Team Name: Team STYT

Team Number: 5

List of Team Members:
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Project Title: Energy Usage Tracker and Optimizer

Project Goals:

The goal of this investigation is to gather insights from potential users about their current energy usage habits, awareness of electricity costs, and challenges they face in managing consumption. By understanding how users track their energy usage, their awareness of peak-hour rates, and their preferences for managing electricity during high-cost periods, we can identify key pain points and opportunities for improvement. Additionally, the investigation will explore users' interest in features such as real-time alerts, energy usage breakdowns, and automation of non-essential devices during peak hours. These insights will inform the development of our energy usage tracker and optimizer app, ensuring it addresses the actual needs of users and helps them manage energy more efficiently.

Questions to :
1. Do users track their electricity usage, and if so, how?

2. Are users aware of peak-hour rates, and do they know when peak hours occur?

3. Would users be interested in receiving real-time alerts about their electricity usage?

Participants:

Our project is targeting a broad, but also specific group of users. We are searching for individuals that are either renters or homeowners and pay a monthly utility bill at their residence. Therefore, our target user has two specific traits. First being they own or rent a home (or apartment). Secondly, they pay a monthly utility bill. For this study's intended scope, we limit our search to Greater L.A. area residents. Due to our time constraints, we are excluding businesses and focusing solely on residential users. Within residential users, we exclude potential users that do not directly pay a utility bill (i.e., dorm residents). We also exclude users who do not pay a utility bill in full (i.e., utility bill with roommates). This is to keep the math simple and prevent data from being skewed.
The process we use to recruit potential users will be semi-integrated into our survey questionnaire. The population size of our potential userbase is so large that it will not be difficult to search for and find them. And the topic of 'energy usage' is a very general and comfortable topic to approach therefore we can simply ask a few brief questions before administering the survey. We ask the potential user, yes or no, if they own or rent a home (or an apartment). We then ask if they are head of the household, or if they are responsible for paying the bills (utility bill) and if they are paid fully or portioned out. If they answer yes to both questions, we have found a user with the data we need for our study.

Instruments:

For our project titled "Energy Usage Tracker and Optimizer we will utilize two main instruments: a survey administered via Google Forms and individual interviews.

Survey: We will distribute a Google Form survey to gather quantitative data on participants' electricity usage and their strategies for managing their electricity bills.

Interviews: We will conduct one-on-one interviews to gain qualitative insights. During these interviews, participants will be asked the following questions:

1. Do you pay your electricity bill?
2. Have you noticed an increase in the bill?
3. How do you track your usage of electricity?
4. Have you taken an approach to lower your bill?
5. Are you interested in using an electricity usage monitor to help you save money on your electricity bill?

Google Survey Form:

Energy Usage Tracker and Optimizer: User Survey/Customer Survey

Section 1: Basic Information

- Location:
  - Los Angeles
  - Other (please specify): _____

- Type of Residence:
  - Apartment
  - Home
  - Other (please specify): _____

- Type of Ownership:
  - Renter
  - Owner

- Utility Company:
  - SCE
  - Other(please specify): _____

- Approximate monthly utility bill (per household):
  - $50 - $100
  - $100 - $200

- More than $200

Section 2: Current Energy Usage

- How do you currently track your energy usage?
    - Monthly bill
    - Electricity meter
    - Not sure / Not tracking
- Are you aware of the peak hour rates for electricity in your plan?
    - Yes
    - No
    - Somewhat
- What times do you believe are peak hours for electricity usage?
    - 4 PM - 9 PM
    - 5 PM - 8 PM
    - 1 PM - 5 PM
    - Not sure

Section 3: Usage Habits and Preferences

- How often do you experience high electricity bills?
    - Rarely
    - Occasionally
    - Frequently
    - Very frequently
- What devices or appliances do you use the most during peak hours? (Select all that apply)
    - Air conditioning / Heating
    - Lighting
    - Kitchen appliances (e.g., oven, microwave)
    - Electronics (e.g., TV, computer)
    - Laundry appliances
    - Other (please specify): _____
- Would you be interested in receiving real-time alerts about your electricity usage?
    - Yes
    - No
    - Maybe

- How important is it to you to be able to automate the shutdown of non-essential devices during peak hours?
  - Very important
  - Somewhat important
  - Not important
  - Not sure
- Would you prefer a feature that allows you to set a budget for your electricity usage and get alerts when you approach it?
  - Yes
  - No
  - Maybe
- Would you find it useful to see a breakdown of electricity consumption by device?
  - Yes
  - No
  - Maybe

Section 4: Additional Feedback
- What challenges do you currently face with managing your energy usage?
- What features would you like to see in an energy usage tracker and optimizer?
- Any other comments or suggestions?

Interview at Grocery Stores or Random locations
- Do you pay your electricity bill? Have you noticed an increase in the bill?
- How do you track your usage of electricity? Have you taken an approach to lower your bill?
- Are you interested in using an electricity usage monitor to help you save money on your electricity bill?

Timeline:

We plan to have one week to conduct our investigation including testing our instruments, recruiting participants, completing the data collection, and data analysis. First, the two forms of instruments including google surveys and interviews take one to two days to create and revise. Second, the process of recruiting the desired participants group may break into two parts: one is friends and family we know who belong to our desired group and the other is shoppers at grocery stores. The former group can be scheduled to have interviews with, but the latter group may be picked in a grocery store which may cause lower rate of conducting a successful interview. Our ideal sample size is about twenty. Given the conditions mentioned above, we might need to have three to four days to finish the survey and data collection. Lastly, the rest one or two days should

be used to analyze the data we collect, and we can start our design phase based on the insight of the analysis.