Social Solar

USER TESTING REPORT

INFO 644-01 / USABILITY THEORY AND PRACTICE / PROF MACDONALD

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Executive Summary

Social Solar is a platform that provides clean energy for eco-conscious urban residents having limited access to onsite renewables. The goal of Social Solar is to help users purchase clean energy and save time while helping renewable energy suppliers to gain new customers. With advanced algorithms, Social Solar is aiming to bring users the most modern and freshest solutions, empowering them to make clean energy decisions easier, faster, and with a peace-of-mind.

To achieve better user experience of the mobile application, Social Solar collaborated with Pratt Institute to conduct a usability test. Two major tasks were given to the users, "figure out how the service works" and "sign up with personal preferences". With the users' permission, videos were recorded to capture how the users interacted with the platform and notes were taken documenting their experience. During the test, the "think-aloud" strategy was used, which means users could say out loud what they were thinking about while they were doing the task on the prototype. Post-test-questionnaires were implemented. All the data was then gathered for analysis. The usability test report is based on the user test data analysis. With that, five recommendations are given by the usability test team at Pratt Institute.

1. **Add a 3-step summary briefly explaining "Why" and "How"**
2. **Relocating information button to make it more discoverable**
3. **Make Green Energy Impact page more understandable**
4. **Compare contracts on one table**
5. **Add a subscription summary to show all the choices users have selected**

Introduction

Social Solar, was founded by Columbia University graduate students from the school of business and school of engineering after taking the Lean Launchpad course in February 2017. The students from Columbia University continuously serve as integral contributors to the advanced algorithms and artificial intelligence of the platform. The mission of Social Solar is to help urban residents consume, purchase, and store renewable energy smartly.

The workflow of Social Solar is separated into three parts. First, the company curates top-rated energy suppliers at the best prices. Second, the users customize the clean energy subscription. Third, the company's monthly monitoring ensures the users' energy is optimized using artificial intelligence. As a Cleantech finalist, Social Solar continues to demonstrate their commitment to providing access to clean options and is actively working to help communities connect with alternative energy solutions such as solar, wind and hydroelectric.

Methodology

User testing refers to a technique used in the design process to evaluate a product, feature or prototype with real users. To assess the user experience and usability of the Social Solar website, a series of moderated in-person user testing sessions were conducted. Ten interviews were conducted, with participants from 21-60 years old.

A moderated in-person user testing is the gold-standard of usability research. It is conducted in a controlled setting and involves users as experimental subjects. In a moderated in-person user testing, one moderator presents several questions and tasks to an individual participant. Tests are typically conducted with the help of a recording device to allow the researcher to return to the specific quotes, reactions, and comments made by testing participants (Rubin & Chisnell, 2008). For the testing of Social Solar, researchers used either Quicktime Screen Recorder or Voice Memos, both which capture voice activity, and users' interaction with the interfaces.

Target Users

Since Social Solar is a New York-based company focused on green energy, which provides a list of green energy supplier alternatives, the target user for this study is someone who lives in New York, pays the utility bills and over 21 years old and are comfortable using the web.

Participant Recruitment

In this study, we spoke with Donna M. S., co-founder & CEO of Social Solar, and looked over information that she sent us to come up with a target user base. We came up with the following target user profile:

- Age: over 21
- Residency: New York City
- Other: paying the utility bill

Test Plan

Participants were asked to perform the following tasks during the moderated usability test. These five tasks were designed to focus on the sign-up process for the Social Solar website. In these tasks, participants were first presented with a scenario, to orient them in a specific context.

Scenario

You are a New Yorker, and you have decided that you want to see what options you have for energy suppliers. You heard of "Social Solar" a company focused on green energy, which provides a list of green energy supplier alternatives.

Pre-Test Questions

1. What is your occupation?
2. What is your education level?
3. What is your preferred gender orientation?
4. How environmentally conscious are you?

(Extremely Very Moderately Slightly Not at all)

5. Do you have a lot of smartphone experience?

(Extremely Very Moderately Slightly Not at all)

Tasks

1. Figure out how the service works.
2. Sign up and enter preferences.

Post-Test Questionnaire

1. Do you like the look of the page?

(Extremely Very Moderately Slightly Not at all)

2. What was the most challenging step of the process?
3. Did you understand everything that happened during the tasks?

(Extremely Very Moderately Slightly Not at all)

4. What did you find hard to understand?
5. How likely is it that you would sign up to this service?
6. Please explain your answer to question 5.

Additional Interface Feedback

In order for Social Solar to provide you with supplier options, you have to give them access to data from ConEdison. Therefore, you will be redirected to ConEd's website during the sign-up process. Please answer the questions below:

1. At what stage of the process would you expect to be redirected to ConEd?
2. What is your opinion on the ConEd step?
3. How likely is it that you would finish this step and head back to Social Solar?

(Extremely Very Moderately Slightly Not at all)

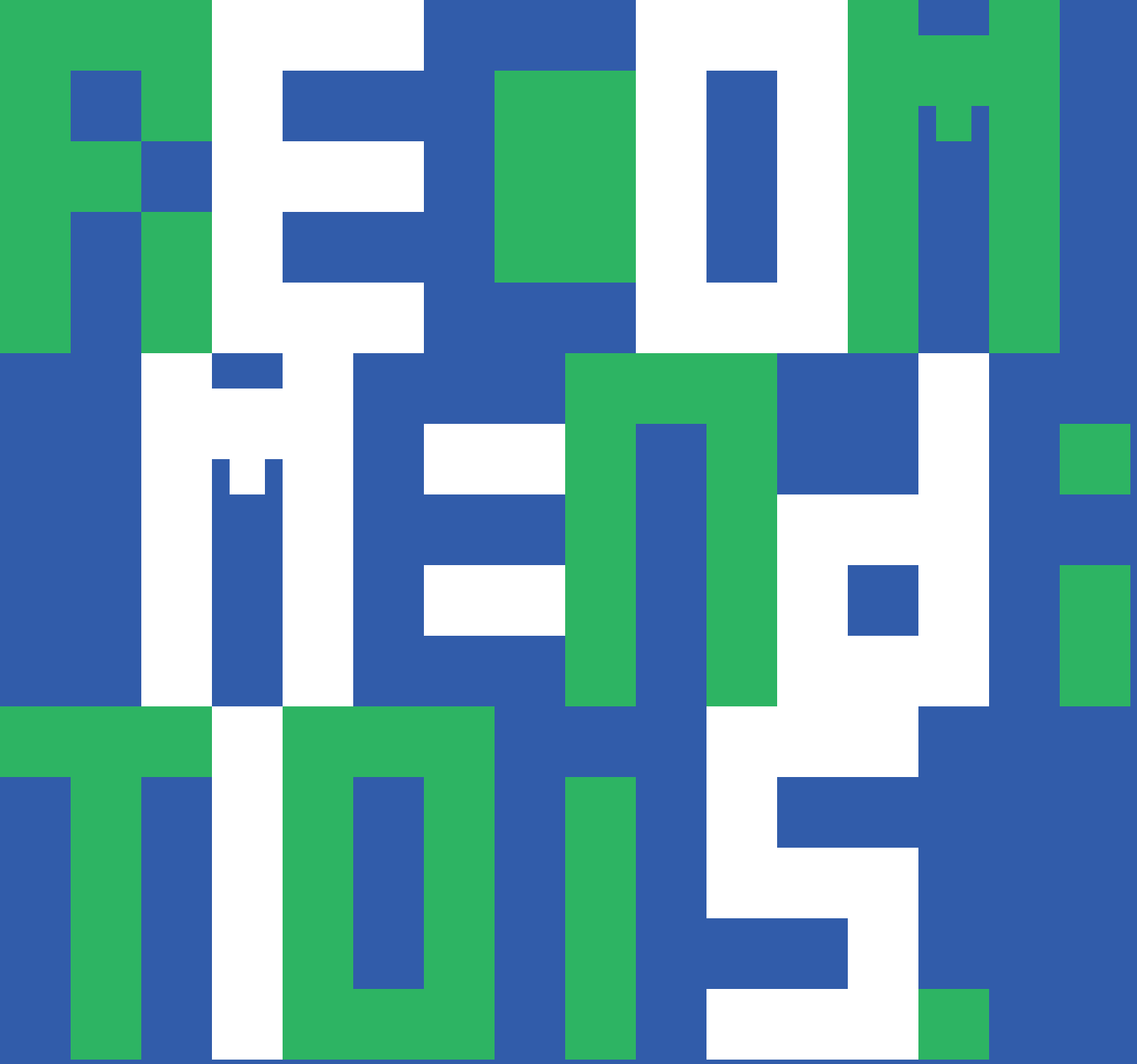
By grounding a participant's actions and reactions in these tasks, researchers were able to focus in on the most problematic areas and determine which usability issues affected those parts of the website specifically. For a full transcript of users' tasks, please see Appendix.

Overall Findings

Social Solar serves a great purpose, and offers a highly relevant service, considering the current environmental situation. Therefore, the overall concept was perceived with great enthusiasm when presented to our participant group. When asking our participants about their environmental consciousness, we received a score of 78%, which explains the positive attitude toward Social Solar's concept. However, following the supervised user tests of the Social Solar prototype interface, some areas of potential improvement were found. These findings will be presented in this chapter, accommodated by recommendations on how these potential issues could be solved.

After analyzing the user test data, we could confirm an overall understandability score of 56%, and a sign-up probability score of 52% (see appendix). Considering the 78% environmental consciousness level, we believe that the sign-up score could be higher. Much of the confusion appears to be based on the lack of information in regard to choosing energy preferences. We believe that increasing the discoverability of the interface by adding easily-found and "faster" preference descriptions would significantly increase the understandability score. Regarding the 52% sign-up score, we believe that a considerable reason to this percentage is based on a lack of real figures, such as how the users' monthly cost would be altered, and how their environmental footprint would change. One user stated,
"I need to get more knowledge of my actual green impact, and how much the total price will differ for each option, before deciding on signing up to Social Solar."
Therefore, by adding more information, like real greenhouse gas figures, we believe the sign-up probability score would also be enhanced. More of this will also be presented below.

Another crucial part of Social Solar's sign-up process is the step where users are redirected to Con Edison in order to allow the sharing of data. Analyzing our post-test data, we found that the sign-up probability declined by 10%, from 52% to 42%, because of the current Con Edison step. One of the participants stated, "I would not have expected such a long process when being redirected," while another participant said, "I need more motivation and want to know why it's necessary". 90% of our users had negative comments similar to the ones above. The Con Edison step would have to be explained thoroughly, and if possible, shortened. This will be further discussed by the end of this chapter.



Recommendations

"When asked to describe the hardest part of the sign-up process, 20% of our participants stated that they did not understand what the service actually did." - Evaluator A

Recommendation 1

Add a 3-step summary briefly explaining "Why" and "How"

There are a lot of pros and cons related to the current lifecycle stage of Social Solar, i.e., an early and relatively unknown startup company. Having a great business concept, like Social Solar, one of the most important things that can be done is to simply and clearly explain why someone should sign up to a service, and how. This communication aspect is specifically important for a company in the startup phase, as you want to catch the attention of potential customers. When analyzing the user test, we found that several of the participants were not fully aware of how the service worked, which consequently led to questioning why they should sign up. When asked to describe the hardest part of the signup process, 20% of our participants stated that they did not understand what the service actually did. The current design for Social Solar homepage can be seen in Fig.1.

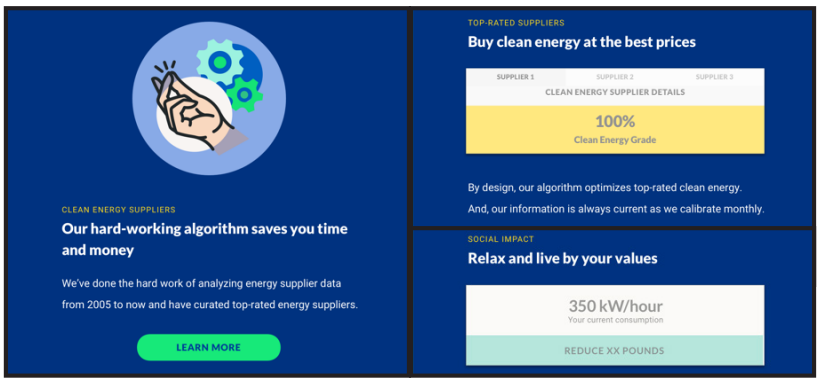


Fig.1 Current Social Solar homepage with segmented information

To avoid confusion, and make sure that all participants are fully aware of the "why" and "how", we recommend implementing a short and concise 3-step summary to the homepage of Social Solar. Step 1 will answer the "why", while step 2 and 3 briefly explains the "how". This will increase the overall understandability of Social Solar, and make the signup process less confusing. In addition to the 3-step sequence, to further increase the understandability of users, a short video (optional) could be offered, giving a somewhat more detailed explanation of the 3-steps. This would facilitate the learning process for people who do not have the time or energy to read a text. Shown in Fig.2 is our recommendation for the Social Solar homepage.

Recommendation 1

Fig.2 Recommended interface for Social Solar homepage

Simplified value proposition of Social Solar divided into three easy steps

"I am studying in the green energy field, but I do not understand the meaning of the terms. The explanation of the terms is needed." - User A.

Recommendation 2

Relocating information button to make it more discoverable

Users found it hard to choose the plan without having a clear understanding of some of the more complicated language. In Fig.3, there is the "source origin" button which can be clicked to show the information about the term "Local only" and "No preference". However, the button is located too far away from the main content. We found that 5 out of 10 users complained that they did not realize there was a clickable button which could show them the instructions of the terms that they needed to understand. One of the participants who is a professional in the green energy field says: " I am studying in the green energy field, but I do not understand the meaning of the terms. The explanation of the terms is needed."

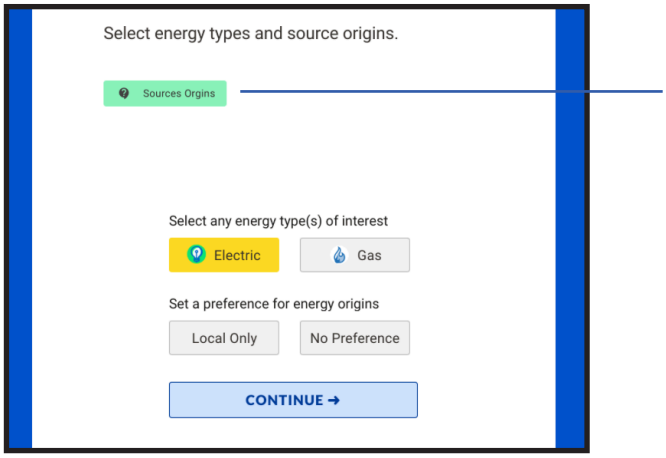
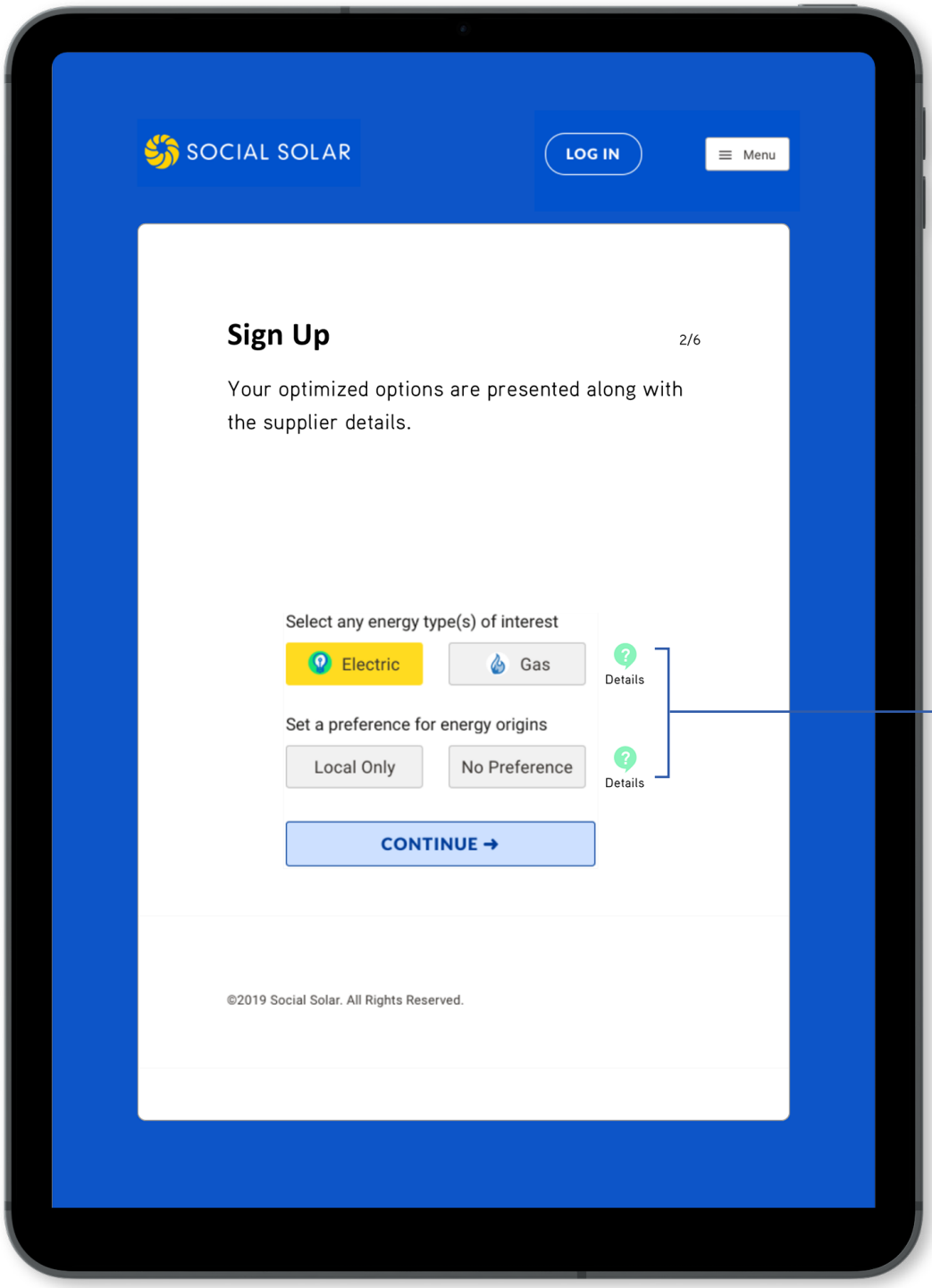


Fig.3 Current location of information button

Adding a question mark with bright green color next to the terms to notify the users of more detailed information about the terms could help relieve some confusion. A potential pop-up dialogue box will show on the screen with the explanation of the terms after the users click the question mark. It is important for the users to understand what they are doing to keep them continuing on. The users can close the dialogue box from the right top corner and continue selecting preferences. It is important to keep in mind the different knowledge levels of the users and to cater to all of them equally. The recommended design of this page can be seen in Fig.4.

Recommendation 2

Fig.4 Recommended interface to emphasize information button



Relocation of the information button besides each question to achieve discoverability

"I don't really know what is the purpose of this page." - User B.

Recommendation 3

Make Green Energy Impact page more understandable

The third step of the sign-up process is designed so that imagery correlates to the percentage of "green energy ratings" the user chooses. However, six out of ten participants found it quite challenging to understand the correlation between the image and the slider. Two users pointed out that they took some time to realize the presence of the slider. The users also mentioned that they want to understand how much of an impact would be present on the environment based on the green level they chose in the slider. Shown below in Fig.5 is the current design of the third step of the sign-up process.

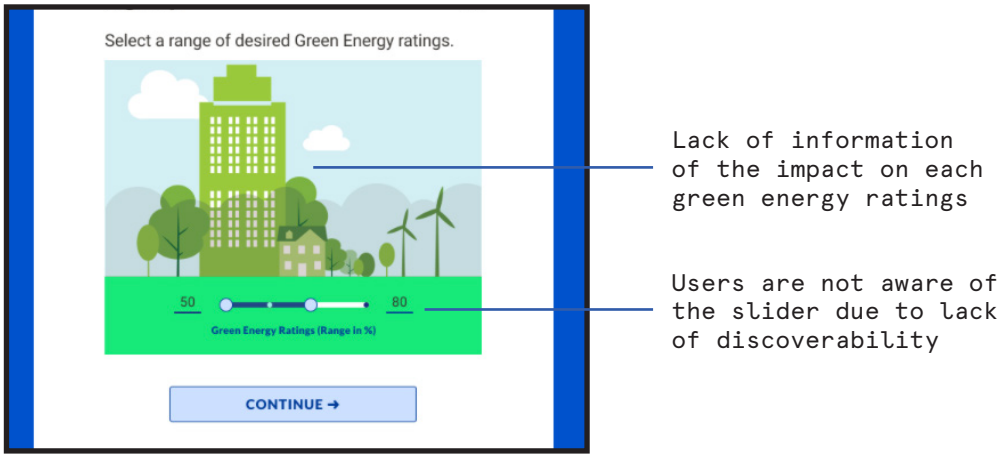
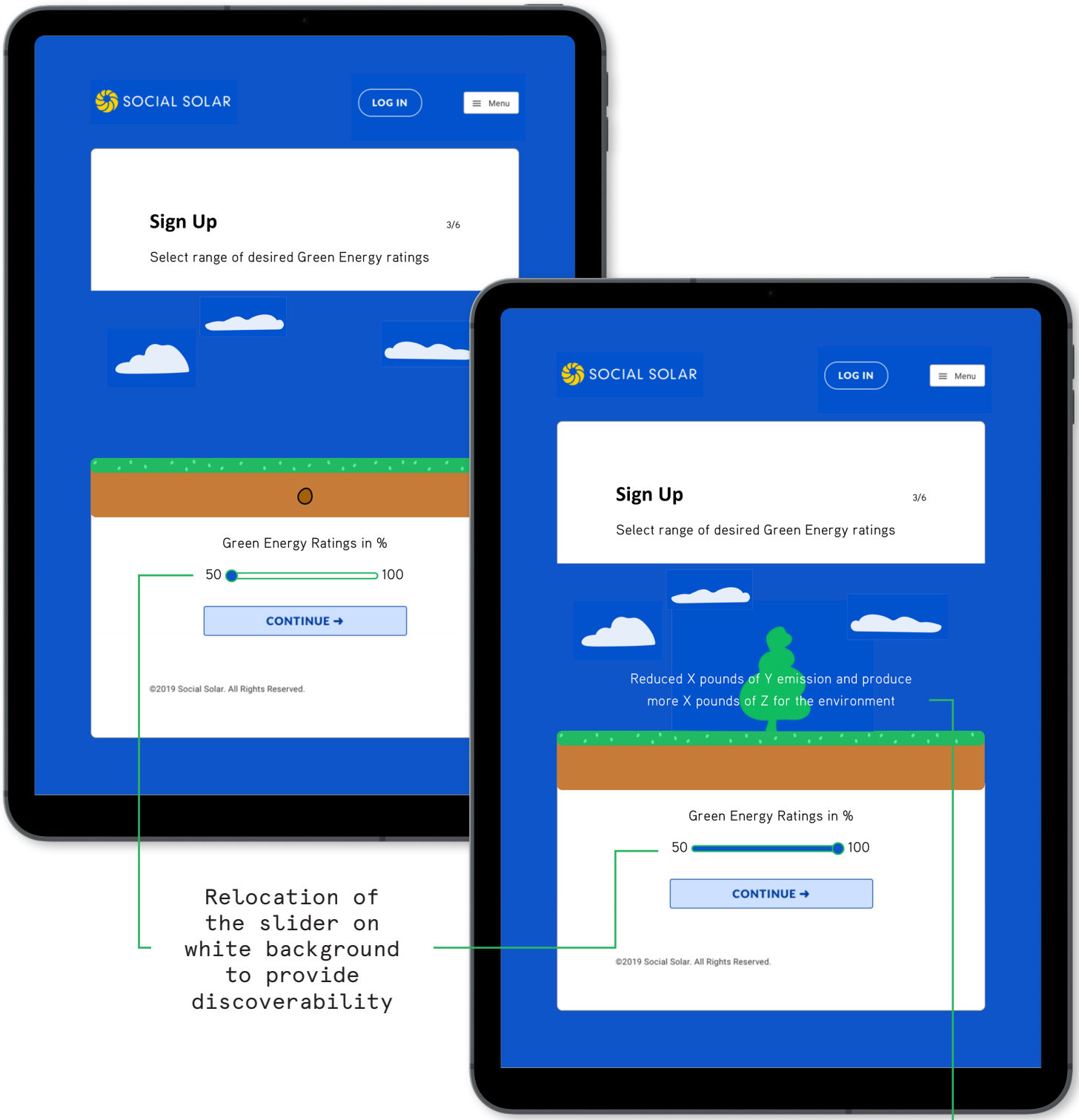


Fig.5 Current Social Solar green energy ratings page

With that in mind, we would like to suggest a few recommendations to enhance the aesthetics and information on this step of the sign-up process. Firstly, we would like to recommend putting the slider on a white background to make it more discoverable. Secondly, we also would like to add some information on top of the imagery to signify users the impact of each green level. Last, but not least, we suggest using less complicated imagery to give users a better understanding of the page. Shown below in Fig.6 is the new design of the green energy ratings page.

Recommendation 3

Fig.6 Recommended interfaces for Green Energy Ratings page



Relocation of the slider on white background to provide discoverability

Change of imagery as the green energy ratings increases, supported with information about the impact of the green energy ratings

"Oh, I didn't realize that there are other options in the bottom." - User C.

Recommendation 4

Compare contracts on one table

When the user gets to the step of picking their energy supplier, they are met with three different options. In order to see these options, the user has to scroll down the page. Making a final decision on an energy supplier should be easy and leave little no room for doubt. By separating the options, the ease of use of the step goes down. Users have to remember what options are attached to what company and recall that information to hold it as a comparison for two other suppliers. Shown in Fig.7 is the current supplier recommendations page.

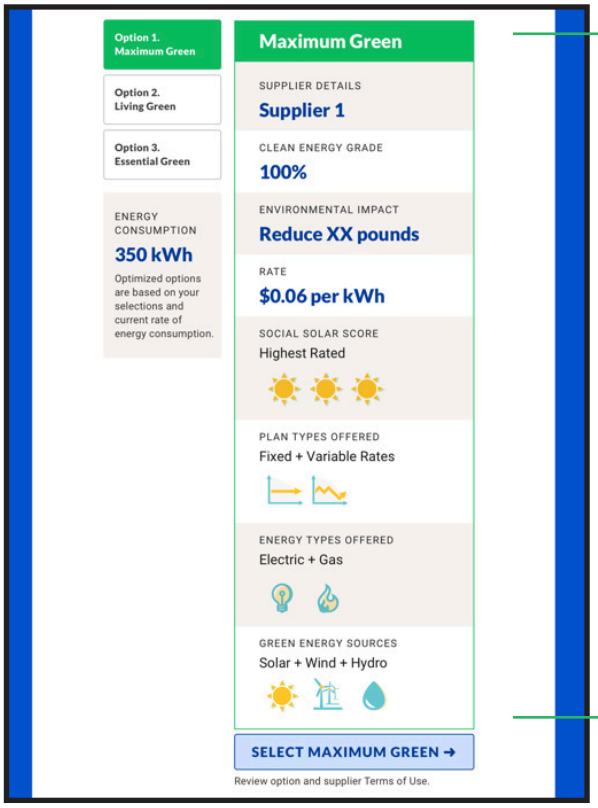
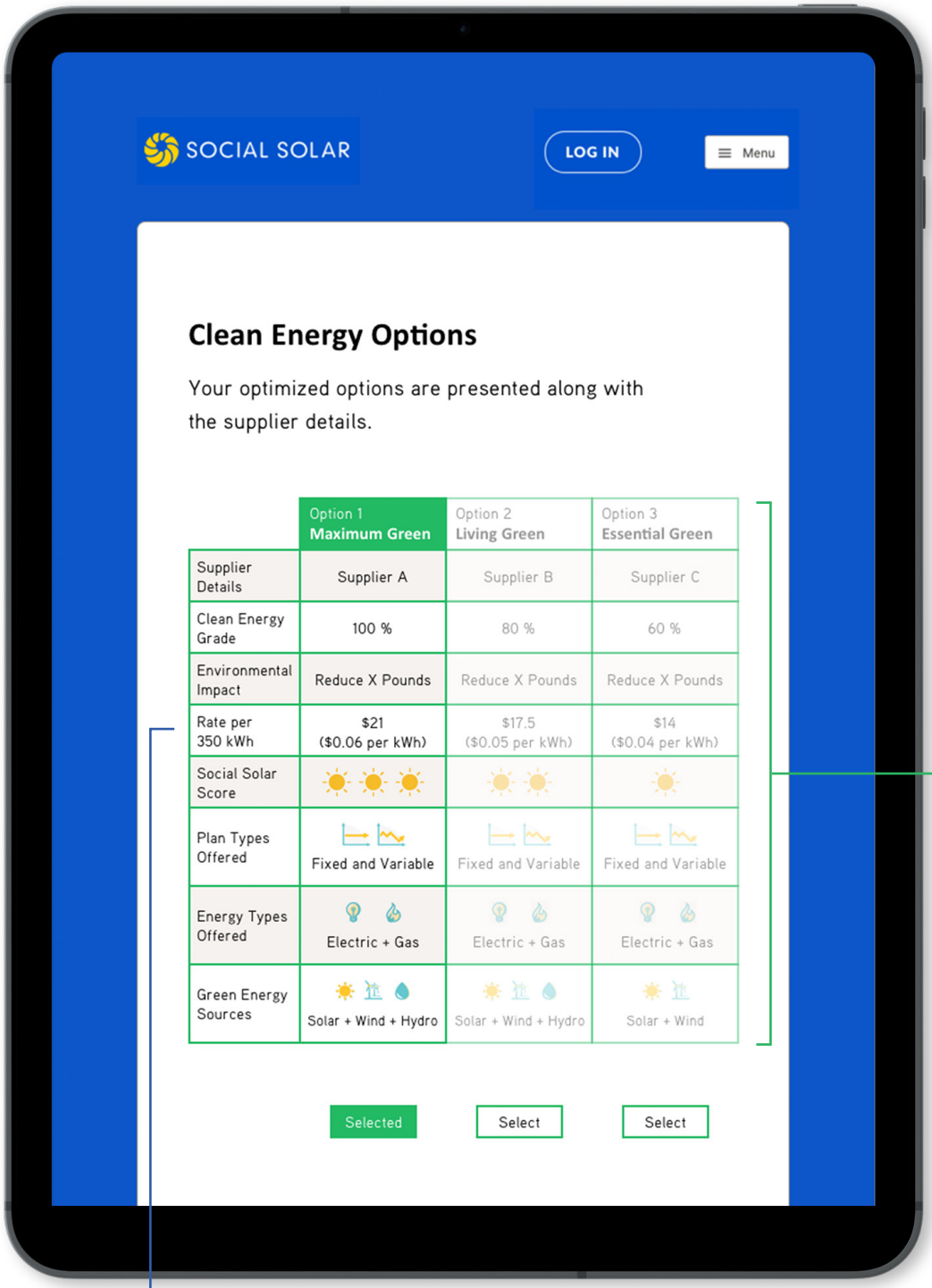


Fig.7 Current supplier recommendations page

By making all three of the energy suppliers listed on one easy to read table (Fig. 8) the user can, with a glance, compare all of their options. Making sure that information is clear is one of the main points that kept coming up in our user tests. With that point in mind, we also suggest providing the sum of the total price instead of per kWh price.

Recommendation 4

Fig.8 Recommended interface for Clean Energy Options page



In a glance, users can compare all the supplier options. Second and third options are intentionally designed with lower opacity level as a physical contraint for users to realize that option 1 is recommended, however, there are other options that they can choose as well

Sum of total price instead of per kWh price

"At this point, I have no idea of what I have done and what type of information they are gathering." - User D.

Recommendation 5

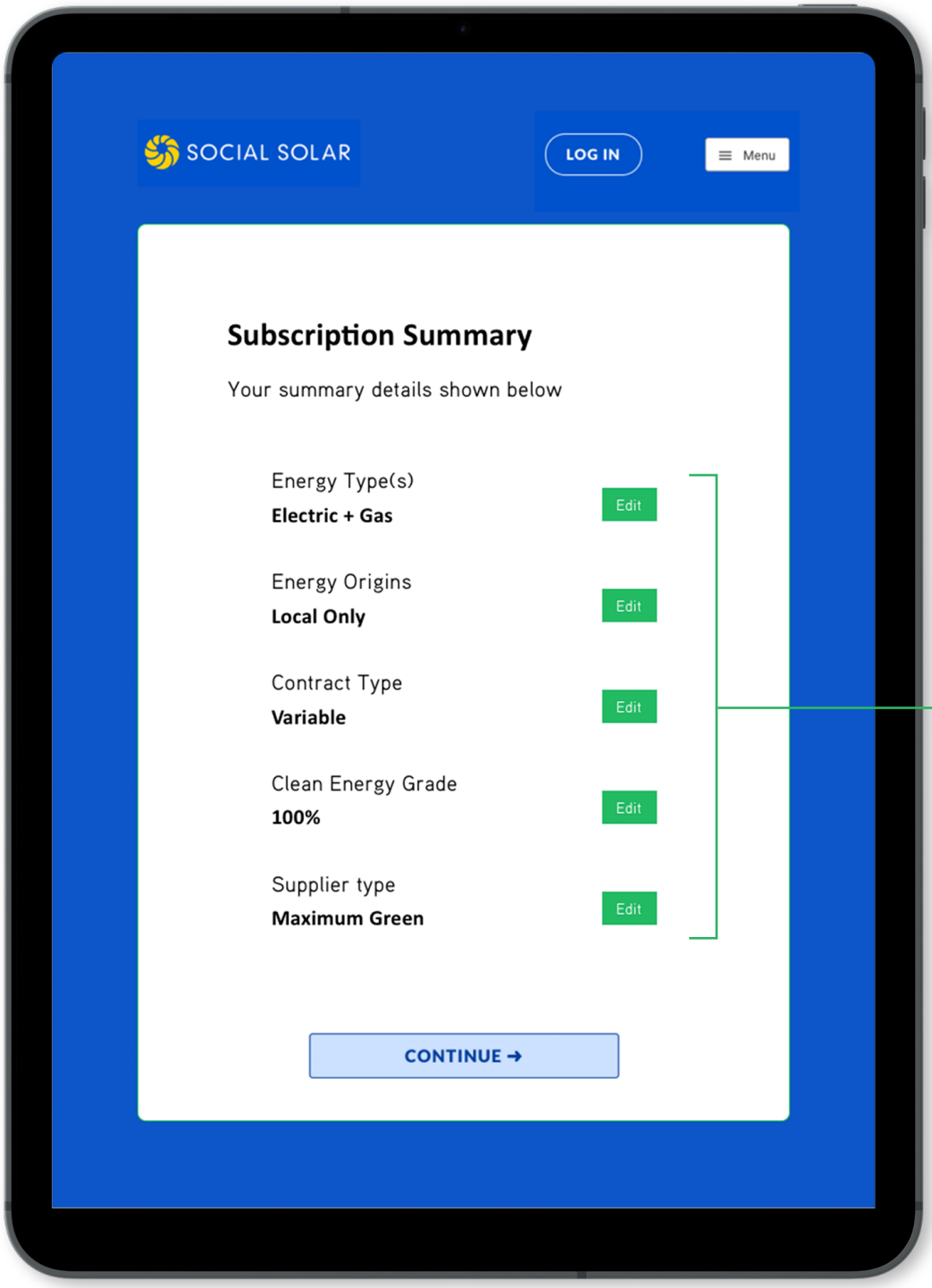
Add a subscription summary to show all the preferences users have selected

Add a subscription summary to show all the preferences users have selected. After they were finished choosing preferences, some users found it hard to remember what exactly they had chosen. Users felt confused at the end of the sign-up process: "At this point, I have no idea of what I have done and what type of information they are gathering." During the sign-up process, Social Solar collected many preferences to personalize the contract, but from the users' perspective, it is never shown clearly.

Since users always want to know what they are expecting before putting in any personal information, a summary of what the users have selected would make them have a better understanding of the contract they are getting into as well as building trust between users and Social Solar. Our recommendation is to add a subscription summary showing the "Energy Type", "Energy Origins", "Contract Type", "Clean Energy Grade", and "Supplier type" users have selected. It is also essential to provide flexibility to the users so that they have enough freedom to handle any mistakes. In this subscription summary, we also recommend giving users the freedom to edit the options they chose to let users have control of their own contract as well as meeting their expectations. So they have a better chance of finishing the sign-up process and signing the contract. Shown in Fig.9 is the recommended additional summary page.

Recommendation 5

Fig.9 Recommended additional summary page



Summary page to give users better understanding of the contract

Additional Recommendation

ConEdison Findings

The redirect and sign in/up to ConEdison was a huge point of contention with nearly all of our participants. Users were confused as to why exactly they were required to be redirected to the ConEd site in the first place. One user said, “I need more motivation and want to know why it’s necessary”. When given a “to-do list”, as is implemented on the current site, the users couldn’t understand fully why these steps were beneficial to them. More than 50% of participants said they would not return to the Social Solar site after completing the ConEd step if they did at all.

More important than having “how” to complete the ConEd step, users wanted to know “why?”. Making it clear to the user why they are being redirected should be the priority. Metrics or an acknowledgment of how this will benefit them could be implemented to make the necessary step go down easier.

Users also had a problem with how many steps were involved in completing the ConEd step. It is just as long of a process as signing up for Social Solar to begin with.

Trying to cut down on the number of links and submenus the user had to go through to reach the page to share their information would be wildly beneficial. Perhaps if the redirect could drop users directly on the landing page in which they share their information, they would be more inclined to do so.

Conclusion

Based on our remote usability test, we found five key usability issues that came up with the Social Solar Website. The introduction to the website was lacking a clear and concise mission statement, which made people feel confused immediately. Some of the terms needed more definition for the user to feel comfortable making decisions. Having imagery correlate to green level energy wasn't explicitly clear. Contracts were not easily accessible and comparable. And finally, a summary of users choices after sign up was nearly complete was seen as a needed option.

Our five usability experts came up with recommendations for fixes to these problems;

1. **Add a 3-Step summary briefly explaining "Why" and "How"**
2. **Relocating information button to make it more discoverable**
3. **Make Green Energy Impact page more understandable**
4. **Compare contracts on one table**
5. **Add a subscription summary to show all the choices users have selected**

By implementing these modifications, we hope that the website would provide an easier way for prospective users to reach their desired information.

References

Appendix (User Data)

PARTICIPANT OVERVIEW	
Age	
21-34	70%
35+	30%
Gender	
Male	70%
Female	30%
Other	0%
Education Level	
Doctor	10%
Master	40%
Bachelor	40%
High School	10%
Environmental Consciousness (%)	
78%	
Computer Experience (%)	
88%	

User #	Age	Gender	Education	Occupancy	Environment Consciousness (1-5)	Computer Experience (1-5)
1	35+	Male	PhD Biophysics	Biotech CEO, MIT professor	5	5
2	21-34	Female	MEd (master in education)	Elementary school teacher	5	5
3	21-34	Female	BSc Journalism & Entrepreneurship	Creative licensing	4	4
4	21-34	Male	MFA Filmmaking	Film director and producer	4	5
5	21-34	Male	Master's Degree	Interior designer	3	5
6	35+	Male	Bachelor's Degree	Motion designer & photographer	4	3
7	21-34	Male	Bachelor's Degree Environmental Science	Video production manager	5	5
8	21-34	Female	High School	Photographer	4	5
9	21-34	Male	Master's Degree	Consultant	2	4
10	35+	Male	Bachelor's Degree	Inventory manager	3	3

Appendix (Test Data)

Appendix (User data)

User #	Time (minutes)	Aesthics Score (1-5)	Most difficult step?	Did you understand all the steps? (1-5)	What was hard to understand	How likely is it that you would sign up? (1-5)	Explanation
1	13	3	Selecting plan	2	Language terms	3	The looks weren't too bad, but it didn't really jump out at me. I liked the color choice, but I think that it was a little confusing to navigate. I think that expanding boxes would have been less confusing than jumping down on the page
2	24	3	Selecting plan	3	Language terms and cost information	3	I care about the environment a lot and I think we are wasting a lot of precious energy every day, which is bad. Therefore, I want to use this app to save energy. But as I said, I need more information to understand the company better before I use it.
3	15.5	4	Understanding the options	3	Language terms and plans	4	Don't understand what I pay for. I would have wanted to see a video before signup
4	18	4	Understaning optiopns	4	Understanding what's going on	4	I like the idea of getting to choose your supplier, it feels transparent. However, I would like more information
5	18	3	To understand why the ConEd step is necessary	4	Details about the preferences on the sign-up process and pricing information on the recommended energy resource options.	2	Need to get better understanding of how green and how much the total price difference for each options to be able to decide on signing up to Social Solar.
6	20	2	Understanding options	2	What the options meant	2	Need pro and con on each options given. How much impact on the decision I made for the environment.
7	17	4	Understanding all the options	2	Language terms, and why I had to connect with ConEd	4	I would very much like to sign up to this service. Being environmentally conscious isn't always the easiest thing to do, but it helps the earth and that's really the main end goal.
8	22	3	Selecting plan	2	Understanding all options. Who gets paid? Can't I choose supplier myself	1	-
9	16	3	Understanding options	2	Language terms	1	I do not quite understand what is going on, I would like to learn more about the steps. For example through question mark-buttons.
10	22	4	Green energy rating	4	Knowing the difference of the options	2	I need to see more numbers. I want to know about costs, and how much this will affect the environment

EVALUATION FEEDBACK	
Aesthics score	66%
Understandability score	56%
Signup probability (pre-ConEd)	52%
Signup probability (pro-ConEd)	42%
Average task time (minutes)	18.6

Appendix
(ConEdison & A/B Testing Feedbacks)

CONED FEEDBACK	
What is you opinion on the ConEd step?	
User 1	It is annoying but I guess it is the part of the task. If I have to do it I will, but I do not want to.
User 2	I am not a patient person, I may quit the app if it requires me to do that.
User 3	That's way too many steps, and I don't have patience or it. I would expect only an option to "accept to share my data"
User 4	I would not have expected such a long process when being redirected.
User 5	It is acceptable as long as it helps the platform to give me better recommendation.
User 6	If it is really required, I don't mind going to ConEd. As long as it doesn't take that much steps and it is beyond reach of the app.
User 7	It seems overly complicated to me. Why wouldn't I immediately be redirected to the correct page? Or simply have a button that allows me to bypass the entire process?
User 8	It would be way more than I would be willing to go through.
User 9	I need more motivation and want to know why it's necessary.
User 10	-

CONED FEEDBACK	
At what stage of the process would you expect to be redirected	
User 1	End
User 2	End
User 3	Beginning
User 4	End
User 5	End
User 6	End
User 7	Middle
User 8	Beginning
User 9	End
User 10	Beginning

Which interface design do you prefer? (A/B)	
User 1	Both
User 2	B
User 3	B
User 4	B
User 5	A
User 6	B
User 7	A
User 8	A
User 9	Both
User 10	Both

CONED FEEDBACK	
How likely is it that you would finish this step and head back to Social Solar? (1-5)	
User 1	2
User 2	1
User 3	1
User 4	2
User 5	1
User 6	3
User 7	3
User 8	1
User 9	4
User 10	3

Appendix (Test Preparation)

Target user

Age: over 21

Residency: New York City

Other: paying the utility bill

Screener Questions

What is your age?

a. 16-20

b. 21-34

c. 35-60+

Do you currently live in or around NYC? Where?

a. Yes

b. No

Do you pay your utility bill?

a. Yes

b. No

Scenario

You are a New Yorker, and you have decided that you want to see what options you have for energy suppliers. You heard of "Social Solar", a company focused on green energy, which provides a list of green energy supplier alternatives.

Pre-Test Questions

1. What is your occupation?
2. What is your education level?
3. What is your preferred gender orientation?
4. How environmentally conscious are you?

(Extremely Very Moderately Slightly Not at all)

5. Do you have a lot of smartphone experience?

(Extremely Very Moderately Slightly Not at all)

Tasks

1. Figure out how the service works.
2. Sign up and enter preferences.

Post-Test Questionnaire:

1. Do you like the look of the page?

(Extremely Very Moderately Slightly Not at all)

2. What was the most difficult step of the process?
3. Did you understand everything that happened during the tasks?

(Extremely Very Moderately Slightly Not at all)

4. What did you find hard to understand?
5. How likely is it that you would sign up to this service?
6. Please explain your answer to question 5.

Additional interface feedback

1. A/B-testing

- Which homepage-alternative would you prefer? A or B?

2. ConEdison

In order for Social Solar to provide you with supplier options, you have to give them access to data from ConEdison. Therefore, you will be redirected to ConEd's website during the sign-up process. Please answer the questions below:

- At what stage of the process would you expect to be redirected to ConEd?
- What is your opinion on the ConEd step?
- How likely is it that you would finish this step and head back to Social Solar?

(Extremely Very Moderately Slightly Not at all)

Appendix (Consent Form)

Purpose

The purpose of this study is to evaluate the usability of Social Solar mobile page. The study is part of the Usability Theory and Practice graduate level class, under the supervision of Professor Craig MacDonald.

Procedure

If you agree to be in this study, you will be asked to do the following:

- I will complete two brief questionnaires; pre-test and post-test questionnaires.
- I will be given tasks using the Social Solar mobile page. While completing this tasks, I will be asked to `think aloud' to verbalize my thought process. The tasks are:
    1. To figure out how Social Service works
    2. To sign up and enter preferences
- Members of the Pratt UX Team will observe and take notes. In addition, the session will be captured on video for future review.
- The session will last no longer than 45 minutes

Benefits / Risks to Participant

The participant will learn about the value proposition of Social Service and will help to contribute to the body of knowledge in usability research. Participants will also get a $10 Amazon Gift Card for completing the test. There is no risk to the participant.

Voluntary Nature of the Study / Confidentiality

You are voluntarily taking part in this study. At any point, you are welcome to tell the moderator that you would like to discontinue your participation in the study. You may also ask the moderator any questions at any time during the study. Your name and personal information is completely confidential and will only be accessible to the members of the project team.

Contacts and Questions:

If you have any questions after the study is complete, you may contact any of the research members:

- Erik Hannell: ehannell@pratt.edu
- Michael Lewis: mlewis10@pratt.edu
- Xi Chen: xchen69@pratt.edu
- Kerry Yu: kerryyu817@gmail.com
- Cameron Aguilar: cameronontop10@gmail.com

Statement of Consent

I have read the above information. I have asked any questions I had regarding the experimental procedure and they have been answered to my satisfaction. I consent to participate in this study.

Signature of Participant:

Your name: **Date:**