

Lightning Talk 3: Design

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Design Context

- Client is in need of a battery for his derailleur that will passively charge itself
- No other existing products were found
- Technical Complexity
 - Lithium-ion charge protection
 - Water resistant, dustproof, resistant to vibrations
 - Constraint of 1.5 times original battery

Design Exploration

- We chose a 7.4V, 100 mAh battery based on the client's specifications regarding battery life and charging time.
- To meet the client's need for a hard exterior coating, we chose an epoxy dip.
- We have several options for mounting the solar panel, including mounting it directly to the derailleur, mounting it to a rear wheel, or mounting it to the handlebars/frame.

Proposed Design

- Current design overpowers the solar panel
- The design meets the client requirements
 - No wires
 - Charge during the day and power long night rides
- PV array may need to be larger
- Concerned design may not get enough sunlight

