AI-Driven Storage:
Engaging Customers in System Peak Solutions

March 28, 2018

John Bellacicco
Director of Northeast Operations
John.Bellacicco@stem.com

stem
Energy Superintelligence™

Stem Overview

Stem operates the world's smartest and largest digital energy storage network

Founded:	**2009**
Headquarters:	**Millbrae, CA**
Employees:	**140+**
Operations In:	**CA, HI, NY, TX, MA, Japan, ONT**
Pipeline & Installed:	**800+ sites, 200+ MWh**
Installed:	**350 sites, 3.5M+ device hours**
8 utility contracts:	**350 MWh**
Project Finance:	**$500 MM**

High Caliber Global Investors

GE, RWE, MITHRIL, Constellation (An Exelon Company), ANGELENO GROUP, MITSUI & CO., LTD., IBERDROLA, stem, ACTIVATE capital, TOTAL, ONTARIO TEACHERS' PENSION PLAN

Distinguished Honors & Awards

SEPA Power Player 2017: Innovative Partner of the Year

WORLD ECONOMIC FORUM, ENERGY EXCELERATOR, GRIDEDGE 20, 2018 Global Cleantech 100, Bloomberg NEF Energy Pioneers WINNER, SEPA POWER PLAYERS

Stem's Solution Components

athena™ powered by stem

Athena™ Artificial Intelligence

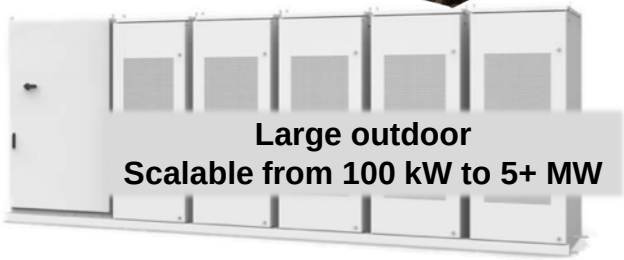
Automatically controls when energy storage charges and discharges to optimize timing, maximize savings, and create virtual power plants.

Energy Storage Systems

Modular options for all facility sizes and locations. Batteries from leading global manufacturers.

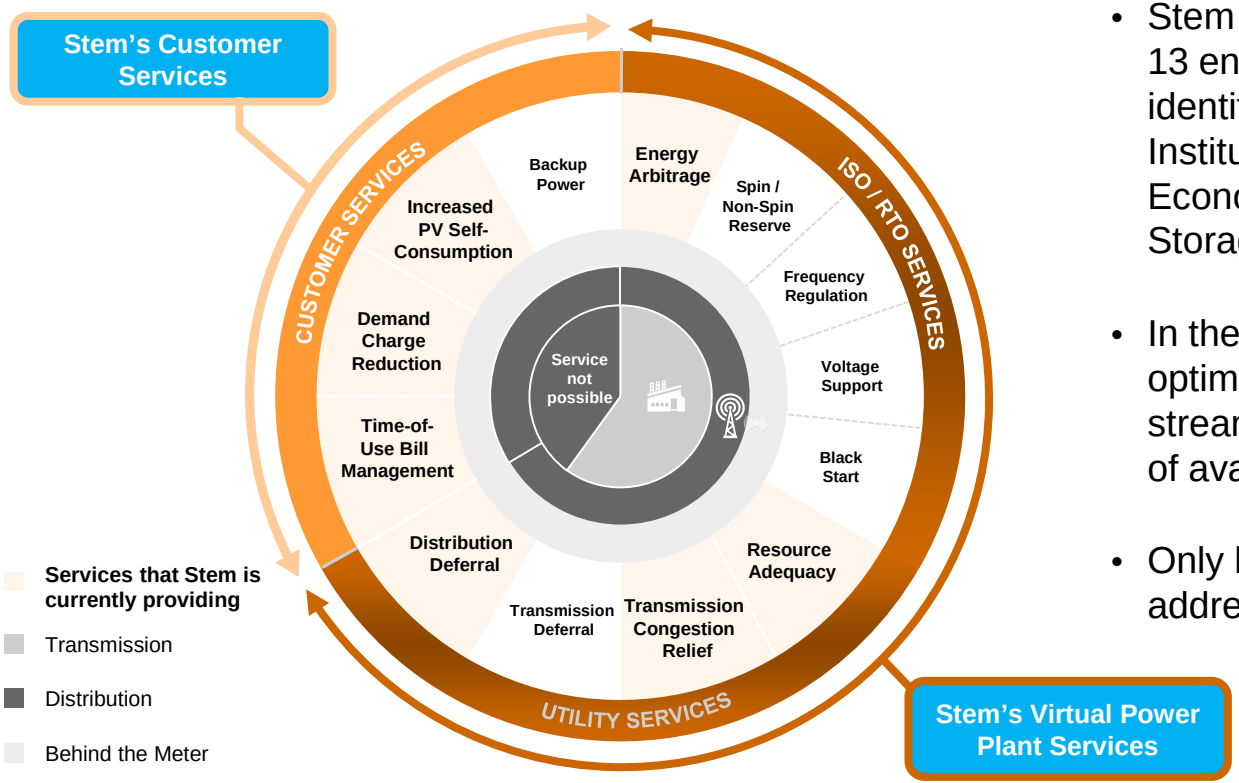
Medium indoor
132 kW modules

Small indoor
18 kW modules



Large outdoor
Scalable from 100 kW to 5+ MW

AI-Driven Optimization of Customer & Grid Benefits



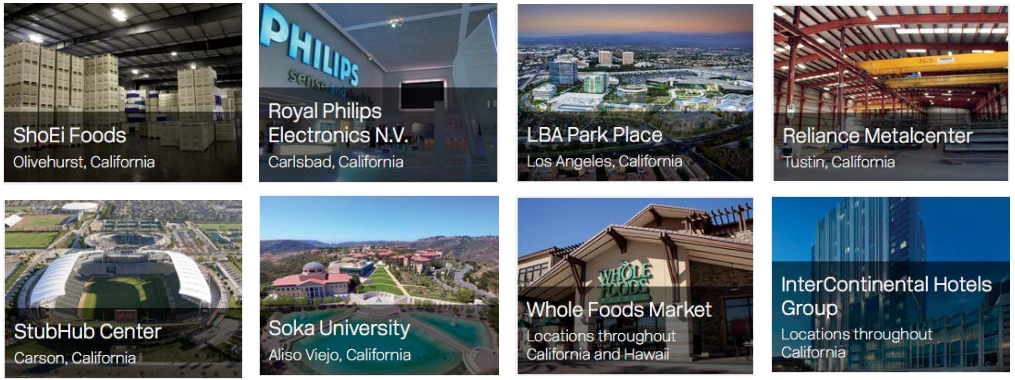
- Stem is currently monetizing 7 of the 13 energy storage value streams as identified by the Rocky Mountain Institute in their report "The Economics of Battery Energy Storage"
- In the future, Stem intends to co-optimize and stack these revenue streams as well as expand the scope of available offerings and services
- Only behind-the-meter solutions can address all 13 value streams

Source: Rocky Mountain Institute.

stem

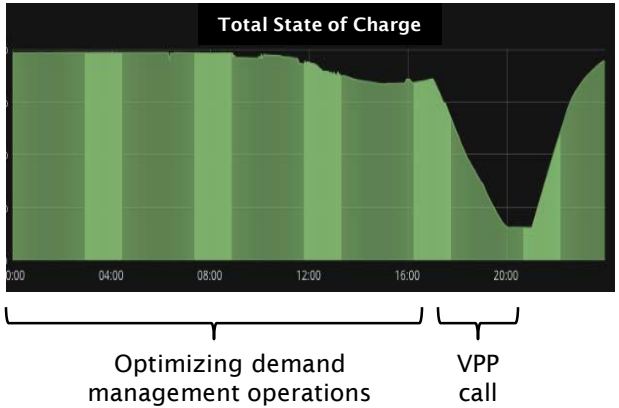
Customer Demand Reductions, Grid Benefits

Athena AI continuously optimizes demand reductions for customers while minimizing use of stored energy



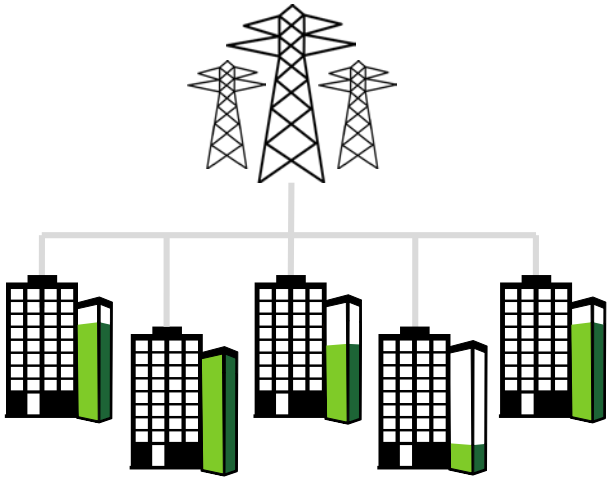
Diversity in customer load shapes, locations and storage equipment

Net outcome: >80% of VPP aggregate energy is available for grid services



Serving both Customers and the Grid

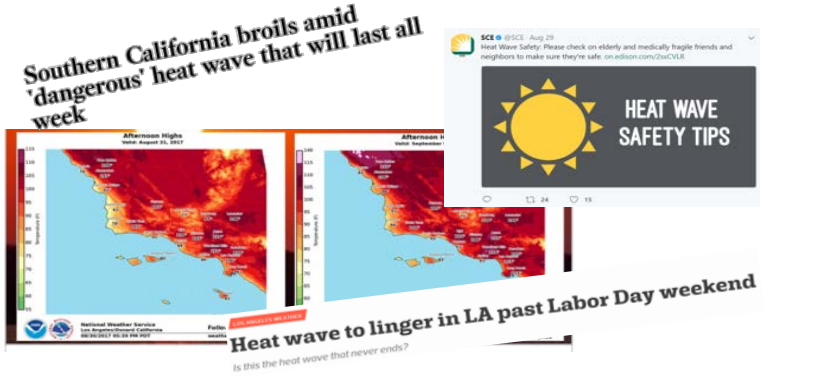
VPPs – Leveraging Vast Networks of Storage Systems



Energy Superintelligence™

- Stem's network of storage systems can be dispatched as a single, "Virtual Power Plant" for additional utility or grid services
- Cloud-based AI software automatically optimizes each system to preserve customer benefits while providing support to the grid
- Software decides which systems can respond and for what duration, without intervention
- Machine learning and vast amounts of data allow software to learn from each event and re-optimize for future event responses, enhancing value

In 2017 CA Grid Needed Flexibility, Fast Response



Current Active Notice

Southern CA Region TRAN

The California ISO hereby issue
effective 12/08/2017 00:00 throu
based on conditions as of 12/10/

Reason:
Local transmission emergency ir

On August 28, 2017 Stem simultaneously dispatched 14 VPPs (over 100 systems)

Reliability and Resilience Needs

- Unprecedented heat waves
- Ongoing wildfires disrupting transmission
- Southern CA gas supplies

Stem's VPPs are working

- Wholesale market since 2014
- 700+ dispatches over 3 years
- Hundreds of real-time market calls – no manual intervention

"That's awesome. Wish all "DR" would respond like this!" – CAISO Staff

Partnering for Greater Customer & Grid Benefits

stem Energy Superintelligence™ + Constellation An Exelon Company

Customer Benefits

- Site peak reduction = lower customer demand charges
- Coincident peak contribution reduction = lower cap tag (or PLC) charge

Grid Benefits

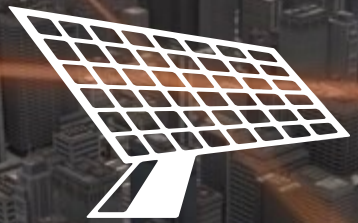
- Private sector equipped and engaged to help NY realize 2030 50% Clean Energy Standard and GHG reduction goals
- Customer sited energy storage is a platform on which NY can build addition grid supporting programs

Benefits for New York

Engaging Consumers in Grid Mod, Higher RE, GHG Goals

Empower Energy Consumers

Distributed storage activates energy consumers and is the fastest and cheapest way to solve distribution-level challenges.



Enable Renewable Energy

Keeping the grid stable at high penetration levels of wind and solar enables widespread reliance on renewables.

Increase Grid Efficiency

Relieving the strain on the grid during peak times reduces the need for “peaker” plants and increases utilization rates.

stem

Policy Recommendations

- Fully compensate storage for peak demand reduction value
  - ➢ Rates, tariffs, customer programs
    - Local DR programs include BTM storage
    - Cap tag/PLC
    - VDER should credit non-exported value and should improve value if charged from onsite solar
- Encourage BTM storage in more utility NWA procurement (e.g. BQDM)
- Set robust MW and BTM expectations in REV Earnings Adjustment Mechanisms (EAM)
  - ➢ Could be achieved through either tariffs or procurements
- Set short-term bridge incentive to help fulfill 1.5 GW landmark storage target


stem
Energy Superintelligence™