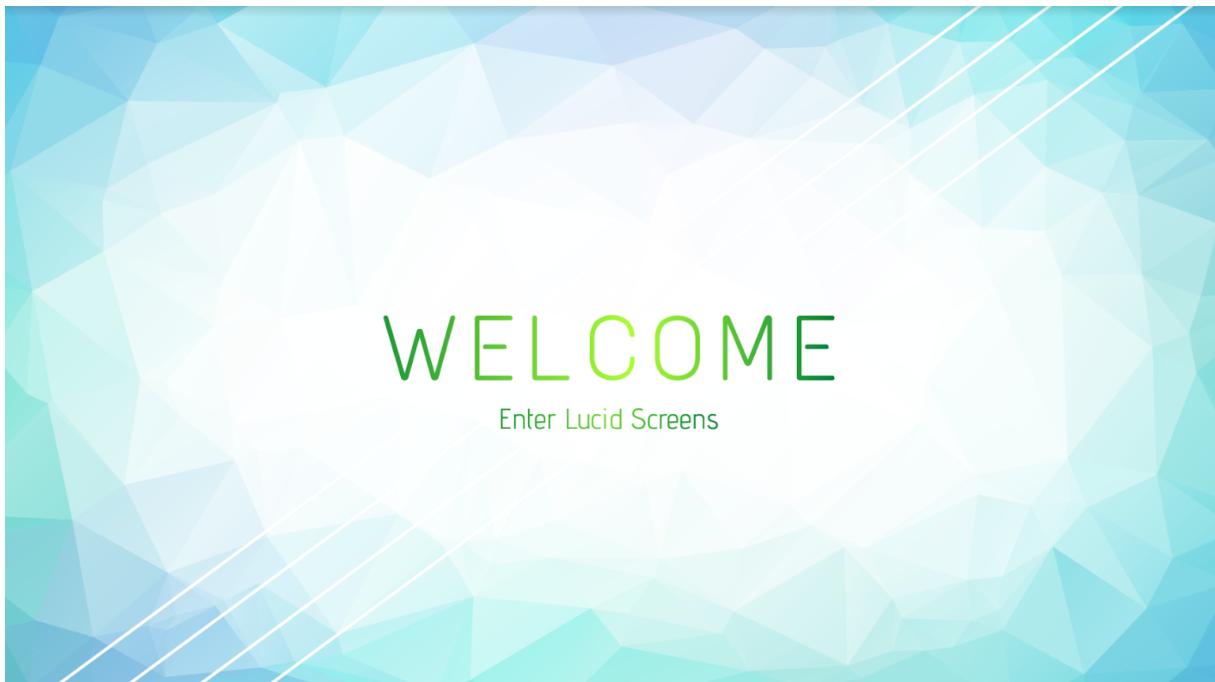
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The new home screen would include a front-facing camera that would activate as students walked by. This camera would have implemented interactive elements such as AR games. Once someone touches the screen, it opens up to the weather card. From there, they can swipe through the different cards and learn about events, electricity, water, natural gas, and solar energy on campus. People stated during our interview that if there was relevant information such as weather and events, then they would find themselves using the screens more frequently, hence the first two cards. We kept the campus' energy data on the screens, but just condensed the information and updated the visuals. We also incorporated tips on each card so students can learn about ways to help the environment. This was also a suggestion we got from the students we interviewed.

# POTENTIAL SOLUTIONS

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Monday 11:00 AM

43°

Bothell

Rainy

Statistics

Cloudy 100% | Thermometer High: 46° Low: 41° | Wind Flag SW 4 mph

Today Week

Now	Rainy	43° F
12:00 pm	Rainy	44° F
1:00 pm	Cloudy	42° F
2:00 pm	Partly Cloudy	41° F

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Weather   Events   Electricity   Water   Natural Gas   Solar

# POTENTIAL SOLUTIONS

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## Events

**Sound House**  
4 pm - 6 pm  
Common Grounds  
Stop by and support your fellow creatives!  
[View event details →](#)

**Jumpstart.me**  
7pm - 8:30 pm  
ARC-121  
Get connected to tech companies like Lyft, Twitch, Spotify, Pinterest, and more!  
[View event details →](#)

**Catch your Zzz's**  
9 am - 4 pm  
ARC 2nd Floor  
Are you feeling tired? Take a nap to destress before your exam!  
[View event details →](#)

**Join the UWB/CC Student Sustainability Organization!**  
The University of Washington Bothell and Cascadia College Student Sustainability Organization is a cross-campus student group aimed to promote and engage with both campuses on issues pertaining to sustainability, including planning our annual Earth Week celebration.  
[Learn more →](#)

**Weather** **Events** **Electricity** **Water** **Natural Gas** **Solar**

## Electricity Consumption

**Location**

- UW 1
- UW 2
- Discovery Hall
- Ti
- LB 1/LBA
- LB 2

Protect power strip, then turn off the power strip at the end of the day to completely power down these devices.

Time	Today (kWh)	Yesterday (kWh)
12 am	~80	~75
3 am	~70	~65
6 am	~100	~90
9 am	~150	~140
12 pm	~180	~170
3 pm	~170	~160
6 pm	~120	~110
9 pm	~70	~65
12 am	~55	~50

**Weather** **Events** **Electricity** **Water** **Natural Gas** **Solar**

# POTENTIAL SOLUTIONS

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## Electricity Consumption

UW 2

What can you do?

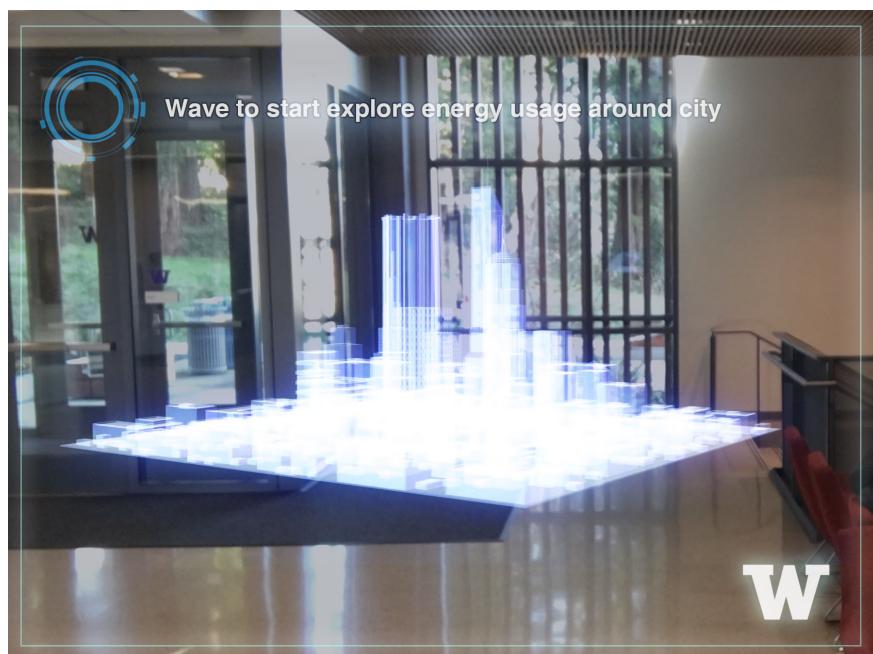
Tip: Completely power off electronics

Plug equipment into a surge protector-power strip, then turn off the power strip at the end of the day to completely power down these devices.

A bar chart titled 'Electricity Consumption' comparing energy usage between 'Today' (green bars) and 'Yesterday' (grey bars) across a 24-hour period. The Y-axis represents consumption in units, ranging from 0 to 300. The X-axis shows time intervals from 12 am to 12 pm. The chart shows a peak in consumption around 12 pm, with Today reaching approximately 190 units and Yesterday reaching approximately 180 units.

Time	Today (Units)	Yesterday (Units)
12 am	80	75
3 am	70	65
6 am	100	85
9 am	160	140
12 pm	190	180
3 pm	180	160
6 pm	130	110
9 pm	80	70
12 am	60	55

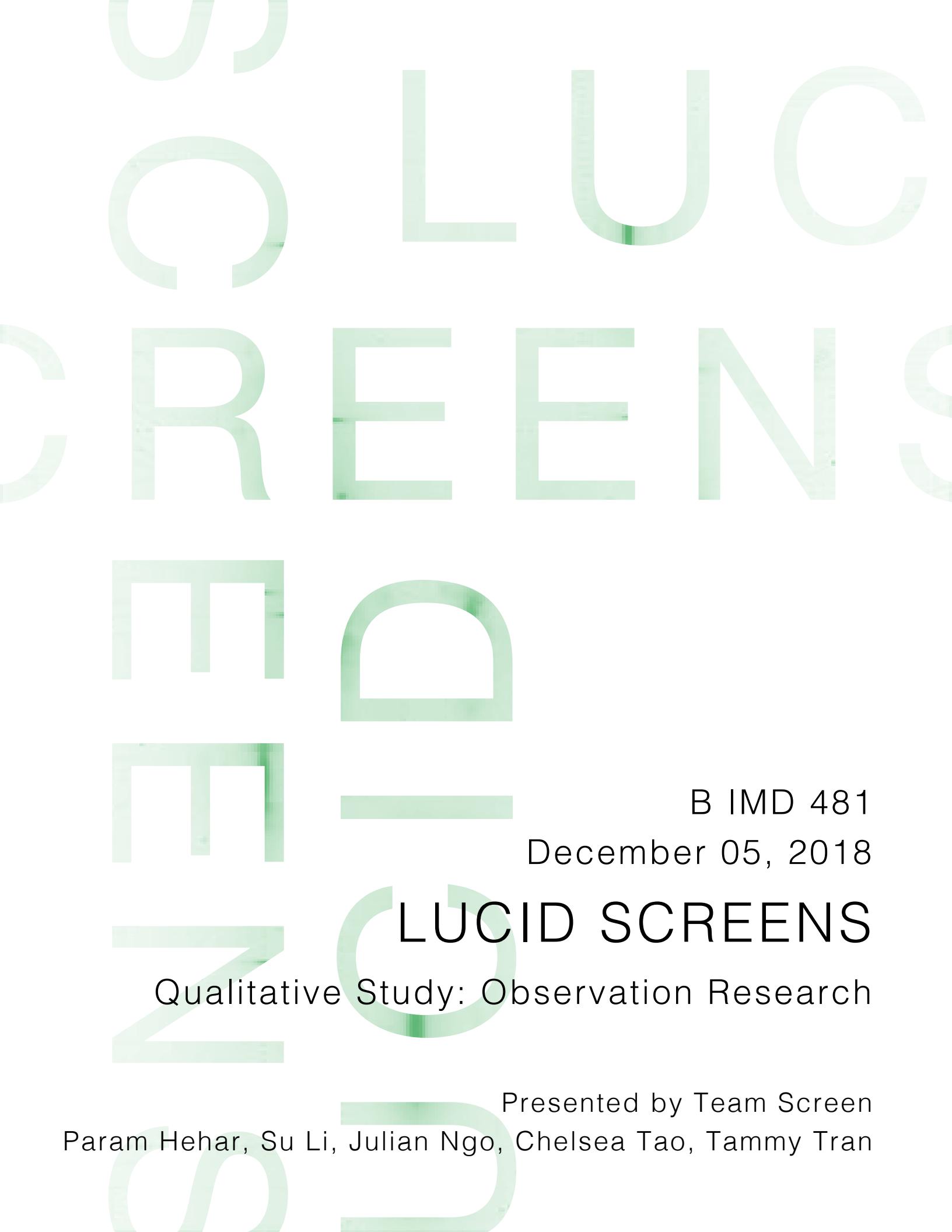
Weather Events Electricity Water Natural Gas Solar



# REFERENCE

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- 1) Chang, Winnie. "AEIOU." *Design-Led Research Toolkit*, [dlrtoolkit.com/aeiou/](http://dlrtoolkit.com/aeiou/)
- 2) "Participant Observation: In the Field." *Introduction to Qualitative Research Methods: a Guidebook and Resource*, by Steven J. Taylor et al., John Wiley & Sons, Inc., 2016, pp. 45–76.



B IMD 481

December 05, 2018

# LUCID SCREENS

Qualitative Study: Observation Research

Presented by Team Screen

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