

Team 7: Energy Usage Monitor

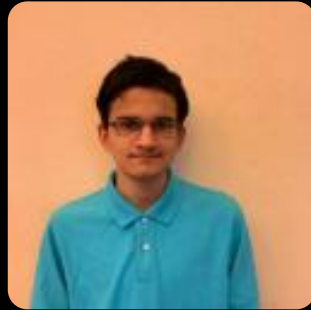
Rimon Yacoub, Shashhank Seethula, Johnny Nguyen, Ravi Gadgil

Meet the Team



Rimón

Login, Google Login,
Charts, Profile



Ravi

Home Dashboard,
Notifications, UI
Design



Johnny

Register, 2FA, UI
Prototype + Design



Shashhank

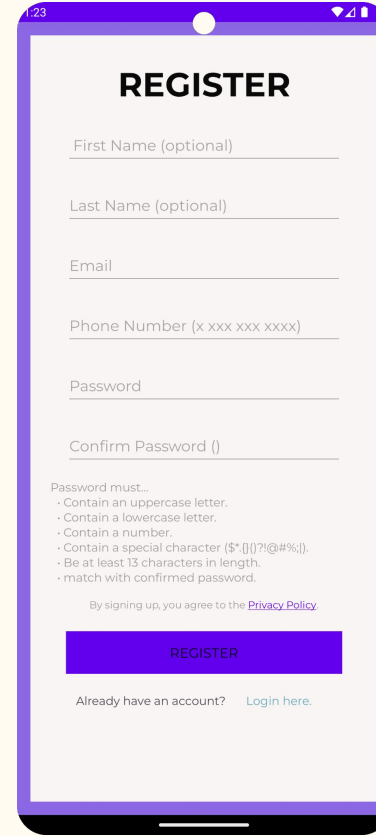
Usage, Energy
Analysis, CI,
Household
Comparison, APIs

Vision Statement

FOR environmentally conscious individuals and households **WHO** need an intuitive way to track, manage, and reduce their energy consumption, **THE** Energy Usage Monitor is a mobile application **THAT** provides real-time insights, predictive billing, and personalized tips to help users make data-driven decisions that lower their energy use and reduce costs. **UNLIKE** generic utility dashboards or static bill summaries, the Energy Usage Monitor offers integrated features such as PG&E data uploads, automated usage forecasting via linear regression, and proactive alerts through push notifications and in-app banners. **OUR** product empowers users to understand their energy usage through intuitive visualizations, receive personalized recommendations based on real data, and make meaningful changes that lower both costs and environmental impact. Designed to be secure, accessible, and adaptable, the Energy Usage Monitor encourages sustained engagement through intelligent features like predictive analytics, real-time alerts, and streamlined data integration. **TARGET USERS** include utility customers, sustainability-minded individuals, and budget-conscious households who seek more than just billing information, they want actionable insights and tools that help them take control of their energy habits, reduce dependence on fossil fuels, and contribute to a more sustainable future

Registration and Login Pages

- Registration Page
 - Users enter their personal information.
 - System sends verification email and prompts user to enroll for 2FA.
 - Requires agreement to Privacy Policy.
- Login Page
 - Allows login via Google account sign-in.
 - Allows login for registered emails.
 - Prompts for 2FA code and redirects user to Settings Page.



A mobile app registration screen with a purple header and a light gray background. The title 'REGISTER' is centered at the top. Below it are input fields for 'First Name (optional)', 'Last Name (optional)', 'Email', 'Phone Number (x xxx xxx xxxx)', 'Password', and 'Confirm Password ()'. A list of password requirements is shown below the password fields. At the bottom, there is a purple 'REGISTER' button and a link to 'Login here' for users who already have an account.

REGISTER

First Name (optional)

Last Name (optional)

Email

Phone Number (x xxx xxx xxxx)

Password

Confirm Password ()

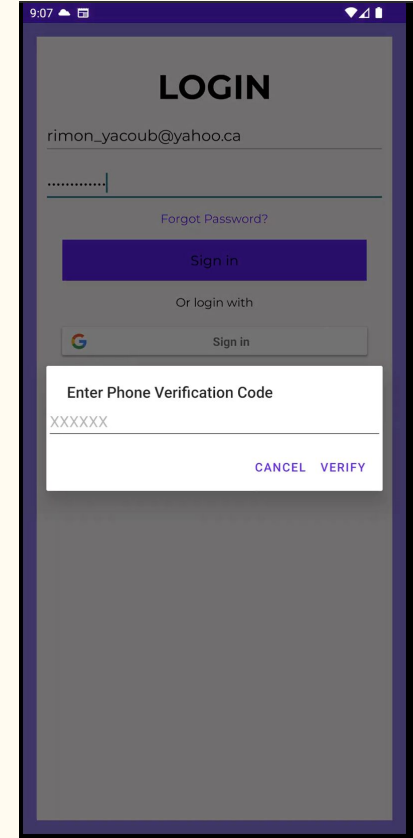
Password must...

- Contain an uppercase letter.
- Contain a lowercase letter.
- Contain a number.
- Contain a special character (\$*[]?@#%!).
- Be at least 13 characters in length.
- match with confirmed password.

By signing up, you agree to the [Privacy Policy](#).

REGISTER

Already have an account? [Login here.](#)



A mobile app login screen with a purple header and a dark gray background. The title 'LOGIN' is centered at the top. Below it are input fields for the email 'rimon_yacoub@yahoo.ca' and a password field. There is a link for 'Forgot Password?'. Below the password field is a purple 'Sign in' button. Underneath is a link 'Or login with' followed by a Google logo and another 'Sign in' button. A white modal box is overlaid on the screen, titled 'Enter Phone Verification Code' with a text input field showing 'XXXXXX' and two buttons: 'CANCEL' and 'VERIFY'.


LOGIN

rimon_yacoub@yahoo.ca

Forgot Password?

Sign in

Or login with

 **Sign in**

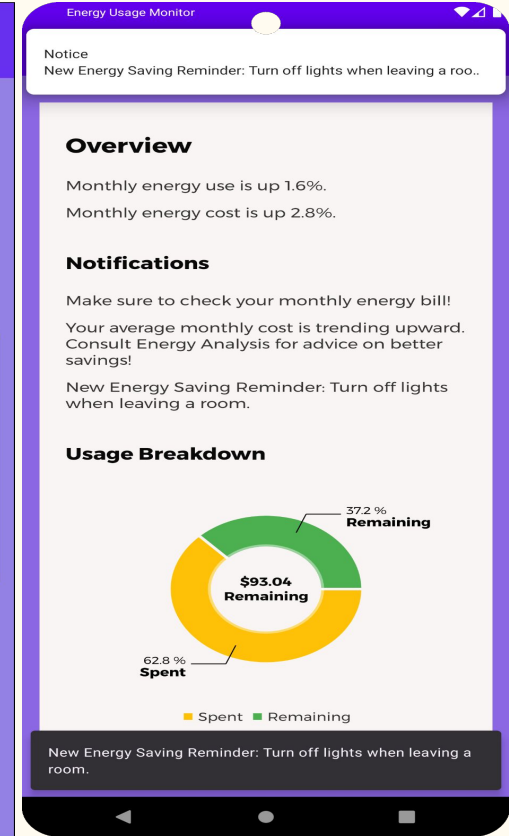
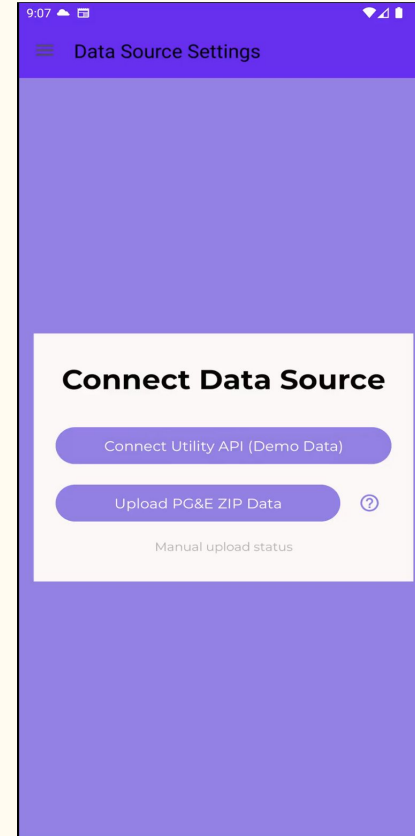
Enter Phone Verification Code

XXXXXX

CANCEL VERIFY

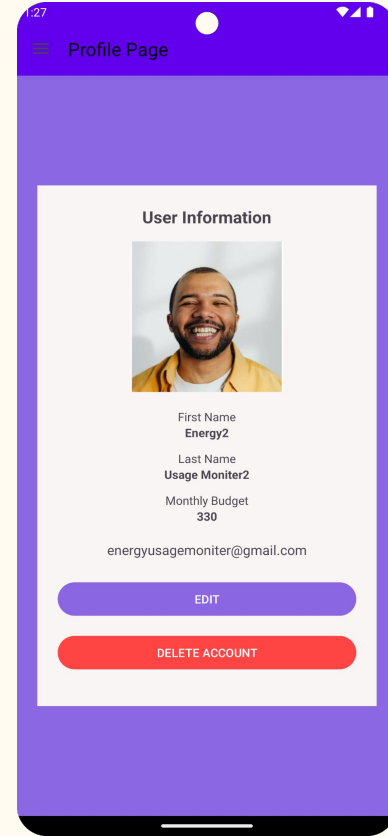
Settings Page, Home Dashboard, and User Notifications

- Settings Page
 - Allows users to connect demo energy data or a zip file of their PG&E data.
- Home Dashboard
 - Textual and visual summary of the user's energy consumption, monthly trends, cost insights, and suggestions.
- User Notifications
 - Delivers important updates based on the latest user data through system-level Android notifications and in-app banners.



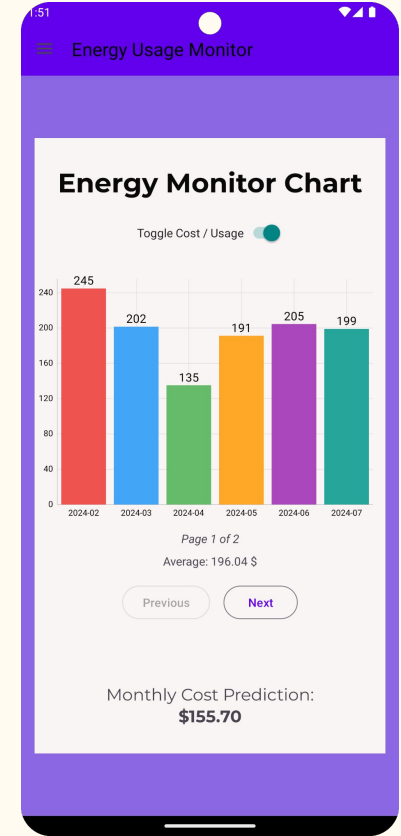
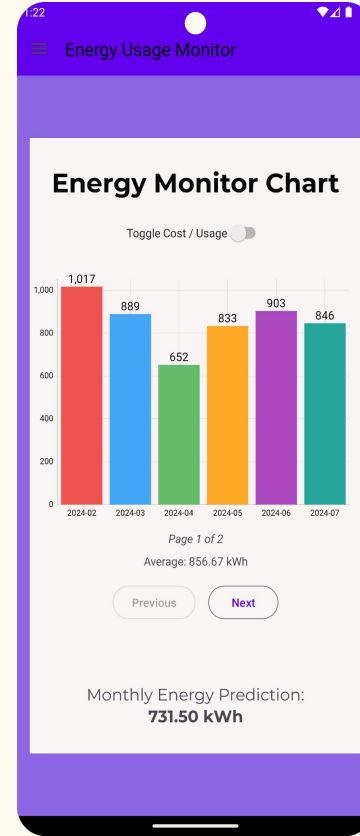
Profile Page

- Profile Page
 - Displays user's personal details.
 - Enables users to upload and save a profile photo.
 - Allows users to edit their information.
 - Provides an account deletion option.



Energy Monitor Charts and Monthly Predictions

- Energy Monitor Charts
 - Shows a bar chart visualizing historical usage and cost data segmented by the billing month.
 - Enables users to look at their most recent and previous six-month datasets.
 - Shows helpful metrics, such as average consumption and expenditure, over each respective six-month period.
- Monthly Predictions
 - Analyzes past energy usage and cost patterns using linear regression.



Energy Analysis and Household Comparison

- Energy Analysis
 - AI used to generate various types of analytical content based on user data.
 - Allows comparison of two different billing periods.
- Household Profile
 - Has fields that allow users to enter information about their household profile.
 - Compares the user's energy consumption for the month to the average energy use of comparable households.

The screenshot shows the 'Energy Analysis' app interface. At the top, there's a purple header with a menu icon and the title 'Energy Analysis'. Below the header, there's a 'Select Bill' section with a dropdown menu showing 'Feb 29, 2024 to Mar 31, 2024 - \$244.82'. Underneath is an 'Analysis Type' section with a dropdown menu showing 'Cost Breakdown'. At the bottom of this section are two buttons: 'Analyze' and 'Compare'. Below these is an 'Analysis Results' section. It starts with the text 'Here's a concise analysis of your utility data:'. It then lists three bullet points: 'Overall Cost: You used 1017 kWh, costing \$244.82 during Feb 29 - Mar 31, 2024.', 'Cost Distribution & Expensive Components: The data lacks a "cost_breakdown" to detail how the \$244.82 is split (e.g., energy charge, delivery fees, taxes). Without this, identifying the most expensive component is impossible.', and 'Potential Savings:'. Under 'Potential Savings', there are two sub-points: 'Efficiency: Reducing your kWh consumption is key. Look for ways to use less energy (e.g., LED lighting, energy-efficient appliances, adjusting thermostat).', and 'Cost Breakdown Request: Contact your utility provider and request a detailed breakdown of your bill to identify cost drivers and savings opportunities. The "Service Tariff: E1 XB Residential Service" can inform what specific costs are.' At the bottom of the results section, it says 'To provide more specific savings advice, a cost breakdown from your utility bill is crucial.'

9:08

Energy Analysis

Select Bill

Feb 29, 2024 to Mar 31, 2024 - \$244.82

Analysis Type

Cost Breakdown

Analyze Compare

Analysis Results

Here's a concise analysis of your utility data:

- **Overall Cost:** You used 1017 kWh, costing \$244.82 during Feb 29 - Mar 31, 2024.
- **Cost Distribution & Expensive Components:** The data lacks a "cost_breakdown" to detail how the \$244.82 is split (e.g., energy charge, delivery fees, taxes). Without this, identifying the most expensive component is impossible.
- **Potential Savings:**
 - **Efficiency:** Reducing your kWh consumption is key. Look for ways to use less energy (e.g., LED lighting, energy-efficient appliances, adjusting thermostat).
 - **Cost Breakdown Request:** Contact your utility provider and request a detailed breakdown of your bill to identify cost drivers and savings opportunities. The "Service Tariff: E1 XB Residential Service" can inform what specific costs are.

To provide more specific savings advice, a cost breakdown from your utility bill is crucial.

The screenshot shows the 'Household Comparison' app interface. At the top, there's a purple header with a menu icon and the title 'Household Comparison'. Below the header, there's a 'Your Household Profile' section. It has three input fields: 'Number of Bedrooms' with the value '2', 'Number of Occupants' with the value '5', and 'Zip Code (e.g., 95192)' with the value '95111'. Below these fields is a button labeled 'Save Profile & See Comparison'. Below this section is an 'Energy Usage Comparison' section. It starts with the text 'Your usage for Jan 2025: 743 kWh. This is compared against an estimated average calculated with regards to your household's bedrooms, occupants, and zip code for January 2025.' Below this text is a bar chart. The chart has two bars: a purple bar for 'Jan 2025' with a value of 743 kWh, and an orange bar for 'Est. Similar Avg.' with a value of 604 kWh. Below the chart, it says 'For January 2025, your usage (743 kWh) was somewhat higher than the estimated average for similar households.' At the bottom, there's a green circular icon with a checkmark and the text 'Profile saved!'.

9:08

Household Comparison

Your Household Profile

Number of Bedrooms

2

Number of Occupants

5

Zip Code (e.g., 95192)

95111

Save Profile & See Comparison

Energy Usage Comparison

Your usage for Jan 2025: 743 kWh. This is compared against an estimated average calculated with regards to your household's bedrooms, occupants, and zip code for January 2025.

743 kWh

604 kWh

Jan 2025 Est. Similar Avg.

For January 2025, your usage (743 kWh) was somewhat higher than the estimated average for similar households.

Profile saved!

Goal of our Product

- Our app aims to provide users with relevant actionable insights, monitoring tools, and incentives that motivate them to start conserving energy.
- Consequently, energy waste will be greatly reduced, as users will want to save money by using resources in a more sustainable manner.
- Thus, the app will achieve our primary goal of positively impacting the environment by reducing the amount of fossil fuels burned every year to produce energy, mitigating greenhouse gas emissions and climate change.

Demonstration

Backup Video:

