

5/30/20 Meeting

## Research Papers

<https://ieeexplore.ieee.org/document/8614997> (origami-based portable)

<https://ieeexplore.ieee.org/document/7566456>

<https://ieeexplore.ieee.org/document/7478940>

<https://ieeexplore.ieee.org/document/7421513>

<https://ieeexplore.ieee.org/document/8528571>

<https://ieeexplore.ieee.org/document/8605460>

<https://ieeexplore.ieee.org/document/8342475>

<https://ieeexplore.ieee.org/document/8806509>

<https://ieeexplore.ieee.org/document/8289034>

<https://ieeexplore.ieee.org/document/8362577>

<https://ieeexplore.ieee.org/document/7455111>

## Dish Idea:

- <https://ieeexplore.ieee.org/document/7566456>
- [Relation with intensity](#)

<https://www.sciencedirect.com/topics/engineering/solar-tracking-system>

- 1st idea: solar panel mounted on top of a drone/rover that carries food/supplies, rotates to face the sun with the most amount of surface area
- Purpose: Commercial use for delivering necessities to areas where humans can't normally do by themselves. Such as during disaster times.
  - 2 parts
    - drone/rover build
      - Size: Between the size of a typical backpack to a tricycle?
      - Programmed to reach a certain destination safely
    - Dish solar panel build
      - Programmed to auto-rotate
  - Could have a dish mounted on it
  - How it compares to traditional methods
    - Traditional buggies are battery powered
    - Complement battery with solar (?)
  - # of panels + power produced
    - 1 panel (42"x21"x1.5" 100 watts) for a backpack sized rover
    - 1 panel (65"x20"x1.5" 300 watts) for a tricycle sized rover
- 2nd idea: portable charger powered by solar panel, that also adjusts to maximize sunlight
- Purpose: Mobile/Leisure use. Can also be used at home to power appliances.
  - Sections of project
    - Charger/ USB

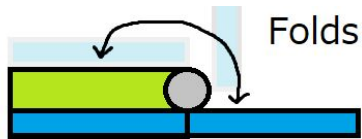
- Solar panels (and base to hold it up?)
- Device to measure power produced
- Device to determine the optimum angle for solar panels
- How it compares to traditional methods
  - Traditional portable chargers require you to charge a battery beforehand
  - This can be used on the fly, without charging beforehand, while its foldable design still allows it to be carried daily
- # of panels + power produced
  - mAh portable battery power to Watt hours conversion/comparison
    - $x \text{ mAh} * 5/1000 = y \text{ Watt hours}$
- 3rd idea:

#### Solar Panel Dimensions

Type	Size (inches)	Power (Wph)	Output Voltage (V)	Current (A)	Weight (Lbs)
Flat <a href="https://www.amazon.com/Renogy-Monocrystalline-Solar-Panel-Of-f-Grid/dp/B07BK1MG77">https://www.amazon.com/Renogy-Monocrystalline-Solar-Panel-Of-f-Grid/dp/B07BK1MG77</a>	65 inches x 40 inches x 1.5 inches	300 Watts per hr	32.2 Volts	9.33 A	41.3 lbs
Flat <a href="https://www.amazon.com/Newpowa-Monocrystalline-Efficiency-Module-Marine/dp/B07VBL7XKV/ref=sr_1_3?dchild=1&amp;keywords=300+watt+solar+panel&amp;qid=1590898335&amp;s=lawn-garden&amp;sr=1-3">https://www.amazon.com/Newpowa-Monocrystalline-Efficiency-Module-Marine/dp/B07VBL7XKV/ref=sr_1_3?dchild=1&amp;keywords=300+watt+solar+panel&amp;qid=1590898335&amp;s=lawn-garden&amp;sr=1-3</a>	65 x 27 x 1.4	200 Watts per hr	17.0 V	11.76A	32 lbs

Flat <a href="https://www.amazon.com/dp/B07HFMBF3G/ref=emc_b_5_t">https://www.amazon.com/dp/B07HFMBF3G/ref=emc_b_5_t</a>	42 inches x 21 inches x 1.5 inches	100 Watts per hr			17.65 lbs
Flat (Mini) <a href="https://www.amazon.com/ALLPOWERS-Battery-Charger-Encapsulated-130x150mm/dp/B074TYH68Z/ref=sr_1_4?dclid=1&amp;keywords=mini+solar+cells&amp;qid=1590898970&amp;sr=8-4">https://www.amazon.com/ALLPOWERS-Battery-Charger-Encapsulated-130x150mm/dp/B074TYH68Z/ref=sr_1_4?dclid=1&amp;keywords=mini+solar+cells&amp;qid=1590898970&amp;sr=8-4</a>	6.06 x 5.04 x 0.31 inches	2.5 W	5V	500 mAh	0.2 lbs
Dish <a href="https://www.solartronenergy.com/solar-concentrator/specifications/">https://www.solartronenergy.com/solar-concentrator/specifications/</a>	20 x 16 x 7	?	24V	5A	?

Charging Phone Case “Prototype” (if possible to implement as/for other designs:

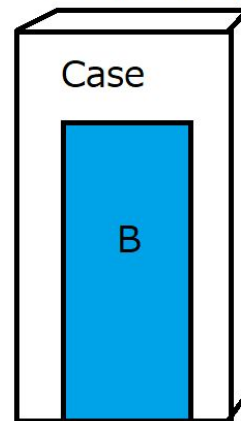


— panel  
— battery

Top View  
(Battery)

- Port to connect to panel/battery on case
- Add connecting wire to charge while charging? (if enough power produced)
- 2nd panel folds out for max charge per area

Back of case



Panel Battery  
slides in

- panel can be revealed to still charge while in case

