Team North
University of Waterloo
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Desktop Graphical User Interface | Information Architecture & Interface Draft

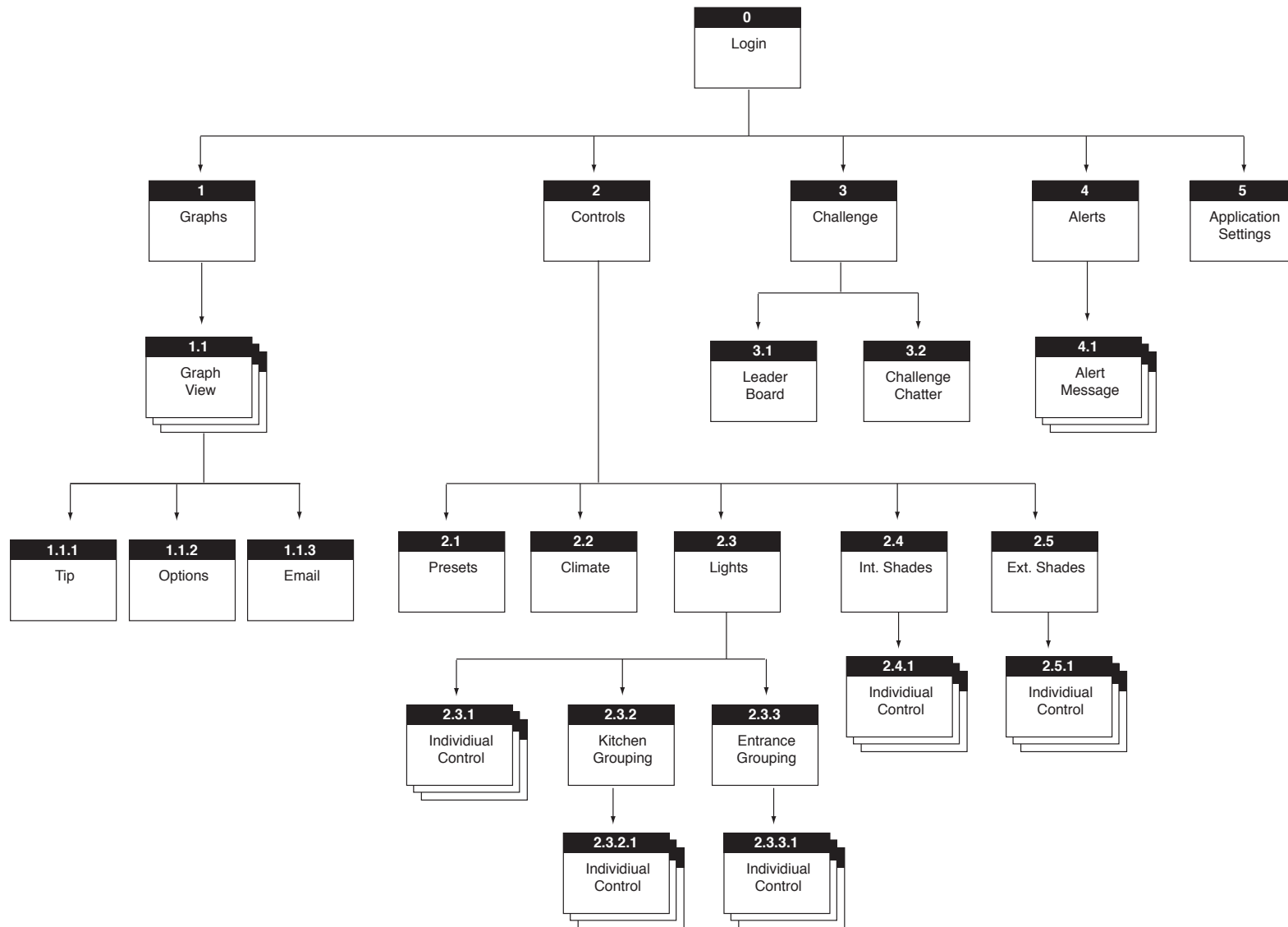Version 4 | Date: August 29, 2009

Revision History:

V.1   Developed the system with four main sections (quick-view, controls, challenges, and alerts). These sections were drawn from the larger, desktop, GUI system based and interactions were simplified according to i-phone interaction guidelines / conventions. The "application settings" section is yet to be designed, but will consist of username / password, privacy settings, and other settings that deal with the overall application's use.

V.1.1   Alterations made to the community page and small adjustments to the con trols interfaces

V.1.2   Moved the "application settings" icon from the top nav bar to the bottom tool bar. Added progress bar to challenge page list.

V.2   Redesign of the mobile interface; added the spinner function for viewing graphs. Color changes to dark. Added Settings page. Added non-scrolling functionality to the control sliders. Changes to the Challenge interface.

V.2.1   Added "draggable" sliders for lights, shades & blinds. Added text instructions

V.2.2   Fixed small illegible type on several pages, changed control sliders to closer resemble those on control panel pages. Added blue dot on Alerts page. Added "Save" button on Settings page

V.3   Edited text descriptions and fixed minor issues.

V.4   Revision after usability testing. Revised: graph view, spinner area, terminology, password login, lighting view indications, settings.

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Login

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Legend

a page

Page Details

This is a splash / login page. A login is used to prevent others from having control of the house in the event that the mobile is stolen or lost.

A: These are the login fields where the user would enter his/her username and password. For the purposes of the contest, we will designate a password and user-name.

B: In the case the user forgets their pass-word, they can retrieve it by clicking here. (Go to page ID 1)
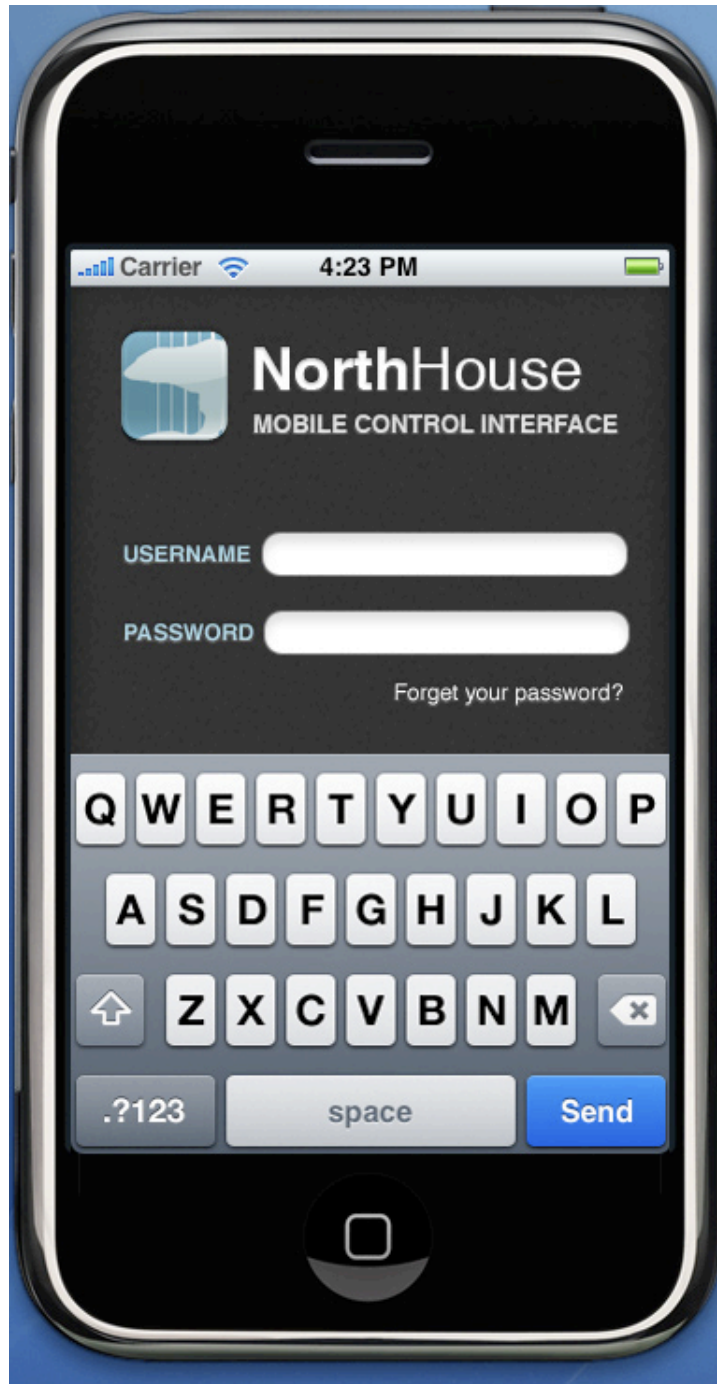
Page Details

This is just the view when entering the username and password as the user needs to use the iphone keyboard.
Pressing the 'submit' button on the keyboard will log them in.

(Go to page ID 1)

Page ID: 1

Page Title: Graphs

Page Details

*** Animation of the spinner will at the beginning of this section to show the user how it works.

A: This page allows the user to select different variables (originally presented in the desktop GUI), in order to compare/present the user with a graph. The user can also shake/ or press the "spin the variables" button to allow the system to randomly select variables (by visually spinning the variables in each column). By pressing the arrow buttons (in black), the user can scroll through the variables in each column.

B: When a user presses on a variable within a column, it changes color/brightness to highlight the selected variable and provide feedback to the user.

B: This would spin the variables (randomly selects a variable from each column). Once three variables (one from each column) are chosen, the button changes
(see page ID 1-A)

E: The house controls section
(Go to page ID 2)

F: The community challenge section
(Go to page ID 3)

G: The house alerts/notifications section. The red bubble only appears when a new alert exists. The number signififes the number of new alerts.
(Go to page ID 4)

H: The Settings section presents application options that can be adjusted. Currently this section is only a demonstration and will not be functionally implemented.
(Go to page ID 5)

Page ID: 1-A

Page Title: Graphs

Page Details

A: This view of the Spinner screen displays all three variables selected (Highlighted color)

B: When all three variables (one in each column are selected), this button changes color and the text changes as well.

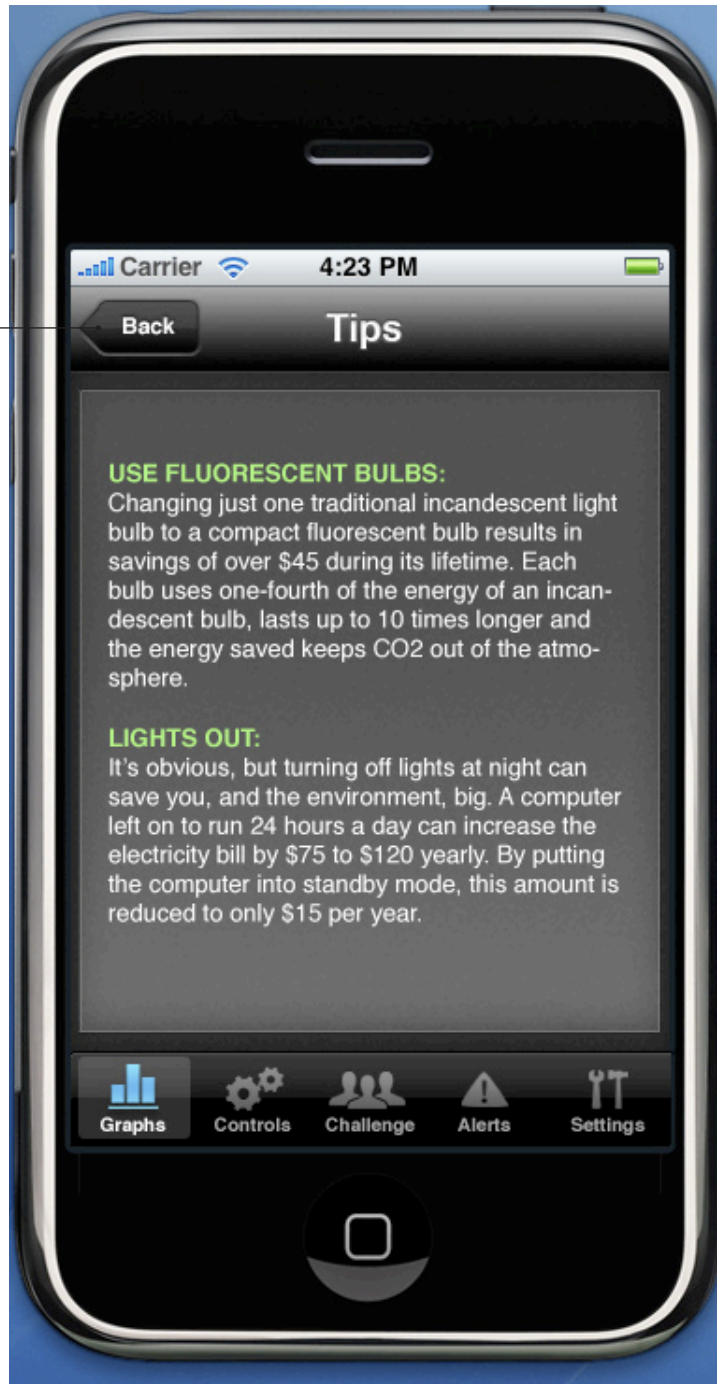## Page ID: 1.1

Page Title: Graph Results

Page Details

A: Brings the user back to the main spinner page (page ID 1)

B: Tips are relevant to the particular graph being displayed on this screen. They are used to provide useful suggestions on how to improve house energy efficiency.
(Go to toPage ID 1.1.1)

C: This provides the user with viewing options for the particular graph. In pressing the button, the page will "flip" to reveal the backside of the panel.
(Go to Page ID 1.1.2)

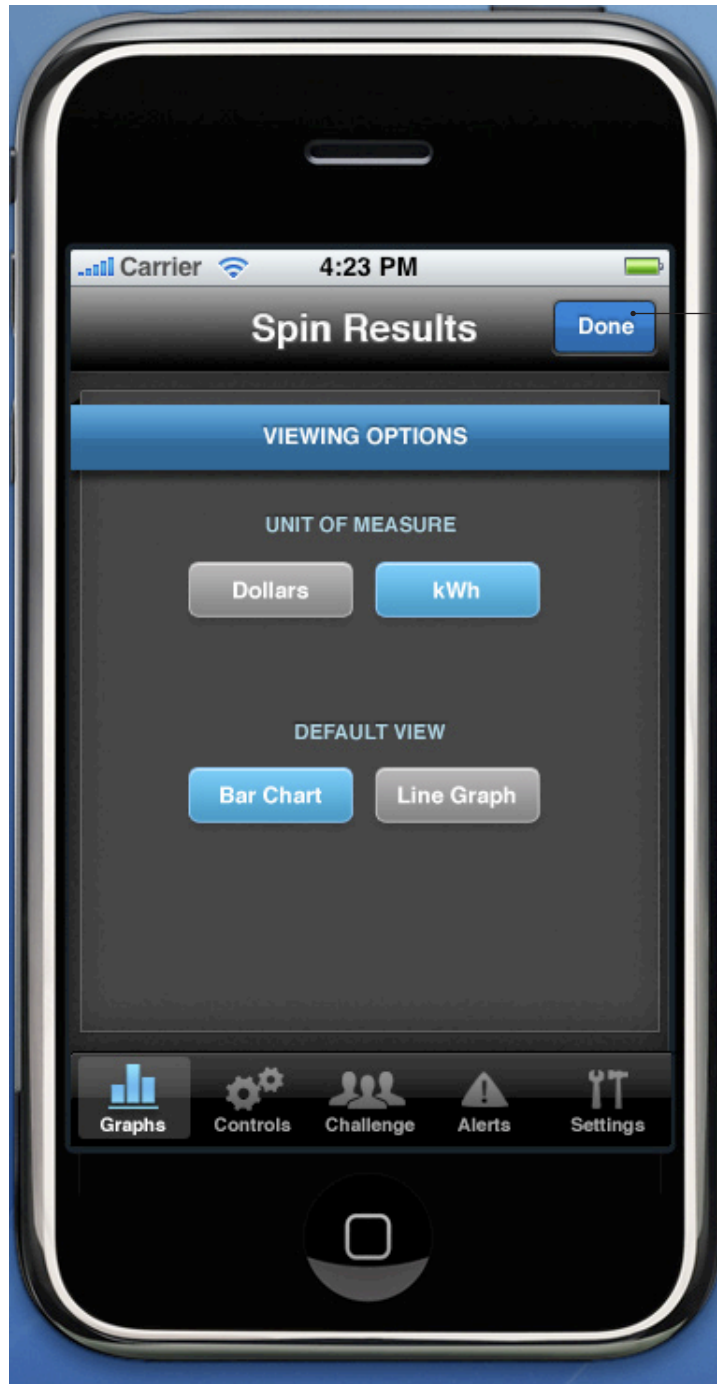**C:** This allows the user to email the graph to other people.

Page Details

This page provides the user with useful information on how to conserve / produce more electricity or be more efficient with water usage. The tips presented on this page will be relevant to the particular graph (viewed on the previous page). The tips could be generated from a database where a number of them would reside for each type of variable (on Page ID 1).

A: Brings the user back to the main spinner page (page ID 1)

Screen content:

Carrier 4:23 PM

Back **Tips**

USE FLUORESCENT BULBS:
Changing just one traditional incandescent light bulb to a compact fluorescent bulb results in savings of over $45 during its lifetime. Each bulb uses one-fourth of the energy of an incandescent bulb, lasts up to 10 times longer and the energy saved keeps CO_2 out of the atmosphere.

LIGHTS OUT:
It's obvious, but turning off lights at night can save you, and the environment, big. A computer left on to run 24 hours a day can increase the electricity bill by $75 to $120 yearly. By putting the computer into standby mode, this amount is reduced to only $15 per year.

Graphs   Controls   Challenge   Alerts   Settings

Page ID: 1.1.2

Page Title: Viewing Options

Page Details

This page provides the option of viewing the graph in dollar figures, or in kWh figures. Also, it can be viewed as a bar chart or a line graph (this will not be functional for the NH demonsration).

A: Brings the user back to Results page (page ID 1.1)

Page Details

A: This brings the user to the modes control screen. the "Away" text in blue displays the current mode that is active.
(go to page ID 2.1)

B: This brings the user to the Climate control screen (go to page ID 2.2)

C: This brings the user to the light control screen
(go to page ID 2.3)

E: This brings the user to the Interior blinds control screen
(go to page ID 2.4)

F: This brings the user to the Exterior shades control screen
(go to page ID 2.5)
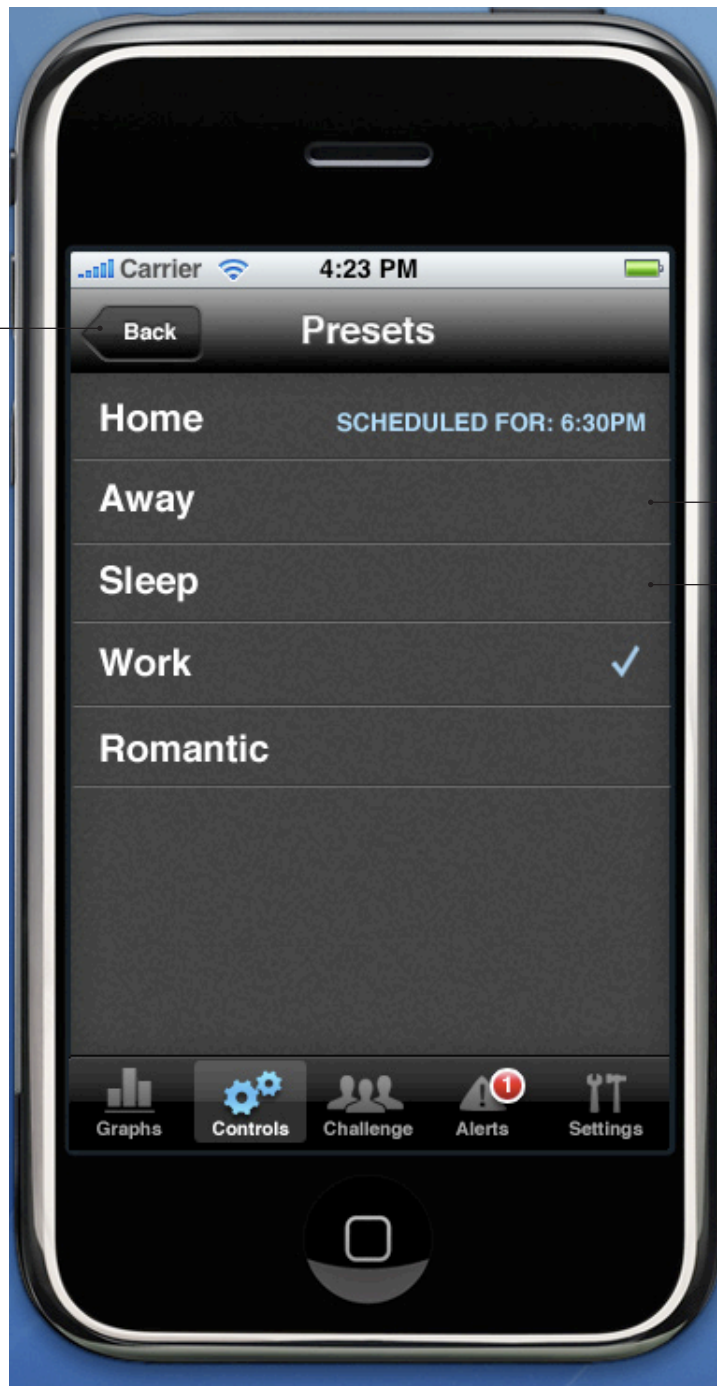
Page Details

A: Takes the user back to the main controls page

B: The blue highlight and checkmark denotes the active preset. The user can click on the other mode text to activate the mode. Whe clicked upon the mode text flashes blue-to-black until all the setpoints for the mode are reached. Only one mode can be active at a time.

C: This provides the user with an understanding of when the preset is next scheduled to tun on. The user cannot change this time through the mobile device, however this provides some extra information that may be helpful to them. (it only appears if the mode is scheduled for that day)
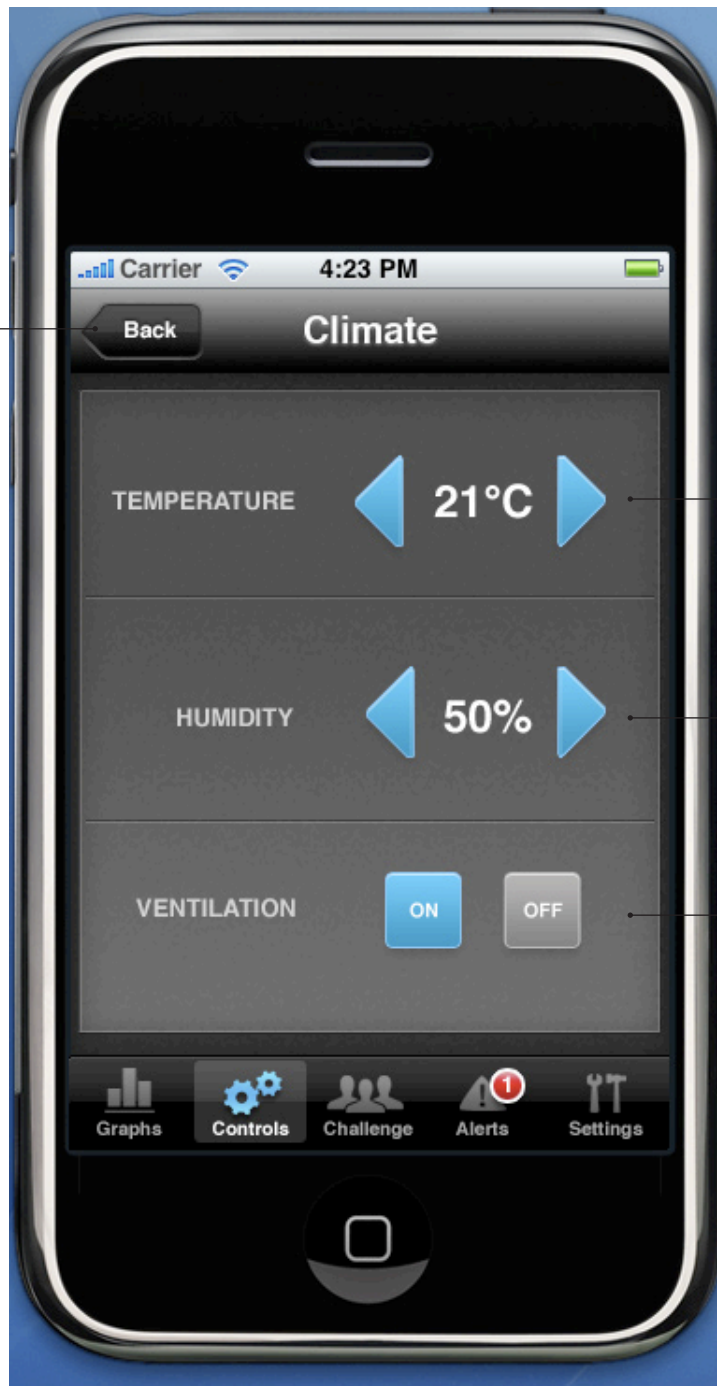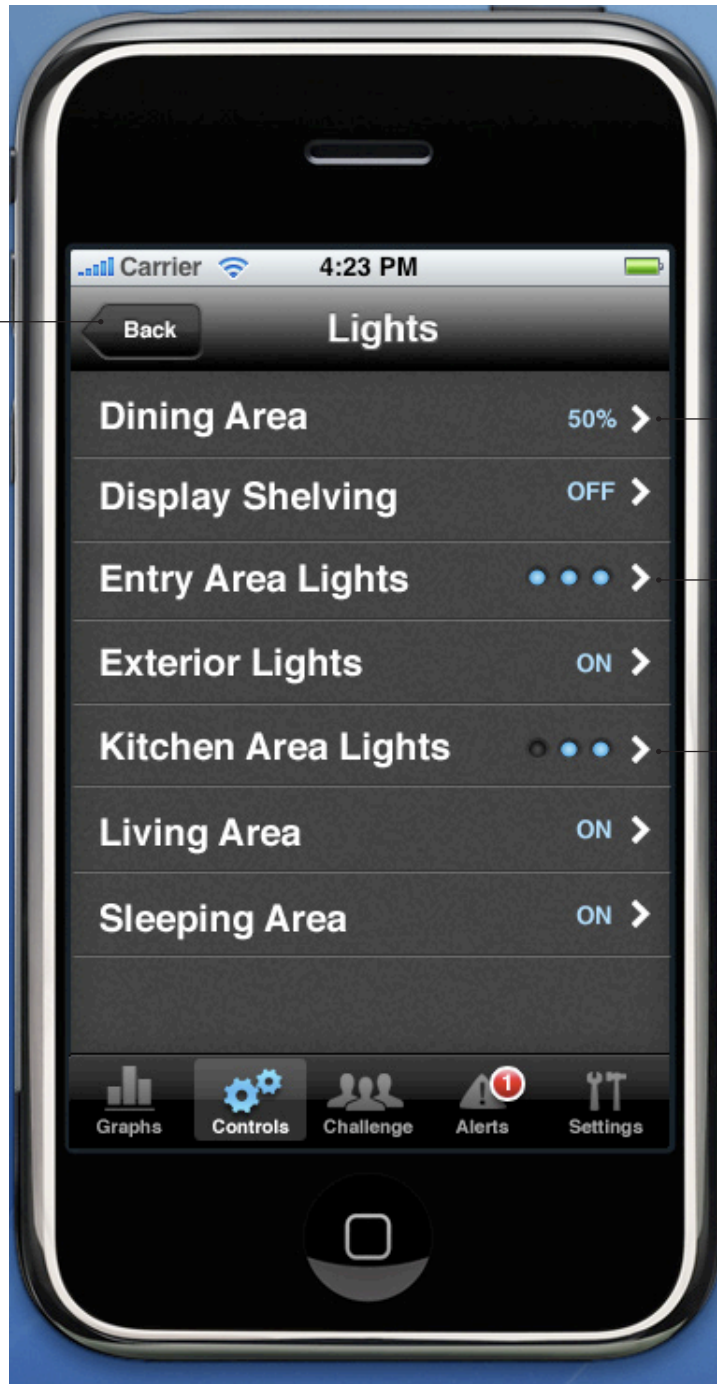
Page Details

A: Takes the user back to the main controls page

B: This changes the temperature up or down through pressing on the arrow buttons.

C: This changes the humidity up or down through pressing on the arrow buttons.

D: The user can toggle between the ventilation being on or off. THe blue button denotes the active state.

Page Details

A: Takes the user back to the main controls page

B: Each of these sections allows the user to access the respective light. The name represents the name of the light, the "off/on, %" represents the state of that light and the arrow is the action button to control the light. To see an example of the a dimmer controller go to page ID 2.3.1

C: Entry Area Lights contain more than one light, about three. So the LED dots show how many lights are on and off. Lighted dots represent the a light in on, empty/dark dots mean they are off.
Takes the user to page ID 2.3.3

D: Kitchen Area Lights contain more than one light, about three. So the LED dots show how many lights are on and off. Lighted dots represent the a light in on, empty/dark dots mean they are off.
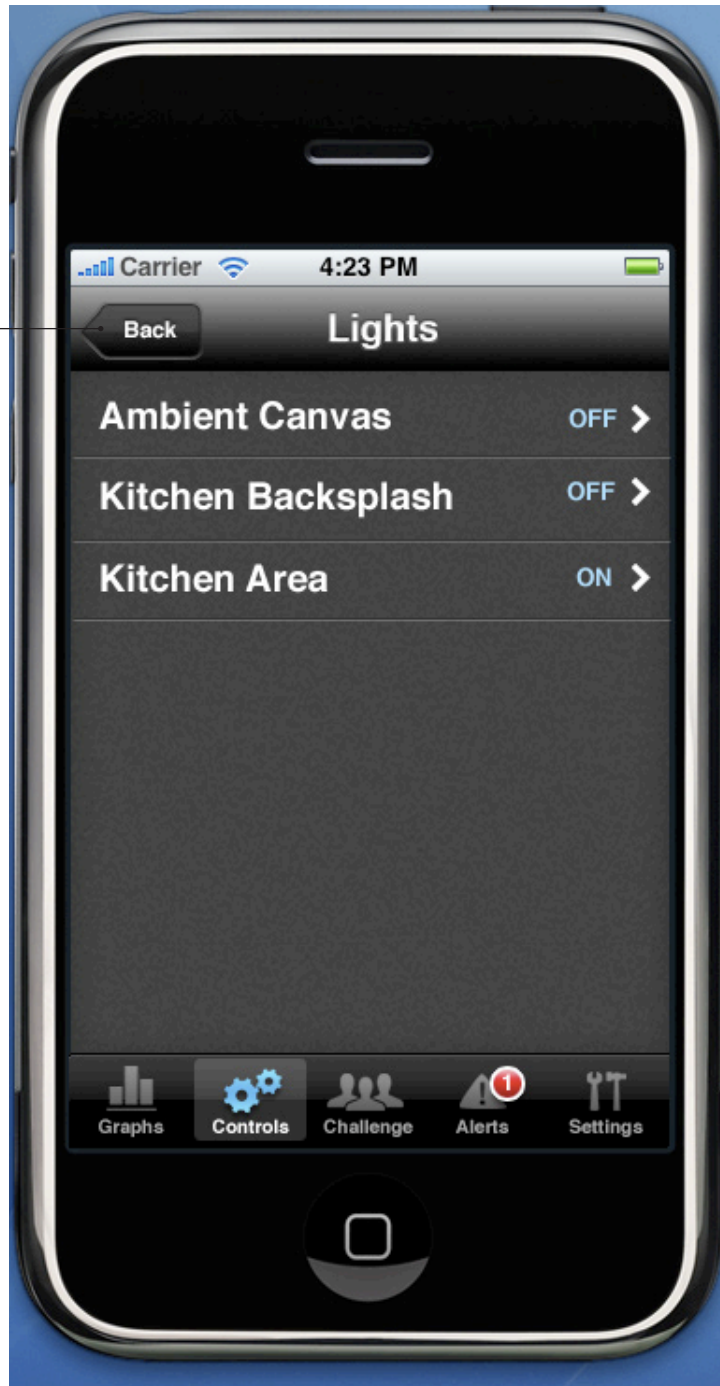Takes the user to page ID 2.3.2

Carrier 4:23 PM

Back **Lights**

Dining Area 50% >

Display Shelving OFF >

Entry Area Lights ● ● ● >

Exterior Lights ON >

Kitchen Area Lights ○ ● ● >

Living Area ON >

Sleeping Area ON >

Graphs | Controls | Challenge | Alerts | Settings

Page ID: 2.3.1

Page Title: Ind. Light Control

Page Details

A: Takes the user back to the interior lights controls list

B: The user can press and drag the blue part to rise and lower the light. Doing so will change the white text on the top, to provide the user with specific feedback on the state of the light.
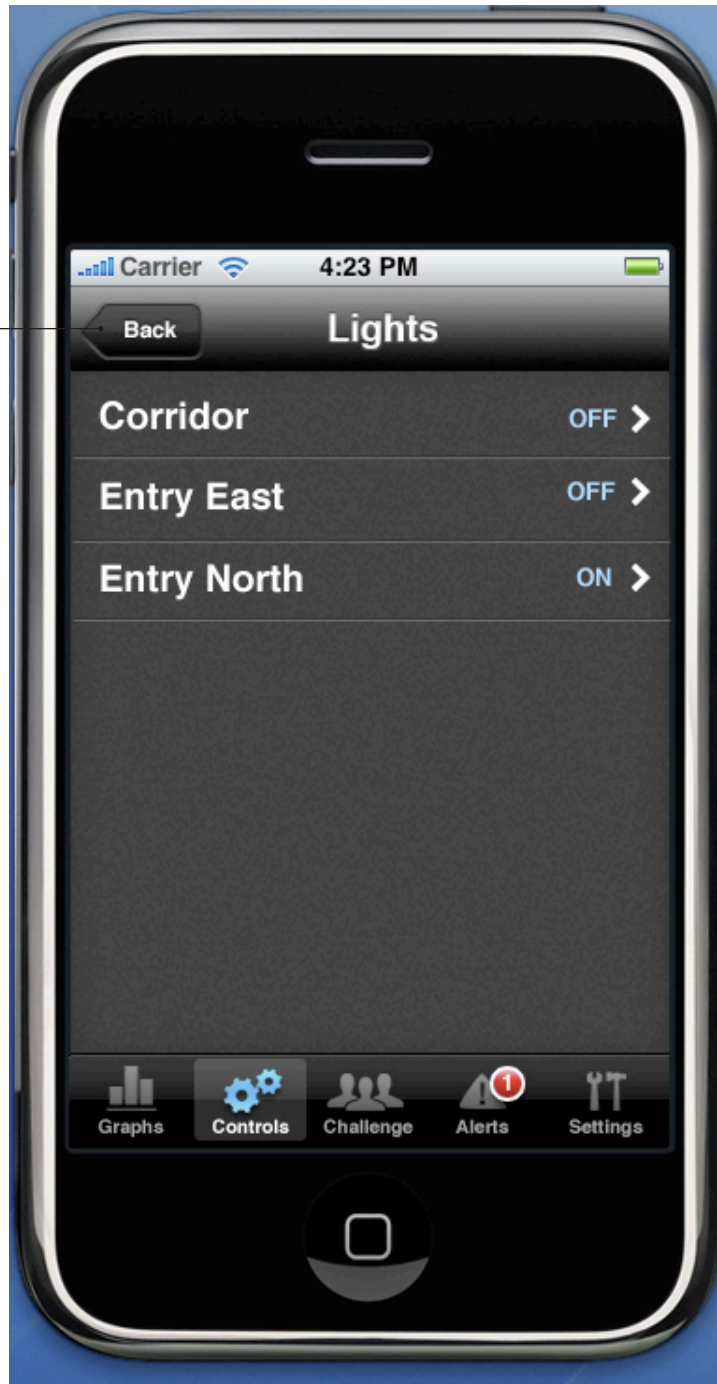
Page Details

A: Takes the user back to the lights controls list

Page Details

A: Takes the user back to the lights controls list

Page ID: **2.4**

Page Title: **Interior Shades**

Page Details

A: Takes the user back to the main controls page

B: Each of these sections allows the user to access the respective shade. The name represents the name of the shade, and the arrow is the action button to control the light. To see an example of the a dimmer controller go to page ID 2.5 .1
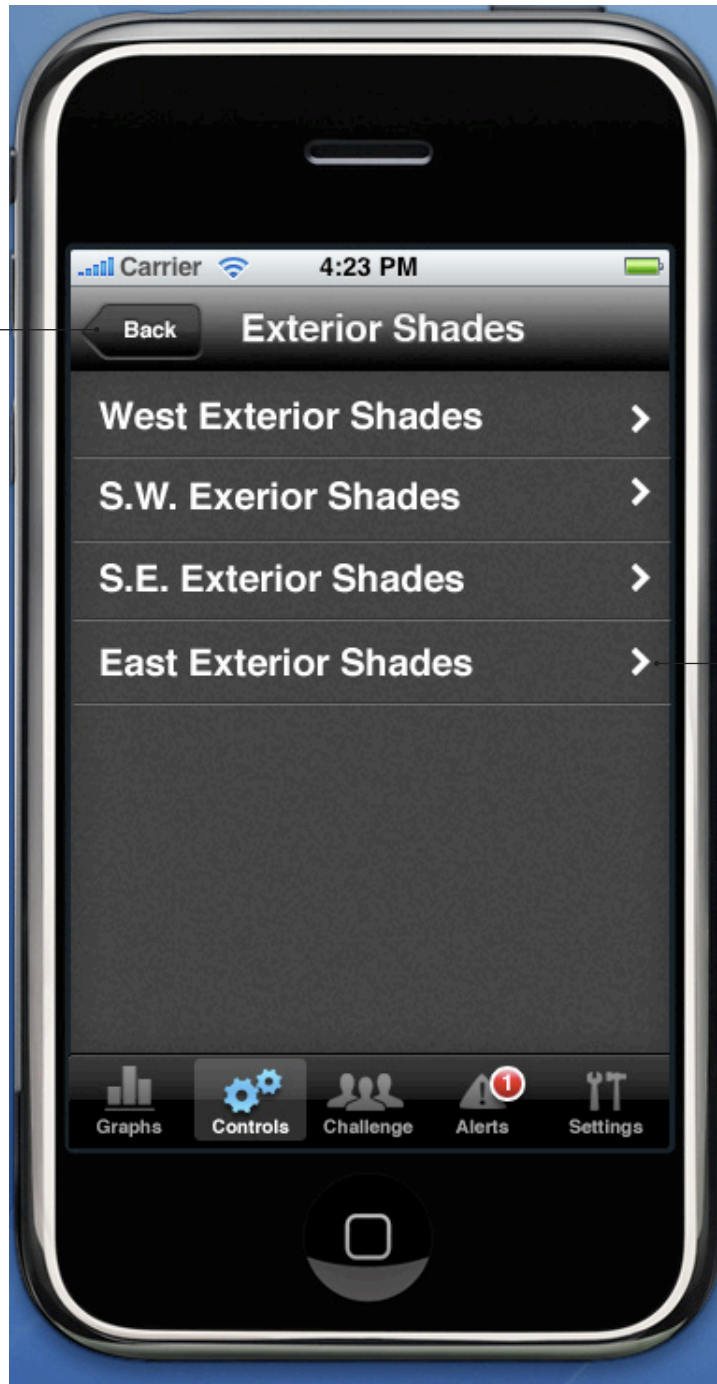
Page Details

A: Takes the user back to the interior shades controls list

B: The user can press and drag the blue part up and down to rise and lower the blind. After changing the blind state, the blue part will fade in and out until the actual blind reaches the set point.

Page Details

A: Takes the user back to the main controls page

B: Each of these sections allows the user to access the respective shade. The name represents the name of the shade, and the arrow is the action button to control the light. To see an example of the a dimmer controller go to page ID 2.6.1
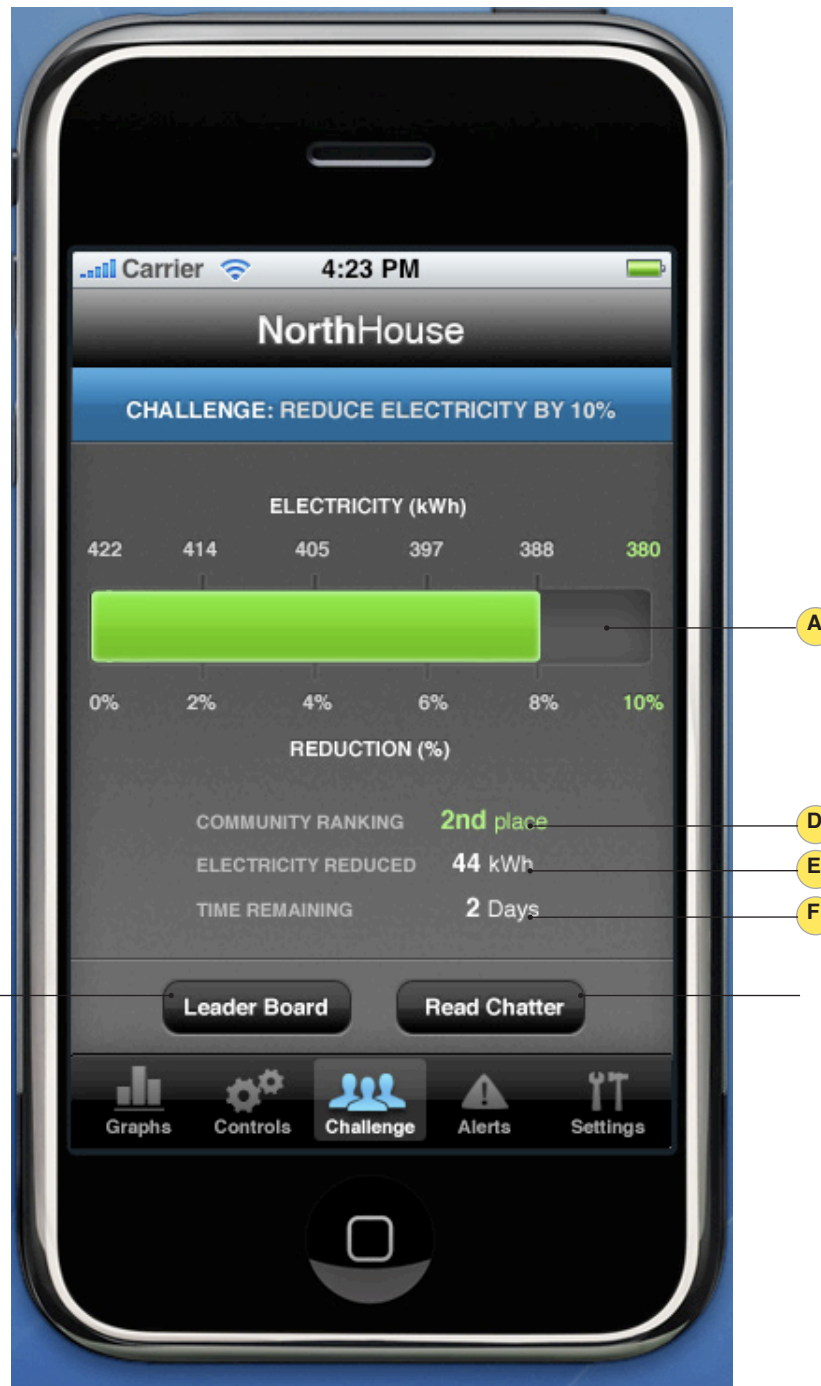
Phone Screen

Carrier 4:23 PM

Back **Exterior Shades**

West Exterior Shades 〉

S.W. Exerior Shades 〉

S.E. Exterior Shades 〉

East Exterior Shades 〉

Graphs | Controls | Challenge | Alerts ❶ | Settings

Page ID: 2.6.1

Page Title: Ind. Ext. Shade control

Page Details

A: Takes the user back to the exterior shades controls list

B: The blue part is draggable up and down to lower and raise the external shade. once the shade is adjusted, the blue part will fade in and out until the actual shade reaches the desired set point.

C: These buttons tilt the shades according to the angle displayed on the button. This will function in the same manner as on the control interface

Page Details

A challenge works similar to a race between community members. They are used to encourage electricity conservation through a competition model.

A: This displays your current challenge, how much time is left, and your current state & rank in the challenge.
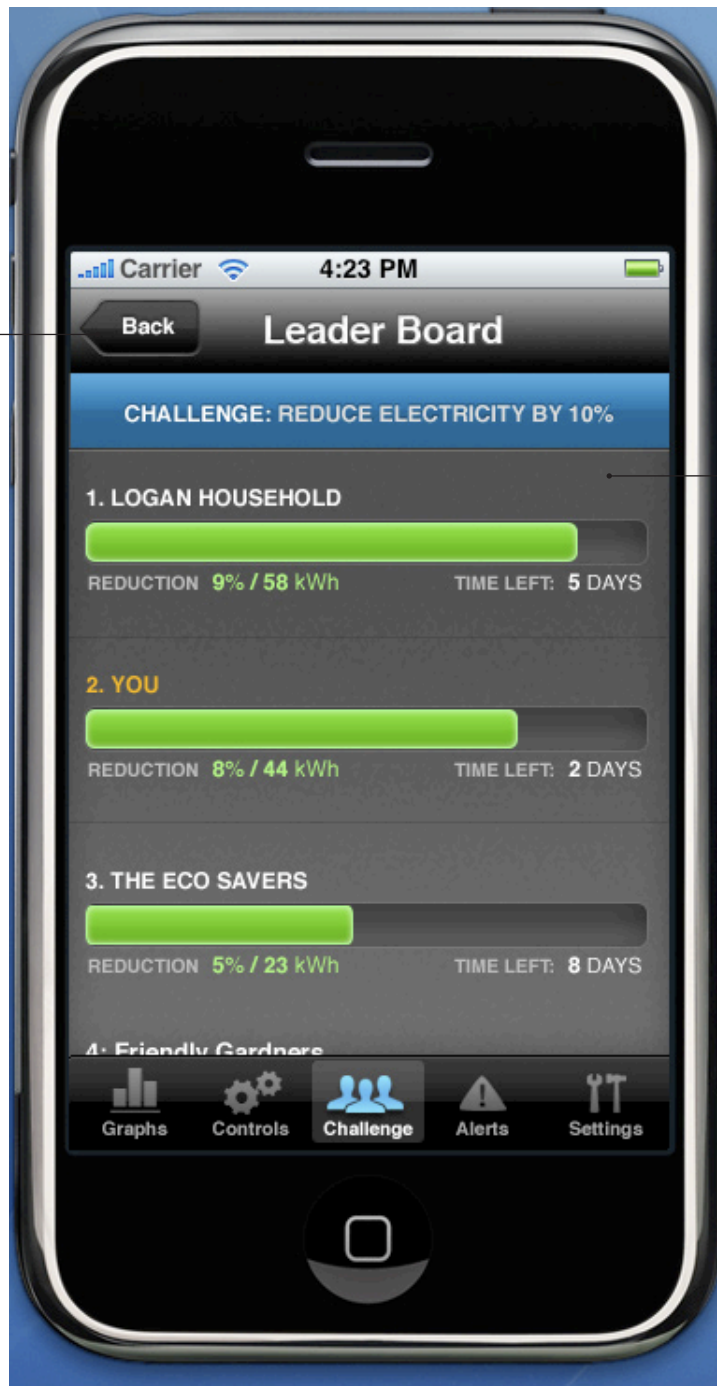
B: This brings the user to the leader board for the challenge. (go to page ID 3.1)

C: This brings the user to the chatter / discussions that relate to the current challenge. (go to page ID 3.2)

D: This displays the resident's current positioning within the community challenge.

E: This displays the amount of electricity that has been reduced by the resident within the one month period of time (for the duration of the challenge)

F: This displays the number of days until the challenge is complete. Each challenger may have different number of days remaining (people within the same challenge may have different time remaining as the system accepts participants within 5 day differentials – this is done to maximize the number of individuals within a challenge).

Phone screen content

Carrier 4:23 PM

NorthHouse

CHALLENGE: REDUCE ELECTRICITY BY 10%

ELECTRICITY (kWh)

| 422 | 414 | 405 | 397 | 388 | 380 |

| 0% | 2% | 4% | 6% | 8% | 10% |

REDUCTION (%)

COMMUNITY RANKING — **2nd** place — D

ELECTRICITY REDUCED — **44** kWh — E

TIME REMAINING — **2** Days — F

[Leader Board] [Read Chatter]

Graphs | Controls | Challenge | Alerts | Settings

Page Details

This page allows the resident to view how other competitors are doing within the challenge. The user can scroll down the page and keep track of the competition. The board could be updated on an hourly basis, in order to encourage residents to engage in "checking-in" as frequently as possible, while still being relevant with regards to the data.

A: Brings the user back to the main challenge page (page ID 3)

B: This is a running list of those competing in the challenge. The user can scroll down the page to view the entire list.

Phone screen content:

Carrier 4:23 PM

Back   **Leader Board**

CHALLENGE: REDUCE ELECTRICITY BY 10%

1. LOGAN HOUSEHOLD

REDUCTION 9% / 58 kWh   TIME LEFT: 5 DAYS

2. YOU

REDUCTION 8% / 44 kWh   TIME LEFT: 2 DAYS

3. THE ECO SAVERS

REDUCTION 5% / 23 kWh   TIME LEFT: 8 DAYS

4: Friendly Gardners

Graphs   Controls   Challenge   Alerts   Settings

Page ID: 3.2

Page Title: Challenge Chatter

Page Details

A: Brings the user back to the main challenge page (page ID 3)

B: This displays the conversation as bubbles between different competitors. The name of the competitor appears above the posted comment.

C: The user can enter a comment through the standard i-phone keyboard. When not being used, the keyboard hides to make more visible space.
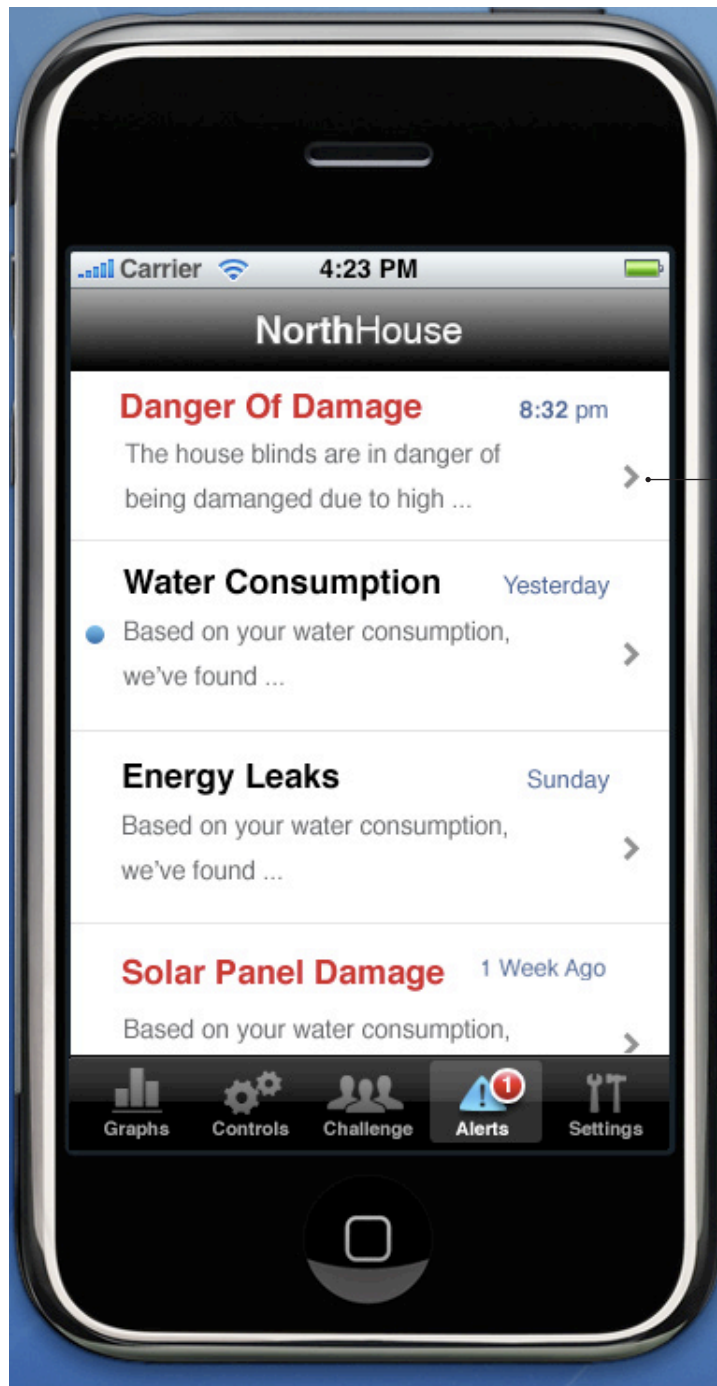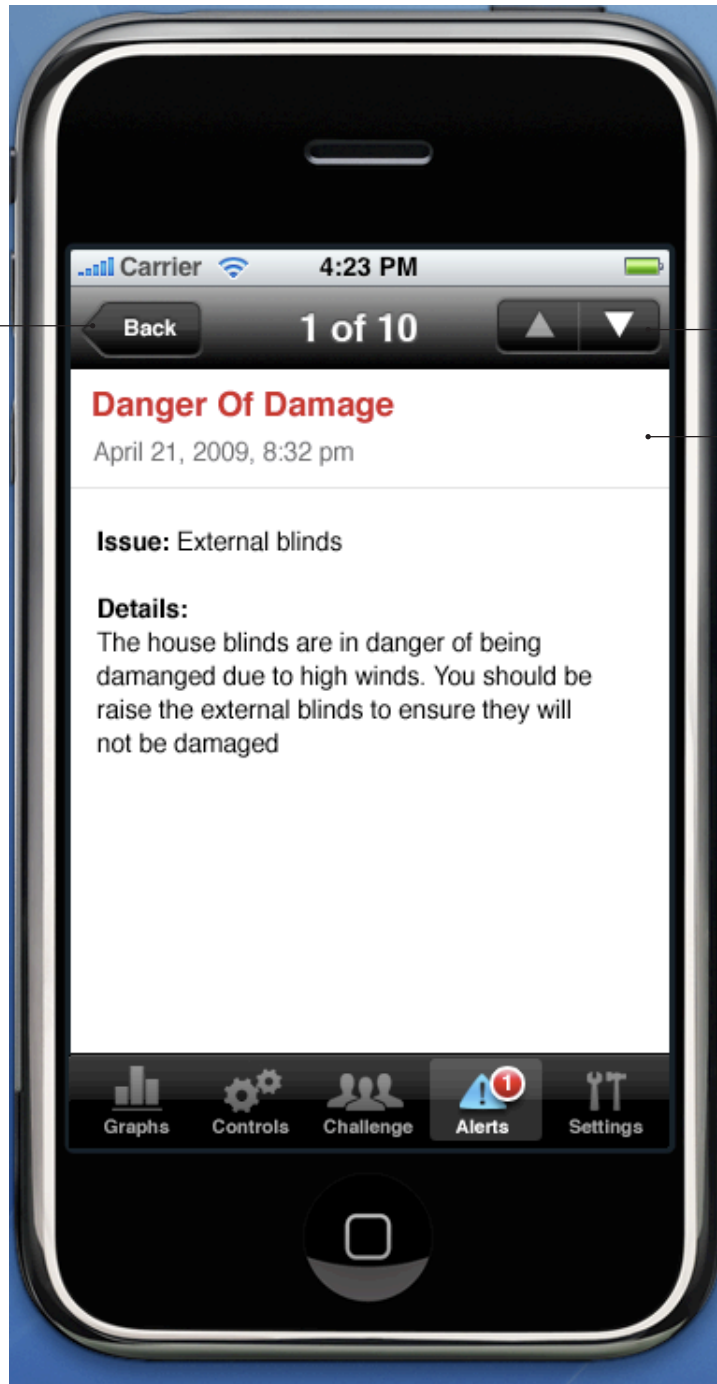
Page Details

This is a list of previous alerts. The list is scrollable and displays the last 25 alerts. Each alert has a title. The red text denotes an emergency alert, whereas a black-coloured title denotes a normal priority. Underneath the title is teaser text. The blue dot represents an unread message.

The time represents when the alert was sent. As the alert gets older, the time becomes less specific. The list is presnted in reverse chronoligical order.

**A:** Clicking on the arrow allows the user to see more detailed information (go to page ID 4.1).

Phone screen content

Carrier 4:23 PM

NorthHouse

Danger Of Damage   8:32 pm
The house blinds are in danger of being damanged due to high ... >

Water Consumption   Yesterday
● Based on your water consumption, we've found ... >

Energy Leaks   Sunday
Based on your water consumption, we've found ... >

Solar Panel Damage   1 Week Ago
Based on your water consumption, >

Graphs   Controls   Challenge   Alerts   Settings

Page ID: 4

Page Title: Ind. Alert Msg.

Page Details

A: Brings the user back to the alerts list (page ID 4).

B: The up and down arrow allow the user to scroll through the list of alerts without having to go back to the main alerts list.

C: This displays the full alert message.
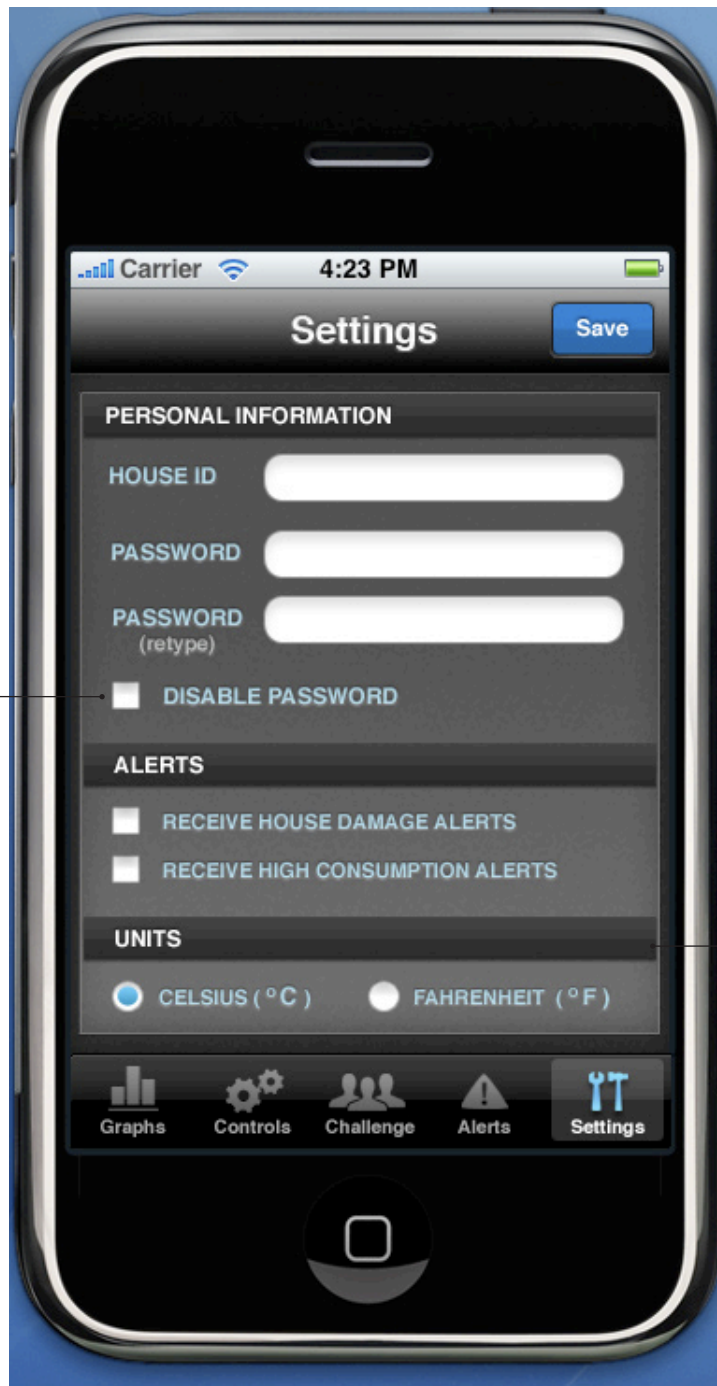
Page Details

This page offers the resident the ability to change global application preferences.

In a "real world" scenario, each house equipped with a mobile control interface would be given a house ID to set each appart. (this would need to be set before the application could receive any information on the other pages of this application).

Addtionally, the user would need to input a password for security purposes.

A: Disable Password: If checked then this will disable the use of the password allowing users to login into the system without loggin in with a password everytime.

**When this is checked a popup will appear to ask if user is sure they want to disable the password use, and explains what selecting this option means for them.

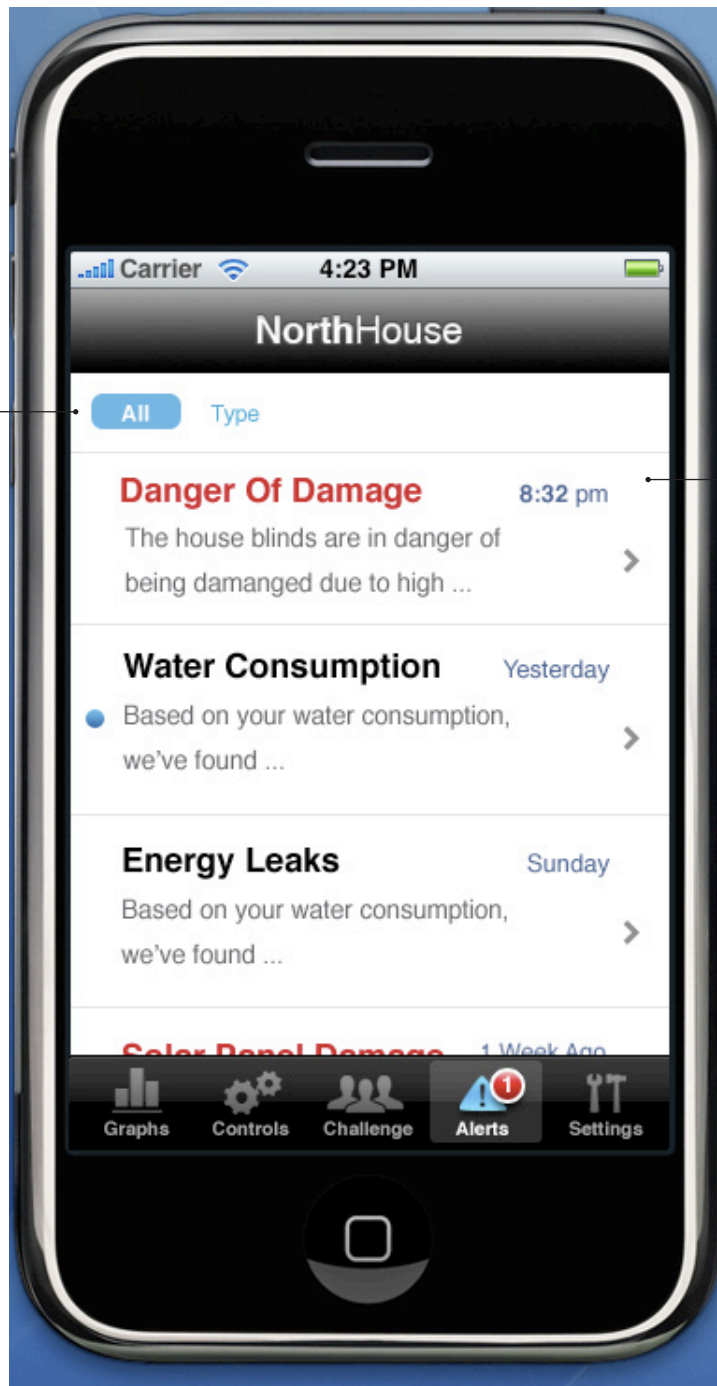**B:** Users can change units used from Celsius to Fahrenheit.

Page Details

This is the popup window that appears when a user selects the "Disable Password" checkbox option.

EXTRA REVISIONS

Alerts Alternative view - from user comments: Would like to be able to view alerts by categories in order to see frequency of types of alerts
- unknown if usable-
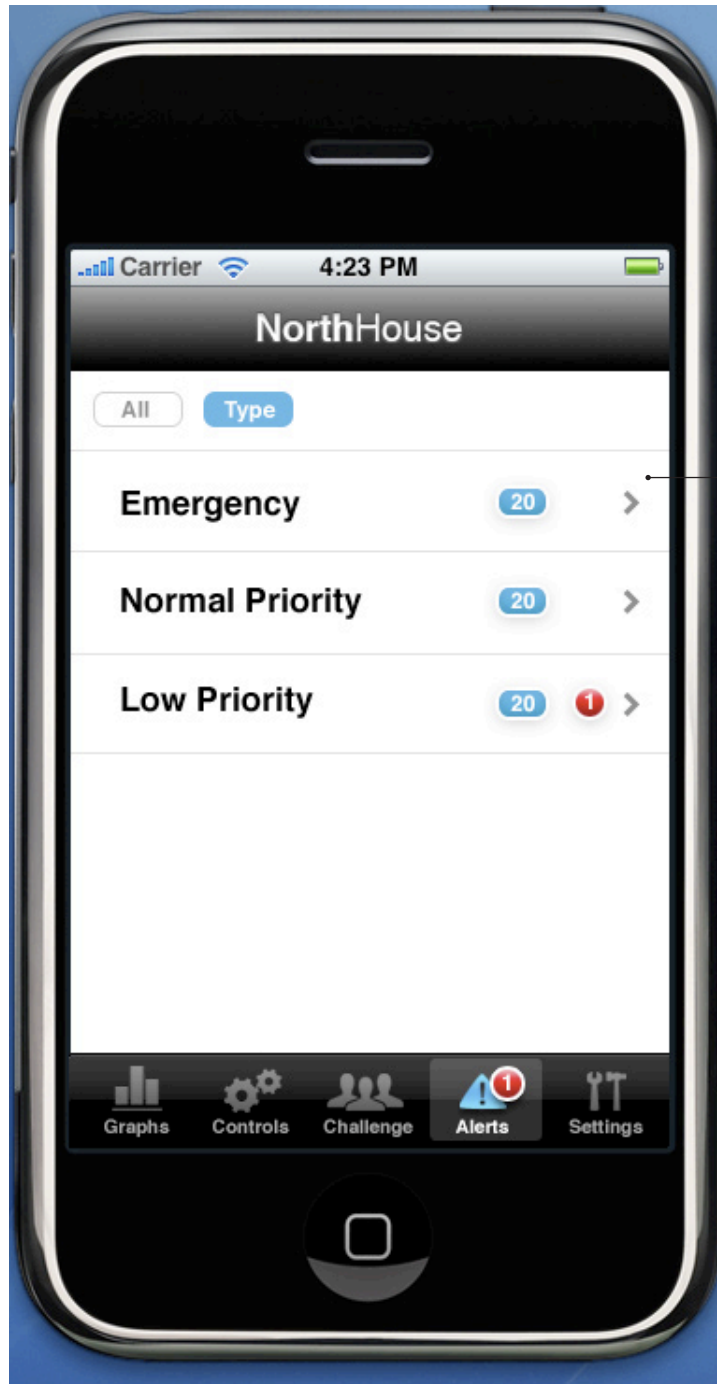
Page ID: 4-B

Page Title: Alerts

Page Details

This is a list of previous alerts. The list is scrollable and displays the last 25 alerts. Each alert has a title. The red text denotes an emergency alert, whereas a black-coloured title denotes a normal priority. Underneath the title is teaser text. The blue dot represents an unread message.

The time represents when the alert was sent. As the alert gets older, the time becomes less specific. The list is presnted in reverse chronoligical order.

A: Clicking on the arrow allows the user to see more detailed information (go to page ID 4.1).

B: Users can view 'All' or by "Type" Clicking on "Type" will change the view to different types where the user can select a type to view. "All" lists all alerts in chronological order.
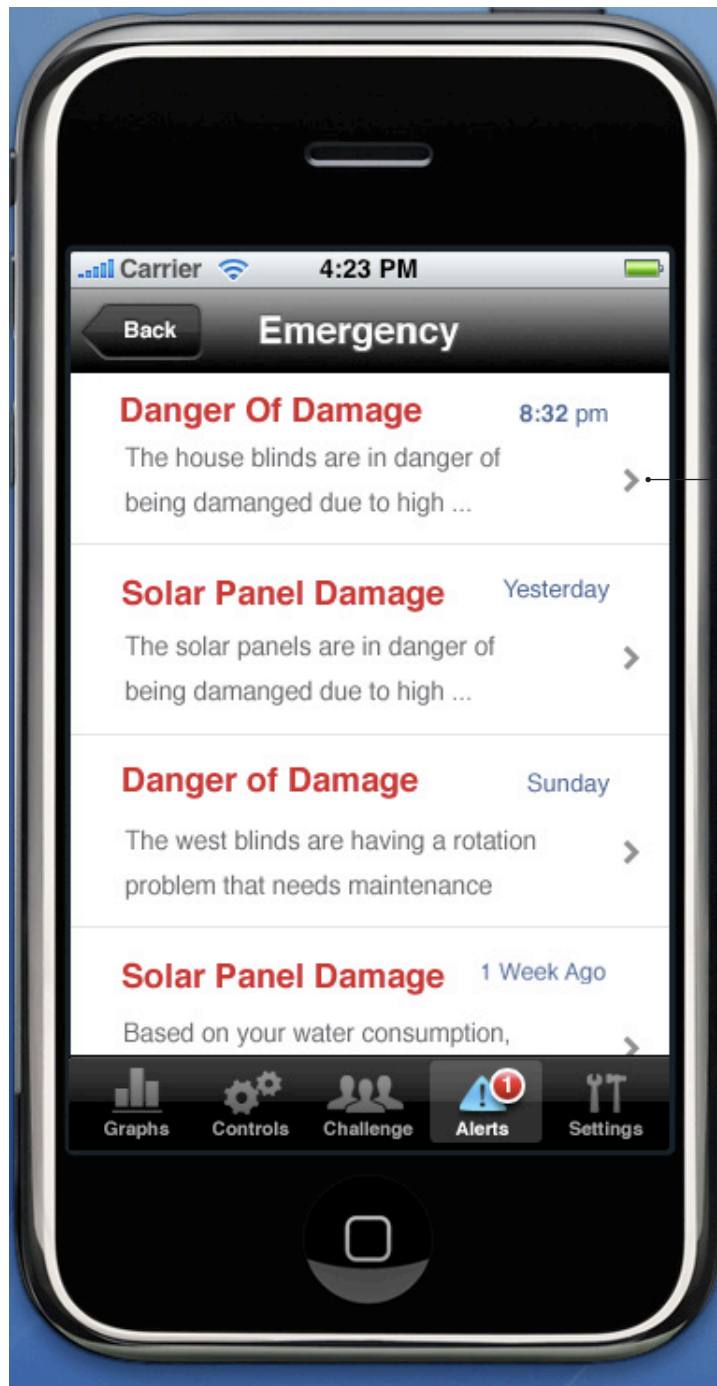(go to page ID 4.1-B)

Carrier 4:23 PM

NorthHouse

All | **Type**

Emergency `20` >

Normal Priority `20` >

Low Priority `20` 1 >

Graphs | Controls | Challenge | **Alerts** 1 | Settings

Page Details

This is a view by "Type", where there are different categories/types of alerts.

A: Clicking on the arrow allows the user to see more detailed information (go to page ID 4.2-B).
The blue round rectangles with a number represent the quantity of alerts in that Type. A Red circle with a number represents the number of 'new' alerts.

Page Details

This is a list of alerts within a type view. Clicking on Back will go back to the the type view menu - ID 4.1-B

The time represents when the alert was sent. As the alert gets older, the time becomes less specific. The list is presnted in reverse chronoligical order.

A: Clicking on the arrow allows the user to see more detailed information (go to page ID 4).