EE/CprE/SE 492 - sddec21-21
Microgrid App
Biweekly Report 4

October 11 - October 25
Client: EPRC Anne Kimber
Faculty Advisor: Mat Wymore

Team Members:
Gabriel Rueger - Frontend Engineer
Michael Doyle - Team Leader / Backend Engineer
Micheal Thai - Backend Engineer
Patrick Shirazi - Frontend Engineer
William Bronson - Backend Engineer

Past Week Accomplishments:
- Mobile app select site and view site screen - Patrick
    - Updated UI for better styling and display of data
    - Setup rest endpoint to return list of sites
    - Select site screen calls endpoint to dynamically display list of sites
    - Site view screen calls endpoint to show list of datasources
        - Each datasource is collapsible, shows list of measurements
        - Scrollable list of data
- CSV export - Patrick and Will
    - Basic export functionality endpoint
    - Rest endpoint that takes crate id
    - Queries database for each datasource in crate and constructs table for datasource with columns as timestamp and measurements
- Connection to Tesla Powerwall - Patrick
    - Python script to access tesla powerwall data
    - Call to tesla api every second
    - Package data into json and send to rest endpoint
    - Endpoint takes data and inserts it into the database
- Finished coding the data for the other devices - Micheal
    - Created a 3 phase sinusoidal graph for the dranetz
        - Calculated the Vrms, Irms, and other power flow calculations
    - Coded the data ranges for the other devices in python
- Experimented with different graph libraries - Gabe
    - As we've tried to implement some of our more complex feature, we found out that some graph libraries could not meet our needs
    - Several graph libraries were tried, and a basic example was implemented to determine if the library would meet our needs

- ○ The react-native-svg-charts library was determined to be the library that would most likely meet our needs
  - ● Further implemented the live site data screen - Gabe
    - ○ The graph looks a lot better, and it was determined that the current graph library should meet our needs
    - ○ The x-axis can hold timestamp values
    - ○ The graph can have multiple y-axes
    - ○ The graph can have multiple color-coded data sets
    - ○ Data sets and y-axes can be dynamically made visible/invisible
    - ○ The latest data point for a given data set is shown below the graph

Pending Issues

- - Scraping data from all data sources
    - - Outback Radian Inverter, Dranetz Power Quality Meter, SMA Sunny Boy Inverter

Individual Contributions

Team Member	Contribution	Biweekly Hours	Total Hours
Gabriel Rueger	Experimented with different graph libraries Further implemented the live site data screen	4 4	27
Michael Doyle	Tested WebSocket Event handling Researched stompJS functions for requests sent with subscription event	3 4	22
Micheal Thai	Coded dummy data for other devices	4	14
Patrick Shirazi	Tesla powerwall data collection Site select and view page CSV Export	4 6 3	44
William Bronson	Data research CSV export	3 3	21

Plans for Coming Period

- ● Implement websocket communication for frontend and backend using the data currently available from our database - Mickey and Gabe
  - ○ Need to finalize and implement method for getting available data points when connecting to a site
  - ○ Need to "stream" data to the frontend as it is added to the database
  - ○ Frontend graph needs to update in real time, and the user needs to be able to select what data points they want to view

- Complete export functionality - Patrick
  - Add export function to mobile application
    - Hope to leverage ios / android built in file handling / sharing functions
    - Date range selector
    - Datasource selector
  - Server functionality allows selection of datasource and range selection
- Archive data - Patrick
  - After certain time, data granularity is less important
  - "Archive" data by averaging values over a certain period of time
  - Reduce space requirements
  - Possibly configure cassandra db to handle tombstones / data compaction

Summary of Advisor Meeting
- Create detailed timeline of the final sprint of the project
  - Timeline should include major milestones of the project and the people assigned to each milestone
- Data export discussion
  - Design of how user should interact with exporting data
  - Date time range picker
  - Export by datasource because of matching timestamps
- Graph display discussion
  - This graph library should do what we want, we will keep moving forward with this implementation
  - Seem to be going the right direction, will keep implementing it according to plan and get the advisor's feedback on the interactions for selecting and graphing data