

# h<sub>2</sub>ow low

*...can you go?*

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*collect, compete, conserve*



*"Moisture is the essence of wetness, and wetness is the essence of beauty." - Derek Zoolander*

## PROBLEM AND SOLUTION OVERVIEW

Currently, very few people have systems in place to track water usage. At this time, there is no easy or convenient way to collect this information. As a consequence of this, most people have no concept of how much water they use, or where it is used, and therefore have no motivation to track or reduce use. Even for those who are interested in saving water, there are no concrete implementations to feasibly and easily facilitate this, because people cannot even definitively determine their main source of water use.

To combat this void in available technology, our group proposes a vision of a comprehensive, in-residence system that 1) automatically tracks water use and sends data to our app, 2) allows users to set personal and residence goals, and 3) allows users to see

their performance compared to that of others (by location or demographic), which would hopefully create a competitive backdrop for conservation motivation that may even encourage those who might not have cared without these added incentives.

## TASKS

### **Check personal water usage data** · *simple*

We've made the personal usage our new home page. Once a user logs in, he or she will be directed to the new "my usage" page. Each bubble represents a type of water source: shower, sink, toilet, laundry machine, etc. The bubbles are layered to show your personal average, personal best, and current usage. This allows the user to easily compare their current performance with previous performance at a quick glance. Clicking on a device type switches to a detailed page about that specific device. This page includes a line graph that shows usage over time, tips for conserving, and a list of friends who are performing the best relative to this device.

### **Compare water usage with friends** · *medium*

Swiping to the left brings the user to a page where they can view their friends' overall water usage. This page is just an overview to get a general picture of friends' relative water usage based on bubble sizes. When the user click on a specific friend, he or she will be brought to a bar graph view that compares his usage with the selected friend's usage with data broken down by device type.

### **Find motivation to conserve** · *complex*

Finally, the last tab is the competition. There will be the ability to create a new competition, but the user can also be invited to join a competition. In the competition tab, the user can see the team standings for each competition he is participating in.

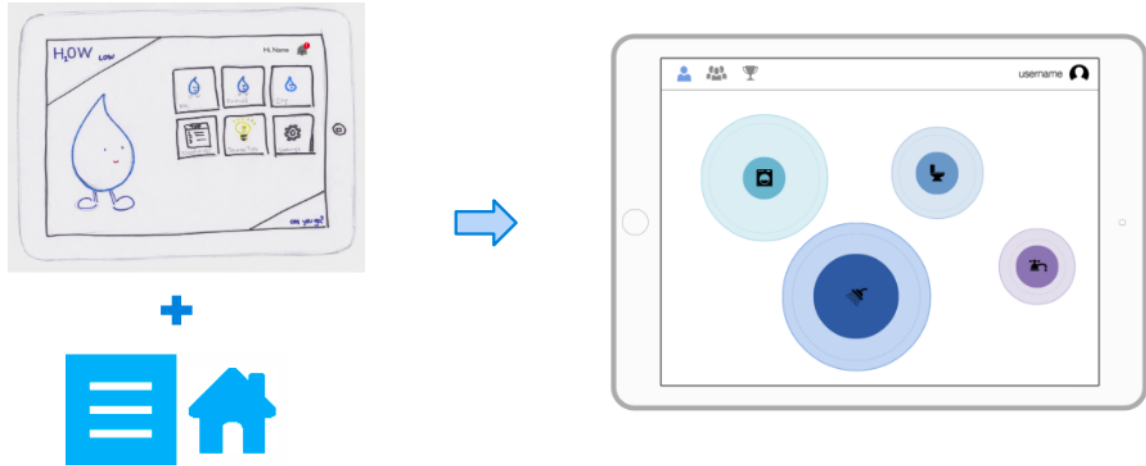
Another way we are trying to motivate our users is also just by presenting them with personalized tips. As we discovered through our interviews, many don't conserve mostly because they don't have concrete ideas of how to reduce water usage. We also received a lot of feedback on our lo-fi prototype to provide tips. By educating, we will be providing extra motivation to conserve.

## REVISED UI DESIGN

We redesigned a lot of our UI to address feedback on our lo-fi prototype:

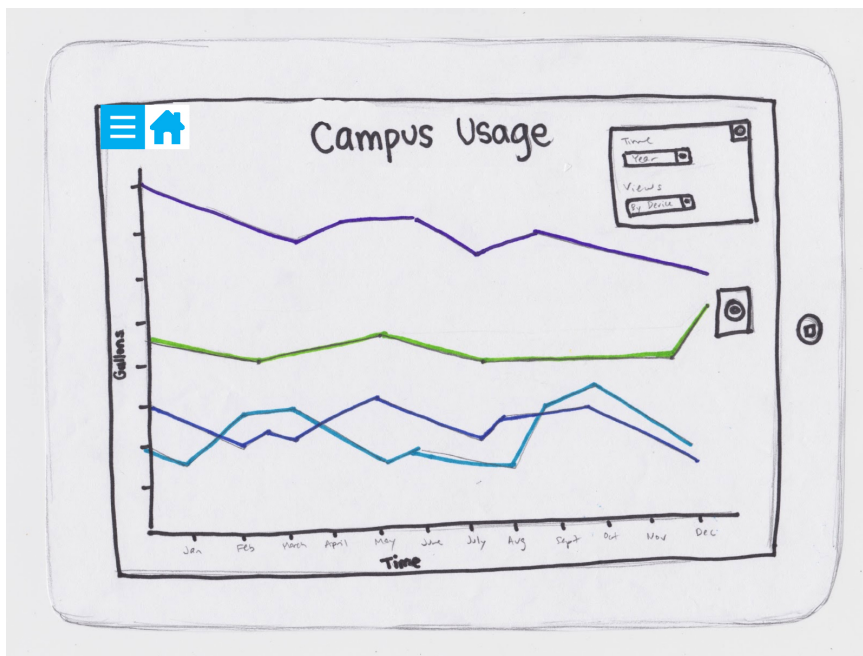
### **Removed "home" screen (resulting in cleaner navigation)**

We received feedback that our home screen did not help users complete any of their tasks. Not only was our home screen static, but it also lacked any useful information and we realized that the navigation functionality of the homepage could be condensed into a toolbar allowing users now to go between views using a single swipe instead of two clicks.



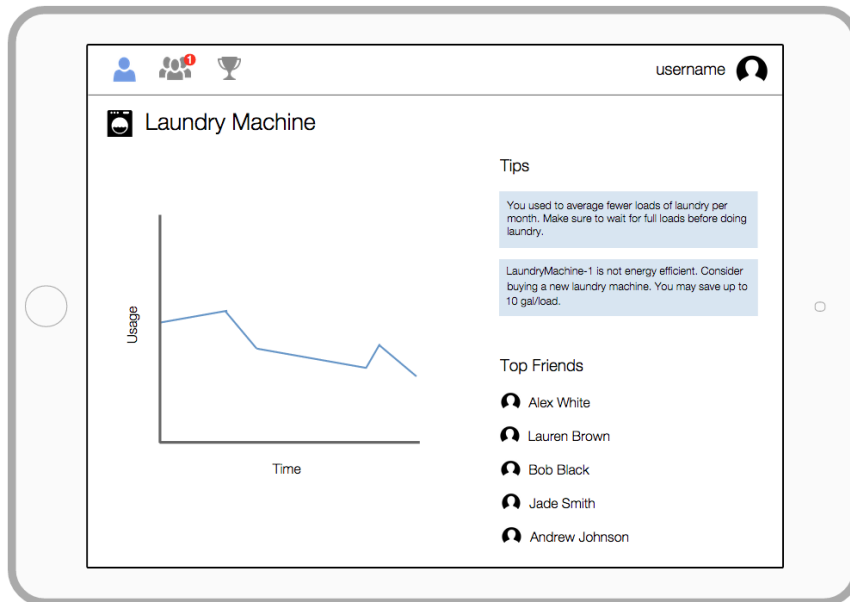
### Removed campus/city screen

We removed the campus/city screen because not only was it a cause of a lot of ambiguity, but we also realized that large scale water usage analytics would not be useful to everyday users of our app. Though the campus/city feature would have been useful for people managing utilities, we realized that these people are not part of our target audience. With the mindset that we want our app to be focused on doing a few tasks well, we decided the campus/city screen was not worth keeping. Removing this allowed us to rethink the flow of the app and make the parts that we kept more integrated.



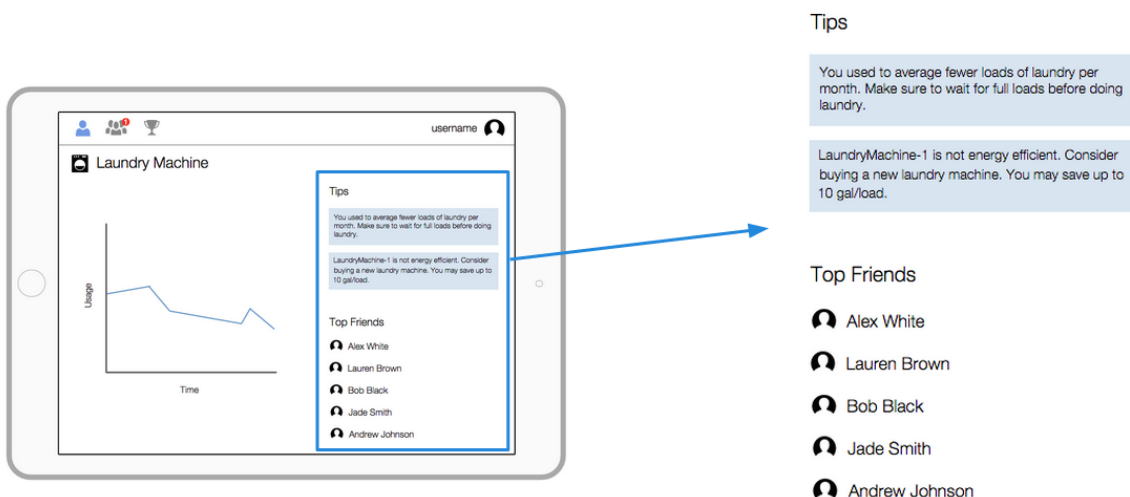
## Focused on individual usage

Part of refining our app into a medium-fi prototype involved narrowing our focus to individual users. We implemented a new level of analytics that allow users to view trends for showers, laundry machines, toilets, and sinks. By clicking on the icon of the desired water usage, the user is brought to a page that also includes customized tips to improve usage habits. For example, our app detects an extremely low efficiency toilet in the house, it will suggest the user to replace it with a high efficiency toilet and give the user water savings estimate to quantify the benefits.



## Incorporated social/tips

Also shown in the screen above, we've incorporated the social and educational aspects of our app directly into the my usage screens.



## Provided more data through visuals

Our user feedback indicated that our Friend's Usage page did not give enough concrete data, but provided a fun visual way to see general usage. For our medium-fi prototype, we wanted to maintain the easy-to-read and fun aspect of our original design while incorporating detailed analytics. Our new design, shown below on the left, organizes each water usage as its own bubble. The outer ring of the bubble represents the user's average usage, while the dotted ring represents the user's personal best. The darker inner circle represents the user's current usage level.

Clicking on an icon will open a page dedicated to a specific water source type.



My usage: left shows general usage amounts, right gives more in-depth view that gives change over time as well as tips and top friends.



Friends/friend usage: left shows overview of all friends' usage where user can quickly compare friends by bubble size, right give more in-depth view that gives device-specific comparisons between the user and a selected friend.

## PROTOTYPE OVERVIEW



HTML: <https://www.dropbox.com/s/zwzmp0iqqc2pix/howlow.zip?dl=0>

PDF: <https://www.dropbox.com/s/t2by9ce8rme8zfw/protoio.pdf?dl=0>

README: <https://www.dropbox.com/s/e173u3d92bxklrd/README.txt?dl=0>

(also copied in appendix for convenience)

Our team tested the three different prototyping tool options (Marvel, InVision, Proto.io), and decided to use Proto.io because of its interactive capabilities. We found that Marvel and InVision were similar to PoP and only allowed minimal user interaction such as swiping and linking pages. With Proto.io, we were able to create interactive buttons, toggle features, and animations that closely resemble what we want our High-Fi app to look like.

Proto.io helped us create our prototype by providing a number of premade features such as buttons and interactive lists, and allowing us to simulate our app on the iPad through their web preview feature. Though the tool is very useful, Proto.io has quite a steep learning curve and it took our team members a few hours of tinkering to get the hang of it. Proto.io also has poor collaboration capabilities that make it difficult to have multiple people working on a prototype simultaneously.

In our prototype, we left out our homepage animations simply because it would have been too difficult to hard-code the bubbles bouncing off each other. We made sure to implement at least one version of each feature into our prototype, but left out all of the redundancies. For example, on the Friends page, only one of the people on the friends list is clickable. We also had to leave out the option to change the viewing scope on all of our various graphs between day, month, and week because we lacked time and the built-in menu wheel tool in Proto.io was too difficult to user.

## APPENDIX

### README.txt

Enter your name on the login page and press enter.

The app can be navigated either by clicking the icons at the top or by swiping left or right (click-swipe mouse).

The main page displays the user's water usage, broken down by appliance. The inner bubble shows the use in the current week, the dotted bubble shows the previous lowest water usage and the outermost bubble represents the average usage. As the current usage reaches the average, the bubble pops (not implemented). If you click on an appliance's icon, it will take you to a page with the breakdown of how that appliance was recently used. We do not have settings to change the time-frame of the graphs yet. The page also contains tips on how to improve water conservation with that appliance.

There are currently two notifications that you can interact with from the main page (the notifications appear on the other pages, but those cannot be interacted with); one indicates that you have a friend request, the other that you have been invited to a competition. You can accept Alex White as a friend on the friends page or join the Roble Dorm Competition by clicking on the competition icon and accepting the request.

The friends page shows all of the user's friends in their individual bubbles. The bubbles size indicates how much water the friend has been using. By clicking on a friend's tab, you can see your usage compared to theirs. We have only implemented Andrew Johnson.

The competition tab shows the state of the competition that the user is part of.

The top right icon will include all account information.