Introduction

“We Make Energy Efficient!”

Energport Inc. Introduction

Energport Inc. is a Silicon Valley based Lithium iron phosphate (**LFP**, aka **$LiFePO_4$**) battery supplier with operations and assembly facilities in Northern California. We specialize in commercial, industrial, utility-scale and turnkey residential energy storage systems, focusing on demand charge reduction, peak shaving, as well as UPS back-up and off-grid solutions. As a vertically integrated producer, we maintain inventory and can provide customized energy storage solutions with the most cost-effective pricing.

EP Premium Partners

Energport

Geli

Green Realities Solar
Green Realities, LLC

Aeterna ENERGY

XSUNX

LANER ELECTRIC SUPPLY

ALLY
ELECTRIC AND SOLAR INC.

Gotion

BaSC solutions

Fuji Electric

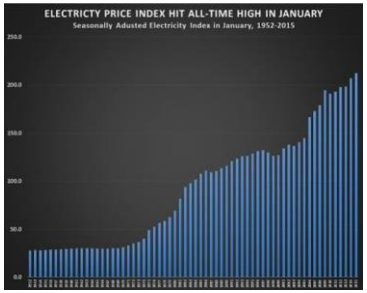
Custom Power Solar

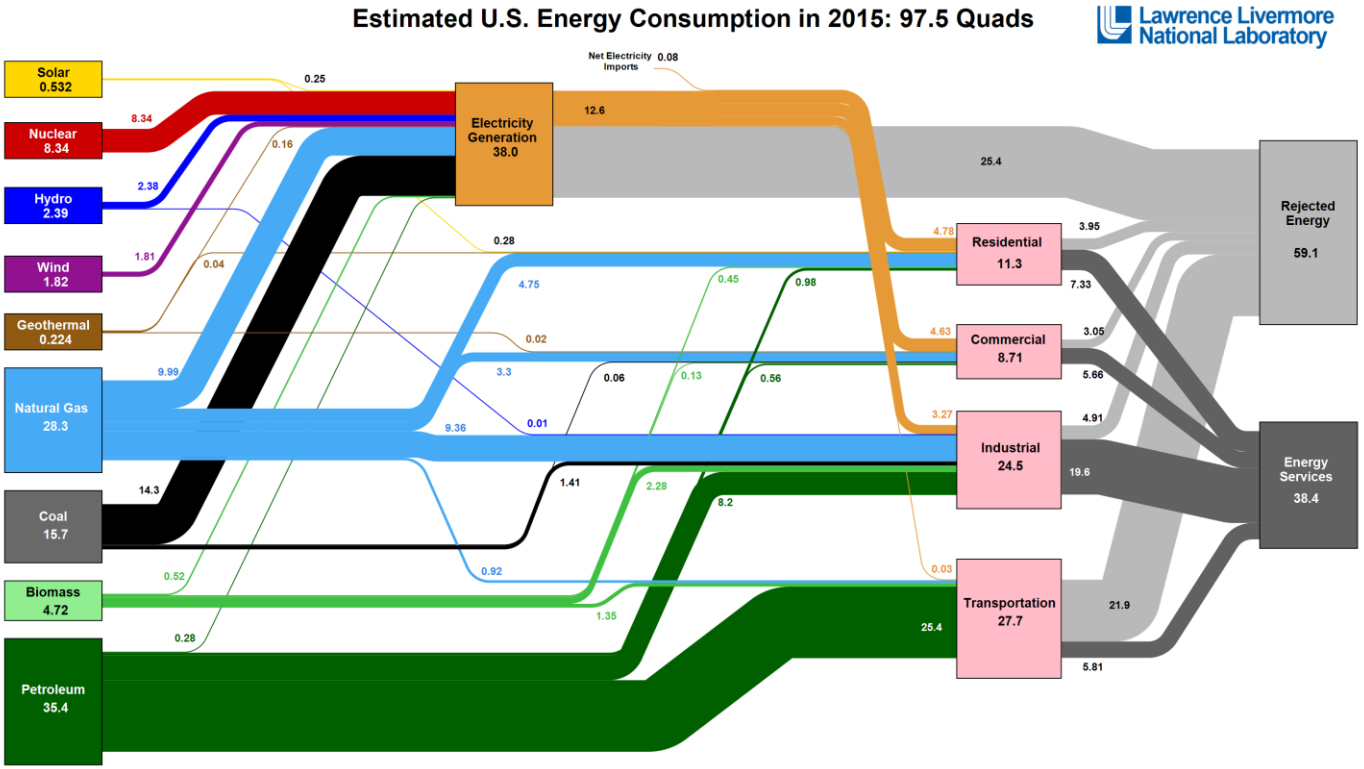
CESA
CALIFORNIA ENERGY STORAGE ALLIANCE

NET ELECTRIC

Global Energy Challenges

- Energy Waste – Generation 66.8%, Transportation 79.1% Rejected Energy
- Energy Cost – 112% increase from 1983 to 2015
- Fossil Fuel – Not sustainable, 9.7% renewable
- Global Warming – CO2 emission affecting the climate
- Security – Energy independence at country and household level





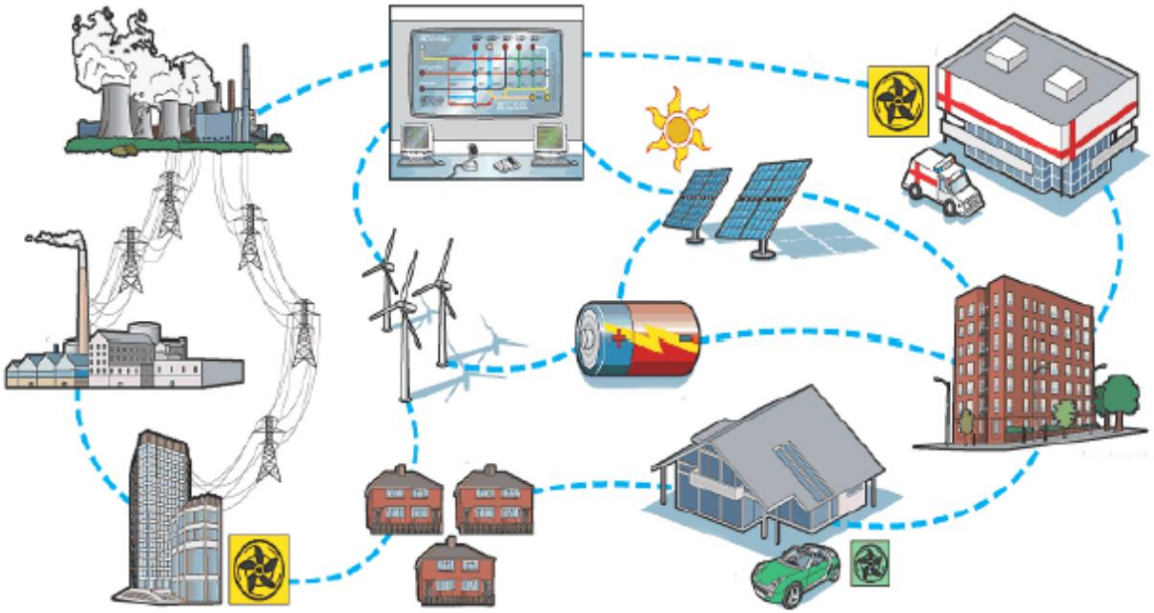
Source: LLNL March, 2016. Data is based on DOE/EIA MER (2015). If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports consumption of renewable resources (i.e., hydro, wind, geothermal and solar) for electricity in BTU-equivalent values by assuming a typical fossil fuel plant heat rate. The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 65% for the residential sector, 65% for the commercial sector, 80% for the industrial sector, and 21% for the transportation sector. Totals may not equal sum of components due to independent Rounding. LLNL-MI-410527

Internet of Things – New Energy Structure

4th Industrial Revolution = IOT driving energy structure into connected distributed formation

Traditional Grid

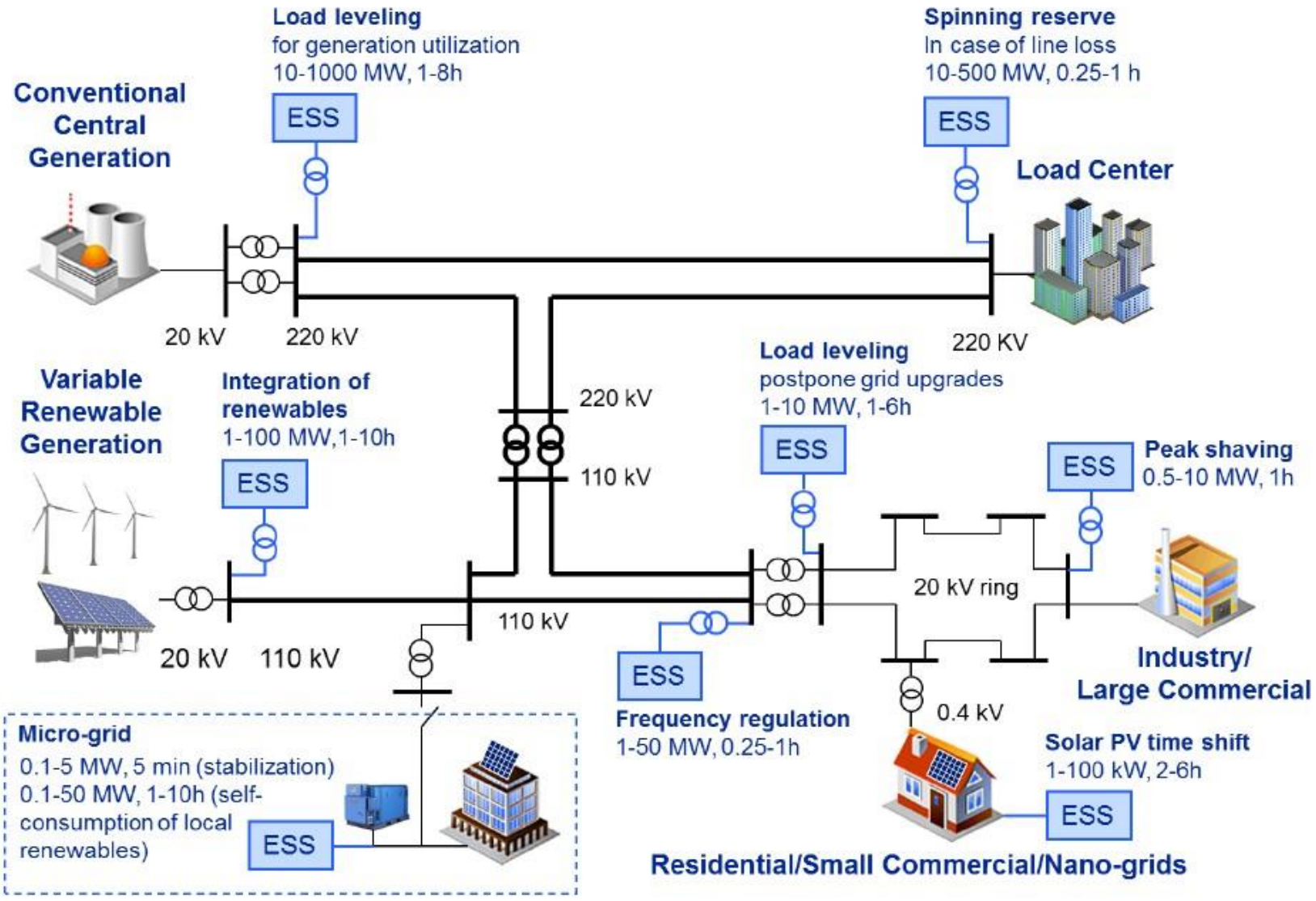
Central Hierarchy



Internet Connected Grid

- Bidirectional
- Distributed
- Local Generation
- Local Storage
- Local Consumption
- Community Sharing

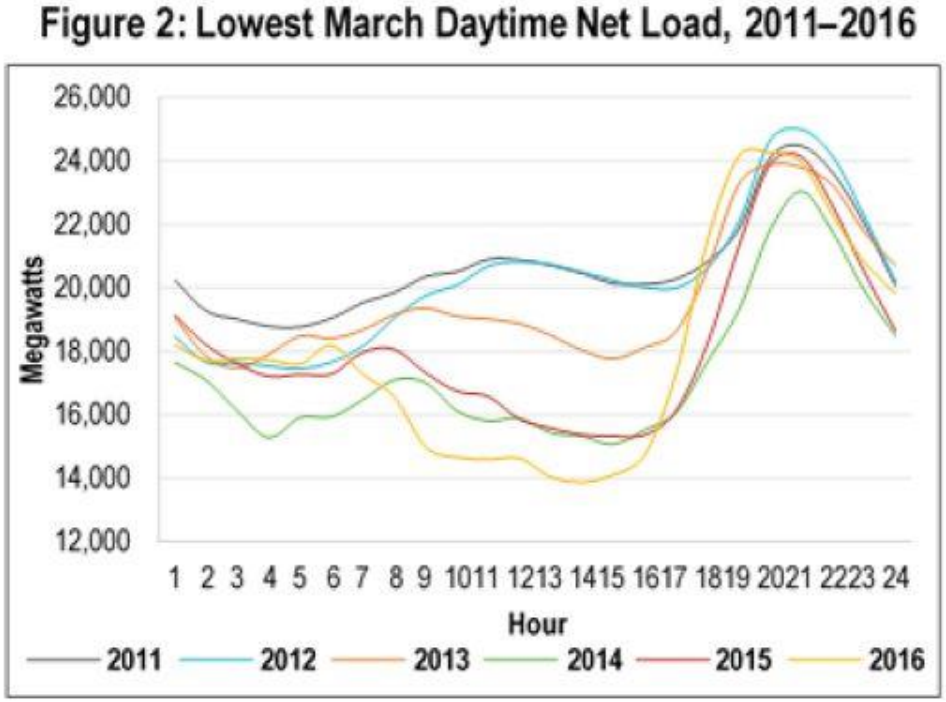
Battery Energy Storage System Applications



Duck Curve

California's "Duck Curve"

In 2021 PG&E Res. TOU Peak will be 3-8 pm M-F, and 4-9 pm beg. 2022



5 gigawatt demand increase from 5-6 pm
15 GW from 6-9 pm

Sharp increase in solar PV production has eased 10 am – 4 pm grid challenges

Utility company Peak Demand charges typically until 6 pm = a PV void period

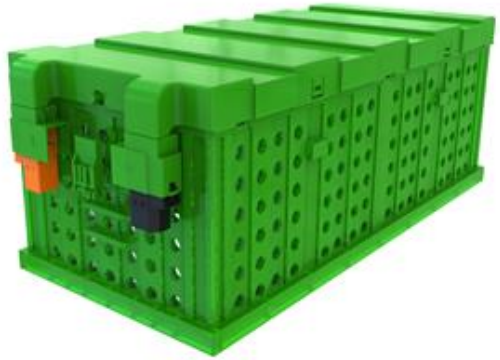
PG&E Residential Tier 3 rates over $.40/kWh – Peak usage 6 pm – 11 pm

Res. TOU is coming = Peak rates over $.43 and higher baseline usage rates

Fixing The "Duck Curve"

Without any form of energy storage, after times of high solar generation, utility companies must rapidly increase power output around the time of sunset to compensate for the loss of solar generation, a major concern for grid operators where there is rapid growth of photovoltaics.

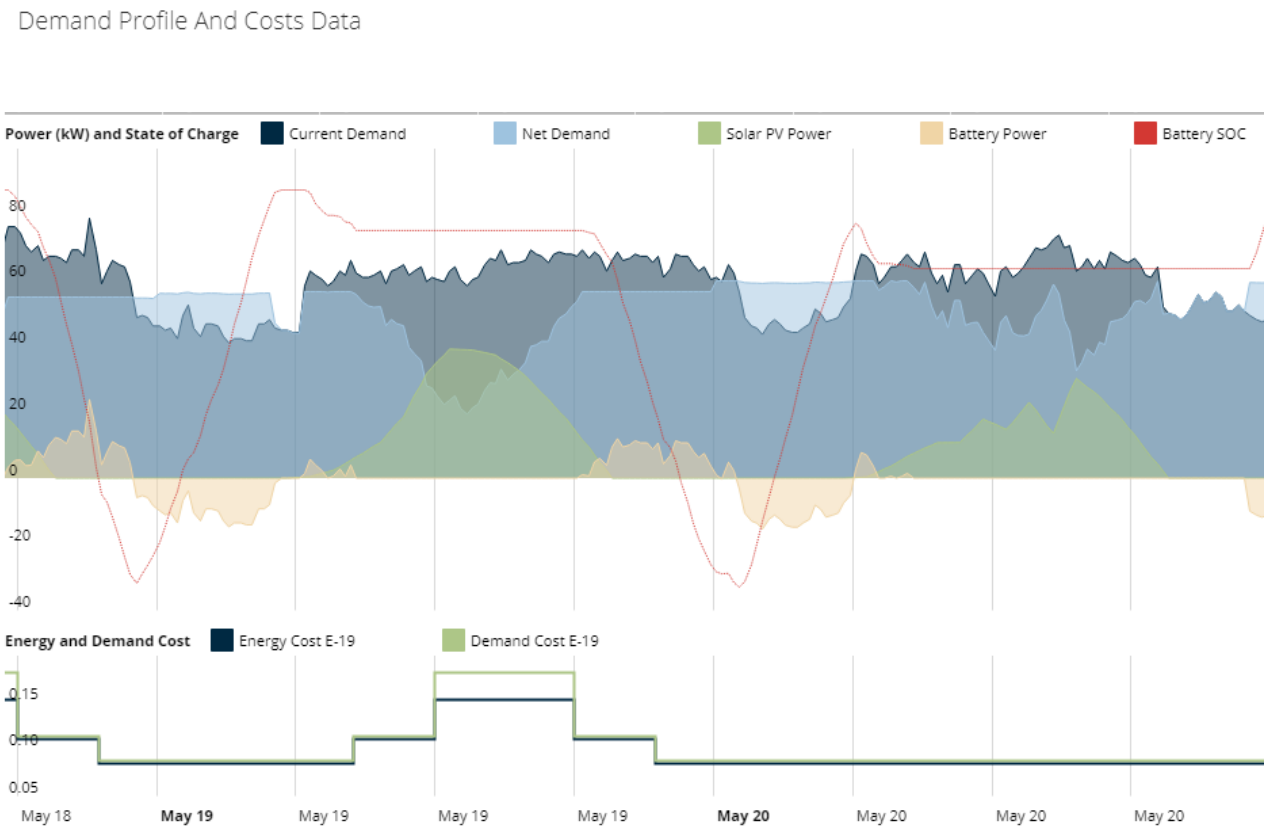
Storage can fix these issues... Short term use batteries, at a large enough scale of use, can help to flatten the duck curve and prevent generator use fluctuation and can help to maintain voltage profile…[1]



1. Lazar, Jim. "Teaching the 'Duck' to Fly"

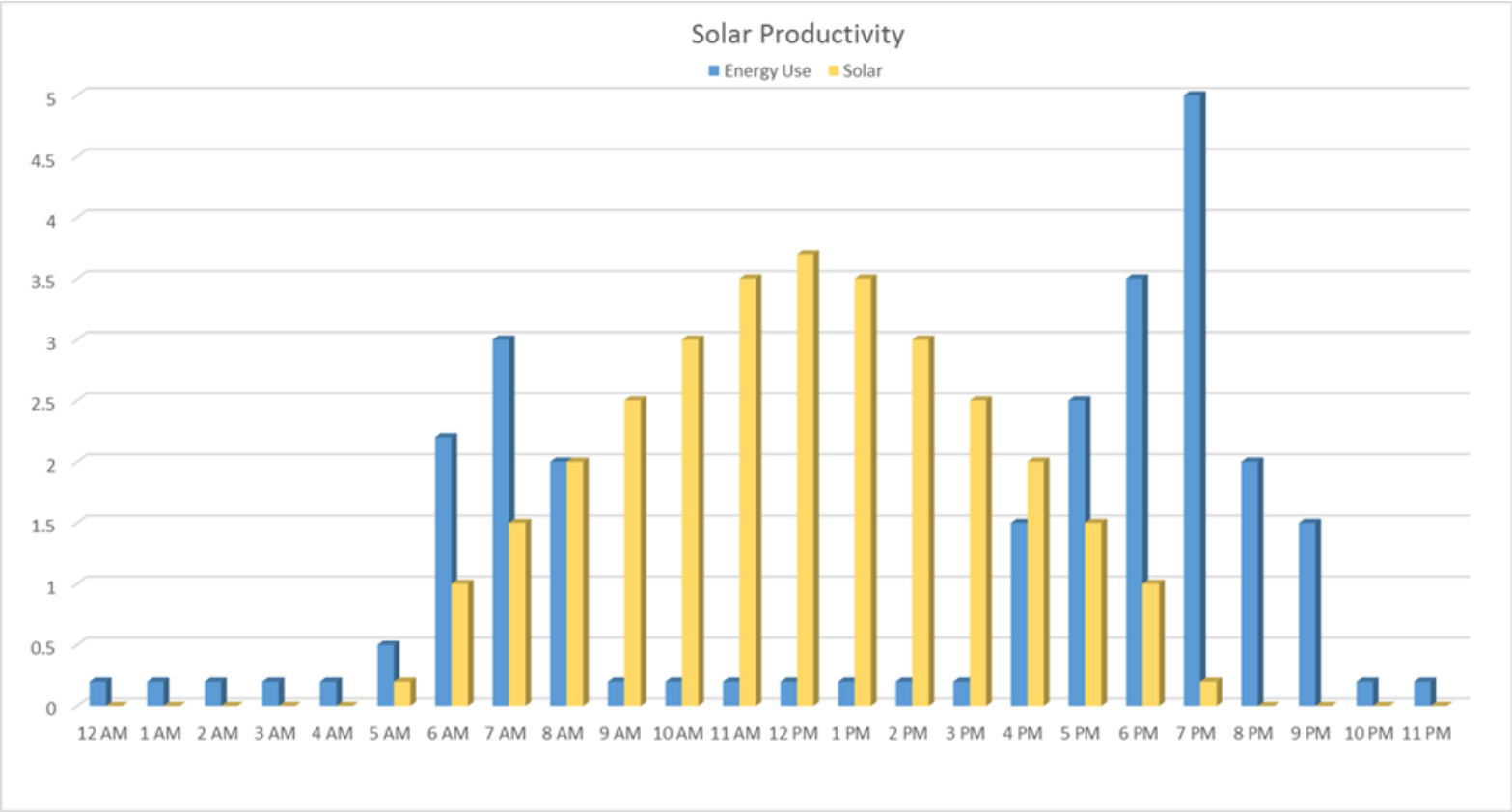
What Happens When The Power Goes Out?

PV + Storage Commercial Profile



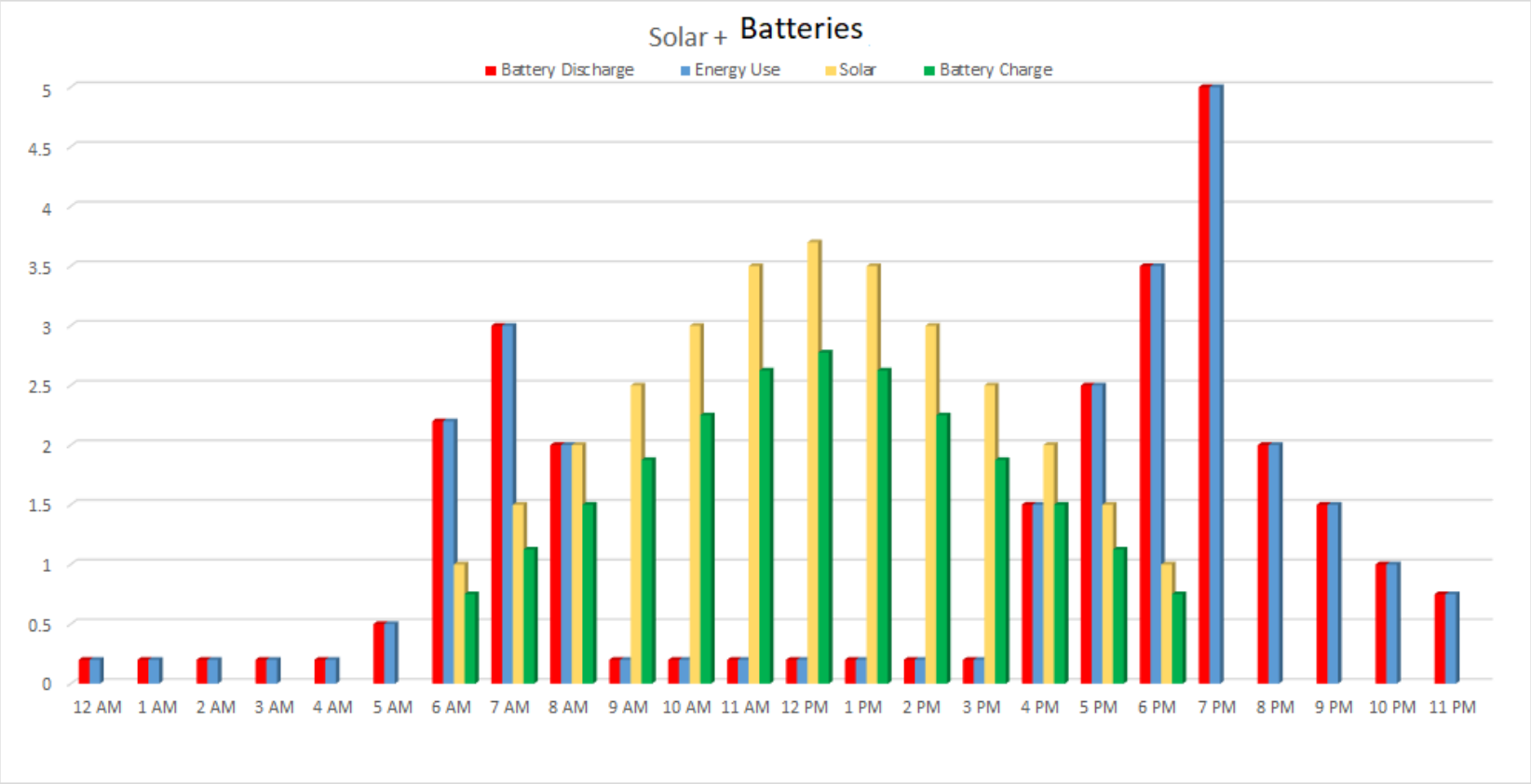
Above is a sample of energy consumption data for a Hotel in California with an energy storage system and solar PV installed. Here, the ESS kicks in in the afternoon and supplies energy during peak demand lowering utility kW charges. ESS can be programed to be charged from solar PV or the grid at night when energy charges are lower.

PV Residential Profile



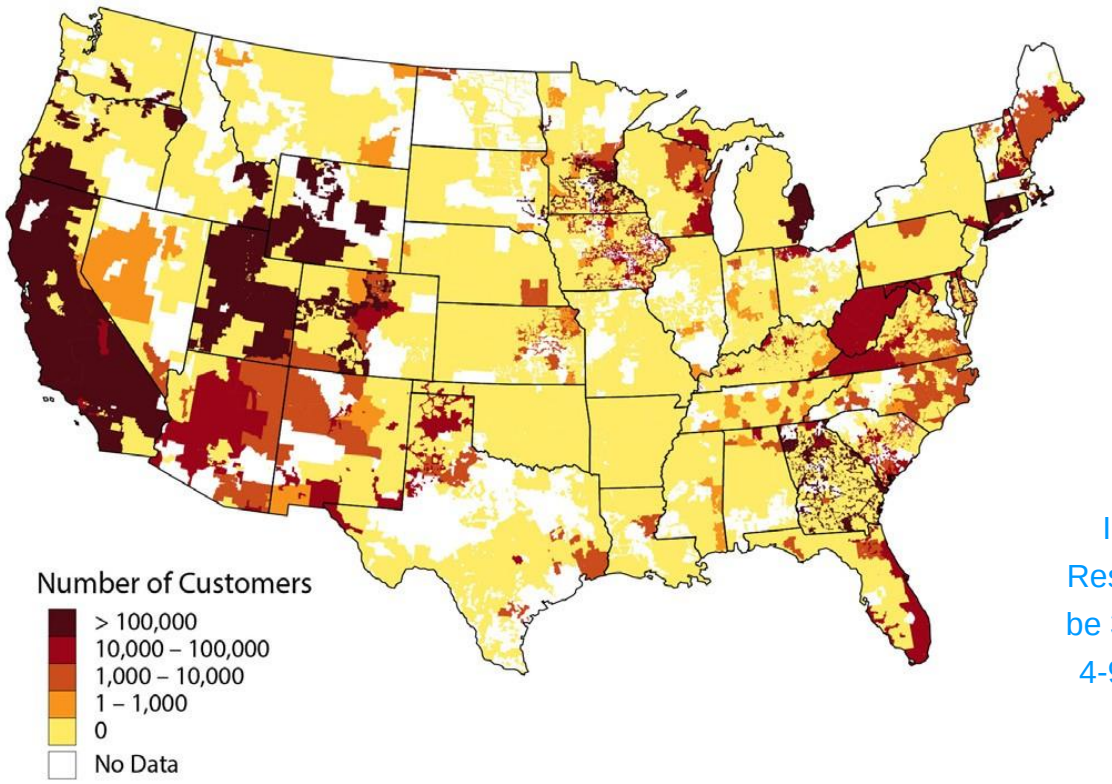
The slide above demonstrates typical residential usage patterns and the offset with solar PV. Notice that solar is strongest in midday when homeowners are at work and not using electricity. The solar void (duck curve) is in the evening and early morning when usage well exceeds what solar can provide.

PV Residential Profile With Batteries



The above slide shows the same residential production and usage curve, with the addition of an energy storage system (in this example - recharged by solar PV). ESS fills the voids. ESS provides power when you need it most – when you are home and using your appliances.

Identifying Potential Markets

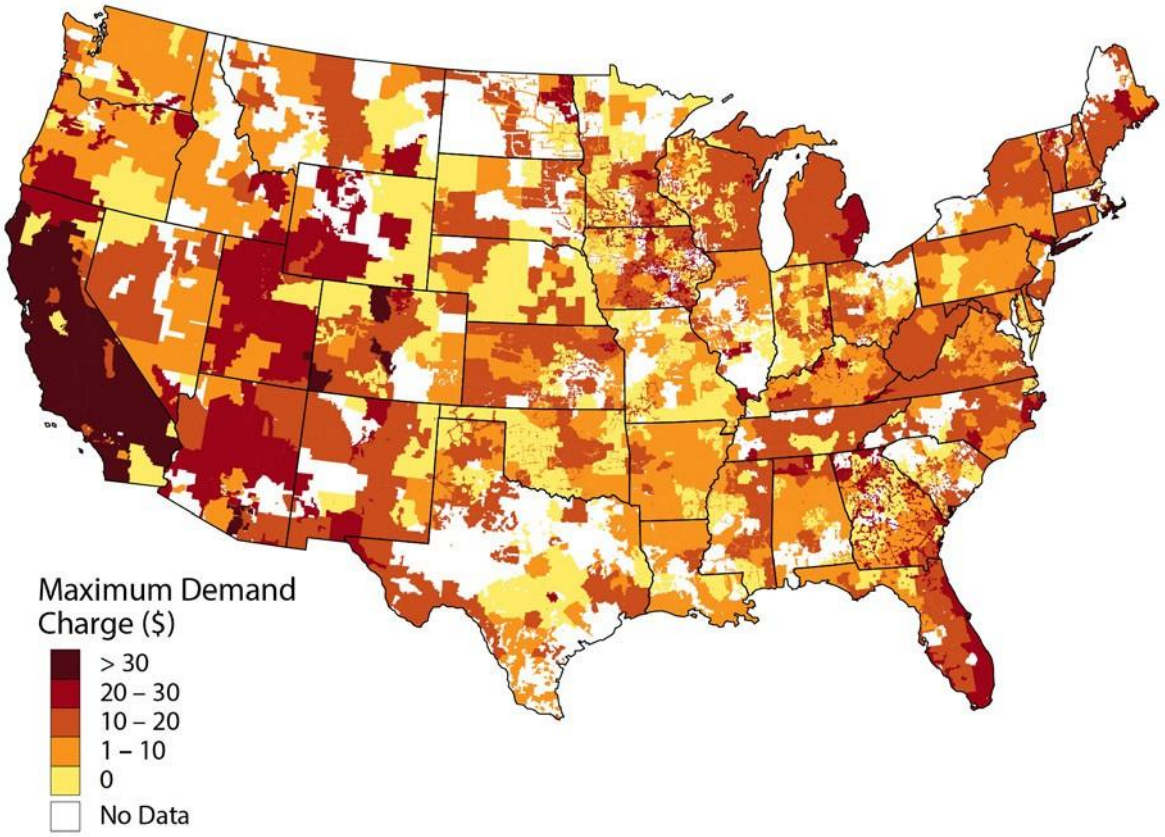


In 2021 PG&E Res. TOU Peak will be 3-8 pm M-F, and 4-9 pm beg. 2022

The map above shows the current target areas for energy storage based upon NREL data provided by the U.S. Department of Energy.

In California, the best targets are shown in brown, whose demand charges exceed $15/kW. Nearly all medium and large commercial customers in California have a tariff that includes a demand charge.

Demand Charge Map



The map above shows geographic areas and their respective demand charges. There are significantly high demand charges throughout California - PG&E, SCE, SDG&E areas. (SMUD, Roseville Electric, REU have lower demand charges).

Energport

We Make Renewable Energy Scalable

Electric Power Daily from Your Own Power Plant

Emergency Power When you Need it Most

Economic Savings – Non-Utility Power Source

Security – Protection from Grid Failures

SAFE – $LiFePO_4$ Batteries

Opportunities + Partnership

2、Product

- Safety & Reliability
- Modular Design, Highly Integrated, High System Energy Density
- Advanced EMS & Remote Monitoring

3、Team

- Years of ESS Integration Experiences
- NA Deployment Experience
- Strong Supports from Guoxuan (Gotion)
- NA Local Presence
- Clear Business and Technical Roadmap

1、Market

- Huge ESS Market Demand, Variety Applications
- Matured NA Market and Government Support
- EV Market drives down Battery Cost for ESS
- Viable Leasing Business Model

Maximizing Your Billing Savings

One Size Does Not Fit All

- We view customer interval data to determine peak usage periods
- We compare usage with billing charges to determine best ESS deployment times
- Example: Customer shown above had highest peaks between 10 am and 2 pm
- Energport lowered peak charges and qualified customer for a better utility rate

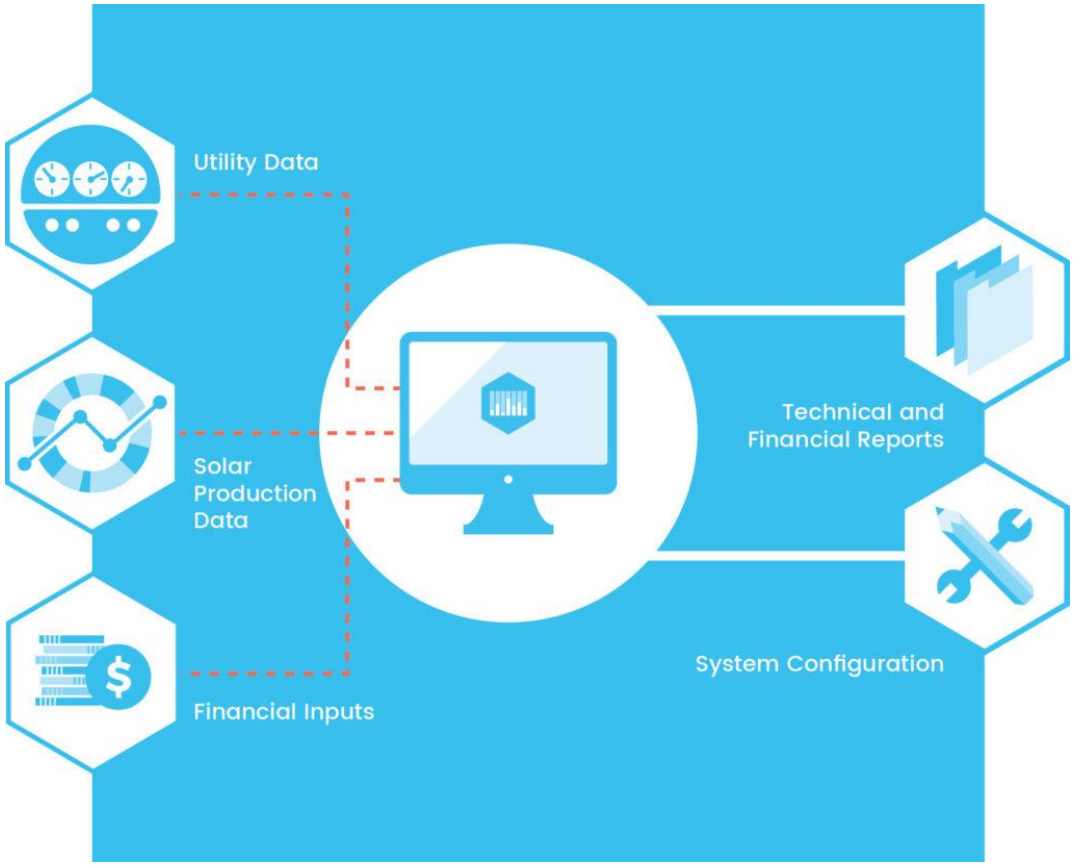
Using Geli to Analyze Your Project

Geli

Site Analysis

System Selection

Financial Projections



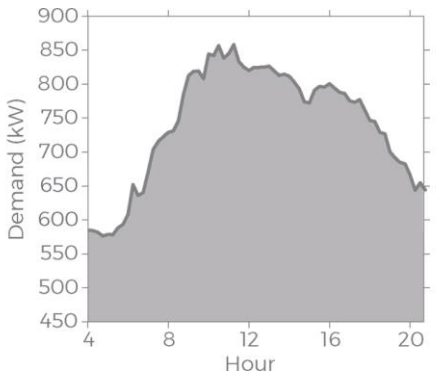
Energport uses Geli ESyst to combine tariff information, historic electrical consumption data, and solar PV performance projections to determine the true energy needs of a facility. We then provide you with a “project qualification score card.”

Solar + Storage Using Geli Integration

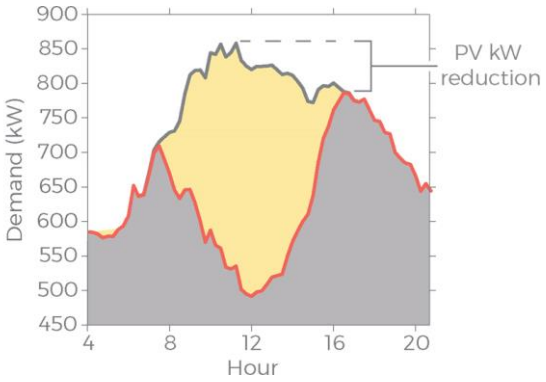
Energport

Geli

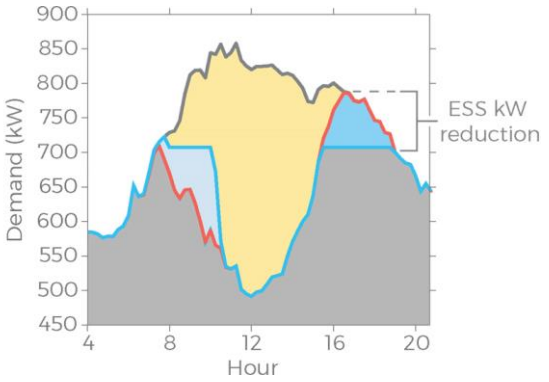
Baseline Load

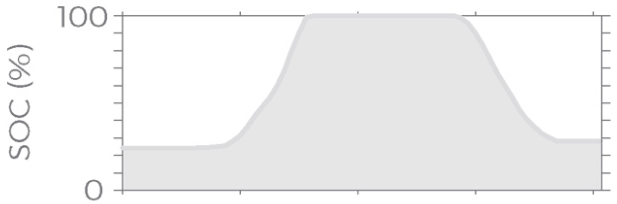


Load w/Solar PV



Load w/Solar + Storage

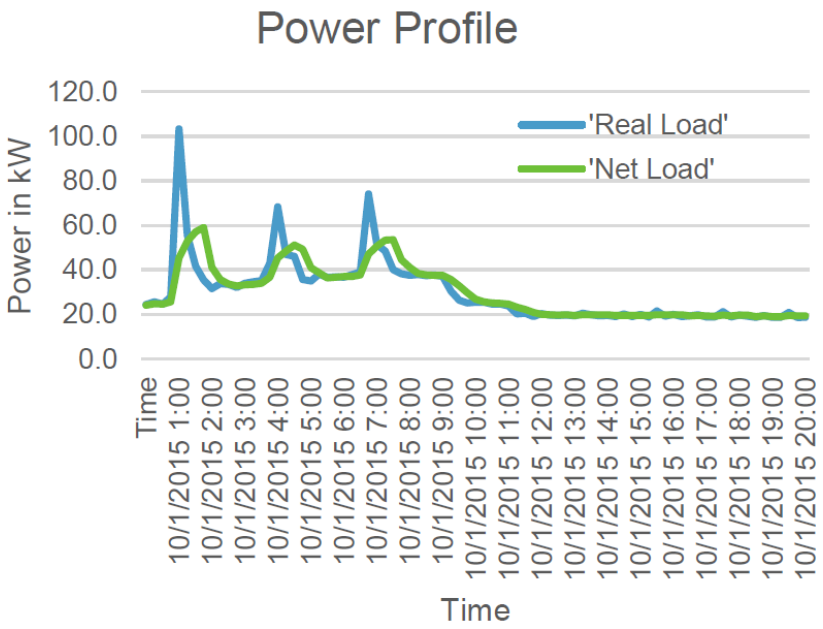




Paring solar PV and “behind-the-meter” energy storage can more than double customer savings and significantly boost project returns.

Commercial & Industrial ESS

- Modular design integrates everything in a small footprint
- Custom 10 kW to 60 kW design in one cabinet
- EV BMS for safety and reliability
- Dynamic balancing and control
- Advanced EMS – Cloud-based monitoring/reporting
- Reduces Peak Demand
- Time of Use Solution
- Solar Integration

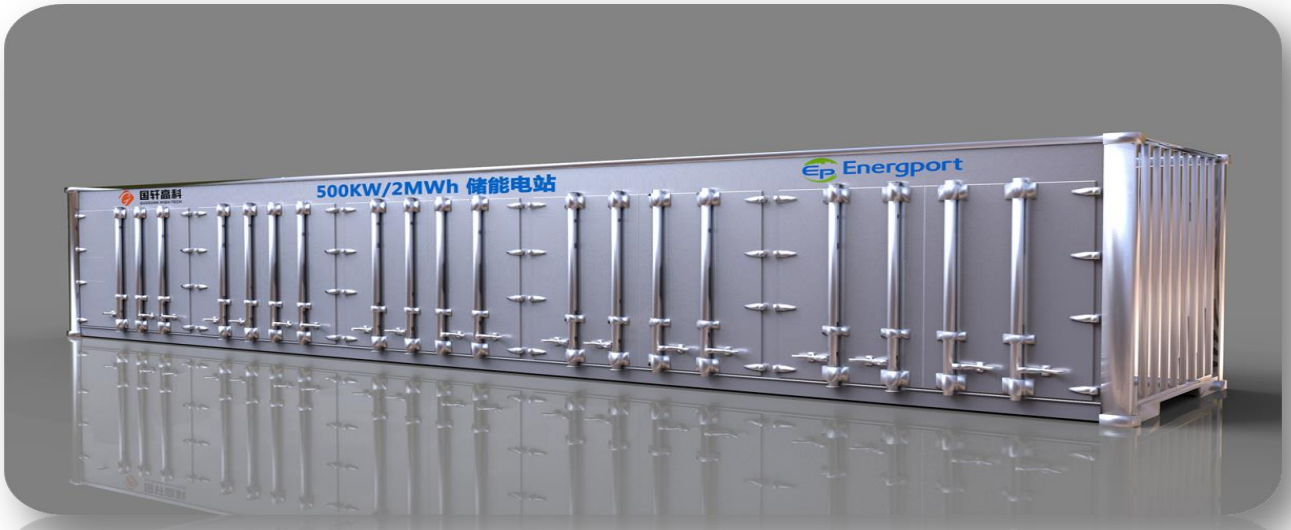


32”d x 30”w 80”t

Self-contained fully integrated small commercial unit

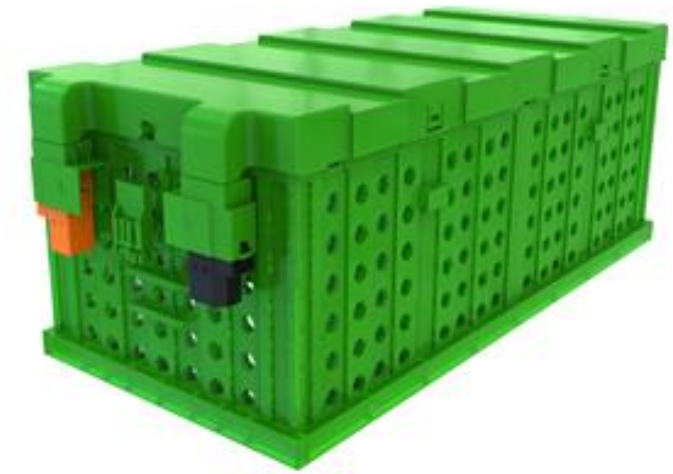
150kW/2MWh Containers

- Battery Cell: LFP20100140A-21.5Ah lithium iron phosphate battery
- System Connection：[8P*2S] *8S*15S*15P (28800 cell totally)
- Main Components：
  - 10FT to 40FT Container – 150 kW – 2MW Design
  - Battery Shelf
  - Soft Air Ducting
  - Air Conditioner
  - Lighting System
  - AC and DC Protection
  - Fire Control System (FFS)
  - Power Convertor System(PCS)
  - Power Distribution System
  - Energy Management System(EMS)



Battery Management System

The Battery Management System (BMS) manages entire process of the LFP battery cell stack operation



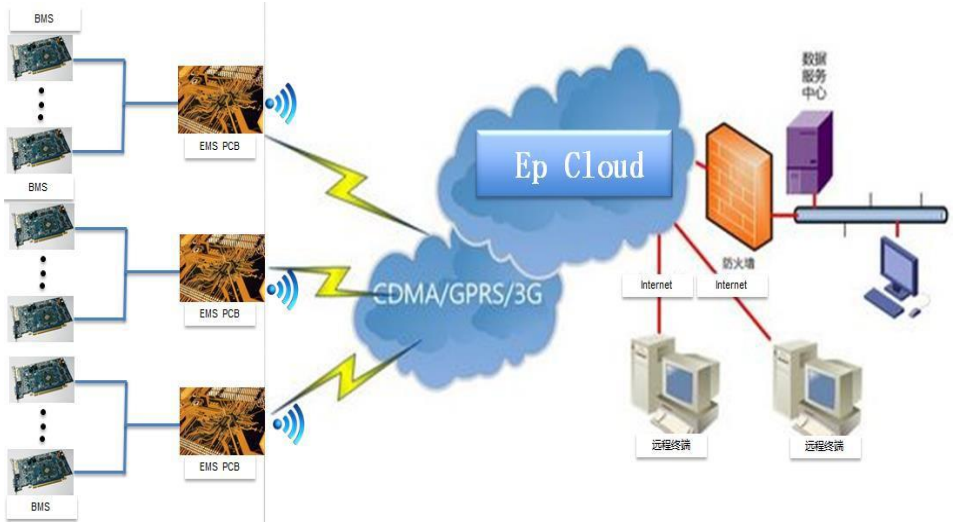
Safe $LiFePO_4$ Batteries with safe quick connect + - connections

- Current, voltage and temperature sampling
- Calculation and estimation of SOC
- Battery cell balance
- Thermal management
- Analysis of system running status
- Charging and discharging control
- Fault diagnosis
- Alarming and safety protection
- Data communication

Energy Management System

EMS Main Functions：

- Communicates with String Battery Management (SBMU) and all external PCS
- Signals management function
- Receive signal of communication status among main control rack and all battery racks
- Measures output voltage of 12V power supply (optional)
- Control switches on wakeup circuit of racks
- Measures high voltage of system and insulation of system. When there is abnormality, it is allowed to automatically cut off high voltage
- Time calibration function
- Extended non-volatile storage



Remote Monitoring System

Features:

- Real time data acquisition
- Real time online monitoring from PC, Mobile or Pad
- Remote fault diagnosis
- Remote intelligent control

Functions of the Remote Monitoring System

- Battery system data gathering and graphical display
- Historical data record of system
- Limit parameters setting of system
- Battery system running and maintenance
- Communication between monitors and main control PC

Turnkey Residential Energy Storage

- Self contained 2kW Inverter
- 2kWh modular building blocks
- Stackable to 10kWh
- Plug-n-Play into wall outlet
- Self installation
- Portable for outdoor use*
- Safe $LiFePO_4$ Batteries

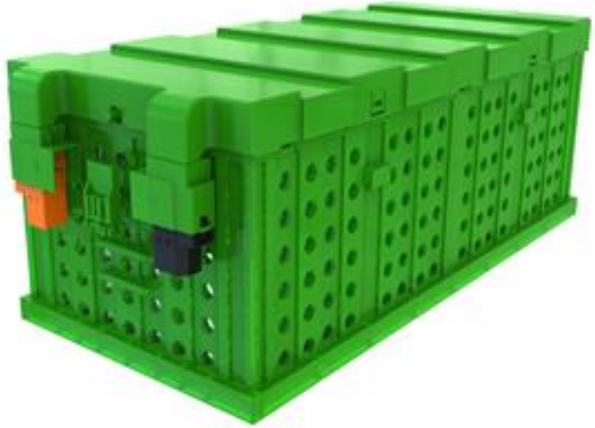
Order Now

- Scheduled to ship in Spring 2018
- Inexpensive plug-n-play home solution
- We're taking pre-orders now

*Unit is not water proof

EP Technology – XS Series for UPS

More Battery Solutions from Energport and Gotion. Replace existing lead acid batteries with safer, longer lasting, easier to maintain LFP batteries.



Specifications

Model	L24V90Ah	L48V45Ah
Nominal Voltage (V)	24V	48V
Watts/2V 15min/2.5V per cell	683	341
Nominal Capacity 1C	90Ah	45Ah
Dimension (D×W×H mm) 42U Rack	502×200×176 (19.8×7.9×6.9 in)	502×200×176 (19.8×7.9×6.9 in)
Weight	20 kg (44 lbs)	20 kg (44 lbs)
Short Circuit Current (A)	3463	1732
Internal Resistance (mΩ)	6.93	27.7
Terminals	Kostal PLK14.5 Quick Disconnect	Kostal PLK14.5 Quick Disconnect

- Direct replacement of 12V 155Ah Lead Acid battery with better LFP battery
- Specifically designed for 15 minutes or less
- high rate discharge applications
- Lower initial cost and TCO
- Safest Lithium battery in the market (LFP)
- Lead Free
- Small light weight
- Very low energy consumption
- Front quick disconnect for ease of installation and maintenance
- Up to 18-months shelf life

Thanks For Viewing!

Energport ESS Lowers Electric Utility Bills

http://www.energport.com