



Energy Storage Report

1. Introduction

GEAC is excited about the current opportunities regarding **Energy Storage Systems (ESS)**. The Industry is seeing rapid growth especially in the residential storage market and distributed energy sector. Energy Storage is ideal for businesses and companies looking for small scale storage solutions ranging from 3-10kW power capacity. Background about the Energy Storage Industry. (Box 1).

Box 1 Energy Storage

- Energy storage market to grow to USD 250 billion by 2040.
- Rise of Electric Vehicles improving economies of scale lowering cost Li-ion.
- By 2018 10% of global residential solar will involve battery storage.
- The fast pace of technology is reducing price for batteries and accelerating growth in the industry.
- Advantages: Recent discussions with Telecom, E-bike companies, and SIGUREC .
- Barriers: high initial costs, ability to demonstrate functionality, certification requirements.

Source:

1. Bloomberg New Energy Report (2016).
2. Energy Storage Council Global Energy Storage Report (2015).

1.1 Problem Statement

By capacity more than 99% of global energy storage is today made up of large scale pumped hydro. However there is a significant shift towards other forms of energy storage, particularly battery storage. This is demonstrating potential to disrupt electricity and transportation sectors.

2. Competitors and Products for Residential Storage

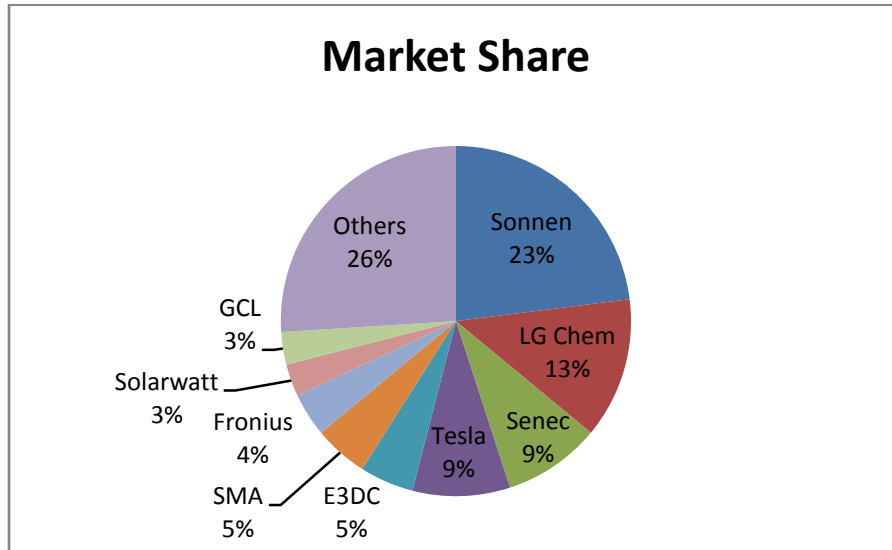


Source: PV Magazine Storage Special 2015

The following countries have active markets for buying Energy Storage.

- China and Japan
- Australia and US
- Germany and India

2.1 Energy Storage Market Share First Half 2016 for AU, EU and US



Source: EuPD Research Germany

3. Applications for Energy Storage

- Avoiding costly fuels and transport of fuels.
- Providing UPS for specific equipment and loads.
- Reducing need for expensive electricity infrastructure.

3.1 Hot Segments for Energy Storage



Electric Vehicle

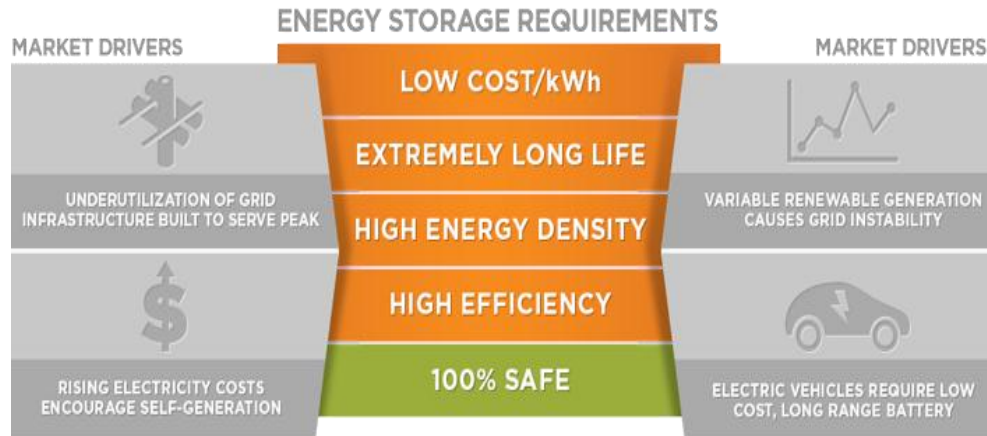


Residential Energy Storage

3.2 Users of Energy Storage

- *Island Nations*, why? Remote locations and high energy costs infrastructure.
- *Industrial sector*, why? Those businesses who need regular consistent power.
- *Hospitals, government, military*, why? They need UPS for emergencies.

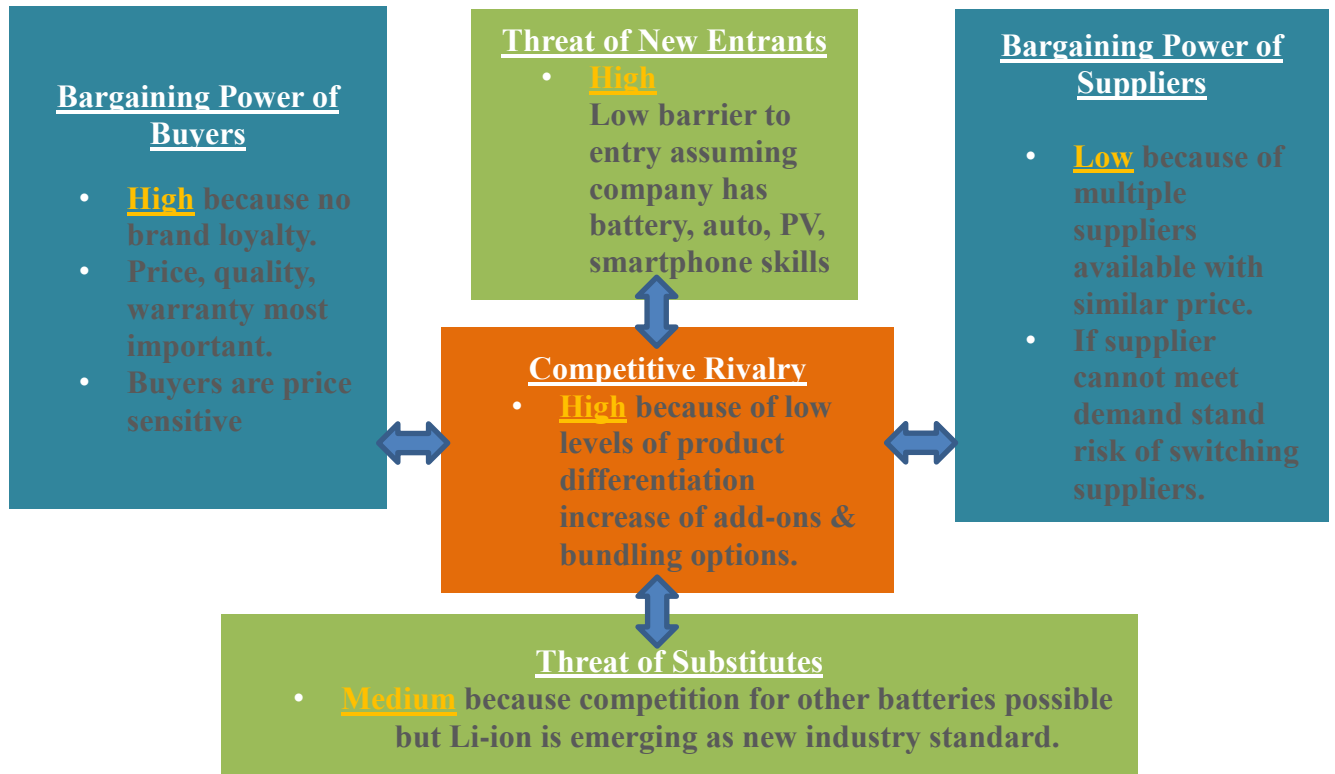
4. Market Drivers For Energy Storage



Source: EOS Energy Storage

4.1 Porter Five Forces

Five Forces for Energy Storage Systems



4.2 Current Business Trend in Solar

Many solar companies face a problem regarding solar installations and customer purchase of Energy Storage Systems.

- The Customer: Businesses such as shopping mall, grocery store or small textile factory.
- Ideal for solar and energy storage because of high energy bills, refrigeration, large rooftops.
- The problem: Solar installation requires substantial up front capital expenditures.
- Solution: Demonstrate to customer that upfront capital expenditures costs will breakeven over 5 year period. How? Utility trends -costs increase in utility rates, power bills and gap's in power. Power cuts can causes loss of profit, accidents, and uncertainty for industry or small business.

4.3 GEAC Products/Cost with ESS



- 5kw off-grid power station
- 18 solar panels with racking for installation

- Energy Storage System included
- Design and shipping container included

GEAC Energy Storage System Dual Inverter and MPPT



- Dual 4kw Hybrid Inverter
- 8kW power capacity
- Dual MPPT Charger
- Panasonic Li-ion Battery
- BMS system
- Dual Hybrid Inverter AC/DC
DC/AC

5. Conclusion

GEAC believes the opportunity for energy storage is a growing industry with great potential. We look forward to working with any partners who are interested to collaborate with us on potential projects. Please feel free to contact us with any questions. Thank You!!