

SHARP
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DIVISION OF SHARP ELECTRONICS CORPORATION
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October 21, 2013

Stephen St. Marie & Marzia Zafar
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Dear Mr. St. Marie & Ms. Marzia,

Sharp Electronics Corporation would like to thank you for this opportunity to present our proposal for the Living Pilot Program. Sharp is proposing to install a hybrid solar-storage system in a distributed environment.

The systems will be a distributed PV generation system integrated with energy storage. This design has tremendous promise to help eliminate the strain on the transmission and distribution systems, while providing a clean source of dispatchable energy in a location where the energy is needed. Sharp has developed an integrated system of PV, battery storage and control software to produce, store and distribute energy in a commercial environment. The key to using this technology effectively will be to establish the appropriate economic models.

The Living Pilot should demonstrate technology, while also providing needed data and background information to establish the appropriate tariffs and incentives. Programs are needed to fully unlock the potential of this solution, since its value lies not only with autonomous operation, but with widespread, connected, dispatchable deployment. A practical place to begin offering such incentives would be the commercial market. In this market, growth would be spurred via cost savings on both sides of the meter. In all, encouraging growth of hybrid, distributed renewable energy generation with energy storage systems in the commercial sector would bring the most value to all parties today and for years to come.

This solution offers many potential auxiliary benefits, both autonomously and when linked to a central controller. For example, voltage variations, power quality issues, and harmonic distortions can all be minimized. This pilot program would encourage wider deployment of this solution, which in turn would bring more value to the intrinsic attributes, as well auxiliary attributes including, communications technology, data management, and demand response.

The commercial sector is a logical choice for this sort of pilot program. While renewable generation reduces usage (kWh), energy storage reduces demand (kW). Commercial customers fit into the goldilocks region of demand, as residential customers generally do not get charged for demand, and industrial/utility scale operations would require too much risk and investment for a pilot program. Additionally, Orange County and the surrounding areas have vast amounts of commercial customers, facilitating wider deployment and a greater cost benefit justification.

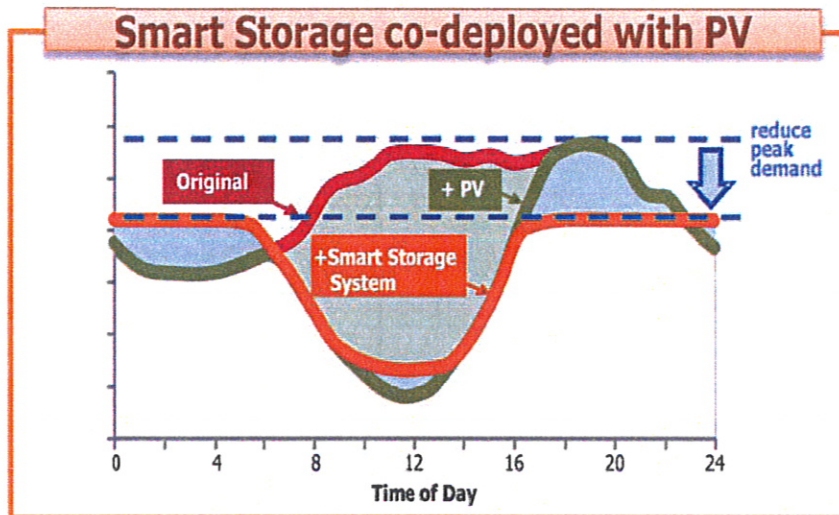
Please feel free to contact me at (406) 600-9963 with any questions, and we look forward to presenting at the symposium on November 6th, 2013.

Sincerely,
Beryl Weinschenker
Beryl Weinschenker
Business Development

SMART STORAGE

Combining Clean Energy with Electricity Demand Management

Smart Storage provides facility-wide, electricity demand management to reduce commercial electricity demand charges. Smart Storage can either be deployed independently or deployed in tandem with a solar PV installation to realize a Hybrid Clean Energy System.



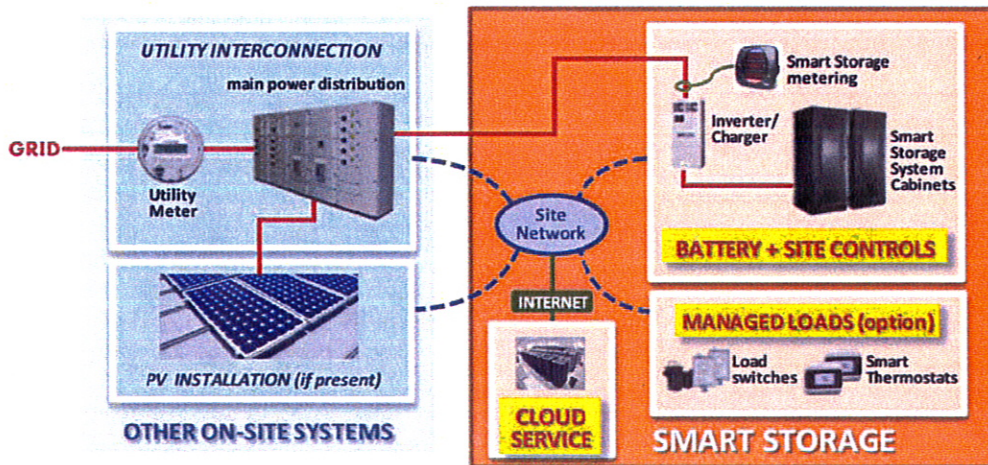
Exceptional economics:
15%+ first year yield and IRR's exceeding 20% likely

Intelligent, predictive algorithms to maximize utility savings

Simple Installation process

Full life of system asset management available

Safe, reliable lithium battery storage with integrated load management



Typical installation shown

Cost effective and applicable to wide range of building types and applications

- Office buildings
- Retail
- Multi-family housing
- Hotels
- Warehouses
- Schools
- Nursing homes
- Electric vehicle charging stations
- Demand management
- Back-up power compatibility

SMART STORAGE Features and Specifications

Service Features	
	Installed System Warranty
Duration	Varies by component
What is Covered	Replacement labor (1-yr) Battery system components (10-yr) Power converter (5-yr) Site server components (3-yr) Site workmanship (10-yr)
What is Not Covered	Labor (beyond 1-yr) kW peak reduction performance System "up-time"
Services Included	Call center access Onsite labor (1-yr) SW maintenance updates (1-yr)

Asset Management Service	
10 Years standard term (Extended terms available for additional fee)	
Full system uptime warranty (real-time monitoring & operation, preventative maintenance, all replacement parts/labor)	System kW peak reduction performance tied to historical energy usage baseline for the site
Financial returns (per utility rates) Site operation consistent with historical usage baseline Performance during "abnormal events"	
24/7 Web-based system monitoring Automated system alerts Call center access Preventative HW maint. System Software maint. Parts/labor warranty repair	Additional services include: System performance reports Annual performance tuning Analysis of performance limiting events Upgrades / enhancements End of life management (disposal)
Optional extended service features	

Note: warranty services are for guidance only and subject to site-specific approval

Product Features	
Data visualization	Site electricity usage Smart storage system performance PV system performance
Demand management	Predictive, learning algorithm Integrated load management Operational life >10 years
User interface	Web server based Account / access management Preference settings Load control settings
Network interfaces	Ethernet, Wi-Fi, Modbus
System management	Integrated industrial grade site server Integrated Cloud-based management
Scalability	Support for deployment of multiple 30kW/80kWh units under common control to meet facility needs
Battery management	Integrated battery mgmt with overload protection Integrated cell management (thermal, electrical) Cell optimization
Reliability	Cells and BMS proven in >1million automotive road miles Cell-life > 2,500 cycles at 100% depth of Discharge
Support services	Web-based proposal development tools Facility analysis for optimized design 10-year system warranty Full system asset mgmt. service & warranty options
Product kit	Pre-integrated system elements in kit form Easy integration
Upgradeability	Automated in-field software updates Post-deployment performance tuning Post deployment feature addition

Electrical Specifications

AC power rating, per system unit	30kW
Storage capacity, two options	80kWh / 40kWh
AC interconnection voltage	480V, 3-phase (208V option)
NEC compliant	UL1741, IEEE1547
Control electronics supply	110V AC

Physical Specifications

Operating temperature range	50F to 105F ambient
Per system unit, two options	1 or 2 Towers, 1 Inverter
Approx. dimensions per Tower	59"H x 28"D x 42"W
Approx. dimensions per Inverter	37" x 24" x 11"
Approx. weight per Tower	400lbs
Approx. weight of Inverter	95lbs
Tower cabinet type	Indoor std / Outdoor compatible
Inverter cabinet type	Indoor / Outdoor
Tower mounting / stability	Bolts to floor
Inverter mounting / stability	Wall mount

Battery Tower Specifications

Certifications	UL1642, UL1973
Cell type	Reliable, safe lithium manganese oxide (LMO) cells

