SOLAR
INVENTIONS

Future of Residential Energy Storage Discussion Points

March 2021

Background

Suniva - Georgia Tech Spin Out

Innovation based on PhD work. Adopted and developed the 1st Ion Implanted Solar Cells. Currently Installed at the White House

1994 GT Formula 1 Lightning Racecar

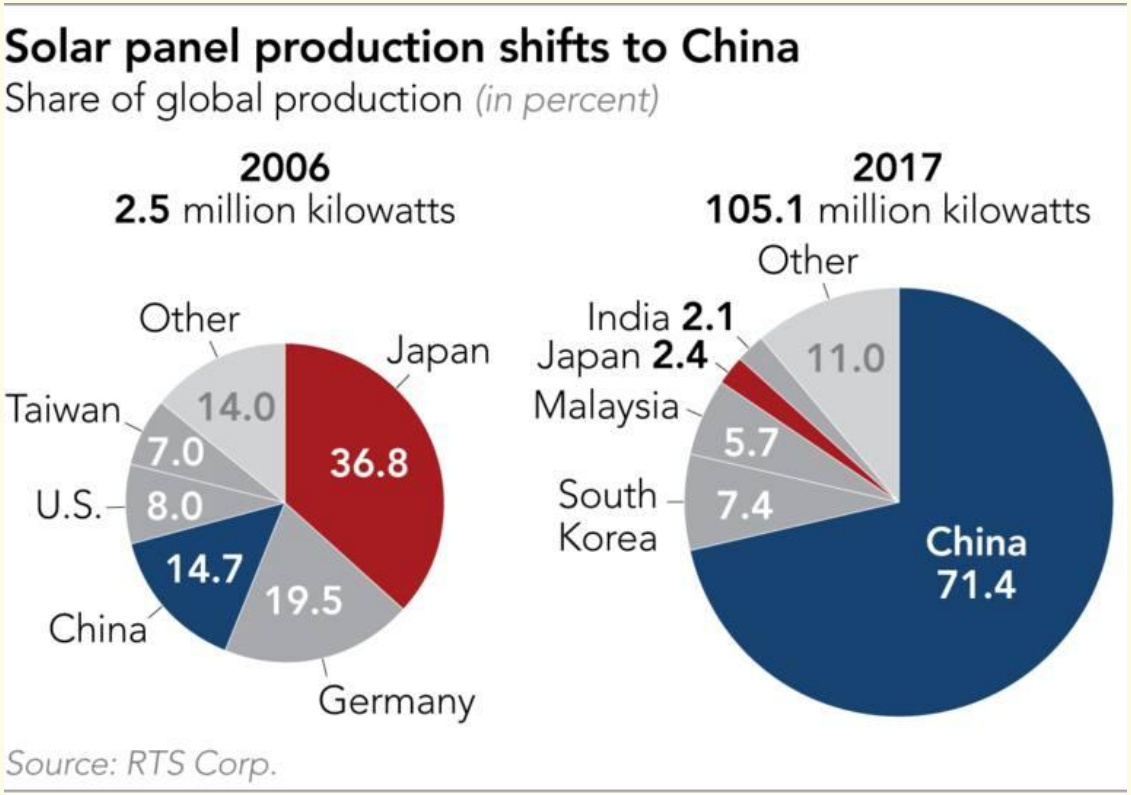
2004

PhD in EE specialization in Solar Energy

2007

2018

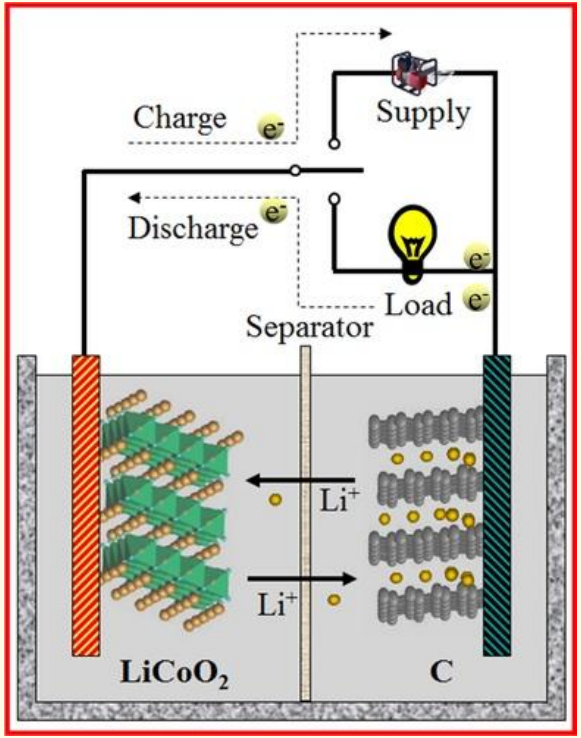
Innovation and Manufacturing



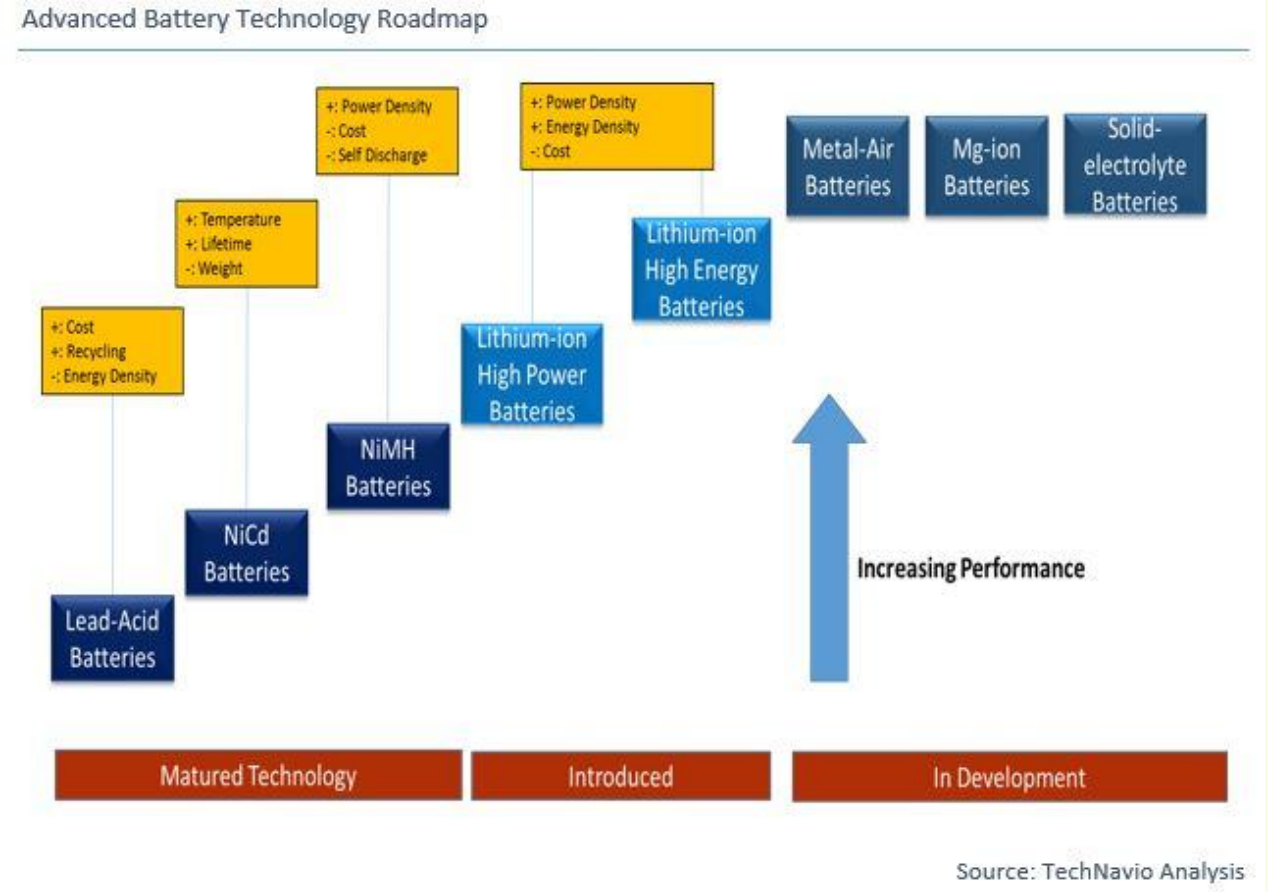
- Innovation alone is not protection
- Lithium Ion
- Solid State
- Recycling Capacity
- Earth Elements

Components of Batteries

- Anode - Silicon Lithium compounds
  - Ex: Graphite
- Electrolyte - Liquid going to solid state
- Separator - Needed for liquid
- Cathode - Transition metal oxides, spinels, and polyanionic materials
  - Ex: Lithium Nickel Cobalt Manganese Oxide
- Ion/Charge Transport



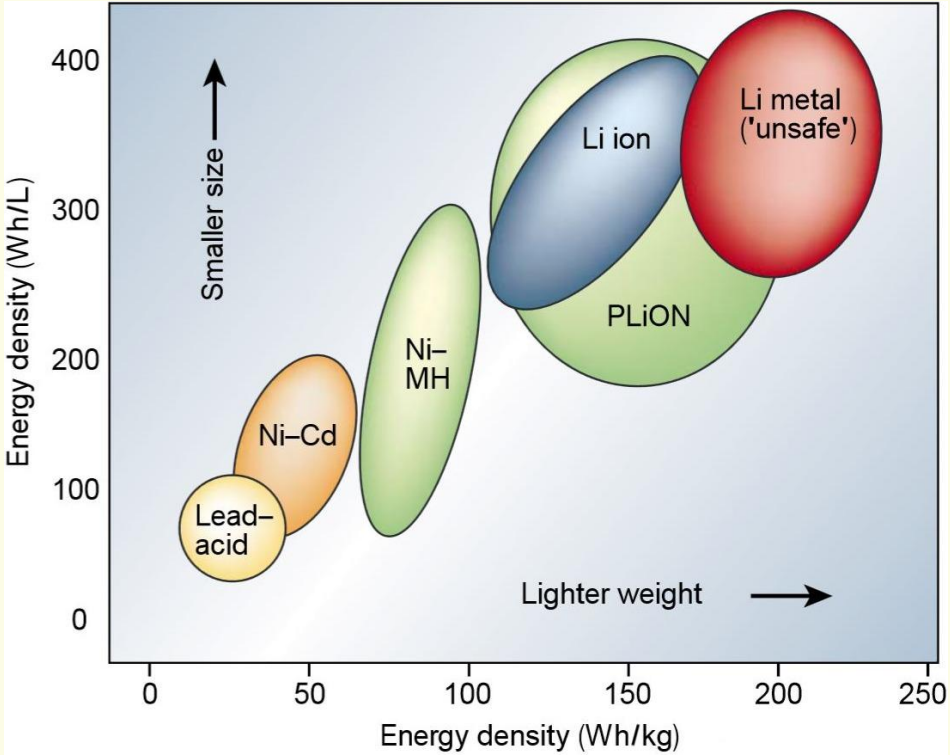
- Characteristics
- Recycling
- Manufacturing
- Rare Earth Elements



Different Battery Technologies

- Residential storage needs
  - Charge/Discharge
  - Cycling
  - Safety
  - Density
  - Size/Capacity
  - Cost

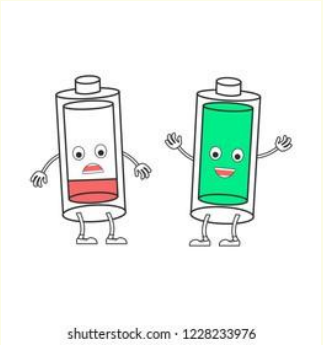
- Electrical vehicle storage needs
  - Differences



Shifting Energy Applications

- Lights come on
  - Heat spins magnets

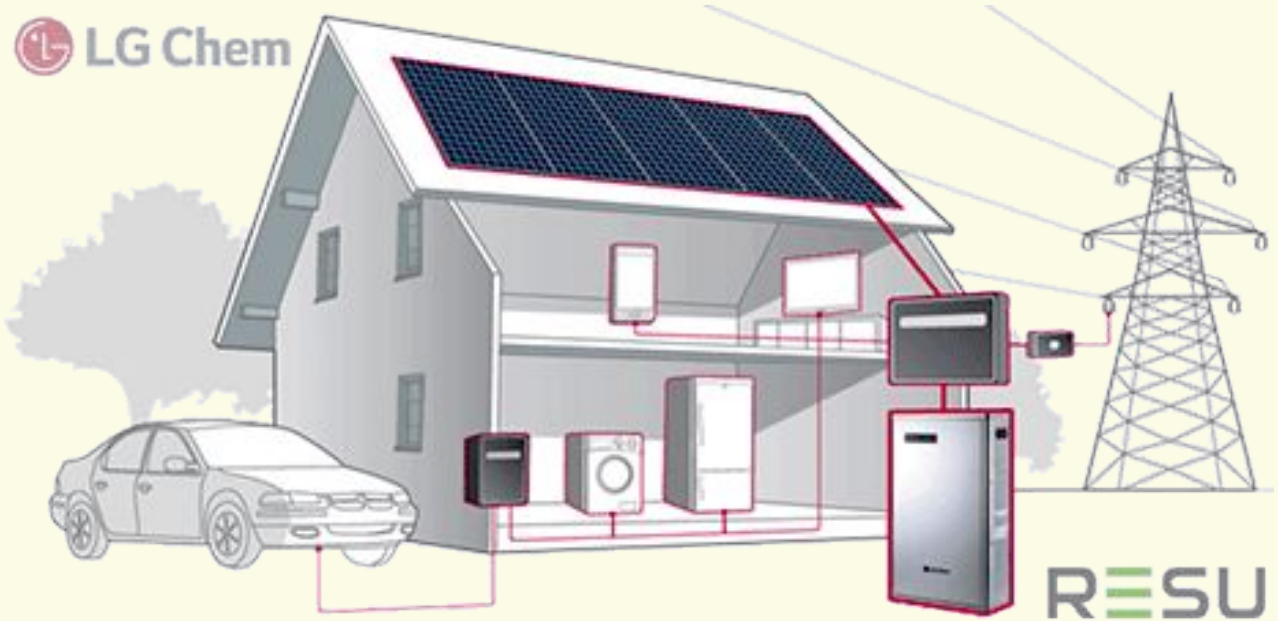
- Lights on
  - Suns Up



- Lights on
  - Battery is charged

US Residential Storage

- Cost
- System Size
- Reliability
- Power Generation
- On Grid/Off Grid



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Thank you

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