

**Southern California Public Power Authority (SCPPA)
Request for Information (RFI)**

Battery Energy Storage System (BESS)

August 1, 2016

A. BACKGROUND

The Los Angeles Board of Water and Power Commissioners (Board) on September 2, 2014 approved an Energy Storage Procurement Plan totaling 178 MW to comply with Assembly Bill 2514. Under the bill, the Los Angeles Department of Water and Power (LADWP) will have targets to procure grid-connected storage systems for the purpose of integrating renewable energy resources with specific and cost-effective applications at all levels of the power system.

To successfully meet the Board-approved energy storage targets, LADWP is planning a Battery Energy Storage System (BESS) pilot test plant to evaluate the performance of a 100 KW lithium-ion battery system and a 100 KW flow battery system and associated controls. This test will provide LADWP's planning and engineering teams with key insights into the performance, operations and feasibility of energy storage systems.

The Southern California Public Power Authority is issuing this request for information at the request of and for the benefit of LADWP for information related to BESS. SCPPA member utilities, including LADWP, (Members) are committed to providing safe and reliable electricity to their customers.

B. OBJECTIVE

Through this request for information (RFI), Members are seeking Respondents who are capable "Turn-key Solution Providers" for an upcoming request for proposal (RFP) to design, procure, install and commission a proposed BESS pilot test plant. The BESS will be composed of a lithium-ion battery system, a flow battery system, a master site controller and associated control systems to coordinate and monitor the operation of these two types of battery systems. The duration of the pilot test is for one year and the BESS will be located outdoors adjacent to LADWP's main office (See enclosed location map).

Disclaimer: This RFI shall not be construed in any manner to create an obligation on the part of SCPPA or its Members to enter into any contract, or serve as a basis for any claim whatsoever for reimbursement of costs for efforts expended.

Furthermore, responding to this RFI does not commit or obligate SCPPA or its Members in any way to pay or reimburse any costs incurred by any Respondent in the preparation of any response to this RFI, or to procure or contract for services, all of which will be at the Respondent's sole expense.

Moreover, the scope of this RFI may be revised at the sole discretion of SCPPA or its Members at any time or this RFI may be withdrawn or canceled by SCPPA or its Members at any time. SCPPA and its Members reserve the right to waive formalities and to add, modify, or delete items, requirements, and terms or conditions prior to the conclusion of this RFI whenever it is deemed to be in SCPPA or its Member's best interest. SCPPA and its Members reserve the unilateral right to reject any or all responses submitted hereunder for any reason whatsoever. SCPPA or its Members shall be held free

from any liability resulting from the use or implied use of the information submitted in any response to this RFI.

This RFI is for information purposes only.

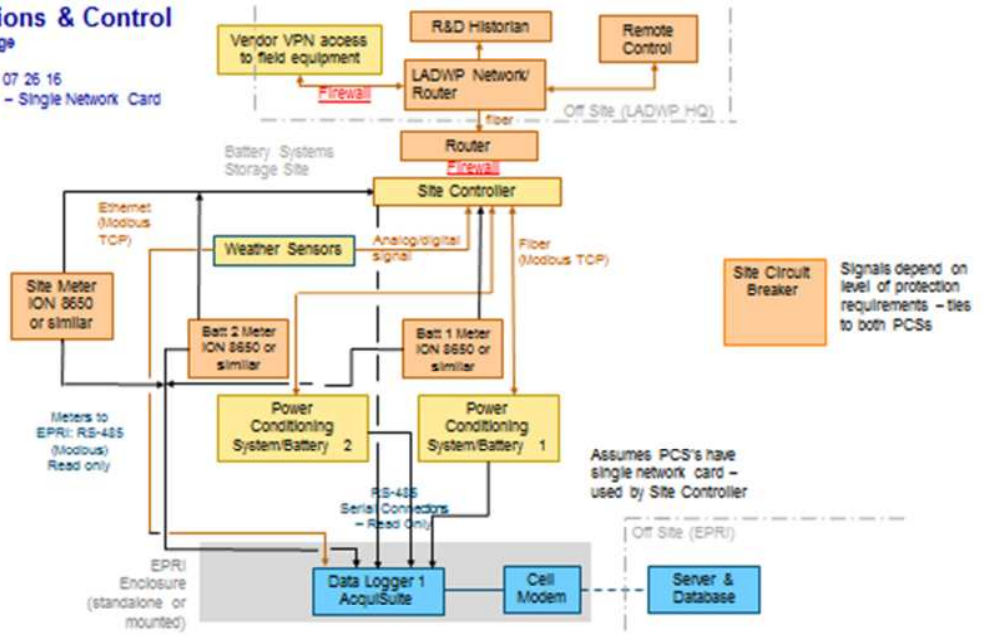
C. REQUIREMENTS

Below are the design requirements of the BESS, the envisioned control communications architecture, a summary of the control functions, and a matrix that shows the individual and simultaneously functions that the BESS will be required to perform:

- Design, procure, install and commission a BESS consisting of a lithium-ion battery system, flow battery system, master site controller and associated control systems according to specifications.
- As an alternate: Design, procure, install and commission a lithium-ion battery system, a master site controller and associated control systems according to specifications or design, procure, install and commission a flow battery system that is compatible with the specified master site controller and associated control systems.
- The lithium-ion battery system shall be rated approximately at 100kW/200 – 400kWh
- The flow battery system shall be rated at approximately 100kW/200 – 600kWh
- The master site controller shall be capable of communicating and operating with the slave controllers of each of the two battery systems.
- Provide LADWP approved remote vendor access communication channel, allowing remote access to both the site controller and respective battery management systems by vendor and LADWP
- The control system shall allow for simultaneous operation of numerous control functions. Vendor is encouraged to define exactly which control functions (Table 1) can operate simultaneously, and which can be operated as a single-function mode only.
- Control System General Requirements: Vendor equipment shall be capable of accepting LADWP specific load profiles and other data inputs, provided by electronic file transfer or similar means, to allow for the operation of the specified controls. The envisioned control communication architecture is as follows:

Communications & Control
 LADWP Energy Storage
 Los Angeles, CA
 Drawing version: V0.4c 07.26.16
 Autonomous Protection - Single Network Card

- Storage Vendor
- EPR
- LADWP



Envisioned Control Communication Architecture

Table 1: Summary of Control Functions

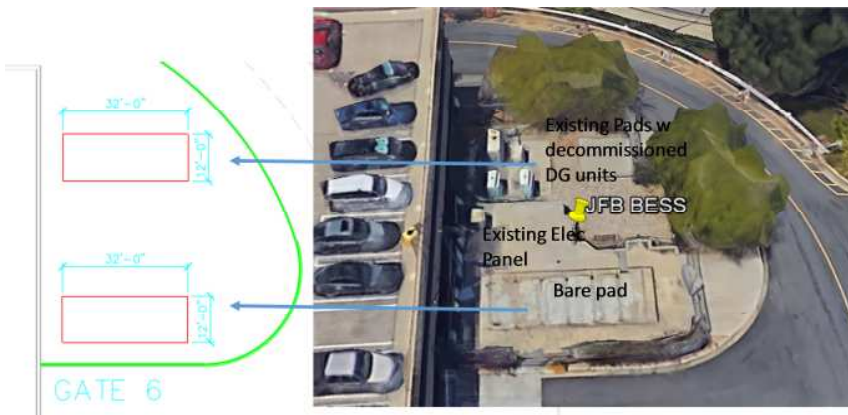
Control Function	Brief Function Description
CF1: Direct Charge / Discharge Management Mode	A remote system instructs the System. This mode can be used to support general energy arbitrage, peak load limiting, load following, spinning reserve, and frequency regulation.
CF2: Scheduled Charge / Discharge Management Mode	A remote system provides the System with a specific schedule for charging and discharging. This mode may be used to support general energy arbitrage and other uses in which the charging and discharging is known in advance.
CF3: Autonomous Volt-Var Mode	Instructs the System how to manage its own VAR output relative to the local service voltage (13.2kV).
CF4: Constant Power Factor Mode	Instructs the System how to vary its own VAR output relative to its real power output.
CF5: Autonomous Frequency-Watt Mode	Instructs the System how to limit its own Watt level relative to the local system frequency.

CF6: Autonomous Volt-Watt Mode	Instructs the System how to limit its own Watt level relative to the local system voltage.
CF7: Peak Limiting Mode	Instructs the System how to manage its own Watt output in order to prevent the power level at a point of reference from exceeding a given threshold.
CF8: Load/Generation Following Mode	Instructs the System how to manage its own Watt input/output in order to follow (or partially follow) the power level at a given point of reference.
CF9: Power Smoothing Mode	Instructs the System how to dynamically modify its Watt input/output in response to fast changes in the power level at a given point of reference.
CF10: Dynamic Reactive Current Support Mode	Instructs the System how to provide dynamic additional reactive current support in response to fast changes in the local system voltage.
CF11: Dynamic Volt-Watt Mode	Instructs the System how to provide dynamic real power support in response to fast changes in the local system voltage.
CF12: Managed Connect / Disconnect Function	Remotely instructs the System to connect/disconnect to/from the grid.
CF13 Auto Islanding	BESS must be capable of islanded operation

The BESS shall be capable of performing the functionality of the aforementioned CFs, individually and simultaneously according to the following matrix:

Test #	CF1	CF2	CF3	CF4	CF5	CF6	CF7	CF8	CF9	CF10	CF11	CF12	CF13
Test 1	X	X		X								X	
Test 2	X	X					X					X	
Test 3		X			X							X	
Test 4		X		X			X	X				X	
Test 5		X							X			X	
Test 6	X	X									X	X	
Test 7		X	X									X	
Test 8		X				X						X	
Test 9		X								X		X	
Test 10							X				X	X	

The job site for the BESS pilot plant will be located at: 111 N. Hope St., Los Angeles, CA 90012
 The approximate site/layout dimensions are as follows:



D. KEY DATES

SCPPA and its Members reserve the right to amend the schedule of RFI activities, as necessary. Table 2 reflects the key dates in this RFI. SCPPA and its Members encourage Respondents not to wait until the final due date to provide responses; and depending on the level of interest, may choose to keep the RFI open for an extended period or indefinitely. Should there be changes to the schedule; SCPPA will post an announcement on its website.

TABLE 2

Event	Date
RFI Released	Monday, August 1, 2016
RFI Submittals Due ASAP, but no later than	Monday, August 29, 2016
SCPPA and LADWP to review responses and potentially meet with qualified Respondents	As soon as possible

E. Information Submission Delivery Requirements

There will not be an initial Respondent's conference associated with this RFI. Clarification questions may be addressed to Aziz Danialian at adanialian@scppa.org

One (1) hard copy of your response, including a transmittal letter with wet-ink authority signature, and any supporting documentation should be delivered no later than 4:00 pm PST on August 29, 2016 to:

Southern California Public Power Authority

Beacon Battery Energy Storage System

Attention: Aziz Danialian

1160 Nicole Court

Glendora, California 91740

One (1) electronic copy of your proposal should also be delivered to the address above, preferably on a CD or USB flash drive, or alternatively e-mailed to adanialian@scppa.org no later than the time and date referenced above.

All information received by SCPPA in response to this RFI is subject to the California Public Records Act and may be subject to the California Brown Act and all submissions may be subject to review in the event of an audit.