EV CHARING SLOT RESERVATION & LOAD MANAGEMENT

User Stories

1. Slot Reservation Module:

US-01: Search Stations

As an EV user, I want to search for nearby charging stations so that I can choose the most convenient location.

US-02: Filter Stations

As an EV user, I want to filter stations by charger type and availability so that I can find a suitable charger.

US-03: View Time Slots

As an EV user, I want to view available and reserved time slots so I can select the correct charging time.

US-04: Book a Slot

As an EV user, I want to book a charging slot so that I have guaranteed access when I reach the station.

US-05: Modify or Cancel Slot

As an EV user, I want to modify or cancel my booking so I can adjust my travel plans.

US-06: Auto-Expire Booking

As the system, I want to auto-expire the slot if the user doesn't arrive within 10 minutes, so I can free up the charger.

2. Real-Time Charger Status Module:

US-07: View Real-Time Status

As an EV user, I want to view real-time charger status so that I know whether the charger is free or busy.

US-08: Charger Health Monitoring

As the system, I need to monitor charger temperature and load so I can detect faults early.

US-09: Mark Faulty

As a station operator, I want to mark a charger as faulty so that users cannot book it.

3. Load Management Module:

US-10: Load Calculation

As the system, I want to calculate total load every few seconds so that I can distribute energy safely.

US-11: Load Threshold Control

As the system, I want to restrict new charging sessions when load exceeds a safe limit so that the station does not overload.

US-12: Dynamic Load Balancing

As the system, I want to distribute load dynamically across chargers to maintain stability.

US-13: Emergency Priority

As an emergency vehicle user, I want priority charging so that I can bypass the queue.

4. Queue Management Module:

US-14: Auto Queue Add

As a user, I want the system to put me in the queue when all slots are full so I can wait for the next available turn.

US-15: View Queue Position

As a user, I want to see my queue position so that I know when my turn is coming.

US-16: Queue Notification

As the system, I want to notify the user when their slot becomes available.

5. Dynamic Pricing Module:

US-17: View Pricing

As a user, I want to view updated charging prices before booking.

US-18: Dynamic Charge Calculation

As the system, I want to calculate charging price based on time, demand, and charger type.

US-19: Membership Pricing

As a premium user, I want discounted pricing based on my membership level.

6. Charging Session Module:

US-20: Start Charging Session

As a user, I want my charging session to start automatically when the vehicle is plugged in.

US-21: Track Charging Session

As the system, I want to track consumption and time so the user knows their session progress.

US-22: Auto Stop Session

As the system, I want to auto-stop charging when the battery is full or time ends.

7. Notification Module:

US-23: Booking Confirmation Notification

As a user, I want to receive confirmation for my booking so I know the slot is reserved.

US-24: Reminder Notification

As a user, I want a reminder 30 minutes before my slot so I don't forget.

US-25: Charging Complete Notification

As a user, I want a notification when charging is complete.

8. Operator Dashboard Module:

US-26: View Dashboard

As a station operator, I want to view real-time station status so that I can monitor operations.

US-27: Fault Alerts

As a station operator, I want to receive alerts for faulty chargers.

US-28: Demand Forecast View

As a station operator, I want to view forecasted demand for the next day.

9. Admin Module

US-29: Manage Stations & Chargers

As an admin, I want to add, update, or remove stations and chargers.

US-30: Manage Pricing Rules

As an admin, I want to manage pricing rules to adjust demand-based rates.