Solar Powered Charging Dock for Lime® eScooters

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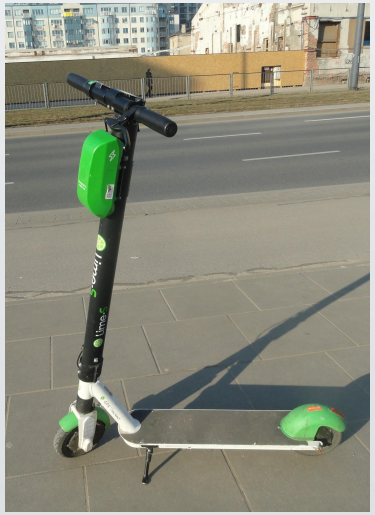
Problems

- Lime® scooters implemented over the past years on campus have problems:
  - They appear *everywhere*
  - Require manpower to fetch and recharge
  - Have to be charged using local power (juicers use their own homes for power)



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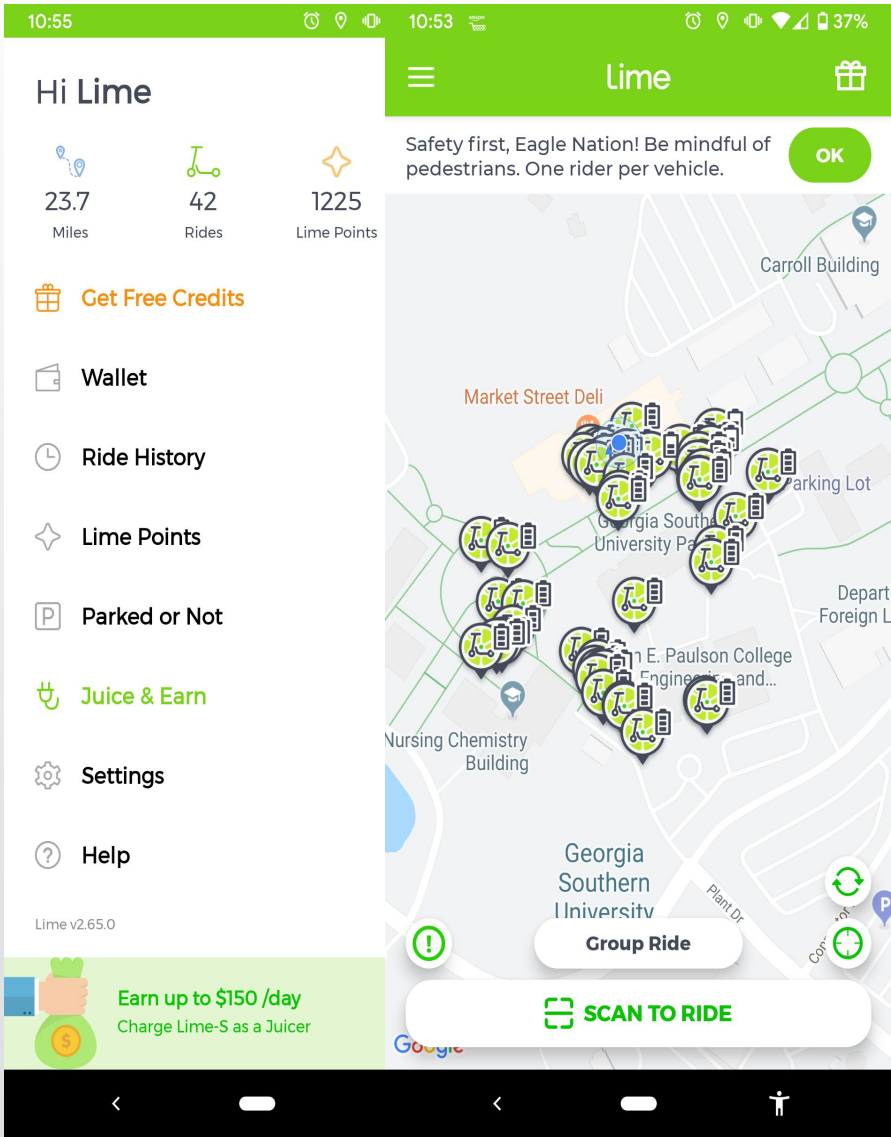
Problems Cont.

- Location
  - Roads
  - Parking Spaces
  - In way of accessability
  - Blocking doors
- Lime ® CO2 emission
  - Compared to Cars and Walking



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Solutions

- The following remedies will come from charging stations:
  - Charge from solar grid, not local homes
  - Provide certain points on campus where eScooters can be found
  - Have an incentive for people to park at the stations

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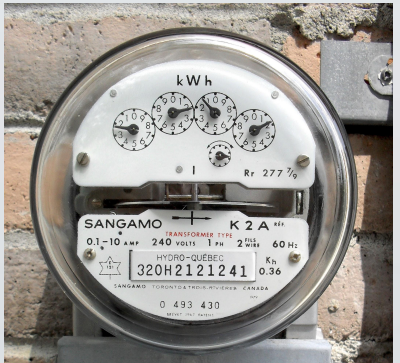
Features

- Metering to track usage and performance of panels and chargers.
- Mobile App/Website accessibility for the End User/Owner of station to access.
- Design that matches the aesthetic of Georgia Southern University.
- Custom locking mechanism to secure and charge eScooters when not in use.



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Implementation:

- Charging with 100 W solar panel:
  - eScooters charge using 42 V, 2 A (84 W)
  - Single 100 W solar panel can be used to both charge the scooter and provide power for a control system.

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Implementation Cont.

- Control System:
  - Deep cycle battery system for use after peak hours.
  - DC electrical motor to track the sun and provide optimal efficiency.
  - Arduino microcontrollers to control the motor, locking mechanism, and data statistics.
  - Meters to track the power analytics of the PV panel, DC Electrical Motor, and charging eScooters.
  - Raspberry Pi 3 to communicate with microcontroller.

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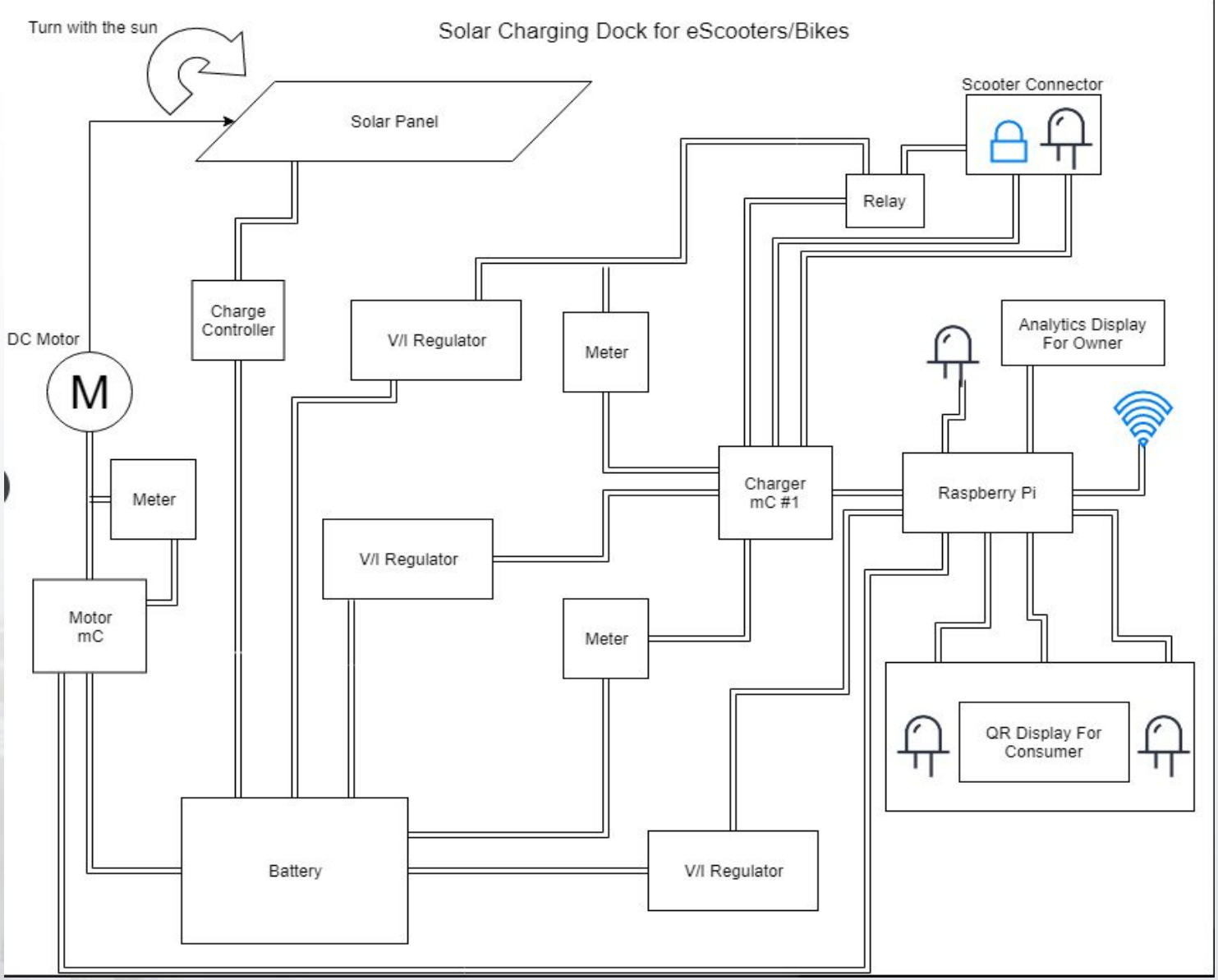

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Questions?

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Sources

https://chesterenergyandpolicy.com/2018/06/11/the-electric-scooter-fallacy-just-because-theyre-electric-doesnt-mean-theyre-green/

https://www.ridester.com/lime-charger/

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