Final Project Report

Redesign of *My SCE*

Group 13

Lucy Cao, Daniel Nakasone, Yingyu Yang, Nick Lyu, Tianxiong Wu

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1. Executive Summary

In this final project report, our team presents the redesign of Southern California Edison's mobile application, My SCE.

My SCE is a utility application that seeks to assist SCE customers with bill payment, usage check, outage report and customer support. We conducted analysis, research and evaluations to determine the objectives and criterias of our redesign, which can be found in section 6 of this report. Our redesign aims to improve the overall presentation and structure of the application, and as a result, meeting the expectations of users and making the overall UX more satisfactory.

A brief explanation of our development/design process:

- At the beginning of our project cycle, team members briefly brainstormed and integrated ideas of shortcomings of the current application. The redesign team then sought to gather information on competing apps to understand the environment and norm for utility applications.
- Before the redesign, the team conducted a series of user research activities and usability tests, evaluations, which will be explained in detail in sections 4 and 5, to recognize what was needed to create an appropriate and satisfactory application. Once we finalized the redesign, we also completed assessments on the redesigned application, to see if it conforms to our standards of usability.
- Overall, we performed the following tasks:
    - Competitive Analysis: to understand how My SCE compared to other utility apps

- User Research: to understand what current and potential SCE customers want from a mobile utility app
- Usability Evaluation: to uncover usability issues with My SCE and determine if My SCE supports the needs/expectations users have that our research had identified as being important for the success of the app
- Redesign: to create a new mobile design that addresses problems uncovered in user testing and better reflects what users want from a mobile app for SCE
- Heuristic Evaluation: to revisit completed redesign to see if usability issues still persist
- Accessibility Evaluation: to evaluate My SCE's original design to see how accessible it is for a wide variety of users. See appendix for report

After the project team's redesign, My SCE is now updated with an improved overall efficiency and functionality. Selected components are removed and replaced by more efficient features, and some underlying logistics are modified (such as the combination of bill balance and pay bill function). Our redesign also conforms to the standard IOS gestures and latest industrial UI standards.

2. Introduction

My SCE is a utility app for the electricity company SoCal Edison. It is mainly used to manage SCE customer accounts, report and check power outages, and find information about SCE services and programs. Specifically, the features of the app can be summarized into four major functionalities: account management, power outage reporting/checking, customer support, and providing information about SCE and its services. My SCE contains a lot of information and features, meaning that users could potentially gain a lot of value as SCE customers from using the app.

3. Competitive Analysis

Overview:

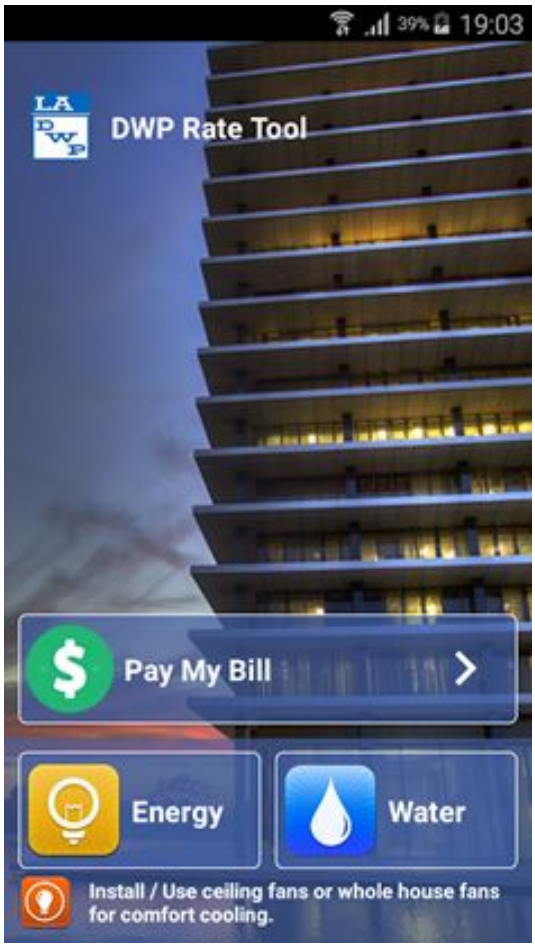
Our competitive analysis helps us understand and grasp the industrial standards and norms for utility applications.

My SCE

Link to app:
https://play.google.com/store/apps/details?id=com.sce.csbu.SCEOutages&hl=en
https://itunes.apple.com/us/app/my-sce/id553317645?mt=8

The official mobile app for Southern California Edison (SCE). Allows SCE customers to view/pay their bill and see/report outages in their area.

DWP Rates



Link to app:
https://play.google.com/store/apps/details?id=com.dwpratecal.ratecalculator

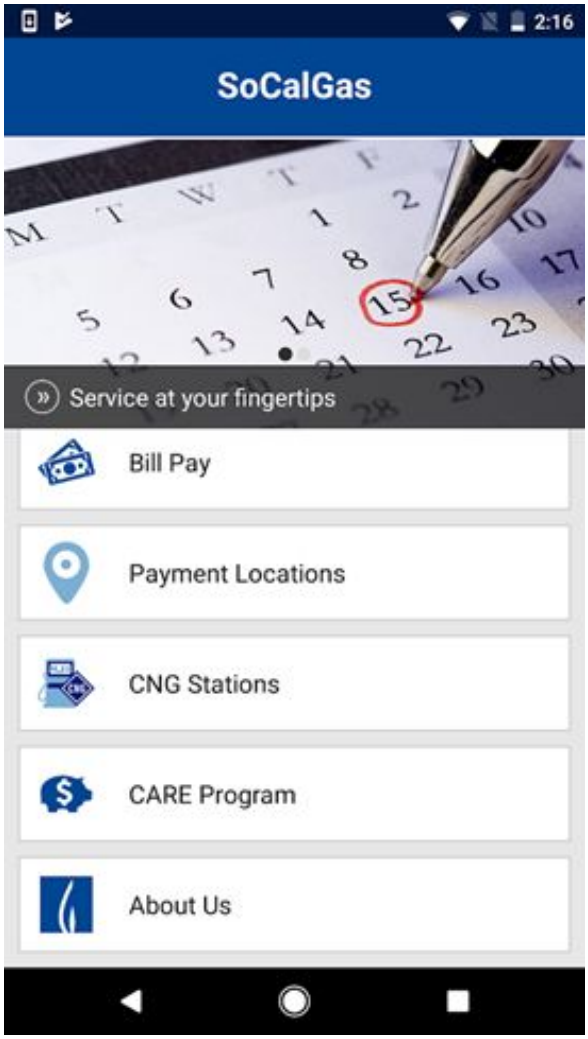
The official mobile app for the Los Angeles Department of Water and Power (LAWDP), a municipal utility. Allows customers to pay their water and electricity bill as well as calculate the potential costs of water and electricity usage. It's a direct competitor to SCE, as cities in Southern California look to the LADWP when considering whether to switch from SCE to their own municipal utility program.

SDG&E

Link to app: https://play.google.com/store/apps/details?id=com.sdge.android
https://itunes.apple.com/us/app/sdg-e/id489246330?mt=8

The official mobile app for San Diego Gas & Electric which allows SDG&E customers to pay their energy bill, see outages, and calculate the energy costs of home appliances. It is a direct competitor to My SCE, since San Diego Gas & Electric is an electric utility company that could take away from SCE's business in Southern California if SDG&E were to expand outside of its territory.

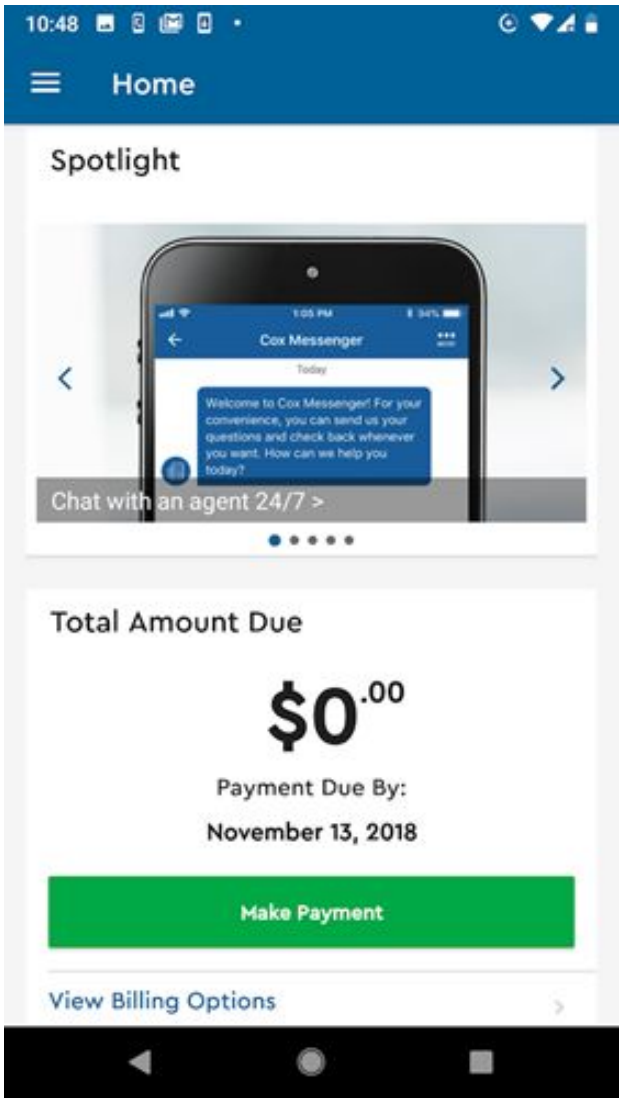
SoCalGas



Link to app: https://play.google.com/store/apps/details?id=com.scg.android
https://itunes.apple.com/us/app/socalgas/id518716246?mt=8

The official app for Southern California Gas Company, which offers gas utilities within the same coverage area that SCE provides electricity to. The app allows users to pay gas bill and find compressed natural gas refueling stations. SoCalGas is an indirect competitor, as gas can be used for home cooling/heating and cooking instead of electricity.

Cox Connect



Link to app:
https://play.google.com/store/apps/details?id=com.cox.android.mobileconnect
https://itunes.apple.com/us/app/cox-connect/id415894489?mt=8

The official mobile app for Cox Communications. It offers functionalities to manage home Internet usage, pay bills, view TV listings, schedule DVR recordings, and get access to information about Cox services. Cox Connect is an indirect competitor of My SCE. Both companies are monopolistic energy providers, and therefore offer similar functionalities in their mobile apps (i.e. paying bills, viewing usage). Users of My SCE are likely also users of Cox Connect. Thus, they may compare My SCE to Cox Connect, which could potentially affect the user experience of My SCE.

Comparing and Contrasting Market Offerings

The main service My SCE and other offerings provide is a way for its customers to be able to pay their utility bills through mobile devices and to find information about what services are provided by their utility company.

A common set of functionality between the different electric utility apps include

- Seeing / Paying bills
- An outage map listing where planned and unplanned outages are taking place
- Reporting outages
- Cost calculator that adds up energy costs from appliance use or overall energy use

Beyond these core services, some apps offer functionality that make them stand out from others. My SCE provides all the information and features that you could find on their main website, while other apps provide a more simplistic interface which provide a smaller set of information. The downside to this approach is that

the interface mostly copies the website's layout, so looking through the information is cumbersome on the mobile app.

Since energy companies service a specific coverage area, the user base for each app corresponds to homeowners and businesses found in those areas. Southern California Edison, whose app is the main interface we will explore, services electricity to much of Southern California. Other electricity utilities operate in locations where SCE is not operating out of, as each utility company has a monopoly over the area they provide for. This means that even the direct competitors for delivering electricity don't overlap in customers. That being said, the Southern California Gas Company (SoCalGas), a gas utility company, offers its services to the same households and businesses that SCE provides electricity to.

Since electric utility companies in California generally have a monopoly over the area they service, it is often the case that there is little incentive to improve their apps or even provide one at all. An example is the Pacific Gas & Electric Company, which services most of California and yet doesn't provide a mobile app for its customers. Utility companies that do provide mobile apps for its customers often have problems with its user experience design. These shortcomings often make it so that customers stick with older methods of interacting with their utility companies (phone, mail, etc.). The opportunity to strengthen its mobile platform is a way for SCE to make itself stand out above the others and provide a modern solution for its customers to manage their utility expenses.

4. User Research

Overview

This section contains the design team's thought process, procedure and findings from the surveys distributed and interviews conducted. The analysis of data and results from our research is critical to our later concluded redesign criterias. An example is the user inputs for our survey question: "check the most commonly used features when you visit a utility website ".

4.1 Target Population

Our main target populations are college students that rent an apartment or a room and working homeowners.

Our first target population is college students, aged 18-22. For many college students, they are new to living on their own, having only started living away from their parents' home within the past couple of years. The lack of experience in living on their own means an unfamiliarity with paying bills. They have only recently started paying their bills. Unless they're helped by their parents or a more experienced user, they had to figure out on their own how the bill paying process works. The amount of available time and where they have to be at a certain time can vary a lot depending on what obligations they have to meet for the week. Things like changing class schedules, finding new part-time work, or sudden social opportunities add further variability in how much free time they have and where they physically are at any moment.

If any demographic would be receptive to using *My SCE* to pay their electric bills, it would be college students. They are adept with modern technology, needing to use a combination of different devices and applications to succeed in their academic, professional, and social pursuits. Smartphones in particular have been an essential part of their lives, having been introduced to them at a young age and aid them in every facet of their lives (school, job hunting, socializing, etc.). Not always having access to computers would also necessitate the use of smartphones to perform certain online tasks.

Are second target population is homeowners, aged 36 and above. They're generally in a higher economic class compared to renters or even younger homeowners. Learning newer technologies doesn't come as intuitively as it once did. They have a set and stable schedule based around their work and/or family obligations.

For homeowners, they are less inclined to modern solutions for bill paying. Unlike college students, homeowners have been paying utility bills for years now and have already discovered a process they are content with. That's not to say they have no complaints or sore spots when it comes to paying bills, but they've settled on how they go about doing things.

4.2 Methods

We use interviews and a survey as our methods to acquire the data that we need. The interview subjects are selected from our friends who pay their own utility bills. We were able to reach out to both of our target population groups (refer to 4.1) for interviews.

We interviewed five college students and two homeowners. The average interview time was about 20 minutes. We drafted 14 questions in the interview protocol. Our main focus was to find out how people pay their bills, and their thoughts on current payment methods and other problems that bothered them while using services. During interviews, we asked our participants questions related to bill payment strategies, utility usage, and communication with utility companies. The full interview protocol can be found in appendix 10.3.

We distributed our survey through facebook and wechat. Most of our survey participants were college students. While some of our group members were able to rely on family members for interviews, we didn't have a convenient communication channel to get as many homeowners for the survey as we would have hoped. We drafted 20 questions for the survey, and received 32 responses in total. Our survey was mainly focused on the comparison between utility apps and websites. In the survey, we asked about participants' demographic information, bill payment strategy, mobile app usage, website usage, and feature preference in utility apps / websites. The full survey battery can be found in appendix 10.3.

4.3 Findings

We concluded from the findings of our interviews and survey that the majority of our subjects have never heard of the MySCE app (although most of them have used other utility apps).

It can be an obstacle that prevents us from giving a more accurate analysis towards the strength and the weaknesses of the app. However, according to

our research on direct and indirect competitors, we have a thorough understanding of what My SCE as an utility company's app should focus on. The basic features would include paying the bill, monthly autopay, and to be able to cancel subscription. And through that understanding, we addressed our survey and interview questions focused more on exploring the user's experience and complaints of current payment methods and problem they met with utility companies. We did find out that some of our users are not comfortable with a subscription payment, and they inevitably, at least sometimes, missed the payment due, which can lead to overdue penalization fee or even utility shut downs. In this circumstance, having a reminder feature is preferable for those people who always forget to pay bill on time. Another thing we find out is that, in younger male demographic group, interviewees and survey takers would like to have the option to use online payment methods rather than credit card. They have listed Venmo, Apple Pay for preferred payment methods. We haven't think of this point while doing our own analysis.

Concerning older homeowner, some of the assumptions that we made when we first selected them as our target population turned out to be incorrect. We assumed that they would be less tech knowledgeable, which would affect their preferences in paying their electric bill. This wasn't the case, as our interviewees and survey respondents stated that they were comfortable in using the web or mobile apps in their daily lives. Their preference towards the website in particular was based on how conveniently using the interface fit in with their lifestyle rather being unable to use the mobile platform.

There are some interviewees regard My SCE as a backup plan for emergency while they cannot access laptop. They think it would be easier to use the

phone app in case of emergencies like power outage and electricity shut down.

A common quality that both of our target populations wanted to see was an interface that was both easy and convenient to use. What this means exactly varied from person to person. Students wanted to see a well-designed mobile app so that they could pay bills or deal with emergencies since they're always moving from one place to the next and won't always have access to a computer. Older participants favored the use of a website precisely because it fit in with how much time they spent at work or at home.

5. Usability Evaluation

Overview

This section contains the findings of our usability testing and cognitive walkthrough. My SCE is not the most intuitive interface for users, be they novice or expert. Some of the paths to accomplish a task aren't logical and users can get lost trying to accomplish what they set out to do. Parts of the UI are also not clearly identifiable and can be overlooked by users. By performing usability testing and a cognitive walkthrough, we set out to identify specific points in the interface where these problems occur for users and should be the focus of the redesign.

5.1 Methods

- **Usability tests**

  For the usability tests, the participants were given five tasks to complete in *My SCE* application. The participants of the usability tests were friends / classmates who had the time to assist us in our user research. They agreed to help without any form of compensation. Each usability test took about 20 minutes, accounting for both the usability test and the follow-up questions and discussion. Participants spent about 3 minutes on each task - the total session was capped at 20 min to respect the time of the participants who graciously volunteered their time to help us.

  We carefully designed each test and followed the principles of the usability that we defined. Participants were asked to complete the following tasks while thinking aloud:

  1. Pay electric bill for this month
     a. Success criteria: user found the “Pay Now” button
  2. Find customer service information
     a. Success criteria: user found contact information for customer service
  3. Check power outage in a certain area (via zip code)
     a. Success criteria: know the current status of the outage
  4. Change first name
     a. Success criteria: successfully changed first name
  5. Report power outage for home or business
     a. Success criteria: successfully submitted the outage report

  According to our survey and interview results, we deem that the key reasons for using the mobile application are ease of use and effectiveness. In evaluating how our participants completed tasks, we kept these usability

goals in mind:

- Easy to access the main functions
- Easy to manage personal information
- Perform some common tasks without too many steps

Task 1, 2, and 3 can be categorized into “Easy to access the main functions”. These three tasks are representation of the most commonly used features according to our survey. Task 4 can be categorized into “Easy to manage personal information”. As a utilities application, users should manage and change their profile easily; so in this test, we want our users to find the identity page. Task 5 required user to submit a power outage form. All of these tasks can be categorized into “Perform some common tasks without too many steps”.

For the usability analyzing, after every team member finished the test we uploaded the video records to the drive and analyzed them as a group. In addition to the notes we took during the tests, we also asked some generally questions about the tests and *My SCE* overall from our participants. These data will be further mentioned in the “Findings” section.

1. Good and bad parts about this app?
2. How did you feel using this app?
    a. Confident?
3. Was this app overall easy to use or did you find yourself running into a lot of problems?
4. Would you like to use this app frequently?
    a. Under what situations?

Five participants were recruited for the usability tests. The screening criteria is based on the previous research.

1. College students aged between 18 to 22
2. SCE user
3. Mix of utility application users and non users

Participants recruited for the usability test are as follows:

Participant	Gender/Age	Duration	Note
#1	M/21	20min	UCI international student, utility app user, renter
#2	F/20	20min	UCI international student, never used utility apps, renter
#3	M/21	20min	UCI BE student, never used utility apps, renter
#4	M/21	20min	UCI Nursing student, never used utility apps, renter
#5	F/20	20min	UCI Criminology student, somewhat familiar with but has never used utility apps. renter

Cognitive Walkthrough

The cognitive walkthrough involved every member of the redesign team, each member an expert user of the app, and sought to uncover usability issues in the UI. For the cognitive walkthrough, the redesign team analyzed three key tasks to identify potential usability issues:

1. Change user's first name
2. View payment history for the month of February 2018
3. Use search function to find bill statement

Of the three tasks, only the first task was used in the both the usability tests and the cognitive walkthrough. Tasks 2 and 3 were chosen because we felt

that payment history and search functionality were important features that users will interact with regularly on the app. The search functionality, in particular, will be one of the main tools to access other features if the user doesn't know how to navigate through the app.

For each task, we broke the path to completing the end goal of a task into smaller steps. At each step, we tried to analyze the app at the current state. We asked ourselves if the user could properly identify how to progress to the next step and if the UI properly guided the user towards progressing through the task.

Specifically, at each step we ask the following questions:

1. Will the user try and achieve the right outcome?
2. Will the user notice that the correct action is available to them?
3. Will the user associate the correct action with the outcome they expect to achieve?
4. If the correct action is performed; will the user see that progress is being made towards their intended outcome?

Answering these questions at each step helped find any issues that could drive users to make a mistake or stray away from the critical path. Once every step of a task was analyzed, we then proceeded to identify issues with the path, if any. Was there a particular step that could lead users off the path? Did certain parts of the UI not function the way a user would expect it to?

Overall, the usability tests and the cognitive walkthrough were able to give us insight into what were the main problems of the app that will need to be addressed moving forward.

5.2 Findings

Key Findings

1. Signifier and affordance mismatch

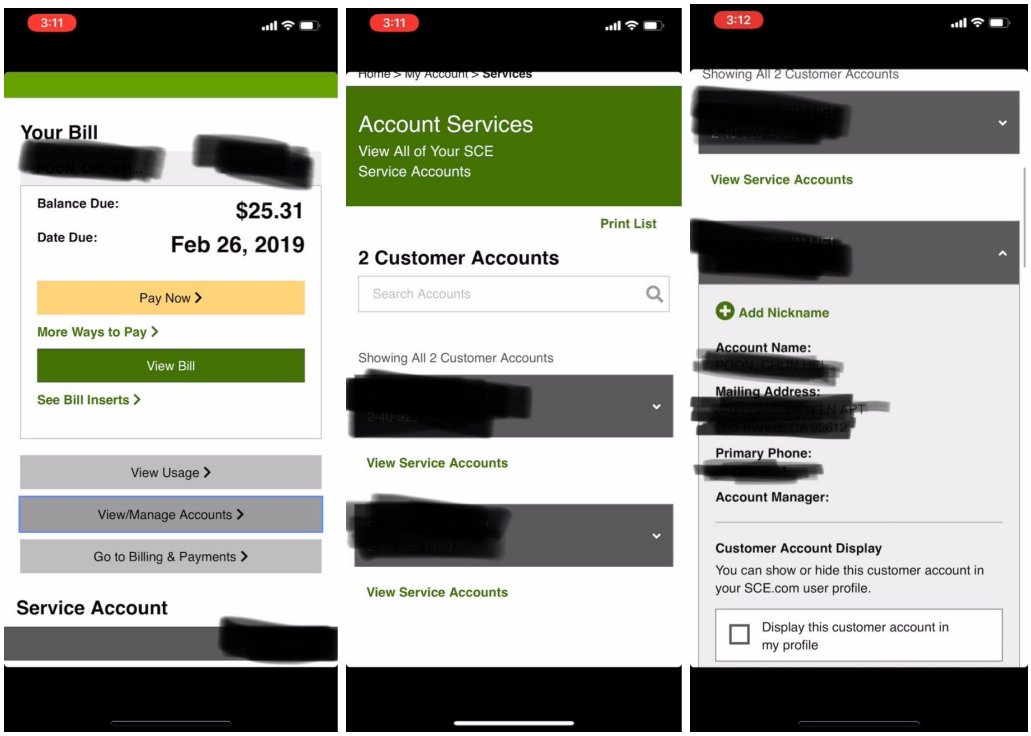


Figure: View/Manage Accounts

In one of the tasks in the usability test, participants are asked to change the displayed name of the electricity account. Through this task, we find some problems with the signifier for the account management feature. As a result of these problems, all of our usability tests' participants have trouble completing the task. As the figure above demonstrates, there is a view/manage accounts option on the account overview page. During the usability test, 4 of 5 participants thought this button would lead to the right path to complete the task. However, it takes them to the account services page instead. This page displays some account information, but doesn't allow users to change

it. All our participants felt confused at this point, and some failed the task because of it. The correct (and only) path to complete this task turns out to be menu → my account → settings → identity. Only one of our participants found this path without any hint. We think the correct signifier for account management is bound to the wrong affordance (account services), and the wrong/unclear signifier (identity) is bound to the correct affordance.

2. False signifier

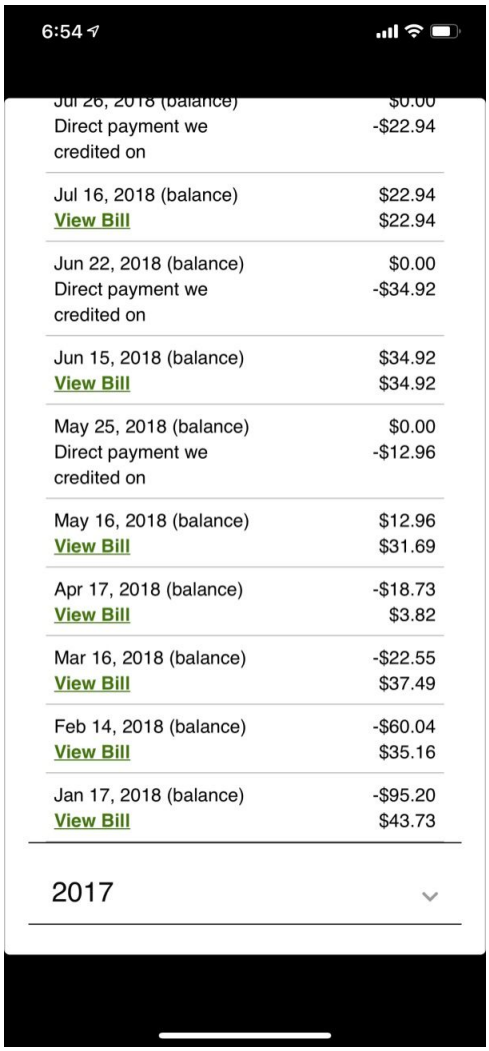


Figure: Invalid View Bill button

When completing the second task (view payment history) of cognitive walkthrough, we found that the view statement signifier also has problems. As shown in the figure above, in the payment history section under account overview, every payment record has a view bill option. The text “View Bill” is underlined and colored in green, which makes it look like clickable. As we expect some kind of statement document to pop up, nothing happens when the fake hyperlink is clicked. We think this is a false signifier. It’s misleading, and violates usability principles.

3. Fails to provide easy reversal of actions

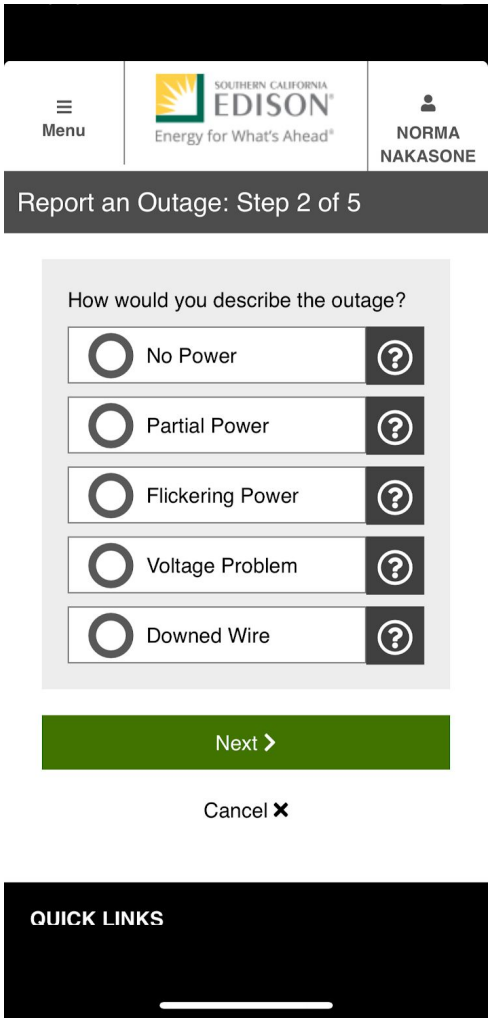
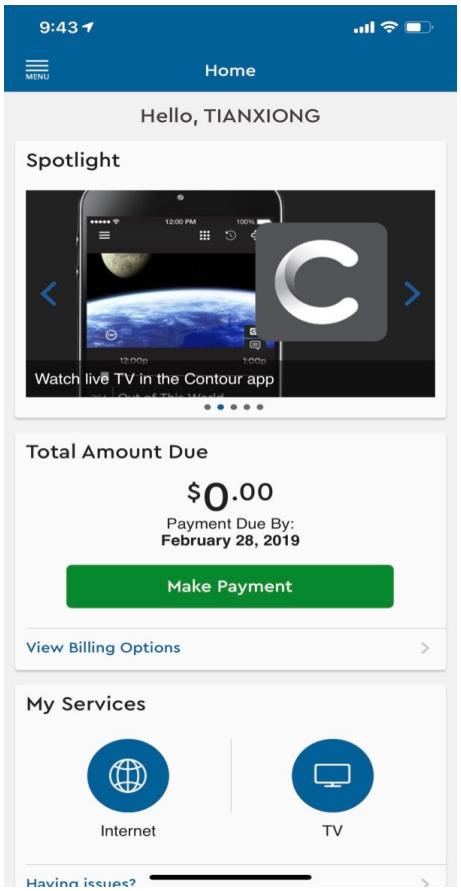


Figure: No reverse button

We found this problem during usability tests. One of the tasks in the test is to report power outage through the app. When filing outage report, users are presented with a 5-step process with no back/previous button. If a user made a mistake in a previous step, the only way to fix it is to click on 'cancel' and start over. This design violates one of the usability principles. One of our usability tests' participant encountered this problem, which worsens his experience with the app.

4. Bad interface layout



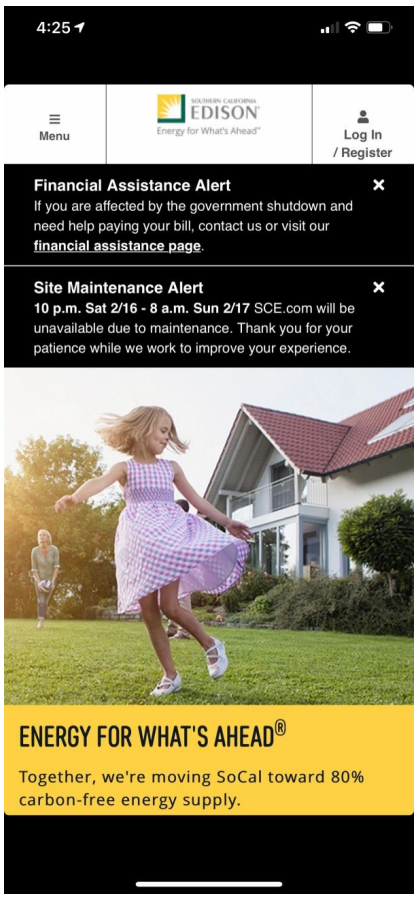


Figure 1: Cox Connect **Figure 2: My SCE**

This issue has been addressed a lot both on the interviews and usability test. First of all, the mobile application has the identical

interface as the website. This causes many basic functions, such as zooming and going back, fail to work on the app at all. This problem makes users feel like they are not in control of the app. In addition to that, some redundant designs greatly reduce the user experience as well. For example, in many other utility applications such as Cox Connect (figure 1 above) have an individual message box or spotlight to deliver special information. However, in *My SCE* (figure 2) the warning blocks are abrupt and overwhelming. Those blocks do not only appear in the home, they actually follow users actions and jump from pages to pages.

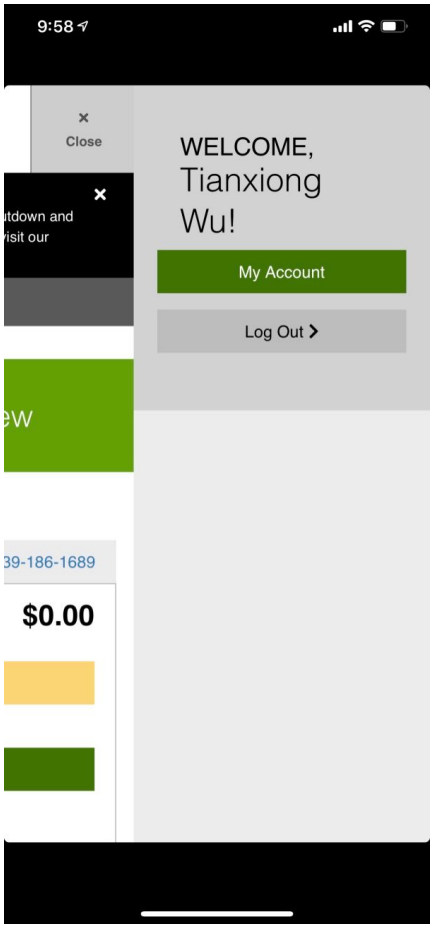


Figure 3: Information page

Second, *My SCE* does not layout the functionalities properly. When we conducted the 3rd usability test (change first name), 2 of 5 participants clicked the name button at the first glance (figure 3); because they thought "name" represents the account, and they could find personal information they need in the "name" button. However, users could only find account setting through Menu page.

5. Some interface components do not appear properly

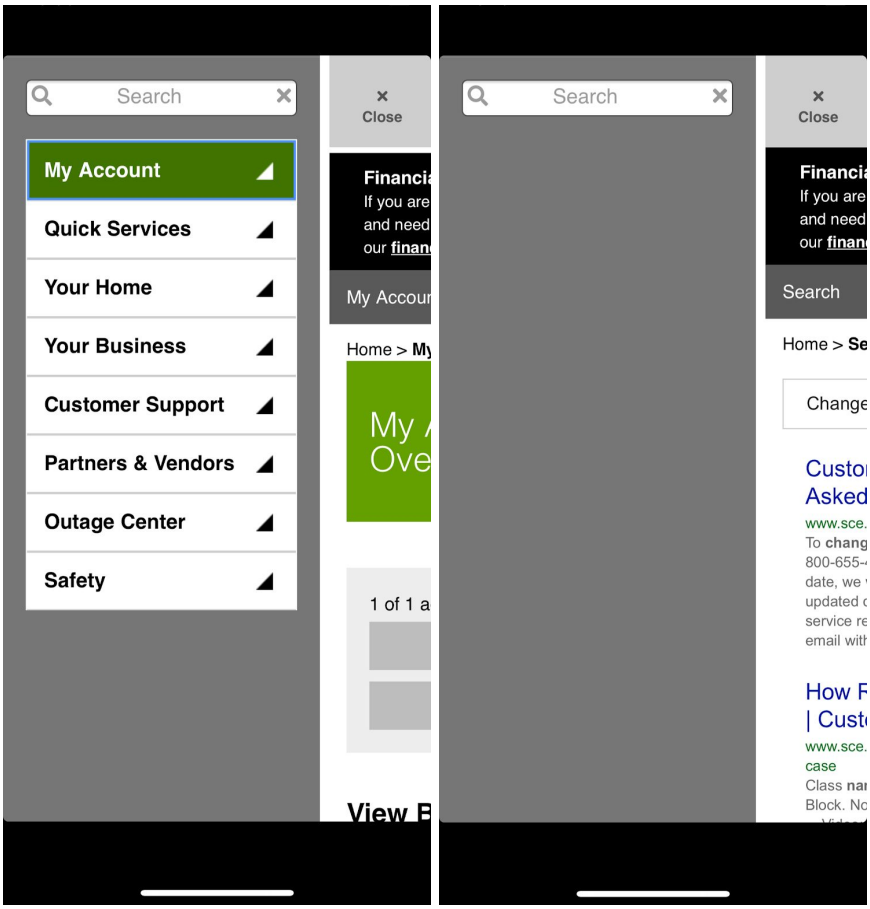


Figure: Menu bar doesn't appear at times

This problem worsens users' overall user experience with the app. There are several places where the inconsistency appears. One example would be the malfunction of menu bar. As shown in screenshots above, when user first uses the menu bar, it functions as expected. However, after the first use, items in the menu bar simply

disappears. There are several similar problems in the app. Sometimes, user needs to restart the app to solve the problem. We believe these problems are caused by some internal (backend) design-wise inconsistency in the system. Several participants in our usability tests are bothered by these problems.

6. Results do not meet the expectation

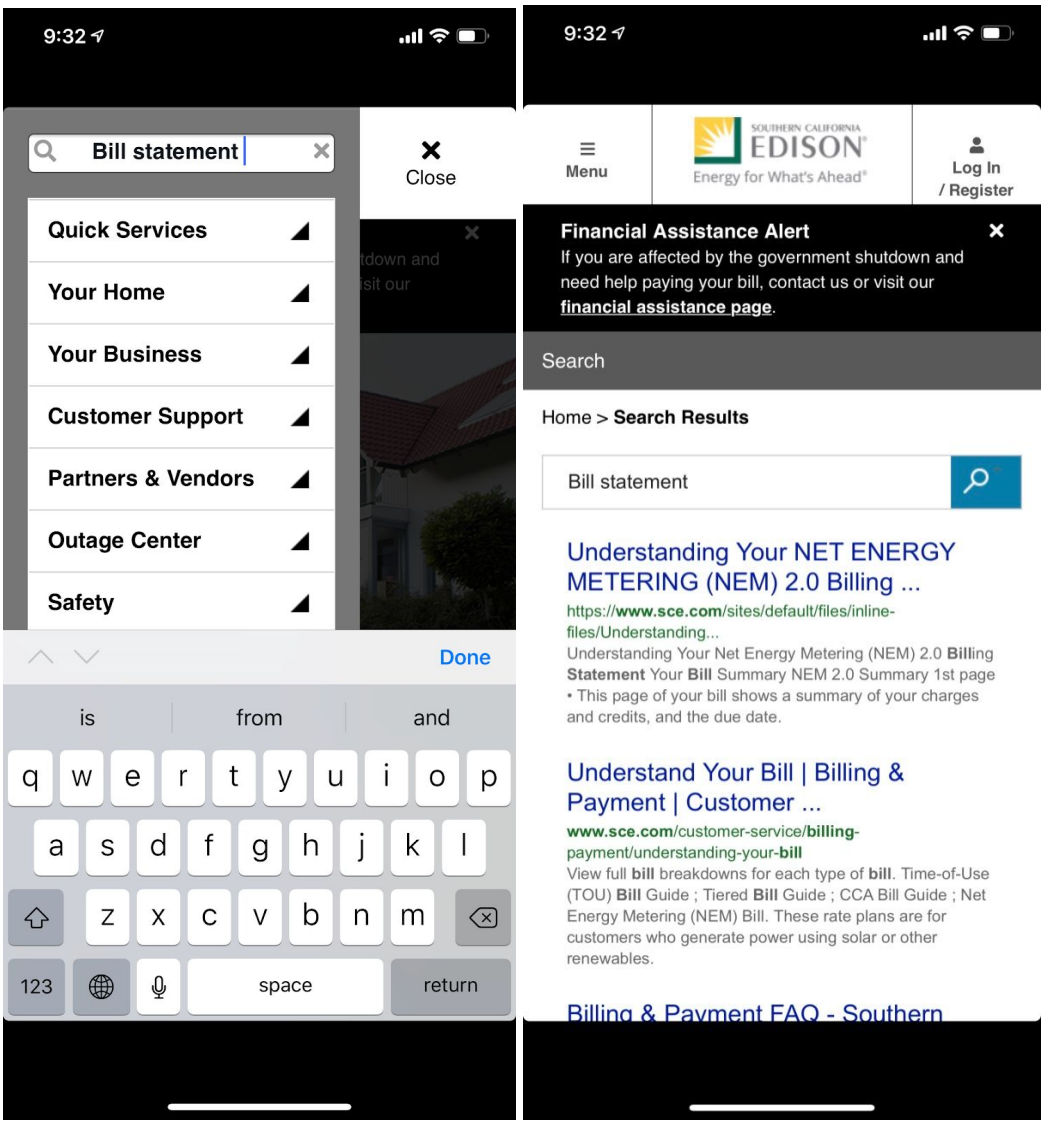


Figure: 'Search' bar didn't give us our desired outcome

We included the search functionality in our cognitive walkthrough in particular because we felt that it can be especially important to novice users. When users have trouble finding a feature or doesn't feel like navigating through the menu, the search bar would be a very useful tool in finding the desired page on the app. That was our expectation for the search functionality. The reality of the current search functionality, however, was far from that. When we typed in the keywords of a feature we wanted to use, the app simply came up with a internet-browser-like page with the results from a web search using the keywords we supplied. The results are confusing for users and almost never the features they were looking for.

Participants feedback:

Base off the post-test questions, most of our participants dislike *My SEC*. The following are the answers from post-test questions.

1. 2 of 5 participants feel confident using this app
2. 0 of 5 participants think the app is easy to use
3. 1 of 5 participants would like to use the app frequently

Positive comments

1. The app works well for payment
2. Task 1 (payment) and task 2 (custom service) are easy to find
3. Identical interface with the website
4. Easy reverse to home page (clicking on the SCE logo at the top of the page)

Negative comments

1. Announcements at the top of the screen gets annoying
2. The app takes a long time to respond, and gets tired of waiting
3. App not loading everything at once
4. Menu didn't appear at times

5. No reverse button
6. Categories and options not very logical
7. Personal information should be categorized into account overview

6. Redesign

Overview:

We constructed the redesign based on the following criteria concluded from our previous research and evaluation:

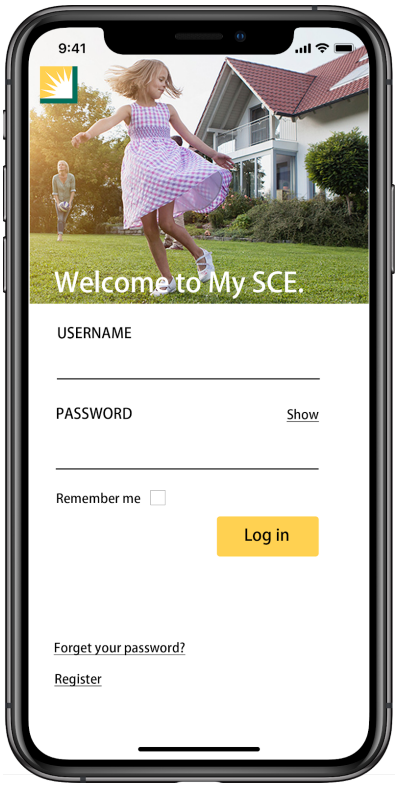
- Big design targets:
    - Up-to-date UI design
    - More reasonable path
    - Reorganize features
- Small design targets:
    - Language Selection
    - More reasonable user profile page layout
    - Add error prevention (gesture/back button)
    - Simpler menu (better phrasing)
    - Fix false signifiers

In other words, some of the key points we kept in mind when redesigning:

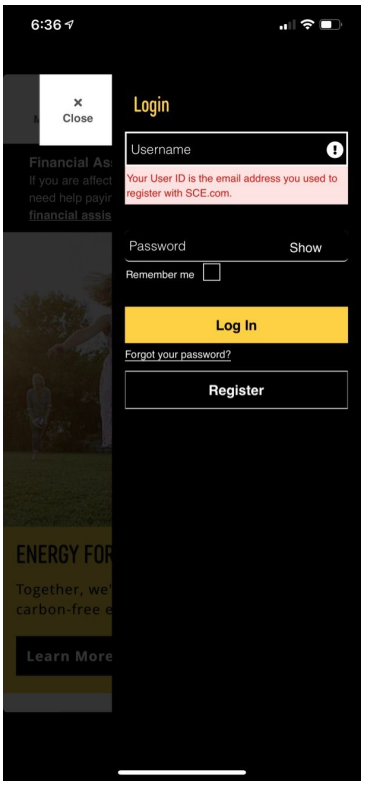
- User interface should be simple and friendly

- Highlight the core features by using the Gestalt laws and size, as well as the visual hierarchy
- Complied with design specifications, but not with heavy graphic design
- Design should be smooth and not overwhelm
- From the old color schemes (yellow, green, black) we picked yellow and green only. We deem that these two colors have a positive emotion effect for users; green represent green energy, yellow represents vigor and vitality.

Login Page (UI, Reasonable path)



New design login page



My SCE login page

Problems:

1. The main colors of the login interface are black and yellow(figure 2 above). This becomes a problem that usually the combination of these two colors represents warning and caution.
   The color theme also does not match the inner design after login.
2. This design violates the design guidelines of Apple.
3. Slide in design causes lag on the App.
4. Login page is not the default page of the app
5. A false signifier (“remember me” option) - remember username only. Users have to input the password again.

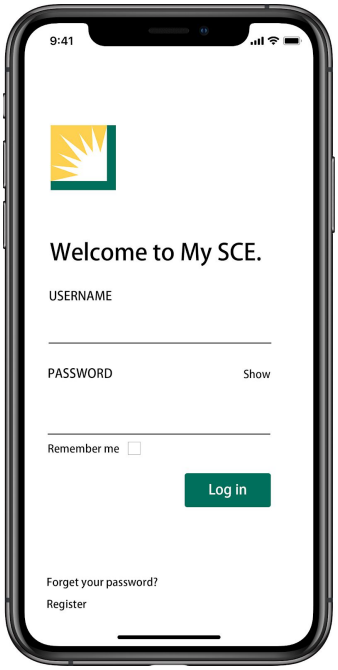
Evidence:

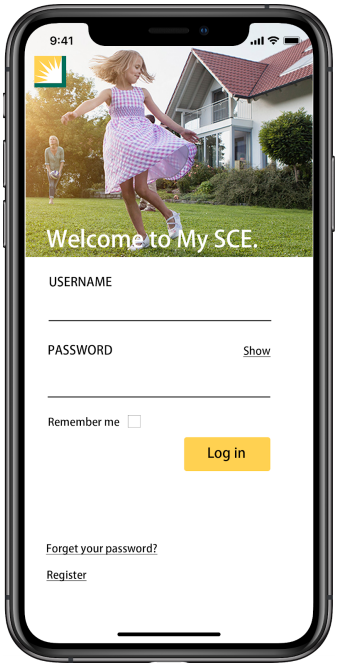
1. The overall design of the app is not modern and user friendly. So we chose to redesign the whole app from the beginning in order to have a consistent UI design.
2. As we have mentioned above, *My SCE* has the problems on default page and “remember me” option. These became a serious problem while we were conducting the usability test. At first, we required our participants to quit the App completely so every participant began in the same page. However, we then realized that this was totally time consuming because the App has these two major problems.

Process:

1. This is the only login page design we have.

Result:

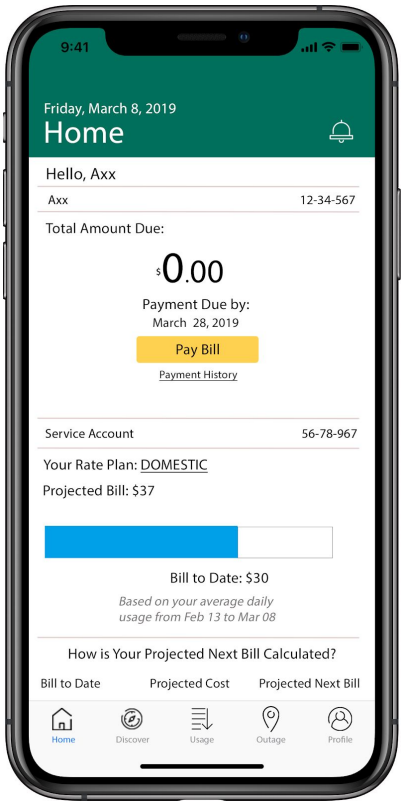




Sketch **Higher-fidelity mockup** **Final Redesign**

Since this is the only login redesign amount our sketches, we could not provide a actual process that lead to this final design. However, for our high fidelity mockup, we have two versions; the image above is our first version. It is evident that our sketch is almost the same as the version one. While we were doing the sketch, we believed that the simplicity and planarization were the most important for an mobile App in 2019. Nevertheless, after we delved into the color schemes more, the intention of the color became more and more clear for us. So in the login page, we decided to add more bright yellow and made the App looks more friendly.

Home Page (UI, Reasonable Path, Reorganization)



My SCE home page (not logged in) **Redesigned home page**

Problem:

1. Old design's homepage didn't properly present the main features of the app. When first entering the app, the home screen uses most of its space for an image and a link that redirects you away from the app. The only attempt to direct the user towards a core feature is the "Pay Your Bill" and "View Balance & Usage" buttons present at the very bottom. To see the other buttons, user would have to scroll down to see them. Home page has extraneous content that doesn't match up with what a user would want to see when first entering the app.

2. Alerts pop up when loading up most pages in the old app, including the home page. It is pretty

Evidence:

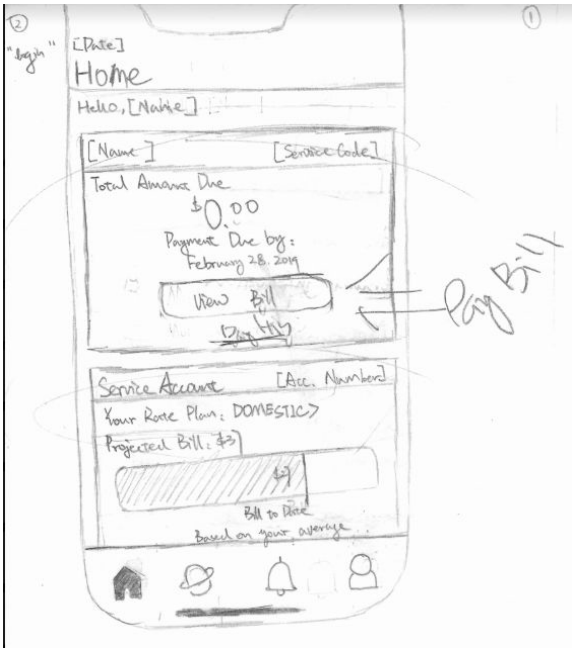
1. From user testing, when asked to perform a task they would often go straight to the menu rather than try to scroll down to see if what they wanted was available in the first page. From interviews and user surveys, most users were concerned with being able to access key features easily and quickly. By having content that isn't relevant to their interests, users will be less likely to use the app.
2. During the user testing and cognitive walkthrough, we observed that if users tried to scroll past alert popups, they would end up skipping past some buttons or signifiers of the interface. Redesigning how alerts are handled would stop users from ignoring important interface components.

Process:

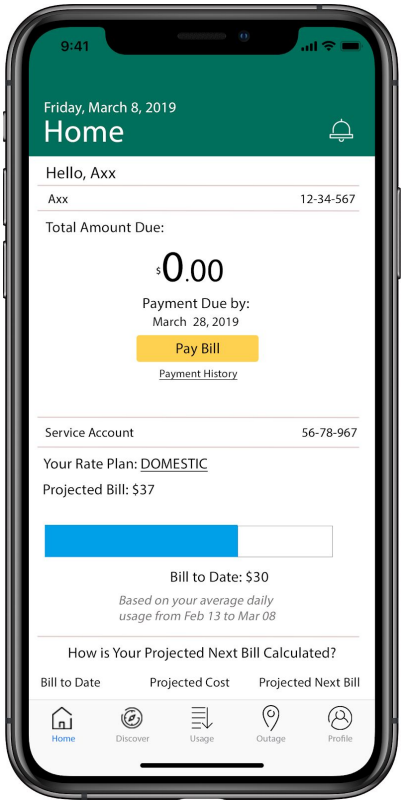
1. We considered keeping the information about the account balance and utility usage in its own page separate from the home page, which is how it is organized in the old interface.
    a. Other redesigns mostly wanted to keep the home page mostly the same, just changing the initial layout to prominently display the buttons to reach the main features
    b. One redesign would use the home page as the main hub to access features. Clicking one of the options would return a page a layer above the home page that mostly covers the screen and presents the user with their desired feature. User would have to return to home page to access another feature by swiping left to get rid of the page overlayed on top of the home page. In practice, a feature would be displayed on a page similar to how the gmail app allows users to select between different labels (sent, starred, spam) from a swipeable page.

2. Considered having the notification system exist as its own tab on the tab bar at the bottom of the app. Decided against it, as we wanted to keep the tab bar reserved for the main features that the user would want to use. Notifications didn't quite fit in to that goal, so we left it off of the toolbar.

Result:



Sketch



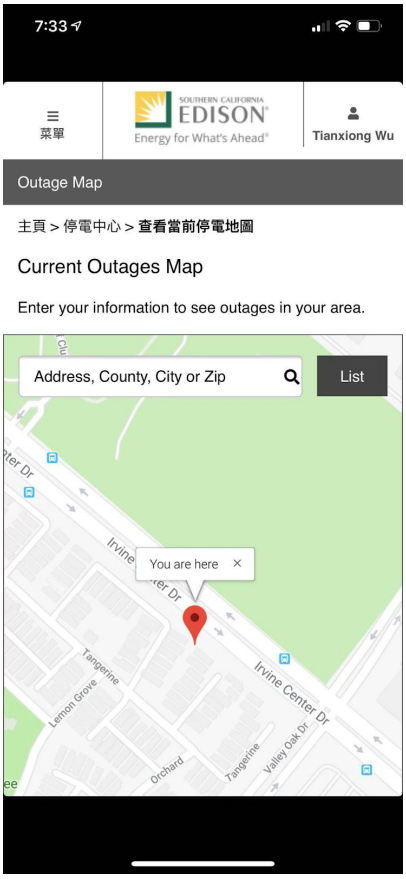
Redesign

The new design for the home page contributes to all of our redesign goals. It better conforms to modern sensibilities for how UI for a mobile app should look like. Using the ios design guidelines from Apple as reference, we designed the new interface to take advantage of commonly used interface components like the tab bar or the notification icon. It also incorporates common ios gestures like swiping to navigate between the different tabs.

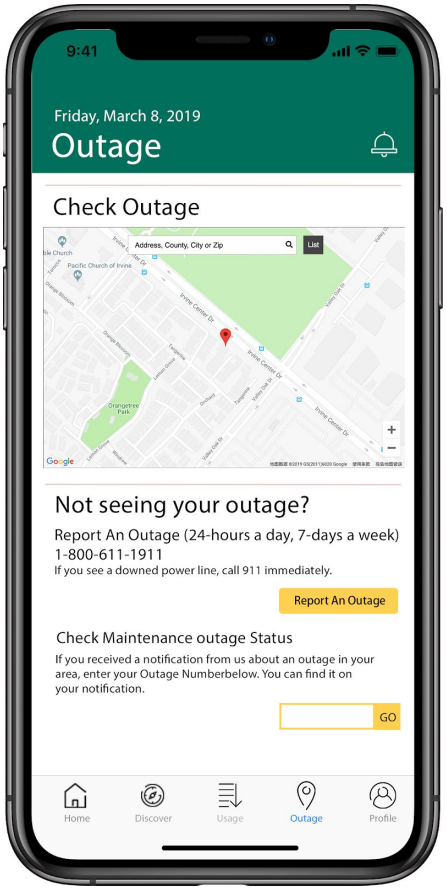
It is now much easier for users to recognize where to start paying. The “Pay Bill” button being the only yellow object on the page makes it really stand out. It is also easy to switch between features with the tab bar. Rather than navigating through a couple of menus to find other features, the user can now switch between different tabs to access different features.

Finally, we decided that viewing balance and paying the bill are the most important features of the app and should appear immediately. This based on user sentiment that we gathered from the user research. Rather than keeping them on a separate page, we had them as the first thing the user sees when entering the home page.

Outage Center (UI, Reasonable path)



My SCE Outage Center



Redesign Outage Center

Problem:

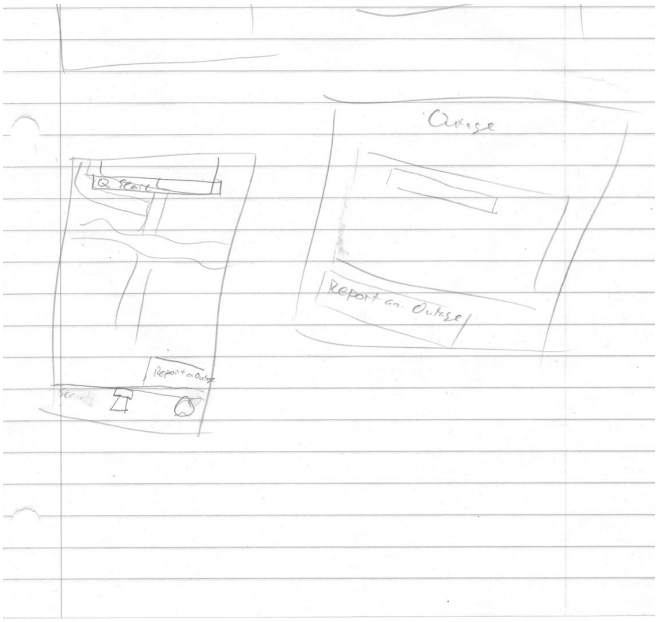
1. The original report outage page has a out-moded layout. It excessively uses inanimate colors and does not auto-resize in respect of different screen sizes.
2. The map area is too small, the user might not get the outage information they want to know.
3. It has a bad efficiency of using the interface space. The user has to scroll down to see the option of report outage.
4. No go back option.

5. Outage center is not easy to find in the original path design.

Evidence:

1. In our usability test findings, a lot of users cannot find outage center as a first time user. The “report outage” button is also hard to find.
2. Our user feedback suggests that we should have a back button and gesture recognition implemented for them to go back to previous page easily.

Process:

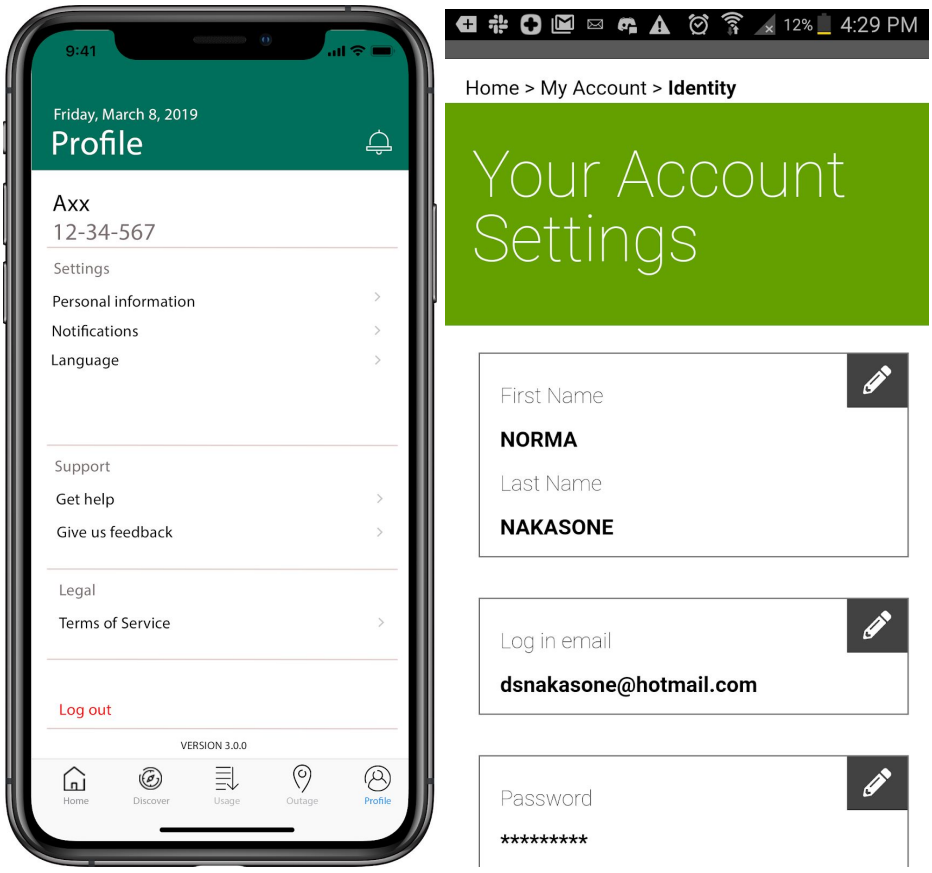


1. We have the similar outage center design in our sketch.
2. We decided to pick this design because it uses screen wisely. We have another slide in design for every action. However, it also becomes a problem that if user mistouched, he/she has to redo all the action again; especially when user tries to use finger to zoom in or out of the map.
3. Besides just put a mini map, we also have the idea that put a fun version map on that page, with a report outage button above (image above). However, we then realized that this design is not informative; we cannot put useful information such as maintenance checking and custom service number. It is important for us because the “report outage” button requires users to fill in a form, which is not very convenient for aged people.

Result:

We decided to map them all together in one page (outage map, report outage button, and check maintenance progress). At the button of the page, we have a bottom bar, so that the user can find what they want fast. We also provide gesture feature for user to go back or undo.

Account Profile (UI, Reasonable path)



Profile Redesign **My SCE "Identity" page**

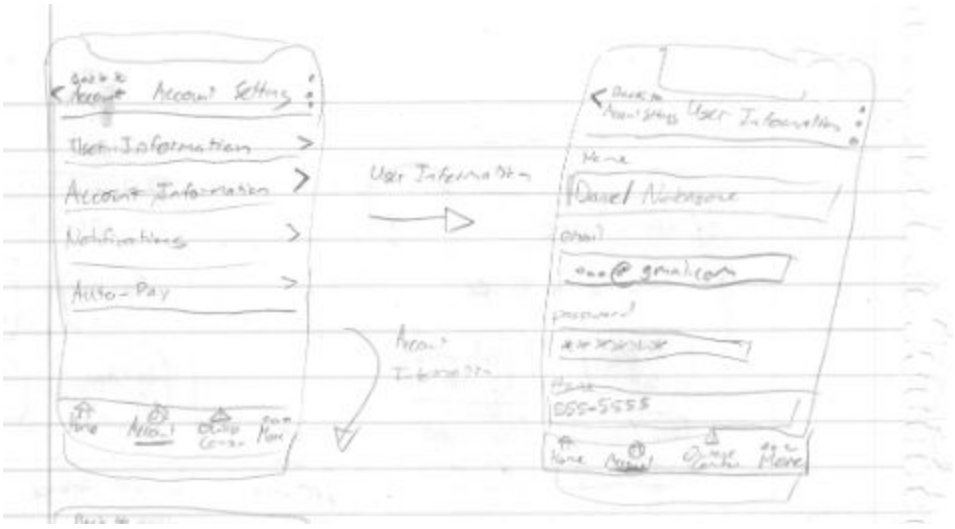
Problems:

1. Hard to find in the original path design (on android and website).
2. Wasn't accessible in the ios app.
3. False signifier, since "View/Manage Accounts" button in "My Account" page had an option to change nickname, but not other personal information.
4. Language options were really bad in the original design. You would have to scroll all the way down to access the option.
5. Information was scattered in different parts of the app.

Evidences:

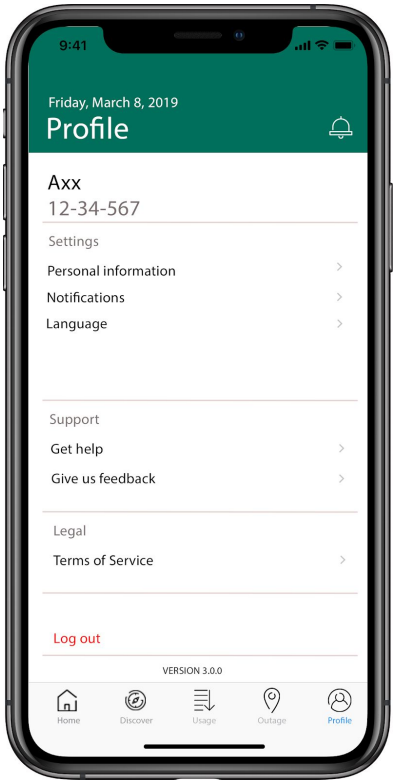
1. In our usability test, we found that it was difficult for users to find the page to change personal information such as name. They would click on “View/Manage Accounts” when the correct solution was finding the “Identity” page, which was hidden in the top right menu.
2. For the ios version of the app, “Identity” page didn’t load.

Process:

a. 

2. Considered what type of information should be contained in the profile page.
    a. Considered having personal information (name, email, address) and account information (rate, account number) be presented in separate sections. Also would contain more functionality like auto-pay.

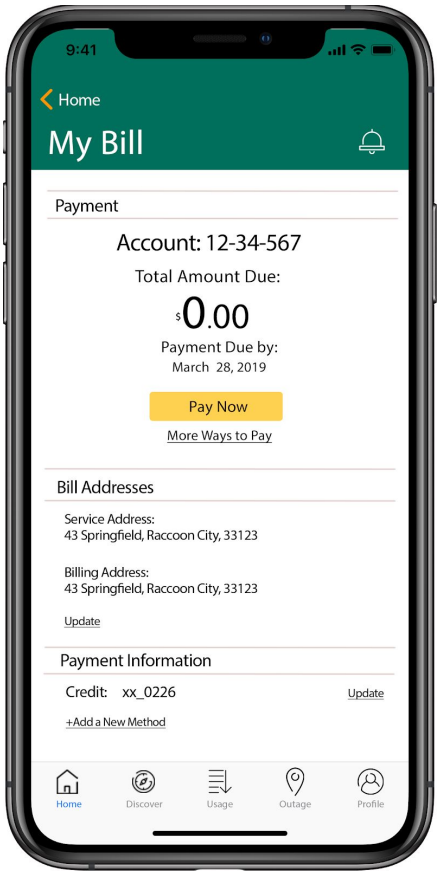
Result:



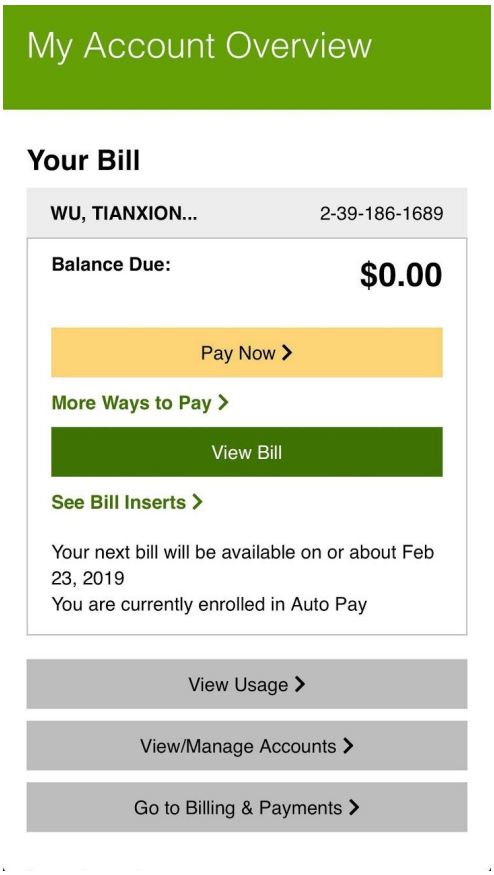
Sketch **Redesign**

The final result was a more organized look that combines a lot of information and puts it in one place that's easy to find. Rather than being in an obscure part of a menu, the profile page is a main feature highlighted in the tab bar. Language selection, which wasn't easy to find, is now clearly displayed on this page. Customer support is also easily accessible from this page.

My Bill (UI, Reasonable path)



Redesign Billing Page



My SCE Billing Page

Problem:

1. The original 'My bill' page can be accessed through a multi-step path: home-> my account-> billing & payments. Viewing my bill is one of the most significant features of the sce mobile app, and this path is not very obvious and too tedious.
2. The UI of the old page doesn't do a very good job at visualizing information regarding users' current bill: the wording of the due date is very tedious, making it hard to read for users; the difference between pay now and view

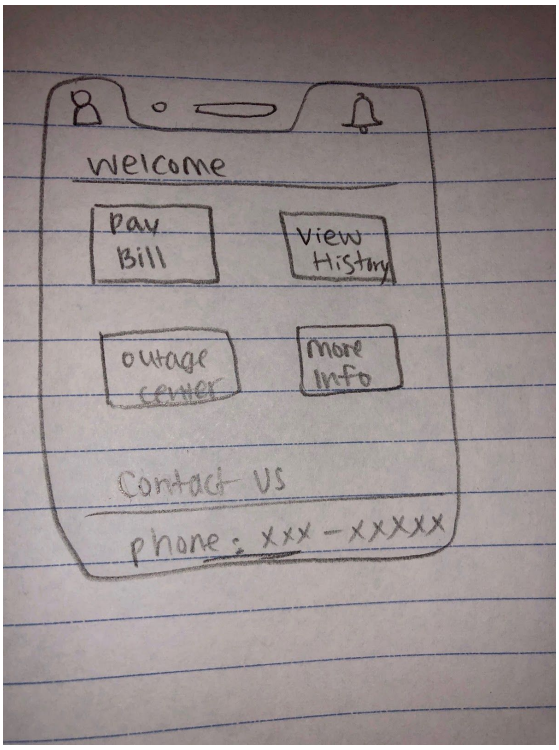
bill isn't obvious at first glance; and the amount due could be put at a more obvious place.

Evidence:

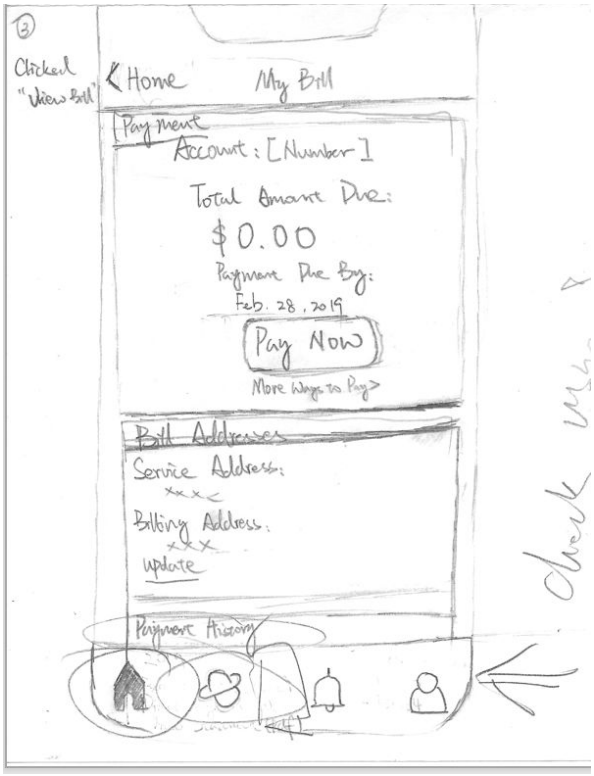
1. Viewing utility bills and making a payment were the top two selected choices of why our survey takers would use an utility app.
2. The top quality our survey takers deem the most important for an utility app is its convenience.
3. While navigating through the apps ourselves, for our cognitive walkthrough and otherwise, the fact that paying for a bill or viewing my bill is under my account (and not its own category) still isn't intuitive.

Process:

1. We all had similar ideas of putting my bill (or pay bill) in a much more easily noticeable and important location and within its own category.
2. The two main versions of the redesign sketches of my bill we all came up with was to either put a 'Pay bill' button on the home page or to put the entire pay bill UI on the home page.

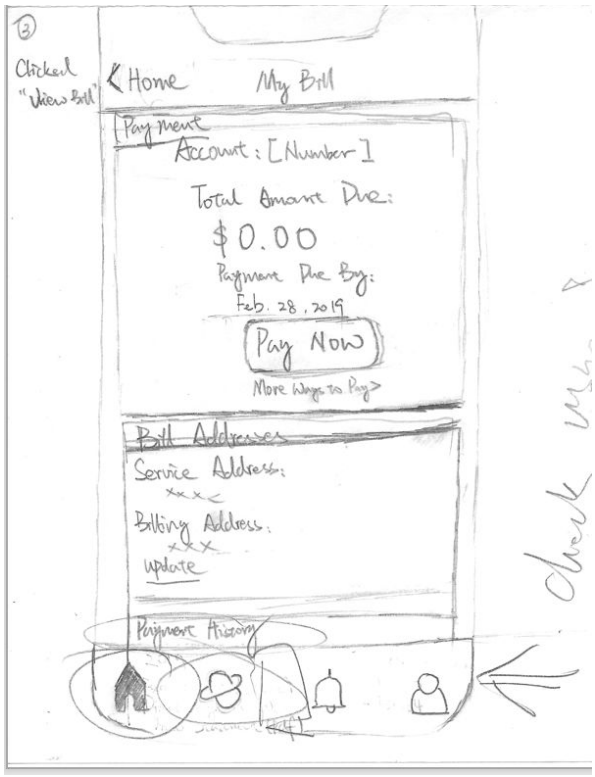


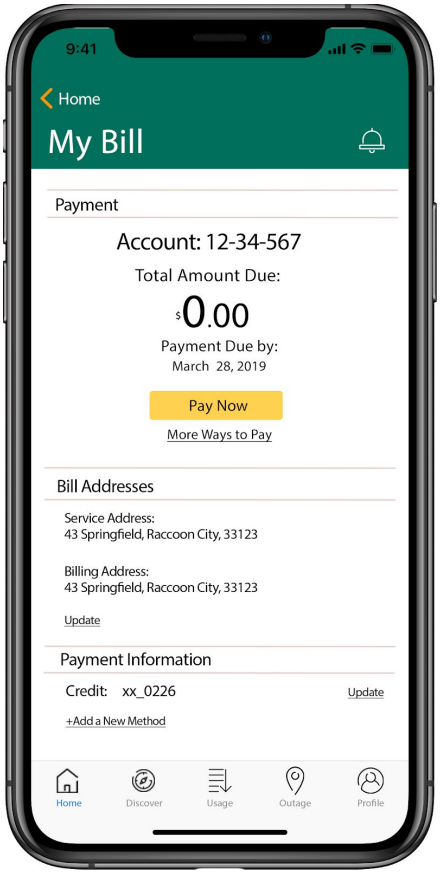
a. We considered having very noticeable buttons for the pay bill and view history features (along with two others) on the home page. Users will be able to easily access all bill paying related information (ways of payment, billing info, payment info) on the pay bill UI and payment history along with past statements on the view history UI. This was one of the ways we came up with that would make the path to the my bill page much more reasonable. Our ideas for the actual UI of my bill (pay bill) were all very similar, which will be shown in the result.



b. The second design we were considering is to essentially put the my bill UI on the home page. The amount due will be shown on the front page and a page with more detailed information will be shown when 'view bill' is clicked on. This was very self-explanatory and resolves the issues with reasonable path and UI design simultaneously.

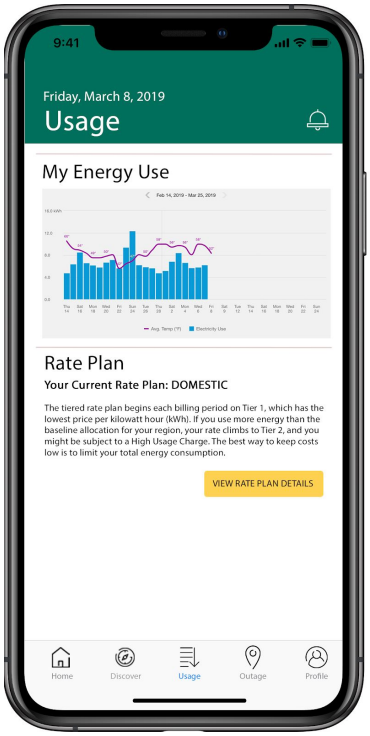
Result:


Clicked "View Bill"
Home
My Bill
Payment
Account: [Number]
Total Amount Due:
$0.00
Payment Due By:
Feb. 28, 2019
Pay Now
More Ways to Pay
Bill Addresses
Service Address:
Billing Address:
Update
Payment History

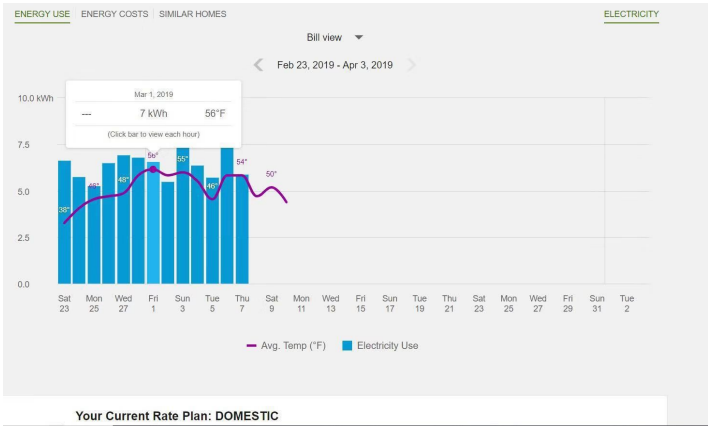

9:41
Home
My Bill
Payment
Account: 12-34-567
Total Amount Due:
$0.00
Payment Due by:
March 28, 2019
Pay Now
More Ways to Pay
Bill Addresses
Service Address:
43 Springfield, Raccoon City, 33123
Billing Address:
43 Springfield, Raccoon City, 33123
Update
Payment Information
Credit: xx_0226
Update
+Add a New Method
Home
Discover
Usage
Outage
Profile

After considering both of the general options we had, we decided to build the redesign upon the idea of the second one. The UI looks much cleaner and more modern with the user's balance present on the front page. Comparing to the first idea, the final design does a better job at giving the user a visual impact as soon as they log in. We agreed that bill paying and viewing is the most used and most important feature on an utility app; therefore, with the final redesign, the path to our my bill page is also much more direct. We changed the wording of 'view bill' on the sketch of the home page to 'pay bill' for our final redesign (to let the user know that clicking on the button will take them directly to a bill paying UI). After clicking on the said button on the home page, the app will take us to the my bill page. Showing similar information as the home page at the top, but more information about payments and addresses below the payments section.

Usage (UI)



Redesign Energy Usage



Website Interface Usage Page

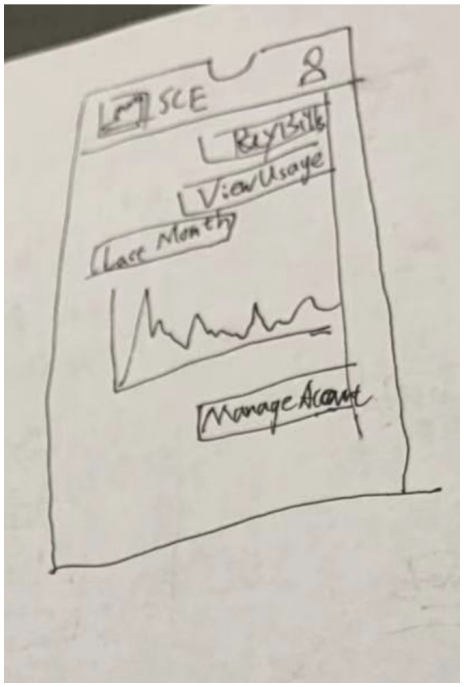
Problem:

1. The usage function cannot be accessed in the old mobile app. (false signifier)

Evidence:

1. This function is not working in the mobile app.
2. This is a common functionality that users want to check based on the survey we did.
3. Users should have a easy way to check their usage quickly.

Process:



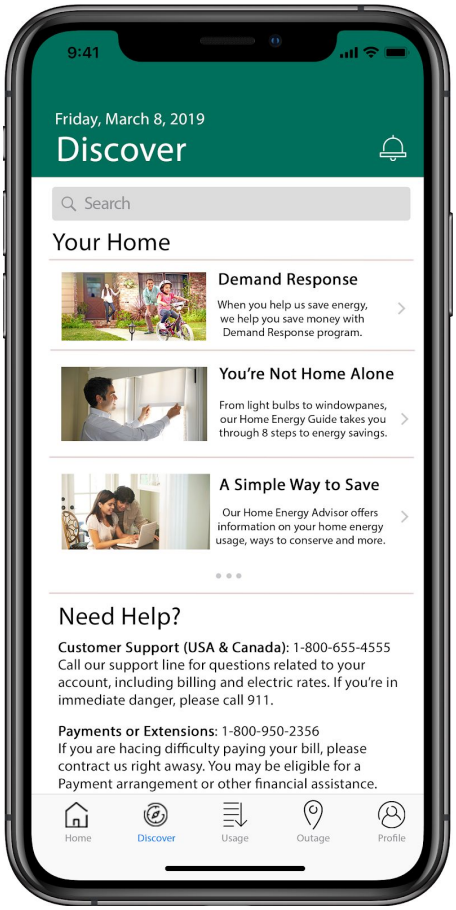
1. We decide to use the same components as the website version. What we have done is basically migrating them and making the style consistent.
2. For the design aspect, besides the standard iOS design, we have a slide in design. However, we did not choose this design become it violates the design guidelines of Apple.
3. Base off the SCE website, the way they present usage is bar chart. And on the computer, user could use mouse to drag on the display. However, it will become a problem for phone because we will have a gesture to go back. We believe that this design may lead to more mistakes for our users.

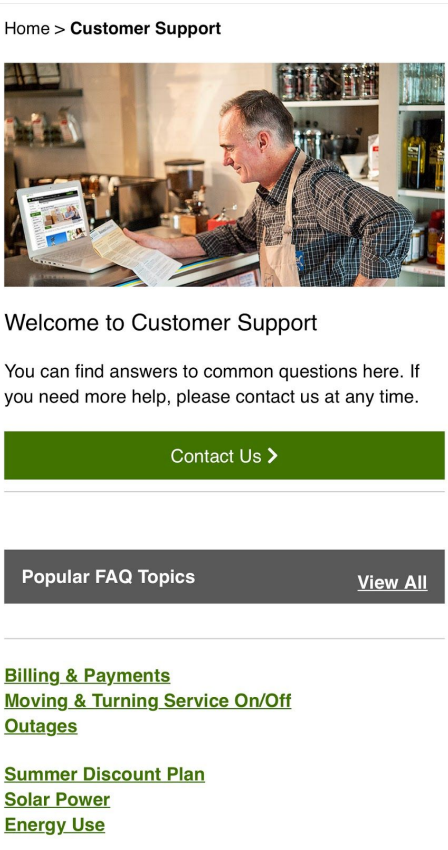
Result:

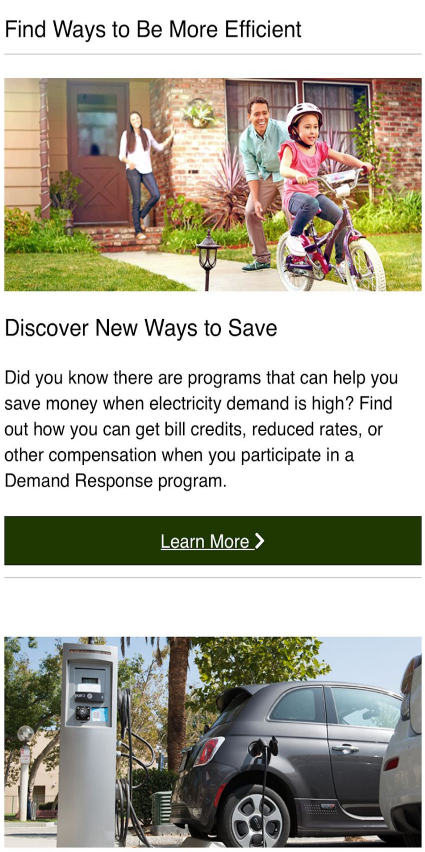
We would like to see an utility app that can let users be aware of their usage. We believe that implementing this feature in mobile app will help users developing a sense of saving the energy, which is very crucial to our entire human race. In addition to that, we believe that as utility app, check usage should be the fundamental function.

For the design aspect, we tried to set up a “toolbox” that contains all the functionalities (the original idea of “discover” page). However, after the discussion, we then realized that it would be inappropriate to put all the side functions into a single button. First of all, it is hard to do the layout, with too many functionalities the layout would be very messy. Secondly, according to our survey, common functions should be highlighted and easy to access. So for the final design, we decided to have a button only for checking the usage.

Discovery (UI, Reorganization)







Redesign - discovery page **My SCE customer support** **My SCE "My Home"**

Problem:

1. The path to find customer service information is unnecessarily complicated. As shown in the second figure, users need to perform an extra step (clicking on "Contact Us") to acquire customer service information when they are already on the customer support page.
2. FAQ takes up most of the space in the customer support page, while it's not an important feature. It's hard to tell from the screenshot, but when users

scroll down the page, they will find the rest of the page is filled with different FAQ categories.

3. Many features in the original app are redundant and unnecessary. Yet, their names are misleading. For example, the “My Home” feature, as shown in the third figure, displays nothing but advertisements for SoCal Edison’s programs. This problem contributes to many false signifiers in the app, which can easily misguide users.

Evidence:

1. From analysis of the user survey, we found that a majority of users would like customer support to be present in the app. Thus, we think it’s important to make customer support easily discoverable.
2. From analysis of the user survey, we found that most users don’t care if there’s a dedicated FAQ section in the app. Instead, they are more concerned about the contact information of customer service.
3. During the usability test, we found that most of our participants got confused over redundant features, such as “My Home”. They were misguided by the name of these features (false signifier), and therefore deviated from their original path. For example, during the usability test, one participant thought “My Home” is the equivalent of profile page.

Process:

1. All of us agree that the customer support page should only show customer service information, and no FAQ.
2. All of us agree that unnecessary features (i.e. My Home, My Business) should be removed.
3. One of us had an idea of attaching a transparent SoCal Edison’s icon to the screen, like iPhone’s assistive touch. When user clicks on the icon, it will go to the customer support page. Other unnecessary features (i.e. My Home) are completely removed. However, we thought the affordance of the icon is unclear — it could be customer support, or something else.

4. Another idea was to make customer support a major functionality in the app. This design creates an icon for customer support, and puts it in the menu bar. When user clicks on the icon, it will go to the customer support page. Other unnecessary features (i.e. My Home) are completely removed. However, we thought customer support should not be treated as a major functionality, because it's not used as often as other major functionalities.

Result:

We decided to create a new functionality called "Discovery", and put customer support there. As shown in the first figure, "Discovery" is one of five major functionalities in the app. It consists of three parts: search bar, your home, and customer support.

The search bar has similar search behavior as Apple's spotlight. It returns a list of in-app results, rather than web results, as in the original app. For example, if user searches for "pay bill", the pay bill function would pop up in the result list.

"Your Home" is essentially the "My Home" feature in the original app. This part contains all of SoCal Edison's advertisements. We decided to keep this part in the mobile app, because it could potentially bring the company profit. We moved all advertisements under this section, so that the app would be more organized, and the problem of false signifiers would be solved.

The last part contains only customer service information (i.e. phone number, address). It provides a more simple and reasonable path than the original app.

7. Heuristic Evaluation

Overview:

The purpose of the evaluation was to provide insight into how our new design could be further improved on. While we are proud of the changes we made, there are still some lingering usability issues that can be addressed in a future redesign. We used the following detailed checklist (https://www.hindawi.com/journals/tswj/2014/434326/) to test our design work.

For a heuristic evaluation, ideally a real system would be available to test against. Since the redesign only consisted of high-fidelity mockups that demonstrate the main features of the mobile app, we couldn't follow through with all parts of the checklist. In particular where items that revolved around system prompts or response times.

We concentrated more on specific tasks such as mental model accuracy and consistency. While our heuristic evaluation couldn't cover all aspects of the system-to-be, this method is still useful since it helped us discover some potential usability issues that we didn't consider during the creation of our redesign.

Findings:

Visibility of system status

1. We didn't provide links to detailed information about the company — SoCal Edison.

Error prevention

1. For our redesign, we currently don't have any error prevention for potential error, like report false outage message, or accidentally log out of the account.

User control

1. We didn't give users a choice to set their own screen defaults.

Recognition rather than recall

1. We used bright yellow for button color, which should have been used to emphasize important data.
2. In our redesign, some pages have extra whitespace that could be used more effectively. For example, the Usage page has a lot whitespace.

Match between system and the real world (mental model accuracy)

1. We used yellow as button color. However, yellow can indicate warning or caution. It goes against our intention, which is to make users feel welcomed to use the app.
2. The language we used in the app may be unfamiliar to new users. For example, in the home page, there is a line saying "your rate plan: domestic". Some users may not immediately understand what this means.
3. We integrated multiple content into one page, which may cause information overflow. For example, the discovery page has two sections: Your Home, and Need Help. They are unrelated to each other.
4. We didn't have a table of contents (site map) in our redesign.
5. Menu choices are not ordered in the most logical way. It'd be more reasonable to move Discovery to the fourth icon in the menu.

Help users recognize, diagnose and recover from errors

1. In our current design, we don't have mechanism to help users to deal with errors (neither error prevention nor recovery from errors).

Consistency

1. The Your Home section under Discovery conflicts with the Home page. Users may get confused at these two names.

Aesthetic and minimalist design

1. Rather than having each page focus on one task, there are often multiple items packed into a page. This splits attention between the first feature on the page and any other features below it.
2. The use of image and multimedia content didn't add much value to the app.

Flexibility and efficiency of use

1. Our search feature doesn't have advanced search options.
2. The box width for outage map is too wide, which makes the interface seem unbalanced.
3. Our search feature (the search box) is not easily accessible. Users have to go to Discovery page to use the search feature.

Help and documentation

1. We didn't provide context-sensitive help (or a help function) in the app.
2. In our redesign, users can't change the level of detail available. For example, users can't change what information to display in the home page. This may make the app look unfriendly.

Pleasurable and respectful interaction

1. We didn't set any default data for text entry box such as search box. However, we cannot do it right now, because we don't have sufficient data available for us to decide a default for that text entry box.

8. Conclusion

The redesign for My SCE that we created is a strong step in much larger process of overhauling the mobile experience for SCE customers.

To familiarize ourselves with what a mobile utility app should look like, we researched how other similar utility apps functioned. We consulted with our target population, student renters and working homeowners, through interviews and surveys to to understand what users want from a utility app.

Our redesign was created with the information gathered from the competitive analysis and user research in mind, as well as the standards set by Apple's Human Interface Guidelines. Once the redesign was completed, we performed a heuristic evaluation to understand what we could improve in future iterations.

Overall, the whole process proved invaluable in understanding how Southern California Edison could benefit from providing better support for its mobile interface. For now, paying bills and viewing outages through their website is the norm. But having the option to use a mobile app that is fast and easy to use helps SCE's customers keep up with the demands of owning/renting a home and having to keep the lights on while juggling other responsibilities. If a customer can pay their bill while in line at the bank or eating at a restaurant, it gives them greater freedom in meeting their obligations as a customer.

Redesigning the mobile app also gives it a purpose that it currently lacks. The old design is virtually the same as the website. Since mobile devices don't support a web interface as well as desktop computers, using the mobile app was always the lesser option. But by redesigning the app to better fit a mobile device, it also gives customers a reason to use both instead of one or the other. The website would still be important if customers wanted to dive into the wealth of information that SCE provides, while the mobile interface caters more towards quick interactions with the main features.

9. Appendix

9.1 Heuristic Evaluation Notes

Link to Heuristic Checklist:
https://www.hindawi.com/journals/tswj/2014/434326/

Nick Lyu

(1) visibility of system status:

system status feedback:

(1) is there some form of system feedback for every operator action?

Yes. There is always a viewable feedback follows each operation made.

(2) if pop-up windows are used to display error messages, do they allow the user to see the field in error?

Yes.

(3) in multipage data entry screens, is each page labeled to show its relation to others?

Yes. There is a bar down the bottom show which major section you at.

(4) are high informative contents placed in high hierarchy areas?

Yes.

location information

(5) is the logo meaningful, identifiable, and sufficiently visible?

N/A

(6) is there any link to detailed information about the enterprise, website, webmaster ... ?

N/A

(7) are there ways of contacting with the enterprise?

Yes. In customer support.

(8) in articles, news, reports ... are the author, sources, dates, and review information shown clearly?

N/A

response times:

(9) are response times appropriate for the users cognitive processing?

Yes. All the tasks are simple.

(10) are response times appropriate for the task?

Yes. Short.

(11) if there are observable delays (greater than fifteen seconds) in the system's response time, is the user kept informed of the system progress?

No, we didn't think about it actually.

(12) latency reduction

Didn't find any.

Selection/input of data:

(13) is there visual feedback in menus or dialog boxes about which choices are selectable? We will merge this statement with the following: "Do GUI menus make obvious which item has been selected?", "Do GUI menus make obvious whether deselection is possible?", "Is there visual feedback in menus or dialog boxes about which choice the cursor is on now?" , and "If multiple options can be selected in a menu or dialog box, is there visual feedback about which options are already selected?"

The GUI looks simple to operate and gives instant feedback according to action.

(14) is the current status of an icon clearly indicated?

N/A

(15) is there visual feedback when objects are selected or moved?

Yes. We designed to make the thing more clear when user clicked.

(16) are links recognizable? Is there any characterization according to the state (visited, active,)?

N/A

(2) match between system and the real world (Mental model accuracy):

metaphors/mental models:

(17) use of metaphors

We have generally applicable icons for specific actions.

(18) are icons concrete and familiar?

Yes. Traditional Bootstrap icon.

(19) if shape is used as a visual cue, does it match cultural conventions?

Yes

(20) do the selected colours correspond to common expectations about color codes?

Yes. They are comfortable.

navigational structure:

(21) if the site uses hierarchical structure, are depth and height balanced?

Yes. Very balanced.

(22) navigation map, also known as site map or table of contents;

They good and very usable.

menus:

(23) are menu choices ordered in the most logical way, given the user, the item names, and the task variables?

Yes. Navigations and hierarchy are good.

(24) do menu choices fit logically into categories that have readily understood meanings?

Yes.

(25) are menu titles parallel grammatically?

Yes.

(26) in navigation menus, are the number of items and terms by item controlled to avoid memory overload?

N/A

simplicity:

(27) do related and interdependent fields appear on the same screen?

Yes. We believe so.

(28) for question and answer interfaces, are questions stated in clear, simple language?

Yes.

(29) is the language used the same target users speak? . We will merge this statement with the following: “Is the menu-naming terminology consistent with the user’s task domain?”

Yes. The namings are easy to understand.

(30) is the language clear and concise? . We will merge this statement with the following: “Does the command language employ user jargon and avoid computer jargon?”

N/A

(31) does the site follow the rule “1 paragraph = 1 idea”?

We didn’t think of it.

output of numeric information:

(32) does the system automatically enter leading or trailing spaces to align decimal points?

N/A

(33) does the system automatically enter a dollar sign and decimal for monetary entries?

Yes.

(34) does the system automatically enter commas in numeric values greater than 9999?

Yes.

(35) are integers right-justified and real numbers decimal-aligned?

Yes.

(3) user control:

explorable interfaces:

(36) can users move forward and backward between fields or dialog box options?

Yes.

(37) if the system has multipage data entry screens, can users move backward and forward among all the pages in the set?

Yes. Gesture.

(38) if the system uses a question and answer interface, can users go back to previous questions or skip forward to later questions?

N/A

(39) clearly marked exits

No. But gesture.

(40) is the general website structure user-oriented?

Yes.

(41) is there any way to inform user about where they are and how to undo their navigation?

No.

some level of personalization:

(42) can users set their own system, session, file, and screen defaults?

No. Don't think we need to.

process confirmation:

(43) when a user's task is complete, does the system wait for a signal from the user before processing?

No.

(44) are users prompted to confirm commands that have drastic, destructive consequences?

No.

undo/cancelation:

(45) can users easily reverse their actions? Also found as "Do function keys that can cause serious consequences have an undo feature?" [38] and "Is there an "undo" function at the level of a single action, a data entry, and a complete group of actions?"

Yes. Gesture!

(46) can users cancel out of operations in progress?

Yes.

menus control:

(47) if the system has multiple menu levels, is there a mechanism that allows users to go back to previous menus?

Yes.

(48) are menus broad (many items on a menu) rather than deep (many menu levels)?

Yes.

(49) if users can go back to a previous menu, can they change their earlier menu choice?

Yes.

(4) consistency:

designing consistency:

(50) are attention-getting techniques used with care?

N/A

(51) intensity: two levels only

N/A

(52) color: up to four (additional colors for occasional use only)

Yes.

(53) are there no more than four to seven colors, and are they far apart along the visible spectrum?

Yes.

(54) sound: soft tones for regular positive feedback, harsh for rare critical conditions

N/A

(55) if the system has multipage data entry screens, do all pages have the same title?

No.

(56) do online instructions appear in a consistent location across screens?

N/A

(57) have industry or company standards been established for menu design, and are they applied consistently on all menu screens in the system?

N/A

(58) are there no more than twelve to twenty icon types?

No. we good.

(59) has a heavy use of all uppercase letters on a screen been avoided?

No.

(60) is there a consistent icon design scheme and stylistic treatment across the system?

Yes

menus:

(61) are menu choice lists presented vertically?

No. Horizontal.

(62) if “exit” is a menu choice, does it always appear at the bottom of the list?

No.

(63) are menu titles either centered or left-justified?

N/A

input fields:

(64) are field labels consistent from one data entry screen to another?

Yes.

(65) do field labels appear to the left of single fields and above list fields?

N/A.

(66) are field labels and fields distinguished typographically?

No. Didn’t think of it.

naming convention consistency:

(67) is the structure of a data entry value consistent from screen to screen?

No

(68) are system objects named consistently across all prompts in the system?

Yes

(69) are user actions named consistently across all prompts in the system?

Yes.

menu/task consistency:

(70) are menu choice names consistent, both within each menu and across the system, in grammatical style and terminology?

Yes.

(71) does the structure of menu choice names match their corresponding menu titles?

Yes.

(72) does the menu structure match the task structure?

Yes.

(73) when prompts imply a necessary action, are the words in the message consistent with that action?

Yes.

functional goals consistency:

(74) where are the website goals? Are they well defined? Do content and services delivered match these goals?

Yes. All in bottom bar.

(75) does the look & feel correspond with goals, characteristics, contents and services of the website?

Yes.

(76) is the website being updated frequently?

N/A

system response consistency:

(77) is system response after clicking links predictable?

Yes.

(78) are nowhere links avoided?

Yes.

(79) are orphan pages avoided?

Yes.

(5) error prevention:

DIDNT THINK OF IT!!!!!!

(80) are menu choices logical, distinctive, and mutually exclusive? [38]

(81) are data inputs case-blind whenever possible? [38]

(82) does the system warn users if they are about to make a potentially serious error? [38]

(83) do data entry screens and dialog boxes indicate the number of character spaces available in a field? [38]

(84) do fields in data entry screens and dialog boxes contain default values when appropriate? [38]

(6) recognition rather than recall:

DIDNT THINK OF IT!!!!!!

memory load reduction:

(85) high levels of concentration are not necessary and remembering information is not required: two to fifteen seconds

(86) are all data a user needs on display at each step in a transaction sequence?

(87) if users have to navigate between multiple screens, does the system use context labels, menu maps, and place markers as navigational aids?

Yes

(88) after the user completes an action (or group of actions), does the feedback indicate that the next group of actions can be started?

(89) are optional data entry fields clearly marked?

(90) do data entry screens and dialog boxes indicate when fields are optional?

(91) is page length controlled?

No.

general visual cues:

(92) for question and answer interfaces, are visual cues and white space used to distinguish questions, prompts, instructions, and user input?

Yes.

(93) does the data display start in the upper-left corner of the screen?

N/A

(94) have prompts been formatted using white space, justification, and visual cues for easy scanning?

N/A

(95) do text areas have “breathing space” around them?

Yes

(96) are there “white” areas between informational objects for visual relaxation?

Yes.

(97) does the system provide visibility; that is, by looking, can the user tell the state of the system and the alternatives for action?

Yes.

(98) is size, boldface, underlining, colour, shading, or typography used to show relative quantity or importance of different screen items?

Yes.

(99) is colour used in conjunction with some other redundant cue?

N/A

(100) is there good colour and brightness contrast between image and background colours?

Yes.

(101) have light, bright, saturated colours been used to emphasize data and have darker, duller, and desaturated colours been used to deemphasize data?

N/A

(102) is the visual page space well used?

N/A

input/output data:

(103) on data entry screens and dialog boxes, are dependent fields displayed only when necessary?

Yes.

(104) are field labels close to fields, but separated by at least one space?

Yes.

Menus

(105) is the first word of each menu choice the most important?

Yes.

(106) are inactive menu items grayed out or omitted?

N/A

(107) are there menu selection defaults?

N/A

(108) is there an obvious visual distinction made between “choose one” menu and “choose many” menus?

N/A

(7) flexibility and efficiency of use:

search:

(109) is the searching box easily accessible?

Yes

(110) is the searching box easily recognizable?

Yes

(111) is there any advanced search option?

No. But don’t need to.

(112) are search results shown in a comprehensive manner to the user?

Yes

(113) is the box width appropriated?

Yes for sure.

(114) is the user assisted if the search results are impossible to calculate?

Yes.

(8) aesthetic and minimalist design:

(115) Fitt's Law: the time to acquire a target is a function of the distance to and size of the target;

We applied it.

(116) is only (and all) information essential to decision making displayed on the screen?

Yes. We trim the functions down.

(117) are field labels brief, familiar, and descriptive?

Yes.

(118) are prompts expressed in the affirmative, and do they use the active voice?

Yes

(119) is layout clearly designed avoiding visual noise?

Yes

multimedia content:

(120) does the use of images and multimedia content add value?

N/A

(121) are images well sized? Are they understandable? Is the resolution appropriate?

Yes.

(122) are cyclical animations avoided?

N/A

Icons:

(123) has excessive detail in icon design been avoided?

No. we good.

(124) is each individual icon a harmonious member of a family of icons?

We good.

(125) does each icon stand out from its background?

Yes.

(126) are all icons in a set visually and conceptually distinct?

Yes.

menus:

(127) is each lower-level menu choice associated with only one higher level menu?

Yes.

(128) are menu titles brief, yet long enough to communicate?

Yes.

(9) help users recognize, diagnose and recover from errors;

DIDNT THINK OF IT!!!!!!

(10) help and documentation:

(129) are online instructions visually distinct?

N/A

(130) do the instructions follow the sequence of user actions?

N/A

(131) if menu choices are ambiguous, does the system provide additional explanatory information when an item is selected?

N/A

(132) if menu items are ambiguous, does the system provide additional explanatory information when an item is selected?

N/A

(133) is the help function visible, for example, a key labeled HELP or a special menu?

No.

(134) is the help system interface (navigation, presentation, and conversation) consistent with the navigation, presentation, and conversation interfaces of the application it supports?

No

(135) navigation: is information easy to find?

Yes.

(136) presentation: is the visual layout well designed?

Yes

(137) conversation: is the information accurate, complete, and understandable?

Yes

(138) is the information relevant? (Help and documentation) It should be relevant in the following aspects: goal-oriented (what can I do with this program?), descriptive (what is this thing for?), procedural (how do I do this task?), interpretive (why did that happen?), and navigational (where am I?);

Yes!

(139) is there context-sensitive help?

N/A

(140) can the user change the level of detail available?

No.

(141) can users easily switch between help and their work?

DIDNT THINK OF IT!!!!!!

(142) is it easy to access and return from the help system?

Yes.

(143) can users resume work where they left off after accessing help?

N/A

(144) if a FAQs section exists, are the selection and redaction of questions and answers correct?

N/A

(11) skills:

(145) do not use the word “default” in an application or service; replace it with “Standard,” “Use Customary Settings,” “Restore Initial Settings,” or some other more specific terms describing what will actually happen

No. DIDNT THINK OF IT!!!!!!

(146) if the system supports both novice and expert users, are multiple levels of error message detail available?

N/A

(147) if the system supports both novice and expert users, are multiple levels of detail available?

N/A

(148) are users the initiators of actions rather than the responders?

No. They are responder.

(149) do the selected input device(s) match user capabilities?

N/A

(150) are important keys (e.g., ENTER, TAB) larger than other keys?

Yes

(151) does the system correctly anticipate and prompt for the user’s probable next activity?

Yes.

(12) pleasurable and respectful interaction:

(152) protect users’ work, also as “For data entry screens with many fields or in which source documents may be incomplete, can users save a partially filled screen?”

Yes

(153) do the selected input device(s) match environmental constraints?

Yes. We believe so

(154) are typing requirements minimal for question and answer interfaces?

N/A

(155) does the system complete unambiguous partial input on a data entry field?

No. DIDNT THINK OF IT!!!!!!

(13) privacy:

Need to login to access feature.

(156) are protected areas completely inaccessible?

Yes.

(157) can protected or confidential areas be accessed with certain passwords

Yes.

Tianxiong Wu

1. Visibility of system status
   a) Feedback -> yes
   b) High informative contents placed in high hierarchy areas -> yes
   c) Display error messages -> N/A
   d) Location information -> N/A
   e) Response times -> N/A
   f) Visual feedback -> yes
   g) Current status of an icon clearly indicated -> yes
   h) Visual feedback when objects are selected or moved -> N/A

i) Any characterization according to the state -> yes

2. Match between system and the real world
   a) Use of metaphors -> N/A
   b) Icons concrete and familiar -> yes
   c) Match cultural conventions -> yes
   d) The selected colors correspond to common expectation about color codes -> yes
   e) Hierarchical structure -> yes
   f) Menu choices ordered in the logical way -> yes
   g) Menu choices fit logically I to categories that have readily understood meanings -> yes
   h) Titles parallel grammatically -> yes
   i) Related and interdependent fields appear on the same screen.
   j) Question and answer interfaces, questions stated in clear, simple language -> Yes
   k) Language clear and concise -> yes
3. User control
   a) Undo their navigation -> yes
   b) Reverse their actions -> yes
   c) A mechanism that allows users to go back to the previous meus -> yes
   d) Menus broad rather than deep -> yes
4. Consistency
   a) Color -> yes
   b) No more than four to seven colors -> yes
   c) Online instructions appear in a consistent location across screens -> yes
   d) No more than twelve to twenty icon types -> yes
   e) Heavy use of all uppercase letters on a screen been avoided -> yes
   f) Consistent icon design scheme -> yes

g) Menu titles either centered or left-justified -> yes

h) Input filed labels consistent -> yes

i) Input field distinguished typographically -> yes

j) The structure of a data entry value consistent from screen to screen -> yes

k) System objects named consistently across all prompts -> yes

l) Menu choice name consistent -> yes

m) Structure of the menu choice names match with their corresponding menu titles -> yes

n) Menu structure match the task structure -> yes

o) Words in the message consistent with that action -> yes

p) Content and service delivered match these goals -> yes

q) The look & feel correspond with goals, characteristics, contents and services of the website -> yes

5. Error prevention

a) Menu choices logical, distinctive and mutually exclusive -> yes

6. Recognition rather than recall

a) High levels of concentration ae not necessary and remembering information is not required -> yes

b) Data display start in the upper-left corner of the screen -> yes

c) Prompts been formatted using white space, justification and visual cues for easy scanning -> yes

d) Breathing space -> yes

e) White areas between informational objects for visual relaxation -> yes

f) System provide visibility; that is, by looking, can the user tell the state of the system and the alternatives for action -> yes

g) Size, boldface, underlining, color, shading or typography used to show relative quantity or importance of different screen item -> yes

h) good color and brightness contrast between image and background color -> yes

i) visual page space well used. -> yes

j) on data entry screen and dialog boxes, are dependent fields displayed only when necessary

k) field labels close to fields, but separated by at least on space -> yes

l) the first word of each menu choice the most important -> yes

m) inactive menu item grayed out -> yes

n) menu selection defaults -> yes

o) obvious visual distinction made between “choose one” menu and “choose many” menus -> yes

7. flexibility and efficiency of use

a) searching box easily accessible -> yes

b) searching box easily recognizable -> yes

c) advanced search option

d) box width appropriated -> yes

8. aesthetic and minimalist design

a) Fitt’s Law -> yes

b) Field labels brief, familiar and descriptive -> yes

c) Prompts expressed in the affirmative and do they use the active voice

d) Layout clearly designed avoiding visual noise -> yes

e) The use of image and multimedia content add value

f) Excessive detail in icon design been avoided -> yes

g) Each individual icon a harmonious member of a family of icons -> yes

h) Each icon stands out from its background -> yes

i) All icons an a set visually and conceptually distinct -> yes

j) Each lower-level menu choice associated with only one higher level menu -> yes

k) Menu titles brief, yet long enough to communicate -> yes

9. N/A
10. Help and documentation
    a) If a FAQ section exists, are the selection and redaction of questions and redaction of questions and answers correct
11. Skills
    a) 145 -> yes
    b) 146 -> N/A
    c) 147 -> yes
    d) 148 -> yes
    e) 149 -> N/A
    f) 150 -> yes
    g) 151 -> yes
12. Pleasurable and respectful interaction
    a) 152 -> yes
    b) 153 -> yes
    c) 154 -> N/A
    d) 155 -> N/A
13. Privacy
    a) Protected areas completely inaccessible -> N/A
    b) Can protected or confidential areas be accessed with certain passwords -> yes
    c) Is there information about how personal data is protected and about contents copyright -> yes

Yingyu Yang

1. Visibility of system status
    a. System status feedback
        i. Is there some form of system feedback for every operator action?

1. Yes

ii. In multipage data entry screens, is each page labeled to show its relation to others?
    1. N/A

iii. Are high informative contents placed in high hierarchy areas?
    1. Yes

b. Location information
    i. Is the logo meaningful, identifiable, and sufficiently visible?
        1. Yes, except for the outage center's logo. The outage center's logo looks like a location logo, so it's not so meaningful.
    ii. Is there any link to detailed information about the enterprise, website, webmaster … ?
        1. No.
    iii. Are there ways of contacting with the enterprise?
        1. Yes. Under discovery -> need help?
    iv. In articles, news, reports … are the author, sources, dates, and review information shown clearly?
        1. N/A

c. Response times
    i. N/A

d. Selection/input of data:
    i. Is there visual feedback in menus or dialog boxes about which choices are selectable? We will merge this statement with the following: "Do GUI menus make obvious which item has been selected?", "Do GUI menus make obvious whether deselection is possible?", "Is there visual feedback in menus or dialog boxes about which choice the cursor is on now?", and "If multiple

options can be selected in a menu or dialog box, is there visual feedback about which options are already selected?"

1. Yes.

ii. Is the current status of an icon clearly indicated?

1. Yes.

iii. Is there visual feedback when objects are selected or moved?

1. Yes.

iv. Are links recognizable? Is there any characterization according to the state (visited, active)?

1. N/A

2. Match between system and the real world (Mental model accuracy):
    a. Metaphors/mental models:
        i. Use of metaphors
            1. Yes. Logos in the menu.
        ii. Are icons concrete and familiar?
            1. Yes, except for the icon for usage. It's not so familiar.
        iii. If shape is used as a visual cue, does it match cultural conventions?
            1. Yes.
        iv. Do the selected colours correspond to common expectations about color codes?
            1. Yes. But for buttons, yellow color might represent alert.
    b. Navigational structure
        i. If the site uses hierarchical structure, are depth and height balanced?
            1. Yes.
        ii. Navigation map, also known as site map or table of contents
            1. No.
    c. Menus

i. Are menu choices ordered in the most logical way, given the user, the item names, and the task variables?
    1. Maybe not. It'd be more reasonable to move Discovery to the left of Profile.
ii. Do menu choices fit logically into categories that have readily understood meanings?
    1. Yes.
iii. Are menu titles parallel grammatically?
    1. Yes.
iv. In navigation menus, are the number of items and terms by item controlled to avoid memory overload?
    1. Yes.

d. Simplicity
    i. Do related and interdependent fields appear on the same screen?
        1. Yes.
    ii. For question and answer interfaces, are questions stated in clear, simple language?
        1. N/A
    iii. Is the language used the same target users speak? We will merge this statement with the following: "Is the menu-naming terminology consistent with the user's task domain?"
        1. Yes.
    iv. Is the language clear and concise? We will merge this statement with the following: "Does the command language employ user jargon and avoid computer jargon?"
        1. Yes.
    v. Does the site follow the rule "1 paragraph = 1 idea"?
        1. Yes.

e. Output of numeric information:
    i. N/A

3. User control
    a. Explorable interfaces
        i. Can users move forward and backward between fields or dialog box options?
            1. N/A
        ii. If the system has multi-page data entry screens, can users move backward and forward among all the pages in the set?
            1. N/A
        iii. If the system uses a question and answer interface, can users go back to previous questions or skip forward to later questions?
            1. N/A
        iv. Clearly marked exits
            1. Yes. i.e. logout
        v. Is the general website structure user-oriented?
            1. Yes.
        vi. Is there any way to inform user about where they are and how to undo their navigation?
            1. Yes. Menu, back button, ...
    b. Some level of personalization
        i. Can users set their own system, session, file, and screen defaults?
            1. No.
    c. Process confirmation
        i. When a user's task is complete, does the system wait for a signal from the user before processing?
            1. N/A

ii. Are users prompted to confirm commands that have drastic, destructive consequences?
    1. N/A

d. Undo/cancelation:
    i. Can users easily reverse their actions? Also found as “Do function keys that can cause serious consequences have an undo feature?” and “Is there an “undo” function at the level of a single action, a data entry, and a complete group of actions?”
    ii. Can users cancel out of operations in progress?
        1. Yes.

e. Menus control
    i. If the system has multiple menu levels, is there a mechanism that allows users to go back to previous menus?
        1. Yes.
    ii. Are menus broad (many items on a menu) rather than deep (many menu levels)?
        1. Yes.
    iii. If users can go back to a previous menu, can they change their earlier menu choice?
        1. Yes.

4. Consistency
    a. Designing consistency
        i. Are attention-getting techniques used with care?
            1. N/A
        ii. Intensity: two levels only
            1. Yes.
        iii. Color: up to four (additional colors for occasional use only)
            1. Yes.

iv. Are there no more than four to seven colors, and are they far apart along the visible spectrum?
    1. Yes.
v. sound: soft tones for regular positive feedback, harsh for rare critical conditions
    1. N/A
vi. If the system has multi-page data entry screens, do all pages have the same title?
    1. N/A
vii. Do online instructions appear in a consistent location across screens?
    1. N/A
viii. Have industry or company standards been established for menu design, and are they applied consistently on all menu screens in the system?
    1. Yes.
ix. Are there no more than twelve to twenty icon types?
    1. Yes.
x. Has a heavy use of all uppercase letters on a screen been avoided?
    1. Yes.
xi. Is there a consistent icon design scheme and stylistic treatment across the system?
    1. Yes.

b. Menus:
    i. Are menu choice lists presented vertically?
        1. No.
    ii. If “exit” is a menu choice, does it always appear at the bottom of the list?

1. N/A

iii. Are menu titles either centered or left-justified?

1. Yes.

c. Input fields:

i. Are field labels consistent from one data entry screen to another?

1. Yes.

ii. Do field labels appear to the left of single fields and above list fields?

1. Yes.

iii. Are field labels and fields distinguished typographically?

1. Yes.

d. Naming convention consistency

i. Is the structure of a data entry value consistent from screen to screen?

1. N/A

ii. Are system objects named consistently across all prompts in the system?

1. Yes.

iii. Are user actions named consistently across all prompts in the system?

1. Yes.

e. Menu/task consistency

i. Are menu choice names consistent, both within each menu and across the system, in grammatical style and terminology?

1. Yes.

ii. Does the structure of menu choice names match their corresponding menu titles?

1. Yes.

iii. Does the menu structure match the task structure?
    1. Yes.
iv. When prompts imply a necessary action, are the words in the message consistent with that action?
    1. N/A

f. Functional goals consistency
    i. Where are the website goals? Are they well defined? Do content and services delivered match these goals?
        1. Goals are listed in the menu. They're well defined. Content and services delivered match these goals.
    ii. Does the look & feel correspond with goals, characteristics, contents and services of the website?
        1. Yes.
    iii. Is the website being updated frequently?
        1. N/A
g. System response consistency
    i. Is system response after clicking links predictable?
        1. Yes.
    ii. Are nowhere links avoided?
        1. Yes.
    iii. Are orphan pages avoided?
        1. Yes.

5. Error prevention
    a. Are menu choices logical, distinctive, and mutually exclusive?
        i. Yes.
    b. Are data inputs case-blind whenever possible?
        i. N/A
    c. Does the system warn users if they are about to make a potentially serious error?

i. N/A

d. Do data entry screens and dialog boxes indicate the number of character spaces available in a field?
    i. N/A
e. Do fields in data entry screens and dialog boxes contain default values when appropriate?
    i. N/A

6. Recognition rather than recall
    a. Memory load reduction
        i. High levels of concentration are not necessary and remembering information is not required: two to fifteen seconds
            1. Yes.
        ii. Are all data a user needs on display at each step in a transaction sequence?
            1. Yes.
        iii. If users have to navigate between multiple screens, does the system use context labels, menu maps, and place markers as navigational aids?
            1. No.
        iv. After the user completes an action (or group of actions), does the feedback indicate that the next group of actions can be started?
            1. N/A
        v. Are optional data entry fields clearly marked?
            1. N/A
        vi. Do data entry screens and dialog boxes indicate when fields are optional?
            1. N/A

vii. Is page length controlled?
    1. Yes.

b. General visual cues
    i. For question and answer interfaces, are visual cues and white space used to distinguish questions, prompts, instructions, and user input?
        1. N/A
    ii. Does the data display start in the upper-left corner of the screen?
        1. Yes.
    iii. Have prompts been formatted using white space, justification, and visual cues for easy scanning?
        1. N/A
    iv. Do text areas have “breathing space” around them?
        1. Yes.
    v. Are there “white” areas between informational objects for visual relaxation?
        1. Yes.
    vi. Does the system provide visibility; that is, by looking, can the user tell the state of the system and the alternatives for action?
        1. Yes.
    vii. Is size, boldface, underlining, colour, shading, or typography used to show relative quantity or importance of different screen items?
        1. Yes.
    viii. Is colour used in conjunction with some other redundant cue?
        1. No.
    ix. Is there good colour and brightness contrast between image and background colours?

1. Yes.

x. Have light, bright, saturated colours been used to emphasize data and have darker, duller, and desaturated colours been used to deemphasize data?
    1. No.

xi. Is the visual page space well used?
    1. Yes.

c. Input/output data:
    i. On data entry screens and dialog boxes, are dependent fields displayed only when necessary?
        1. N/A
    ii. Are field labels close to fields, but separated by at least one space?
        1. Yes.

d. Menus
    i. Is the first word of each menu choice the most important?
        1. Yes.
    ii. Are inactive menu items grayed out or omitted?
        1. N/A
    iii. Are there menu selection defaults?
        1. Yes.
    iv. Is there an obvious visual distinction made between “choose one” menu and “choose many” menus?
        1. N/A

7. Flexibility and efficiency of use
    a. Search
        i. Is the searching box easily accessible?
            1. No. Have to go to discovery.
        ii. Is the searching box easily recognizable?

1. Yes.

iii. Is there any advanced search option?

1. No.

iv. Are search results shown in a comprehensive manner to the user?

1. Yes.

v. Is the box width appropriated?

1. Yes.

vi. Is the user assisted if the search results are impossible to calculate?

1. N/A

8. Aesthetic and minimalist design

i. Fitt's Law; the time to acquire a target is a function of the distance to and size of the target;

1. Yes.

ii. Is only (and all) information essential to decision making displayed on the screen?

1. Yes.

iii. Are field labels brief, familiar, and descriptive?

1. Yes.

iv. Are prompts expressed in the affirmative, and do they use the active voice?

1. Yes.

v. Is layout clearly designed avoiding visual noise?

1. Yes.

b. Multimedia content

i. Does the use of images and multimedia content add value?

1. Yes.

ii. Are images well sized? Are they understandable? Is the resolution appropriate?
    1. Yes.
iii. Are cyclical animations avoided?
    1. N/A

c. Icons
    i. Has excessive detail in icon design been avoided?
        1. Yes.
    ii. Is each individual icon a harmonious member of a family of icons?
        1. Yes.
    iii. Does each icon stand out from its background?
        1. Yes.
    iv. Are all icons in a set visually and conceptually distinct?
        1. Yes.

d. Menus:
    i. Is each lower-level menu choice associated with only one higher level menu?
        1. Yes.
    ii. Are menu titles brief, yet long enough to communicate?
        1. Yes.

9. Help users recognize, diagnose and recover from errors
    a. No.
10. Help and documentation
    i. Are online instructions visually distinct?
        1. N/A
    ii. Do the instructions follow the sequence of user actions?
        1. N/A

iii. If menu choices are ambiguous, does the system provide additional explanatory information when an item is selected?
    1. No.
iv. Is the help function visible, for example, a key labeled HELP or a special menu?
    1. N/A
v. Is the help system interface (navigation, presentation, and conversation) consistent with the navigation, presentation, and conversation interfaces of the application it supports?
    1. N/A
vi. Navigation: is information easy to find?
    1. Yes.
vii. Presentation: is the visual layout well designed?
    1. Yes.
viii. Conversation: is the information accurate, complete, and understandable?
    1. Yes.
ix. Is the information relevant? (Help and documentation) It should be relevant in the following aspects: goal-oriented (what can I do with this program?), descriptive (what is this thing for?), procedural (how do I do this task?), interpretive (why did that happen?), and navigational (where am I?);(139)is there context-sensitive help?
    1. Yes. But no context-sensitive help.
x. Can the user change the level of detail available?
    1. No.
xi. Can users easily switch between help and their work?
    1. N/A
xii. Is it easy to access and return from the help system?

1. N/A

xiii. Can users resume work where they left off after accessing help?

1. N/A

xiv. If a FAQs section exists, are the selection and redaction of questions and answers correct?

1. N/A

11. Skills

i. Do not use the word “default” in an application or service; replace it with “Standard,” “Use Customary Settings,” “Restore Initial Settings,” or some other more specific terms describing what will actually happen

1. Yes.

ii. If the system supports both novice and expert users, are multiple levels of error message detail available?

1. No.

iii. If the system supports both novice and expert users, are multiple levels of detail available?

1. No.

iv. Are users the initiators of actions rather than the responders?

1. Yes.

v. Do the selected input device(s) match user capabilities?

1. Yes.

vi. Are important keys (e.g., ENTER, TAB) larger than other keys?

1. N/A

vii. Does the system correctly anticipate and prompt for the user’s probable next activity?

1. Yes.

12. Pleasurable and respectful interaction

a. Protect users' work, also as "For data entry screens with many fields or in which source documents may be incomplete, can users save a partially filled screen?"
    i. N/A
b. Do the selected input device(s) match environmental constraints?
    i. Yes.
c. Are typing requirements minimal for question and answer interfaces?
    i. N/A
d. Does the system complete unambiguous partial input on a data entry field?
    i. No.

13. Privacy
    a. Are protected areas completely inaccessible?
        i. Yes.
    b. Can protected or confidential areas be accessed with certain passwords.
        i. Yes.
    c. Is there information about how personal data is protected and about contents copyright?
        i. No.

Lucy Cao

1. Visibility of system status:

system status feedback:

(1) is there some form of system feedback for every operator action?

Yes.

- ❏ Pressing search bar will bring up keyboard
- ❏ Swiping right will reverse

(2) if pop-up windows are used to display error messages, do they allow the user to see the field in error?

N/A (not currently implemented)

(3) in multipage data entry screens, is each page labeled to show its relation to others?

Yes.

(4) are high informative contents placed in high hierarchy areas?

Yes.

(5) is the logo meaningful, identifiable, and sufficiently visible?

Yes, always on the UI.

(6) is there any link to detailed information about the enterprise, website, webmaster ... ?

Yes

(7) are there ways of contacting with the enterprise?

Yes.

(8) in articles, news, reports ... are the author, sources, dates, and review information shown clearly?

N/A

response times:

(9) are response times appropriate for the users cognitive processing?

N/A

(10) are response times appropriate for the task?

Yes.

(11) if there are observable delays (greater than fifteen seconds) in the system's response time, is the user kept informed of the system progress?

N/A

(12) latency reduction

N/A

Selection/input of data:

(13) is there visual feedback in menus or dialog boxes about which choices are selectable? We will merge this statement with the following: “Do GUI menus make obvious which item has been selected?”, “Do GUI menus make obvious whether deselection is possible?”, “Is there visual feedback in menus or dialog boxes about which choice the cursor is on now?” , and “If multiple options can be selected in a menu or dialog box, is there visual feedback about which options are already selected?”

All components with inside boxes, or with underlines indicate that they are selectable.

(14) is the current status of an icon clearly indicated?

Yes

(15) is there visual feedback when objects are selected or moved?

Yes.

(16) are links recognizable? Is there any characterization according to the state (visited, active,)?

N/A

2. Match between system and the real world (Mental model accuracy):

metaphors/mental models:

(17) use of metaphors

Yes, the bottom menu bar.

(18) are icons concrete and familiar?

Yes, they adhere to the social norm.

(19) if shape is used as a visual cue, does it match cultural conventions?

Yes

(20) do the selected colours correspond to common expectations about color codes?

Yes.

navigational structure:

(21) if the site uses hierarchical structure, are depth and height balanced?

Yes.

(22) navigation map, also known as site map or table of contents;

N/A

menus:

(23) are menu choices ordered in the most logical way, given the user, the item names, and the task variables?

Yes. Very intuitive.

(24) do menu choices fit logically into categories that have readily understood meanings?

Yes.

(25) are menu titles parallel grammatically?

Yes.

(26) in navigation menus, are the number of items and terms by item controlled to avoid memory overload?

Yes

simplicity:

(27) do related and interdependent fields appear on the same screen?

Yes.

(28) for question and answer interfaces, are questions stated in clear, simple language?

N/A

(29) is the language used the same target users speak? . We will merge this statement with the following: “Is the menu-naming terminology consistent with the user’s task domain?”

Yes.

(30) Does the command language employ user jargon and avoid computer jargon?

N/A

(31) does the site follow the rule “1 paragraph = 1 idea”?

I think so.

output of numeric information:

N/A

(32) does the system automatically enter leading or trailing spaces to align decimal points?

N/A

(33) does the system automatically enter a dollar sign and decimal for monetary entries?

N/A

(34) does the system automatically enter commas in numeric values greater than 9999?

N/A

(35) are integers right-justified and real numbers decimal-aligned?

N/A

3. User control:

explorable interfaces:

(36) can users move forward and backward between fields or dialog box options?

Yes, with ease.

(37) if the system has multipage data entry screens, can users move backward and forward among all the pages in the set?

N/A

(38) if the system uses a question and answer interface, can users go back to previous questions or skip forward to later questions?

N/A

(39) clearly marked exits

No. IOS gesture supported however.

(40) is the general website structure user-oriented?

Yes.

(41) is there any way to inform user about where they are and how to undo their navigation?

No, but intuitive.

some level of personalization:

(42) can users set their own system, session, file, and screen defaults?

No.

process confirmation:

(43) when a user's task is complete, does the system wait for a signal from the user before processing?

No.

(44) are users prompted to confirm commands that have drastic, destructive consequences?

No.

undo/cancelation:

(45) can users easily reverse their actions? Also found as "Do function keys that can cause serious consequences have an undo feature?" [38] and "Is there an "undo" function at the level of a single action, a data entry, and a complete group of actions?"

Yes. IOS gesture.

(46) can users cancel out of operations in progress?

Yes.

menus control:

(47) if the system has multiple menu levels, is there a mechanism that allows users to go back to previous menus?

Yes.

(48) are menus broad (many items on a menu) rather than deep (many menu levels)?

Yes.

(49) if users can go back to a previous menu, can they change their earlier menu choice?

Yes.

4. Consistency:

designing consistency:

(50) are attention-getting techniques used with care?

N/A

(51) intensity: two levels only

N/A

(52) color: up to four (additional colors for occasional use only)

Yes.

(53) are there no more than four to seven colors, and are they far apart along the visible spectrum?

Yes.

(54) sound: soft tones for regular positive feedback, harsh for rare critical conditions

N/A

(55) if the system has multipage data entry screens, do all pages have the same title?

N/A

(56) do online instructions appear in a consistent location across screens?

N/A

(57) have industry or company standards been established for menu design, and are they applied consistently on all menu screens in the system?

N/A

(58) are there no more than twelve to twenty icon types?

No more than twelve to twenty.

(59) has a heavy use of all uppercase letters on a screen been avoided?

Yes.

(60) is there a consistent icon design scheme and stylistic treatment across the system?

Yes

menus:

(61) are menu choice lists presented vertically?

No.

(62) if “exit” is a menu choice, does it always appear at the bottom of the list?

N/A.

(63) are menu titles either centered or left-justified?

Yes

input fields:

(64) are field labels consistent from one data entry screen to another?

Yes.

(65) do field labels appear to the left of single fields and above list fields?

Yes.

(66) are field labels and fields distinguished typographically?

Yes.

naming convention consistency:

(67) is the structure of a data entry value consistent from screen to screen?

N/A.

(68) are system objects named consistently across all prompts in the system?

Yes

(69) are user actions named consistently across all prompts in the system?

Yes.

menu/task consistency:

(70) are menu choice names consistent, both within each menu and across the system, in grammatical style and terminology?

Yes.

(71) does the structure of menu choice names match their corresponding menu titles?

Yes.

(72) does the menu structure match the task structure?

Yes.

(73) when prompts imply a necessary action, are the words in the message consistent with that action?

Yes.

functional goals consistency:

(74) where are the website goals? Are they well defined? Do content and services delivered match these goals?

Yes. Goals are our bottom menu tab.

Content and services delivered match.

(75) does the look & feel correspond with goals, characteristics, contents and services of the website?

Yes.

(76) is the website being updated frequently?

N/A

system response consistency:

(77) is system response after clicking links predictable?

Yes.

(78) are nowhere links avoided?

Yes.

(79) are orphan pages avoided?

Yes.

4. Error prevention:

(80) are menu choices logical, distinctive, and mutually exclusive?

Yes

(81) are data inputs case-blind whenever possible?

N/A

(82) does the system warn users if they are about to make a potentially serious error?

N/A

(83) do data entry screens and dialog boxes indicate the number of character spaces available in a field?

N/A

(84) do fields in data entry screens and dialog boxes contain default values when appropriate?

N/A

6. Recognition rather than recall:

memory load reduction:

(85) high levels of concentration are not necessary and remembering information is not required: two to fifteen seconds

Yes.

(86) are all data a user needs on display at each step in a transaction sequence?

Yes.

(87) if users have to navigate between multiple screens, does the system use context labels, menu maps, and place markers as navigational aids?

N/A.

(88) after the user completes an action (or group of actions), does the feedback indicate that the next group of actions can be started?

N/A

(89) are optional data entry fields clearly marked?

N/A

(90) do data entry screens and dialog boxes indicate when fields are optional?

N/A

(91) is page length controlled?

No.

general visual cues:

(92) for question and answer interfaces, are visual cues and white space used to distinguish questions, prompts, instructions, and user input?

Yes.

(93) does the data display start in the upper-left corner of the screen?

Yes.

(94) have prompts been formatted using white space, justification, and visual cues for easy scanning?

N/A

(95) do text areas have “breathing space” around them?

Yes

(96) are there “white” areas between informational objects for visual relaxation?

Yes.

(97) does the system provide visibility; that is, by looking, can the user tell the state of the system and the alternatives for action?

Yes.

(98) is size, boldface, underlining, colour, shading, or typography used to show relative quantity or importance of different screen items?

Yes.

(99) is colour used in conjunction with some other redundant cue?

N/A

(100) is there good colour and brightness contrast between image and background colours?

Yes.

(101) have light, bright, saturated colours been used to emphasize data and have darker, duller, and desaturated colours been used to deemphasize data?

N/A

(102) is the visual page space well used?

Yes

input/output data:

(103) on data entry screens and dialog boxes, are dependent fields displayed only when necessary?

N/A

(104) are field labels close to fields, but separated by at least one space?

Yes.

Menus

(105) is the first word of each menu choice the most important?

Yes.

(106) are inactive menu items grayed out or omitted?

N/A

(107) are there menu selection defaults?

Yes.

(108) is there an obvious visual distinction made between “choose one” menu and “choose many” menus?

N/A

7. Flexibility and efficiency of use:

search:

(109) is the searching box easily accessible?

Yes, easily found within discovery.

(110) is the searching box easily recognizable?

Yes

(111) is there any advanced search option?

No.

(112) are search results shown in a comprehensive manner to the user?

Yes

(113) is the box width appropriated?

Yes.

(114) is the user assisted if the search results are impossible to calculate?

N/A

8. Aesthetic and minimalist design:

(115) Fitt's Law: the time to acquire a target is a function of the distance to and size of the target;

Yes, we had it in mind when designing.

(116) is only (and all) information essential to decision making displayed on the screen?

Yes.

(117) are field labels brief, familiar, and descriptive?

Yes.

(118) are prompts expressed in the affirmative, and do they use the active voice?

Yes

(119) is layout clearly designed avoiding visual noise?

Yes

multimedia content:

(120) does the use of images and multimedia content add value?

Yes.

(121) are images well sized? Are they understandable? Is the resolution appropriate?

Yes.

(122) are cyclical animations avoided?

N/A

Icons:

(123) has excessive detail in icon design been avoided?

Yes.

(124) is each individual icon a harmonious member of a family of icons?

Yes.

(125) does each icon stand out from its background?

Yes.

(126) are all icons in a set visually and conceptually distinct?

Yes.

menus:

(127) is each lower-level menu choice associated with only one higher level menu?

Yes.

(128) are menu titles brief, yet long enough to communicate?

Yes.

(9) help users recognize, diagnose and recover from errors;

N/A.

(10) help and documentation:

(129) are online instructions visually distinct?

N/A

(130) do the instructions follow the sequence of user actions?

N/A

(131) if menu choices are ambiguous, does the system provide additional explanatory information when an item is selected?

N/A

(132) if menu items are ambiguous, does the system provide additional explanatory information when an item is selected?

No.

(133) is the help function visible, for example, a key labeled HELP or a special menu?

No.

(134) is the help system interface (navigation, presentation, and conversation) consistent with the navigation, presentation, and conversation interfaces of the application it supports?

No

(135) navigation: is information easy to find?

Yes.

(136) presentation: is the visual layout well designed?

Yes

(137) conversation: is the information accurate, complete, and understandable?

Yes

(138) is the information relevant? (Help and documentation) It should be relevant in the following aspects: goal-oriented (what can I do with this program?), descriptive (what is this thing for?), procedural (how do I do this task?), interpretive (why did that happen?), and navigational (where am I?);

Yes.

(139) is there context-sensitive help?

N/A

(140) can the user change the level of detail available?

No.

(141) can users easily switch between help and their work?

N/A.

(142) is it easy to access and return from the help system?

Yes.

(143) can users resume work where they left off after accessing help?

N/A

(144) if a FAQs section exists, are the selection and redaction of questions and answers correct?

N/A

11. Skills:

(145) do not use the word “default” in an application or service; replace it with “Standard,” “Use Customary Settings,” “Restore Initial Settings,” or some other more specific terms describing what will actually happen

N/A.

(146) if the system supports both novice and expert users, are multiple levels of error message detail available?

No.

(147) if the system supports both novice and expert users, are multiple levels of detail available?

No.

(148) are users the initiators of actions rather than the responders?

No.

(149) do the selected input device(s) match user capabilities?

Yes.

(150) are important keys (e.g., ENTER, TAB) larger than other keys?

Yes

(151) does the system correctly anticipate and prompt for the user's probable next activity?

Yes.

12. Pleasurable and respectful interaction:

(152) protect users' work, also as "For data entry screens with many fields or in which source documents may be incomplete, can users save a partially filled screen?"

Yes.

(153) do the selected input device(s) match environmental constraints?

Yes.

(154) are typing requirements minimal for question and answer interfaces?

N/A

(155) does the system complete unambiguous partial input on a data entry field?

No.

13. Privacy:

(156) are protected areas completely inaccessible?

Yes.

(157) can protected or confidential areas be accessed with certain passwords

Yes.

(158) is there information about how personal data is protected and about contents copyright?

Yes

Daniel Nakasone

(1) visibility of system status:

system status feedback:

(1) is there some form of system feedback for every operator action?

- Clicking textboxes will bring up the keyboard
- Clicking checkbox will mark/unmark
- Clicking yellow buttons, underlined links or links with arrow icon at will change the display to a new page
- Clicking “show” in login page will replace placeholder string of asterisks with the actual password
- Swiping (or clicking on a tab bar option) will replace current page with new page

(2) if pop-up windows are used to display error messages, do they allow the user to see the field in error?

N/A

(3) in multipage data entry screens, is each page labeled to show its relation to others?

N/A

(4) are high informative contents placed in high hierarchy areas?

Yes

location information

(5) is the logo meaningful, identifiable, and sufficiently visible?

Yes in home screen

(6) is there any link to detailed information about the enterprise, website, webmaster … ?

Yes, in profile page

(7) are there ways of contacting with the enterprise?

Yes, feedback can be given in profile page. To find contact info, found in discover page

(8) in articles, news, reports … are the author, sources, dates, and review information shown clearly?

N/A

response times: N/A for everything

(9) are response times appropriate for the users cognitive processing?

N/A

(10) are response times appropriate for the task?

N/A

(11) if there are observable delays (greater than fifteen seconds) in the system's response time, is the user kept informed of the system progress?

N/A

(12) latency reduction

N/A

Selection/input of data:

(13) is there visual feedback in menus or dialog boxes about which choices are selectable? We will merge this statement with the following: "Do GUI menus make obvious which item has been

selected?", "Do GUI menus make obvious whether deselection is possible?", "Is there visual feedback in menus or dialog boxes about which choice the cursor is on now?" , and "If multiple options can be selected in a menu or dialog box, is there visual feedback about which options are already selected?"

All touchable elements has something to indicate that it is interactable (underline, checkbox, color box, etc). Profile page is an exception. Options in profile menu are clickable, but there is nothing to indicate that they're interactable.

(14) is the current status of an icon clearly indicated?

N/A

(15) is there visual feedback when objects are selected or moved?

For the tab bar, the label is highlighted for the page the user is currently in.

(16) are links recognizable? Is there any characterization according to the state (visited, active,)?

Links are either underlined text. In the discover page, article links are presented in a card with an arrow icon

(2) match between system and the real world (Mental model accuracy):

metaphors/mental models:

(17) use of metaphors

N/A

(18) are icons concrete and familiar?

Yes, icons conform with standard functions (bell - notifications, house - home page, circle with person - profile page, compass - discover page). Functions with no common icon (usage, outage) has icons (scrollable text, location tag) that hints to what they're used for

(19) if shape is used as a visual cue, does it match cultural conventions?

N/A

(20) do the selected colours correspond to common expectations about color codes?

Yellow might be an inappropriate color for buttons, since yellow can indicate warning or caution and we want to invite users to enter app

navigational structure:

(21) if the site uses hierarchical structure, are depth and height balanced?

Yes, not too many categories represented in tab bar. Each category can go 2-3 pages deep (i.e. Home > My Bill > Pay Now)

(22) navigation map, also known as site map or table of contents;

N/A

menus:

(23) are menu choices ordered in the most logical way, given the user, the item names, and the task variables?

Yes. within each profile page category, menu choices are ordered based on importance. Tab bar menu is also ordered based on what features would be most used

(24) do menu choices fit logically into categories that have readily understood meanings?

Yes, profile page groups menu options based on relevance to each other

(25) are menu titles parallel grammatically?

No

(26) in navigation menus, are the number of items and terms by item controlled to avoid memory overload?

No, tab bar menu has a small set of choices

simplicity:

(27) do related and interdependent fields appear on the same screen?

Yes

(28) for question and answer interfaces, are questions stated in clear, simple language?

N/A

(29) is the language used the same target users speak? . We will merge this statement with the following: “Is the menu-naming terminology consistent with the user’s task domain?” Yes

(30) is the language clear and concise? We will merge this statement with the following: “Does the command language employ user jargon and avoid computer jargon?” Yes

(31) does the site follow the rule “1 paragraph = 1 idea”?

Yes

output of numeric information:

(32) does the system automatically enter leading or trailing spaces to align decimal points?

N/A

(33) does the system automatically enter a dollar sign and decimal for monetary entries?

N/A

(34) does the system automatically enter commas in numeric values greater than 9999?

N/A

(35) are integers right-justified and real numbers decimal-aligned?

N/A

(3) user control:

explorable interfaces:

(36) can users move forward and backward between fields or dialog box options?

Users can move between different fields

(37) if the system has multipage data entry screens, can users move backward and forward among all the pages in the set?

N/A

(38) if the system uses a question and answer interface, can users go back to previous questions or skip forward to later questions?

N/A

(39) clearly marked exits.

N/A

(40) is the general website structure user-oriented?

N/A

(41) is there any way to inform user about where they are and how to undo their navigation?

N/A

some level of personalization:

(42) can users set their own system, session, file, and screen defaults?

Certain things like language and notification preferences are customizable by the user

process confirmation:

(43) when a user's task is complete, does the system wait for a signal from the user before processing?

N/A

(44) are users prompted to confirm commands that have drastic, destructive consequences?

N/A

undo/cancelation:

(45) can users easily reverse their actions? Also found as "Do function keys that can cause serious consequences have an undo feature?" and "Is there an "undo" function at the level of a single action, a data entry, and a complete group of actions?"

To undo text entered into fields, can simply change text entered in keyboard view

(46) can users cancel out of operations in progress?

For entering text, yes by exiting keyboard interface

Other operations can be exited via navigating to another page or hitting back button for some pages.

menus control:

(47) if the system has multiple menu levels, is there a mechanism that allows users to go back to previous menus?

Yes

(48) are menus broad (many items on a menu) rather than deep (many menu levels)?

No, menu options are kept at a small amount

(49) if users can go back to a previous menu, can they change their earlier menu choice?

Yes

(4) consistency:

designing consistency:

(50) are attention-getting techniques used with care?

Limited in use (underline, color to highlight box)

(51) intensity: two levels only

Yes

(52) color: up to four (additional colors for occasional use only)

5 colors used (4 main colors - white, green, yellow, black. Used occasionally - blue)

(53) are there no more than four to seven colors, and are they far apart along the visible spectrum?

Yes

(54) sound: soft tones for regular positive feedback, harsh for rare critical conditions

N/A

(55) if the system has multipage data entry screens, do all pages have the same title?

N/A

(56) do online instructions appear in a consistent location across screens?

N/A

(57) have industry or company standards been established for menu design, and are they applied consistently on all menu screens in the system?

Login page conforms with how most interfaces implement them

- Fields for username and password
- Includes links to register account or retrieve forgotten password

Tab Bar is commonly used by ios apps to control navigation throughout the app

(58) are there no more than twelve to twenty icon types?

Yes

(59) has a heavy use of all uppercase letters on a screen been avoided?

Uppercase letters for entire words only reserved for USERNAME and PASSWORD

(60) is there a consistent icon design scheme and stylistic treatment across the system?

Yes

menus:

(61) are menu choice lists presented vertically?

In profile page, yes

(62) if “exit” is a menu choice, does it always appear at the bottom of the list?

Log out is presented as an option at the bottom of profile page

(63) are menu titles either centered or left-justified?

yes

input fields:

(64) are field labels consistent from one data entry screen to another?

N/A

(65) do field labels appear to the left of single fields and above list fields?

Yes

(66) are field labels and fields distinguished typographically?

Yes

naming convention consistency:

(67) is the structure of a data entry value consistent from screen to screen?

For entering text, yes

(68) are system objects named consistently across all prompts in the system?

Yes

(69) are user actions named consistently across all prompts in the system?

Yes

menu/task consistency: \

(70) are menu choice names consistent, both within each menu and across the system, in grammatical style and terminology?

Yes

(71) does the structure of menu choice names match their corresponding menu titles?

Yes

(72) does the menu structure match the task structure?

Yes

(73) when prompts imply a necessary action, are the words in the message consistent with that action?

N/A

functional goals consistency:

(74) where are the website goals? Are they well defined? Do content and services delivered match these goals?

Goal is clearly presented based on what is displayed, interface wants user to login at start. All other features provided by app are displayed prominently on each tab

(75) does the look & feel correspond with goals, characteristics, contents and services of the website?

Yes

(76) is the website being updated frequently?

No

system response consistency:

(77) is system response after clicking links predictable?

Yes

(78) are nowhere links avoided?

Yes

(79) are orphan pages avoided?

Yes

(5) error prevention:

(80) are menu choices logical, distinctive, and mutually exclusive?

Yes

(81) are data inputs case-blind whenever possible?

Yes (when searching location of outage)

(82) does the system warn users if they are about to make a potentially serious error?

N/A

(83) do data entry screens and dialog boxes indicate the number of character spaces available in a field?

No

(84) do fields in data entry screens and dialog boxes contain default values when appropriate?

Not necessary

(6) recognition rather than recall:

memory load reduction:

(85) high levels of concentration are not necessary and remembering information is not required: two to fifteen seconds

No, username and password needs to be recalled

(86) are all data a user needs on display at each step in a transaction sequence?

No, personal login information not displayed

(87) if users have to navigate between multiple screens, does the system use context labels, menu maps, and place markers as navigational aids?

Yes, user can check the highlighted tab on the tab bar or the title of the current page to understand where they currently are

(88) after the user completes an action (or group of actions), does the feedback indicate that the next group of actions can be started?

Yes, once logged in user will be redirected to home page

(89) are optional data entry fields clearly marked?

N/A

(90) do data entry screens and dialog boxes indicate when fields are optional?

N/A

(91) is page length controlled?

Yes

general visual cues:

(92) for question and answer interfaces, are visual cues and white space used to distinguish questions, prompts, instructions, and user input?

N/A

(93) does the data display start in the upper-left corner of the screen?

N/A

(94) have prompts been formatted using white space, justification, and visual cues for easy scanning?

N/A

(95) do text areas have “breathing space” around them?

Yes

(96) are there “white” areas between informational objects for visual relaxation?

Yes

(97) does the system provide visibility; that is, by looking, can the user tell the state of the system and the alternatives for action?

Yes, the tab bar has a highlighted icon to indicate current location in the app.

(98) is size, boldface, underlining, colour, shading, or typography used to show relative quantity or importance of different screen items?

Yes, important clickable elements are presented as a yellow button. Highlighted words used to indicate other interactable elements.

(99) is colour used in conjunction with some other redundant cue?

Size is also used in conjunction with color when it comes to buttons

(100) is there good colour and brightness contrast between image and background colours?

Yes

(101) have light, bright, saturated colours been used to emphasize data and have darker, duller, and desaturated colours been used to deemphasize data?

No

(102) is the visual page space well used?

No, some pages have extra whitespace that could be used more effectively

input/output data:

(103) on data entry screens and dialog boxes, are dependent fields displayed only when necessary?

N/A

(104) are field labels close to fields, but separated by at least one space?

Yes

Menus:

(105) is the first word of each menu choice the most important?

N/A

(106) are inactive menu items grayed out or omitted?

N/A

(107) are there menu selection defaults?

N/A

(108) is there an obvious visual distinction made between “choose one” menu and “choose many” menus?

N/A

(7) flexibility and efficiency of use:

search:

(109) is the searching box easily accessible?

Yes, in discover page

(110) is the searching box easily recognizable?

Yes

(111) is there any advanced search option?

No

(112) are search results shown in a comprehensive manner to the user?

N/A

(113) is the box width appropriated?

Yes for discover, no for outage map

(114) is the user assisted if the search results are impossible to calculate?

N/A

(8) aesthetic and minimalist design:

(115) Fitt's Law : the time to acquire a target is a function of the distance to and size of the target;

(116) is only (and all) information essential to decision making displayed on the screen?

No, some pages have extraneous information.

(117) are field labels brief, familiar, and descriptive?

Yes

(118) are prompts expressed in the affirmative, and do they use the active voice?

N/A

(119) is layout clearly designed avoiding visual noise?

No, rather than having each page focus on one task, there are often multiple items packed into a page. This splits attention between the first feature on the page and any other features below it

multimedia content:

(120) does the use of images and multimedia content add value?

Yes

(121) are images well sized? Are they understandable? Is the resolution appropriate?

Yes

(122) are cyclical animations avoided?

Yes

icons:

(123) has excessive detail in icon design been avoided?

Yes

(124) is each individual icon a harmonious member of a family of icons?

Yes

(125) does each icon stand out from its background?

Yes

(126) are all icons in a set visually and conceptually distinct?

Yes

menus:

(127) is each lower-level menu choice associated with only one higher level menu?

Yes

(128) are menu titles brief, yet long enough to communicate?

Yes

(9) help users recognize, diagnose and recover from errors;

Back button and the tab bar allows users to return to a page that was accidently navigated away from.

(10) help and documentation:

(129) are online instructions visually distinct?

N/A

(130) do the instructions follow the sequence of user actions?

N/A

(131) if menu choices are ambiguous, does the system provide additional explanatory information when an item is selected?

No

(132) if menu items are ambiguous, does the system provide additional explanatory information when an item is selected?

No

(133) is the help function visible, for example, a key labeled HELP or a special menu?

N/A

(134) is the help system interface (navigation, presentation, and conversation) consistent with the navigation, presentation, and conversation interfaces of the application it supports?

N/A

(135) navigation: is information easy to find?

Yes

(136) presentation: is the visual layout well designed?

Yes

(137) conversation: is the information accurate, complete, and understandable?

N/A

(138) is the information relevant? (, Help and documentation) It should be relevant in the following aspects : goal-oriented (what can I do with this program?), descriptive (what is this thing for?), procedural (how do I do this task?), interpretive (why did that happen?), and navigational (where am I?);

N/A

(139) is there context-sensitive help?

No

(140) can the user change the level of detail available?

No

(141) can users easily switch between help and their work?

N/A

(142) is it easy to access and return from the help system?

N/A

(143) can users resume work where they left off after accessing help?

N/A

(144) if a FAQs section exists, are the selection and redaction of questions and answers correct?

N/A

(11) skills:

(145) do not use the word “default” in an application or service; replace it with “Standard,” “Use Customary Settings,” “Restore Initial Settings,” or some other more specific terms describing what will actually happen ;

(146) if the system supports both novice and expert users, are multiple levels of error message detail available?

N/A

(147) if the system supports both novice and expert users, are multiple levels of detail available?

N/A

(148) are users the initiators of actions rather than the responders?

Yes

(149) do the selected input device(s) match user capabilities?

For the most part, people using the app are already capable of using a mobile device

(150) are important keys (e.g., ENTER, TAB) larger than other keys?

N/A

(151) does the system correctly anticipate and prompt for the user's probable next activity?

N/A

(12) pleasurable and respectful interaction:

(152) protect users' work , also as "For data entry screens with many fields or in which source documents may be incomplete, can users save a partially filled screen?"

N/A

(153) do the selected input device(s) match environmental constraints?

N/A

(154) are typing requirements minimal for question and answer interfaces?

N/A

(155) does the system complete unambiguous partial input on a data entry field?

No

(13) privacy:

(156) are protected areas completely inaccessible?

Information on app can only be accessed when user logs in

(157) can protected or confidential areas be accessed with certain passwords

All contents of app (including confidential information) is locked away by a login process

(158) is there information about how personal data is protected and about contents copyright?

If info is available, most likely in terms of service located in profile page

9.2 Accessibility Report

This section describes the findings about the accessibility of *My SCE* (original system).

Our method includes carefully walking through every part of *My SCE*, including some hyperlinks. According to our previous research, *My SCE* is a utility app for SoCal Edison, and this application has the exactly the same functions and layout as the company's website. Based off the walkthrough we did, the overall accessibility of *My SCE* is higher than we expected; this result indicates that the website also has great accessibility. That being said, there were points in the interface that could be improved to make it more accessible.

For our Accessibility Evaluation, we used WCAG 2.0 as a guideline. In this version, it is divided into three conformance levels (A, AA, AAA) and we only tested with level A's items. According to WCAG, the success criteria of level A are those which will have a high impact on a broad array of user populations.

The following items have failed:

1. 2.5.1 Pointer Gestures -> If multipoint or path-based gestures (such as pinching, swiping, or dragging across the screen) are not essential to the functionality, then the functionality can also be performed with a single point activation (such as activating a button).
2. 3.2.2 On Input -> When a user inputs information or interacts with a control, it does not result in a substantial change to the page, the spawning of a pop-up window, an additional change of keyboard focus, or any other change that could confuse or disorient the user unless the user is informed of the change ahead of time.

3. 2.4.4 Link Purpose -> Avoid hyperlinking text such as “click here”, “read more”.
4. 1.3.1 Info and Relationships -> Semantic markup should be used correctly. E.g. deprecated attributes must be avoided.

Outside of the accessibility checklist, there are other issues that can affect how accessible My SCE is.

Known Issues:

1. No reverse button
2. Entering text into search bar can cause the menu to disappear
3. Too many “read more” options
4. Menu logic error
5. In menu, opening dropdown for a submenu is too small of a region to click
6. Changing the language doesn’t work for majority of interface

App Content

Area	**Accessibility**
Video player	Add a relevant subtitle file for accessibility
Warning banner	Warning banners should be removed from the home screen and ensure that it is accessible to screen readers.
Menu	Reorganize the menu Ex. partners section is less important than safety
Homepage	Too much redundant information

9.3 User Research Documents

Survey Questions

1. How old are you?
    a. 17 or under
    b. 18 - 22
    c. 23 - 35
    d. 36 or older
2. Have you attended (or currently attending) a college / university / higher educational institution?
    a. Yes
    b. No
3. Do you currently rent or own a house?
    a. Rent a room / apartment
    b. Own a house
    c. Neither
4. Do you pay for all or a portion of the bills for your current residence?
    a. Yes
    b. No
5. How do you pay your electric bill? If you don't pay an electric bill, how do you suppose people pay their electric bill?
    a. On website
    b. Mobile App
    c. Phone
    d. Mail
    e. In person
    f. At bank

6. Have you installed Southern California Edison's mobile app?
    a. Yes
    b. No
7. If not, have you considered downloading Southern California Edison's mobile app?
    a. Yes
    b. No
    c. Maybe after this survey
8. If yes, how would you rate this app?
    Awful (1) - Best (6)
9. Have you installed other utility apps?
    a. Yes
    b. No
10. If yes, how would you rate your overall experience with utility apps?
    Awful (1) - Best (6)
11. Could you describe the best part about utility websites?
    [Enter Text Here]
12. Could you describe the best part about utility apps?
    [Enter Text Here]
13. How often do you visit an utility website (approximately)?
    a. Every day
    b. Once per week
    c. Between once per week and once per month
    d. Once per month
    e. Between once per month and once per year
    f. Once per year
    g. Less than once per year
    h. I've never visited an utility website
14. How often do you use a utility app (approximately)?

a. Every day
b. Once per week
c. Between once per week and once per month
d. Once per month
e. Between once per month and once per year
f. Once per year
g. Less than once per year
h. I've never visited an utility website

15. Check the most commonly used features when you visit an utility website (or features that you suppose are most commonly used).
    a. View utility bills
    b. Make a payment
    c. Change payment settings (i.e. set up auto pay, change credit card)
    d. Check/change account information
    e. Check utility usage (and possibly power outage)
    f. Find customer support
    g. Others: _____
16. Check the most commonly used features when you use a utility app (or features that you suppose are most commonly used)
    a. View utility bills
    b. Make a payment
    c. Change payment settings (i.e. set up auto pay, change credit card)
    d. Check/change account information
    e. Check utility usage (and possibly power outage)
    f. Find customer support
    g. Others: _____
17. Do you agree or disagree with the following statement: I would use mobile app to manage my utility accounts if possible.

    Strongly Disagree (1) - Strongly Agree (6)

18. Could you give a short explanation for why you chose your answer for last question?

    [Enter Text Here]

19. Do you agree or disagree with the following statement: I could easily take care of utility related problems online

    Strongly Disagree (1) - Strongly Agree (6)

20. Could you give a short explanation for why you chose your answer for last question?

    [Enter Text Here]

21. Could you give a short explanation for why you chose your answer for Question 7?

    [Enter Text Here]

Interview Protocol

1. How old are you?
2. Have you attended (or currently attending) a college/university or a higher educational institution?
3. Do you currently rent or own a house?
4. Do you pay for all or a portion of the bills for your current residence?
5. How do you usually pay your electric bill? If you don't pay an electric bill, how do you suppose people pay their electric bill?
6. Have you installed Southern California Edison's mobile app?
7. If not, have you considered downloading Southern California Edison's mobile app?
8. If yes, how would you rate this app?
9. Have you installed other utility apps?
10. If yes, how would you rate your overall experience with utility apps?
11. Could you describe the best part about utility websites?

12. Could you describe the best part about utility apps?
13. How often do you visit a utility website (approximately)?
14. How often do you use a utility app (approximately)?

9.4 Usability Testing Documents

Tasks Performed in Usability Tests

Goal / Output:	Pay electric bill for this month
Inputs:	• Username • Password
Assumptions:	• The account has a payment due
Steps:	1. Login 2. Click on Pay Now Alternative: 1. Login 2. Click on Menu 3. Click on My Account 4. Click on Billing & Payment 5. Click on Pay Now Alternative: 1. Login 2. Click on Menu 3. Click on Quick Services 4. Click on Pay Your Bill 5. Click on Log In to pay 6. Click on Pay Now Alternative: 1. Click on Menu

	2. Click on Quick Services 3. Click on Pay Your Bill 4. Click on Log In to pay 5. Login (enter username & password) 6. Click on Pay Now Alternative: 1. Scroll down the main page 2. Click on Pay Your Bill 3. Login (enter username & password) 4. Click on Pay Now
Success criteria:	User found the “Pay Now” button.
Notes:	

Goal / Output:	Change first name
Inputs:	● Username ● Password ● The information to change
Assumptions:	● The account has “identity”
Steps:	1. Login 2. Click on View/Manage Accounts Alternative: 1. Login 2. Click on Menu 3. Click on My Account 4. Click on Settings 5. Click on Identity 6. Click on “edit” button in name section 7. Change first name 8. Click save
Success criteria:	Successfully changed first name.
Notes:	● View/Manage Accounts gives “Page not found” error. ● “Your Account Settings” might not load depending on account used

Goal / Output:	Check power outage in a certain area (via zip code)
Inputs:	• Zip code of the area
Assumptions:	• There will be an outage at the time of user testing
Steps:	1. Click on Menu 2. Click Outage Center 3. Scroll down the page 4. Click View Current Outages 5. Enter zip code in the search bar 6. Click on the suggested address or search icon 7. Drag the outage map to find outages [optional] 8. Click on the outage symbol Alternative 1. Click on Menu 2. Click Outage Center 3. Scroll down the page 4. Click View Current Outages 5. Click on “List” button 6. Click on “By Zip” 7. Find the outage entry (by scrolling down the page) 8. Click on the outage entry Alternative: 1. Scroll down the main page 2. Click on “View/Report Outages” 3. The rest follows Path 1 or Path 2 Alternative: 1. Click on Menu 2. Open Outage Center Drop-down menu 3. Click View Current Outages 4. The rest follows Path 1 or Path 2
Success criteria:	Know the current status of the outage
Notes:	

Goal / Output:	Report power outage for home or business
Inputs:	• Address • Service account number [optional] • Specific power problem • Requestor's personal information (first name, last name, phone number)
Assumptions:	
Steps:	1. Click on Menu 2. Click on Outage Center 3. Scroll down the page 4. Click "Home or Business" under "Report an Outage" section 5. Enter service account number or zip code and click next 6. Enter address and confirm the address entered 7. Choose an power problem (from a list of radio button choices) 8. Enter requestor information 9. Review outage report 10. Click submit Alternative 1. Click on Menu 2. Open Outage Center Drop-down menu 3. Click Report a Power Outage 4. Enter service account number or zip code and click next 5. Enter address and confirm the address entered 6. Choose an power problem (from a list of radio button choices) 7. Enter requestor information 8. Review outage report 9. Click submit Alternative 1. Click on Menu 2. Click Quick Services 3. Click Report an Outage 4. Scroll down the page 5. Click "Home or Business" under "Report an Outage" section 6. Enter service account number or zip code and click

	next 7. Enter address and confirm the address entered 8. Choose an power problem (from a list of radio button choices) 9. Enter requestor information 10. Review outage report 11. Click submit Alternative 1. Scroll down the main page 2. Click on “View/Report Outages” 3. Scroll down the page 4. Click on “Report” in “Not Seeing your Outage?” section 5. Click “Home or Business” in the pop-up 6. Enter service account number or zip code and click next 7. Enter address and confirm the address entered 8. Choose an power problem (from a list of radio button choices) 9. Enter requestor information 10. Review outage report 11. Click submit
Success criteria:	Successfully submitted the outage report.
Notes:	

Goal / Output:	Find customer service information
Inputs:	
Assumptions:	• There will be an outage at the time of user testing
Steps:	1. Click on Menu 2. Click Customer Support 3. Click Contact Us Alternative 1. Click on Menu 2. Open Customer Support drop-down menu 3. Click Contact Us

	Alternative 1. Scroll Down 2. Click Contact Us Alternative 1. Scroll Down to Contact Us section
Success criteria:	Successfully found contact information for customer service
Notes:	

Tasks Performed in Cognitive Walkthrough

1. Change first name
    a. Login
    b. Click on Menu
    c. Click on Settings
    d. Click on Identity
    e. Click on “edit” button in name section
    f. Change first name
    g. Click save

2. View payment history for February 2018
    a. Login
    b. Scroll down
    c. Click on Billing & Payment
    d. Scroll down to Bill & Payment History
    e. Find payment history for February 2018

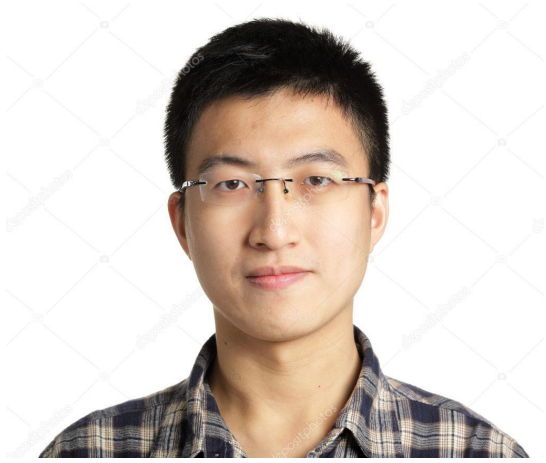
3. Use search bar to find bill statement
    a. Click on Menu
    b. Click on Search Bar
    c. Enter search term(s)
    d. Select a result
    e. If incorrect, return to results and try again
    f. If correct, click “Pay Bill” to see bill statement

Four questions:

1. Will the user try and achieve the right outcome?
2. Will the user notice that the correct action is available to them?
3. Will the user associate the correct action with the outcome they expect to achieve?
4. If the correct action is performed; will the user see that progress is being

made towards their intended outcome?

9.5 Personas



(image source: https://www.dephotos.cn/4241802/stock-photo-asian-man-with-glass.html)

Persona #1 Jerry Le

- 22-year-old international student major in Computer Science
- He jokes that he is a “pretty boring guy”
- Passionate about becoming a better programmer
- Loves working and coding at night
- Enthusiastic about new technologies
- Does not check his email very often
- Prefer to work alone rather than in a team
- A heavy Apple user, likes the way his devices sync with each other
- Likes to save everything on iCoud

Needs:

- Easier to pay bills, e.g., using Apple Pay
- Deal with all utility-related problems in one place.

(image source: https://lifehacks.io/reason-why-cant-you-have-your-dream-crush-in-india/)

Persona #2 Saanvi Ahuja

- 22-year-old intern marketing assistant
- Very articulate and has affinity for strangers
- Love grocery shopping
- Live in a luxury apartment
- Has a poor memory that she always forgot to pay utility bills and rents.
- Has experienced lots of electricity shut down because of overdue electricity fee.

Needs:

- Would like to have an app that notifies her to pay the utility bills monthly
- Easier way to contact SCE to deal with emergency (e.g., electricity shut down)

(image resource: https://pcdn.columbian.com/wp-content/uploads/2015/08/cepeda_esther4-1024x681.jpg)

Persona #3 Veronica Gutierrez

- 45 year old operations management director
- Diligent, somewhat impatient, quick to respond to emails
- Doesn't need to use notifications, uses personal tracker to remember what she needs to do throughout the week
- Has a husband and two kids, both in college

Needs:

- Quick access to pay bills feature
- Easy account creation process