

## SustainX Inc Isothermal Compressed Air Energy Storage

### Project Description

SustainX is developing and demonstrating a modular, market-ready energy storage system that uses compressed air as the storage medium. SustainX uses a hydraulic drivetrain to convert electrical energy into potential energy stored as compressed air. The technology does not need to be paired with a secondary heat source, such as a gas combustion turbine, and no fuel is involved. SustainX has successfully demonstrated a 1 kW prototype that has proven the two core technologies of this project, isothermal gas cycling and staged hydraulic conversion. SustainX will first develop a 50 kW energy storage system (the ESS-50). The lessons learned from this initial scale-up will be used to produce the ESS-1000—a 1 MW power output, 4 MWh storage system that will be demonstrated by partner AES Energy Storage. SustainX technology relies on off-the-shelf, reliable, long-lived components.

### Goals/Objectives

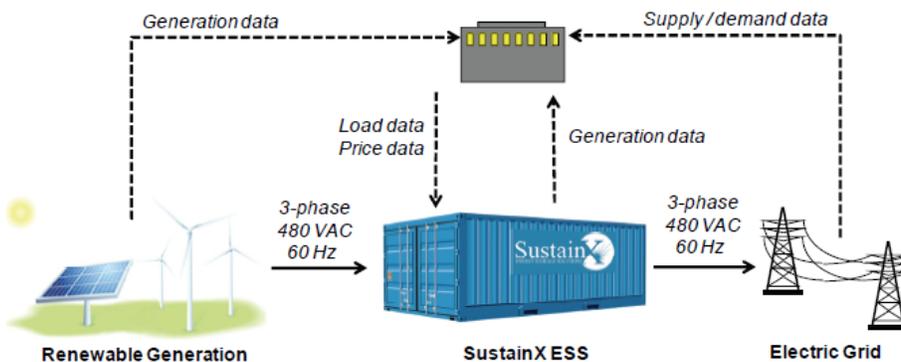
- Demonstrate the viability of isothermal compressed air technology to provide cost-effective energy storage
- Validate scalability for applications in both low- and medium-voltage distribution or sub-transmission grids
- Achieve 65 percent efficiency for the ESS-1000

### Key Milestones

- ESS-50 prototype development complete (December 2010)
- ESS-50 validation testing complete (February 2011)
- ESS-1000 manufactured and field demonstration initiated (2012)

### Benefits

- Jobs created
- Electricity costs reduced
- Grid efficiency improved
- Renewable energy source use accelerated
- Greenhouse gas emissions reduced



### CONTACTS

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### PARTNERS

AES Energy Storage  
Create  
The Hope Group  
MTechnology

### PROJECT DURATION

06/15/10–12/31/13

### BUDGET

**Total Project Value**  
\$10,792,046

**DOE/Non-DOE Share**  
\$5,396,023/\$5,396,023

### EQUIPMENT

Omegadyne PX319 Pressure Sensors  
Nanmac Thermocouples  
Tenma 72-6628 DC Power Supply  
Dynaload DLVP 50-300-3000A

### DEMONSTRATION STATES

To Be Determined  
CID: OE0000231

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