Development Log (Team)

Period: September 10 - October 30

September 10 - 15
Activity: Initial research into solar energy panels, installation costs, and regional return on investment. Reviewed typical energy consumption and pricing in the U.S., Mexico, and Canada to establish base data for the savings calculator.
Challenges: Collecting accurate and current data for each region and ensuring relevance to users' specific needs.
Solution: Consolidated information into datasets for the three countries to support tailored savings calculations.

September 16 - 22
Activity: Developed the MongoDB data schema, began setting up backend API routes with Express, and started designing the frontend interface with Bootstrap. Initial frontend wireframes were created, focusing on a responsive design for ease of use.
Challenges: Structuring the database efficiently to handle various user data inputs and outputs and adapting the frontend design to ensure device compatibility.
Solution: Implemented a modular database schema and updated the frontend wireframes to balance functionality with visual consistency.

September 23 - 29
Activity: Set up core API routes for retrieving solar panel data and user-specific preferences. Developed authentication for user sessions using JWT and integrated security layers.
Challenges: Managing secure data flow between the frontend and backend, ensuring sessions were correctly authenticated.
Solution: Added middleware to manage user authentication and protect data, with JWT-based sessions for secure, personalized access.

October 1 - 7
Activity: Built and integrated the savings calculator, allowing users to input details and see estimated savings. Developed data validation to handle inputs securely and accurately across multiple regions.
Challenges: Ensuring accurate calculations across different user inputs, handling variations in energy prices across regions.
Solution: Added server and client-side validations and a testing suite for consistent calculation outputs.

October 8 - 14
Activity: Designed EJS templates for displaying data dynamically, linked backend and frontend components to display region-specific calculations effectively.
Challenges: Adapting EJS templates for use with Bootstrap and ensuring

compatibility across devices.
Solution: Customized Bootstrap components to match the project's aesthetic and maintain consistent, accessible layouts.

October 15 - 21
Activity: Conducted beta testing and deployed the project to Render, focusing on response times and database load handling.
Challenges: Optimizing the backend to manage multiple concurrent requests efficiently.
Solution: Improved database indexing, minimized response times, and implemented caching for smoother user experience.

October 22 - 28
Activity: Finalized backend documentation, added animations for better UI transitions, and conducted final usability tests. Public deployment was completed.
Challenges: Refining the frontend design and ensuring seamless navigation for users.
Solution: Finalized Bootstrap styling and updated documentation, making last adjustments based on user feedback.

Personal Log (Self and Team Evaluation)

Natalia
I led the design and frontend, implementing Bootstrap for a polished, user-friendly look. The design aimed to make navigation intuitive and visually engaging, especially with the savings calculator as a core feature. The final aesthetic, optimized for various devices, reflects our team's original concept. Dubin's backend setup was crucial for smooth data management, while Heidi's research enabled accurate, region-specific results.

Dubin
I worked on backend integration, converting HTML to EJS to support dynamic content. My main focus was on the calculator's U.S. section, ensuring the accuracy of the energy cost and savings outputs. Natalia's design provided a cohesive layout, and Heidi's research allowed us to integrate location-specific calculations, making our tool more relevant for users.

Heidi
I focused on researching energy costs and calculation models for each region—Mexico, the U.S., and Canada. My role was to create accurate savings estimates based on local energy prices, helping users make informed decisions. Dubin's backend and Natalia's design created a solid foundation, allowing us to deliver reliable, regionally adapted tool.