



ATTACHMENT A
SPECIFIC REQUIREMENTS APPLICABLE TO PROJECTS IN THE
LADWP BALANCING AUTHORITY AREA:
SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY
STANDALONE ENERGY STORAGE SYSTEM SPECIFICATIONS
FOR LADWP TRANSMISSION RELIABILITY PROJECTS
[Project Name]

This Request for Proposal (RFP) is for standalone energy storage within the Los Angeles Department of Water and Power (LADWP) Balancing Authority area (“BAA”). This document outlines the specific requirements for proposals submitted to the LADWP BAA. “LADWP” and the “Buyer” shall be used interchangeably. This document shall be completed and submitted with the Respondent’s proposal package.

Note: Where requested, Respondent shall check appropriate boxes indicating whether the Respondent agrees or disagrees with provisions as stated. If Respondent disagrees, Respondent shall provide description of specific point(s) of disagreement and proposed counterproposal, where applicable. Omission of a response to the required field will render the proposal incomplete and subject to disqualification.

The requirements for proposals to be submitted to SCPPA for projects in the LADWP BAA in response to this RFP effort are detailed in this Appendix and the Energy Storage System (ESS) Specifications Datasheet ([Exhibit 1](#)). Proposals that do not meet these requirements may be considered non-responsive and disqualified from further evaluation, unless otherwise specified.

A. Contract Requirements	
1.	The Respondent shall submit proposal(s) with the following:
a.	<p>Vendor-Owned land: Energy Service Agreement (ESA) with a purchase option.</p> <ol style="list-style-type: none"> 1. Expected Commercial Operations Date (COD): 2028-2033 2. The proposed project shall interconnect to LADWP's Power System and its balancing authority. The Respondent shall submit an interconnection request through the LADWP Large Generator Interconnection Process and provide proof of submission and expected timeline of completion with the proposal. The cost of interconnection and any associated expenses are the sole responsibility of the Respondent. 3. Proposals with a buyout option shall offer Long-Term Service Agreements (LTSA) for operation & maintenance. These agreements shall commence once the buyout option is exercised and shall remain in effect for the duration of the agreement term or until the buyer provides notice to termination. 4. Desired Interconnection Switching Station (SS) Locations and Energy Storage capacities are as follows: <ul style="list-style-type: none"> ○ Adelanto SS: 50-500 MW ○ Crystal SS: 50-300 MW ○ Marketplace SS: 50-300 MW ○ McCullough SS: 50-300 MW ○ Victorville SS: 50-300 MW <p>Comments:</p>

B. Energy Storage System (ESS) Proposal Requirements

<p>1.</p>	<p>All energy for charging the ESS will be solely provided by the Buyer. The ownership of such charging energy shall remain with the Buyer, and the Buyer shall have control of such charging energy at all times. The Respondent shall have custody of such energy while it is stored in the ESS. The ESS shall be integrated into LADWP's grid as a resource for serving load in LADWP's balancing authority area.</p> <p>Acknowledge <input type="checkbox"/></p> <p>Comments:</p>
<p>2.</p>	<p>The ESS requirements in this Appendix are technology agnostic, provided that the ESS:</p> <ul style="list-style-type: none">a. Shall be standalone energy storage.b. Shall meet all the requirements and technological specifications of this Appendix.<ul style="list-style-type: none">1. As such, any requirements or specifications that cannot be met shall be explicitly stated in the proposal.c. Shall interconnect to the LADWP grid with revenue grade metering.d. Shall interconnect at transmission level only (greater than 100kV).e. For Lithium-ion projects proposed, duration shall be 4 hoursf. For non-Lithium-ion projects proposed, duration shall be minimum 6 hours <p>Acknowledge <input type="checkbox"/> _____ kV</p> <p>Comments:</p>
<p>3.</p>	<p>The ESS shall consist of utility scale commercially available technology with a Technology Readiness Level of at least 7. The Agreement term for Lithium-ion battery energy storage systems (BESS) shall be a minimum fifteen (15) years, unless otherwise specified. The Agreement term for other type of BESS and ESS shall be a minimum of twenty (20) years, unless otherwise specified.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>

<p>4.</p>	<p>The Respondent shall be an experienced project developer with at least one member of the development team having (a) completed at least one project of similar technology, or (b) begun construction of at least one other project similar to the proposal being submitted by the time of the submittal. Please include the prime proposer and all subcontractor's experiences and resumes, with their respective roles in each project using a separate file, named Exhibit 2.</p> <p>Acknowledge <input type="checkbox"/></p> <p>Comments:</p>
<p>5.</p>	<p>The ESS shall be installed, delivered, repaired, augmented, and maintained by the Respondent; however, the Buyer shall have full operational control over the ESS.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>6.</p>	<p>All ESS warranty terms and limitations shall be explicitly stated in the proposal.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>

C. ESS Codes and Standards

1.

The ESS shall be developed and installed in accordance with all applicable laws, best industry practices, pertinent standards for the applicable technology, and in consultation with LADWP and the local jurisdiction's Authority Having Jurisdiction (AHJ). The ESS shall comply with the latest version of applicable codes and standards at the time of the detailed engineering phase. The Respondent shall indicate any exceptions to this list and provide supporting explanations. Codes and Standards include, but not limited to the following:

- Institute of Electrical and Electronics Engineers (IEEE) Standards 1547, 1547.1, 693, 519
- UL Standards 9540, 9540A, 2054, 62133, 1741, 1741SB, 1998, 1642
- National Fire Protection Association (NFPA) Standards 855, 68, 69, 72, 70, 1
- 2025 California Fire Code, Title 24, Part 9
- United Nations/Department of Transportation (UN/DOT) 38.3
- National Electric Code (NEC)
- American National Standards Institute (ANSI) C84.1-2020
- International Electrochemical Commission (IEC) 62933-5-2

Agree Disagree

Comments:

<p style="text-align: center;">2.</p>	<p>The Respondent shall comply with the following codes and standards:</p> <ul style="list-style-type: none"> • LADWP’s Cyber Security and Physical Security Standards, which will be provided during negotiations. • North American Electric Reliability Corporation (NERC) Reliability standards, such as PRC – 024-3, and Buyer’s requirements, including Critical Infrastructure Protection (CIP) Standards for the ESS. • Recommended performance specifications set forth in the NERC Reliability Guideline: BPS-Connected Inverter-Based Resource Performance, as published during the design period, based on the BESS’ proposed COD. <p>Acknowledge <input type="checkbox"/></p> <p>Comments:</p>
<p style="text-align: center;">3.</p>	<p>The Respondent shall describe and be responsible for any required environmental compliance, such as the California Environmental Quality Act, or permits for the project. Criteria pollutants and gas emissions must be disclosed in the ESS Specifications Datasheet (Exhibit 1). Examples include, but are not limited to:</p> <ul style="list-style-type: none"> • A permit-to-operate required by the local Air Quality Management District if the equipment generates emissions of criteria pollutants (VOC, NOx, SOx, CO, PM), or if an emergency generator greater than fifty (50) horsepower is installed. • A National Pollutant Discharge Elimination System Permit if the equipment discharges into waters of the United States. • Material Safety Datasheet (MSDS) development, hazardous material removal, and dust mitigation/control measures. <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p style="text-align: center;">4.</p>	<p>List additional codes and standards, if applicable:</p>

D. Technology Specifications, Project Information, and Guarantees

1. Technology Specifications

a.	Select the operational capabilities and operating restrictions of the proposed technology and include all Control Modes that the ESS can perform (See Table 1 for details).	
	Control Mode Category	Control Mode
	Emergency Modes	<input type="checkbox"/> 1. Voltage Ride-Through
		<input type="checkbox"/> 2. Frequency Ride-Through
		<input type="checkbox"/> 3. Dynamic Reactive Current
		<input type="checkbox"/> 4. Dynamic Volt-Watt
		<input type="checkbox"/> 5. Frequency-Watt (Implement NERC Reliability Guideline: BPS-Connected Inverter-Based Resource Performance)
		<input type="checkbox"/> 6. Frequency Droop
	Active Power Modes	<input type="checkbox"/> 7. Charge-Discharge Storage
		<input type="checkbox"/> 8. Coordinated Charge-Discharge
		<input type="checkbox"/> 9. Active Power Limit
		<input type="checkbox"/> 10. Active Power Response (configurable as Peak Power Limiting, Load Following, or Generation Following modes)
		<input type="checkbox"/> 11. Automatic Generation Control
		<input type="checkbox"/> 12. Active Power Smoothing
		<input type="checkbox"/> 13. Volt-Watt
		<input type="checkbox"/> 14. Frequency-Watt Curve
		<input type="checkbox"/> 15. Pricing Signal
	Reactive Power Modes	<input type="checkbox"/> 16. Fixed Power Factor
		<input type="checkbox"/> 17. Volt-VAR Control
		<input type="checkbox"/> 18. Watt-VAR
<input type="checkbox"/> 19. Power Factor Correction		
Other	<input type="checkbox"/> 20.	

<p>b.</p>	<p>Lithium-ion BESS shall provide a minimum of 365 equivalent cycles per calendar year or 366, as applicable for leap years. The number of cycles for other technologies shall be included in the proposal. Cycling during the Annual Performance Test shall not be included in the minimum cycles per year. The Buyer reserves the right to request additional cycles, for a fee, if needed.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>c.</p>	<p>The ESS shall be capable of providing between ± 0.8 power factor at the Point of Interconnection (POI).</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>d.</p>	<p>Proposed Projects shall have an energy density of at least 1.5 kWh per square foot.</p> <p>_____ kWh/ ft²</p> <p>Comments:</p>
<p>e.</p>	<p>The proposal shall provide the following parameters:</p> <p>Full-rated Charging Capacity: _____ MW _____ Hour(s)</p> <p>Full-rated Discharge Capacity: _____ MW _____ Hour(s)</p> <p>Comments:</p>
<p>f.</p>	<p>The ESS shall support Modular Energy System Architecture (MESA)-ESS communication standards as well as DNP3 protocol capability to communicate with SCADA.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>1)</p>	<p>The Control Modes in Table 1 are from the MESA-ESS Specification, and reference shall be made to either the MESA-ESS Specification or IEC 61850-90-7, or standard mutually agreed upon by the Buyer and the Respondent. Table 1 through Table 6 are centered on Lithium-ion BESS and not all sections may be applicable to all ESS technologies. The Respondent shall indicate the portions not applicable in the proposal.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>

<p>g.</p>	<p>The ESS shall establish a connection to external communications in the form of at least: one console for the Buyer's Energy Management System (EMS) and one console for local control.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>h.</p>	<p>Respondent shall provide LADWP with Back-up Automatic Generation Control for the ESS.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>i.</p>	<p>The Control Modes shall consist of settable functional parameters that trigger responses that the ESS can provide. The operation of any Control Mode or simultaneous Control Modes are subject to the ESS Limitations, Control Mode setpoints and priorities (as specified and scheduled by the Buyer), and the ESS conditions (i.e. State of Charge (SOC), temperature, etc.) at the time of operation of such Control Mode(s). The Buyer shall have the ability to provide Control Mode set points for charge and discharge of the ESS as well as the ability to set specific MW charge and discharge values and priorities, subject to those limitations and conditions. All functions should be operable from the Buyer's EMS via DNP3.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>j.</p>	<p>The Respondent shall provide D-Curve for all 4 quadrants (MVAR output vs. MW output) at all power factors to the Buyer.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>2. Project Information</p>	
<p>a.</p>	<p>An ESS proposal shall include information or drawings on each of the elements below in a separate file, named Exhibit 3. Indicate N/A (with explanation) if not applicable to the proposal:</p> <ul style="list-style-type: none"> • Site plan drawing • General arrangement drawing or site map with balance of plant included, for reference purposes • Electrical one line diagram • Evidence of interconnection application and payment

	<ul style="list-style-type: none"> • Demonstration of site control in the form of ownership, lease or license, or irrevocable option for ownership, lease, or license • Project milestone schedule and timeline of necessary permits • Develop and document supply plans, including sourcing strategies, supply chain risk assessments, and mitigation measures for energy storage systems and their components. • Environmental: Potential hazards and mitigation plan • Project emergency response plan that describes the associated hazards and risks, training, and emergency actions to be taken • Hazard and operability (HAZOP) Study or equivalent. HAZOP studies are used as part of a Quantitative Risk Assessment or as a standalone analysis • Additional reports, such as independent engineering reports, arc flash studies, preliminary front-end engineering design studies, etc. to assist LADWP's evaluation of the proposal • Enclosures: Type (container, trailer, building), quantity, and dimensions • Thermal Regulation System: Type (HVAC, water cooling, etc.) • Other: Related auxiliary equipment required • Fire prevention, detection, notification, suppression, and protection systems • Capacity and ancillary services operating restrictions • Guidelines and procedures for safe handling and disposal of damaged equipment or defective battery cells and modules, if applicable • Project decommissioning plan: Include key system and installation information that helps inform the Buyer about system decommissioning, end-of-life disposal/recycling process with potential vendors
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3. Guarantees	
a.	<p>The Respondent shall ensure that the ESS charge capacity (MW) and discharge capacity (MW) matches the ESS Guaranteed values, as declared in Exhibit 1, throughout the Agreement term. If the ESS charge or discharge capacity falls below the Guaranteed values at any time, the ESS will be considered unavailable.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
b.	<p>Lithium-ion BESS shall maintain its Guaranteed Energy value until the last five (5) years of the Agreement. During the last five (5) years of the Agreement, the energy may degrade by up to three (3) percent of the ESS Guaranteed Energy value per year.</p> <p>Non-Lithium-ion ESS energy shall match the Guaranteed ESS Energy value for the entire term of the Agreement.</p> <p>The Respondent shall provide a degradation curve for the term of the Agreement as a separate attachment, titled Exhibit 4.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
c.	<p>The ESS shall be capable of continuous discharge from 100% SOC to 0% SOC and continuous charge from 0% to 100% SOC at the Guaranteed charge and discharge capacity. 100% SOC shall be equal to the Guaranteed ESS Energy during the entire term of the Agreement.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
d.	<p>The ESS shall maintain Availability based on the calculation in Figure 1.</p> <p>For the entire term of the Agreement, the applicable Monthly Guaranteed Availability values are:</p> <ul style="list-style-type: none"> • 98% if proposed technology is Lithium-ion battery • Monthly Guaranteed Availability for non-Lithium-ion technologies shall be negotiated <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>

<p>e.</p>	<p>The Respondent shall provide outage notification at least thirty (30) days in advance via email with start and end dates of such outage, subject to the Buyer’s approval.</p> <p>If SCADA control for ESS is not available or ESS is not visible via SCADA to the Buyer’s Energy Control Center, then the ESS shall be considered unavailable, unless otherwise specified by the Buyer. The Respondent shall coordinate the timing of ESS augmentation with the Buyer to ensure optimal timing and minimal interference and disruption to the Buyer.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>f.</p>	<p>If the ESS fails to achieve the Monthly Guaranteed Availability, the Respondent shall be subject to a reduced Monthly Capacity Payment based on the calculation shown in Figure 2.</p> <p>If BESS Monthly Guaranteed Availability remains below 90% beyond the agreed cure period, not including planned outage or curtailment at the Buyer’s discretion, the BESS shall be considered in default.</p> <p>For ESS technologies other than Lithium-ion BESS, Monthly Guaranteed Availability Requirement for Default described above shall be modified on a case-by-case basis during negotiations.</p> <p>The Respondent shall guarantee the performance of the ESS in accordance with the Annual Performance Test requirements and procedures for the selected parameters (“Guaranteed ESS Parameters”) listed in the Section D.3.g for the entire term of the Agreement. If the ESS fails the Annual Performance Test, the Buyer’s payment to the Respondent shall be subject to reduction based on the monthly capacity payment calculation until ESS passes a subsequent performance test which is separate from the Annual Performance Test.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>

<p>g.</p>	<p>The following ESS Guaranteed Parameters shall be tested by the Respondent and provided to the Buyer for comparison against the appropriate expected values provided in Exhibit 1 at the COD Performance Test and during the Annual Performance Test. All parameters shall be measured at the POI.</p> <ul style="list-style-type: none">a. Round-Trip Efficiency (%)b. Continuous Charge Capacity (MW)c. Continuous Discharge Capacity (MW)d. Guaranteed ESS Energy (MWh)e. Active Power Response Time (Time required for the ESS to ramp up to full capacity from when the Buyer issues the signal).f. Guaranteed up-ramp rate for full power charge and discharge operation (MW/[time])g. Guaranteed down-ramp rate for full power charge and discharge operation (MW/[time]) <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
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<p>h.</p>	<p>In addition to the ESS parameters listed in Section D.3.g, the following ESS parameters shall also be tested through the COD Performance Test and match the appropriate expected values provided in Exhibit 1 to declare COD.</p> <ul style="list-style-type: none"> a. Full-rated continuous Power Rate (Charge and discharge at full rated power capacity for sustained periods of time.) (MW) b. Half-rated Continuous Power Rate (Charge and discharge at ½ of full rated power capacity for sustained periods of time.) (MW) c. Minimum time required to charge from 0 to 100% SOC at full rated capacity d. Maximum time required to charge from 0 to 100% SOC at full rated capacity e. Energy Available for immediate discharge at 100% SOC (MWh) f. Charge Ramp Rate (MW/[time]) g. Discharge Ramp Rate (MW/[time]) h. Discharge Ramp Rate after synchronization (%/sec) i. Self-discharge (% SOC/day) j. Noise (dBA) k. Startup time (min) l. Shutdown time (min) <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>i.</p>	<p>Payment for ESS shall be performance-based and made in full, if all performance parameters are met. A monthly performance report shall be provided as a pre- requisite for payment. Invoices shall be paid after the Buyer approves the monthly performance report. Payment shall be reduced for underperformance.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>

E. ESS Operation and Reporting Requirements	
1.	The Buyer shall have the following control over the ESS:
a.	<p>The ability to schedule specific SOC values for the ESS to achieve by a set time. The ESS shall calculate and execute the charge or discharge profile to achieve that setting.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
b.	<p>The ability to specify a charge and discharge MW set point that shall override existing operations/schedules to execute immediately based on the latest NERC Reliability Guideline: BPS-Connected Inverter-Based Resource Performance.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
2.	<p>All ESS metering shall comply with the applicable metering policies and requirements from the LADWP Bulk Electric System Meter Policy.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
3.	<p>The Respondent shall be responsible for the ESS complying with applicable policies and all requirements for the Energy Imbalance Market.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
4.	<p>The ESS shall be registered with the California Independent System Operator (CAISO) following the New Resource Implementation Process. The Respondent shall assume such resource will become a participating resource in the Buyer's portfolio and be accepted by CAISO on COD.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>

<p>5.</p>	<p>The Respondent shall provide regular reporting of ESS status to the Buyer via SCADA including, but not limited to the following:</p> <ul style="list-style-type: none"> • Number of cycles and MWh remaining for ESS cycling for the year • MW and MVAR available for charge and discharge • MWh available for charge and discharge • MWh discharged year to date • Estimated time taken to charge from current SOC to another Operator-specified SOC • Estimated round-trip efficiency, based on total MWh charged and discharged per month. For clarification, this does not establish the round-trip efficiency of the ESS as described in the Annual Performance Test or as part of the COD Performance Test. <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>6.</p>	<p><u>WECC/NERC Generator Testing and Model Validation Requirement:</u> The Respondent shall comply with Western Electricity Coordinating Council (WECC) and NERC Generator Testing and Model Validation Requirements. The Respondent shall provide Buyer with the required documents for compliance, as applicable.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>
<p>7.</p>	<p><u>EIA Requirement:</u> The Respondent shall be responsible for the U.S. Energy Information Administration (EIA) data submittals. A copy of any submitted reports shall be provided to the Buyer upon submittal to EIA.</p> <p>Agree <input type="checkbox"/> Disagree <input type="checkbox"/></p> <p>Comments:</p>

F. Pricing	
1.	<p>Respondent shall provide project pricing as specified in Exhibit 1.</p> <p>The Respondent's price shall exclude any annual escalator and shall consist of the following:</p>
a.	<p>Fixed Price: A price for the availability of the ESS, subject to availability and performance guarantees in \$/kW-month,</p> <p>\$ _____ /kW-month</p> <p>Comments:</p>
b.	<p>Fixed Operations and Management (O&M) Cost: A price for the fixed costs associated with the maintenance and repair of the ESS in \$/kW-month,</p> <p>\$ _____ /kW-month</p> <p>Comments:</p>
c.	<p>Variable O&M and Variable Asset Replacement Cost: A price for the variable costs associated with the maintenance and repair of the ESS in \$/MWh,</p> <p>\$ _____ /MWh</p> <p>Comments:</p>
2.	<p>Buyout Price: A price for the sale of the ESS in annual increments from year one to the end of the agreement, if applicable.</p> <p>Please provide the following milestone years in addition to all annual increments.</p> <p>Year 1: \$ _____ Year 6: \$ _____ Year 10: \$ _____</p> <p>Comments:</p>
3.	<p>Proposals with a buyout option shall include Long-Term Service Agreements (LTSA) for operation & maintenance. These agreements shall take place once the buyout option is exercised and will remain in effect for the rest of agreement term.</p> <p>\$ _____ / Year for _____ Years after buyout option is exercised.</p> <p>Comments:</p>

G. Evaluation Process

1.	Proposals shall be evaluated against the following criteria:	
a.	Evaluation Criteria	Relative Ranking or Weight
	Complies with necessary codes and standards	Pass/Fail
	Fee schedule	Pass/Fail
	Volume I - Management Proposal – 35%	
	<ul style="list-style-type: none"> • Respondent’s Qualifications and Experience 	
	<ul style="list-style-type: none"> • Existing Utility Scale, Pilot Project, and/or Lab Test 	
	<ul style="list-style-type: none"> • Organizational Approach to the Work 	
	<ul style="list-style-type: none"> • Risk Management Approach 	
	<ul style="list-style-type: none"> • Qualifications of Key Personnel 	
	Volume II – Technical Proposal – 35%	
	<ul style="list-style-type: none"> • Project Description 	
	<ul style="list-style-type: none"> • Project Details 	
	<ul style="list-style-type: none"> • Project Plan to Commercial Operation Date 	
	Volume III – Business Proposal – 30%	
	<ul style="list-style-type: none"> • Pricing 	
	<ul style="list-style-type: none"> • Financing and Tax Equity Investor 	
<ul style="list-style-type: none"> • Credit Support and Security 		
<ul style="list-style-type: none"> • Operation and Maintenance; Ownership 		

2.	Proposals will be evaluated to determine if the Respondent has fulfilled the requirements of the RFP, has a complete understanding of the work to be performed, has exhibited completeness and competence in addressing the Statement of Work or scope of services, and has delineated a viable methodology for meeting the requirements of the work. All proposals will be solely evaluated on their content. Materials not included in the written proposal will not be considered.
3.	LADWP will use the following steps in the evaluation of proposals:
a.	Evaluate and score proposals against the Evaluation Criteria delineated in this section.
b.	Competitive Range is established.
c.	Oral Interviews/Presentation, if necessary.
d.	Site visits, if required, with Proposers within the Competitive Range.
e.	Re-evaluate and score
f.	Issuance and evaluation of Best and Final Offer, if necessary
g.	Recommend highest scored proposal for award.
4.	Award may be made without discussion or proposals received; therefore, proposals should be submitted on the most favorable terms the Proposer can provide. A recommendation for contract award may be made solely on the written response, or firms that fall within a competitive range may be invited for oral interviews/presentations. These interviews/presentations shall include time for questions, answers, and discussion and may be recorded or videotaped. A specific agenda for oral interviews/presentations may be provided.

Table 1: CONTROL MODES

Control Mode Category	Control Mode
Emergency Modes	1. Voltage Ride-Through
	2. Frequency Ride-Through
	3. Dynamic Reactive Current
	4. Dynamic Volt-Watt
	5. Frequency-Watt (<i>Implement NERC Reliability Guideline: BPS-Connected Inverter-Based Resource Performance</i>) *
	6. Frequency Droop
Active Power Modes	7. Charge-Discharge Storage
	8. Coordinated Charge-Discharge
	9. Active Power Limit
	10. Active Power Response (configurable as Peak Power Limiting, Load Following, or Generation Following modes)
	11. Automatic Generation Control
	12. Active Power Smoothing
	13. Volt-Watt
	14. Frequency-Watt Curve
	15. Pricing Signal
Reactive Power Modes	16. Fixed Power Factor
	17. Volt-VAR Control
	18. Watt-VAR
	19. Power Factor Correction
Other	20.

* A frequency function/set point is needed to facilitate LADWP's compliance to NERC Reliability Standard BAL-003-2, requirement R1 or its successor.

The functionality set forth in Table 2 to Table 5 are covered in the various DNP 3.0 Control Modes in Table 1 above and will be implemented by such Control Modes. Setpoints to some Control Modes are included below to establish a common understanding of expected operations but the Buyer shall have the right to direct changes to these setpoints at any time during the Agreement term. In addition to the MESA Control Modes, the ESS shall implement the LADWP-specified "Frequency Rate of Change Response Control Mode" in Table 2. The functionality set forth in Table 2 to Table 5 shall be provided for BESS products; however, to the extent they are applicable to other ESS products, proposals shall provide applicable information and indicate why the following tables are not applicable.

Table 2: AUTONOMOUS FUNCTIONS

AUTONOMOUS FUNCTIONS		
<i>Multiple Control Modes shall be available to be simultaneously armed and operated as needed</i>		
<u>Frequency Rate of Change Response Control Mode</u>		
Monitor grid frequency on the ESS side of the Point of Delivery. Continuously compute rate of frequency change.		
<p>The ESS plant controller shall alternately have setpoints for positive or negative rate of change of frequency below or above which the ESS will respond with “Frequency Response Power” for a “Response Period” setpoint.</p> <p>The ESS shall ramp to the average power for “Rolling Average Period” before the frequency goes above or below frequency rate of change thresholds. The rate at which ESS ramps back to the average power prior crossing the thresholds shall be a “Recovery Ramp Rate” setpoint.</p> <p>Set points required for Frequency Rate of Change Response:</p>		
Symbol	Value	Units
Δf_{trig}	Magnitude of frequency change to trigger response	mHz
Δt_{trig}	Maximum duration over which that change can accrue	sec
ΔP_{resp}	Magnitude of MW response per decihertz	MW/dHz
t_{resp}	Duration of MW response after triggered	sec
<p>Initiate frequency response if the magnitude of frequency change Δf is at least Δf_{trig} within or at time interval Δt_{trig}.</p> <ul style="list-style-type: none"> • The response is a MW step change of amount $P_{resp} = \Delta P_{resp} \times -\Delta f \times k$, where k is the unit conversion between dHz and the units used for Δf. • The response is recalculated throughout the frequency response period. Its magnitude increases if the magnitude of the frequency deviation increases as determined by comparing the current frequency and the starting frequency for calculation of Δf_{trig}. The response magnitude is not permitted to decrease. • Frequency response ends at the expiration of response period t_{resp}. • Ramp-out is at the same ramp rate as is used for active power control. No special ramp rate is needed for this mode. 		

Table 3: CONTROL MODE REQUIRMENTS

<u>Dynamic Active Power-Frequency Performance</u>		
Parameter	Description	Performance Target
Reaction Time	Time between the step change in frequency and the time when the resource active power output begins responding to the change	< 500 ms
Rise Time	Time in which the resource has reached 90 percent of the new steady-state (target) active power output command	< 4 seconds
Settling Time	Time in which the resource has entered into, and remains within, the settling band of the new steady-state active power output command	< 10 seconds
Overshoot	Percentage of rated active power output that the resource can exceed while reaching the settling band	< 5 percent**
Settling Band	Percentage of rated active power output that the resource should settle to within the settling time	< 2.5 percent**
<u>Dynamic Reactive Current Support Mode Requirements</u>		
Monitor voltage at Point of Delivery		
Default hold time (HoldTmms) for Dynamic Reactive Current Support Mode after voltage returns to inside the deadband is five (5) seconds.		
Default to Frequency Response and Frequency Rate of Change Response are higher priority than Dynamic Reactive Current Support.		
Ability to respond in a minimum of 1-3 Cycles from detecting and to provide reactive power in response to Point of Delivery voltage falling below 0.8 pu.		
<u>Reactive Power Control Modes Requirements</u>		
Monitor voltage on ESS side at Point of Delivery.		
While voltage remains between 1.1 and 0.8 pu respond to deviations in voltage outside a defined deadband with proportional reactive power.		
Ramp rate (MVAR / Sec) for adjustment of reactive power.		
Scheduled (day/night) fixed power factor setting for reactive power support.		
<u>State of Charge Management (Coordinate Charge/Discharge Control Mode) Requirements</u>		
Monitor ESS SOC and provide a mechanism to regulate SOC, principally to recover SOC after discharge events (both manual and automatic).		

**Percentage based on final (expected) settling value.

Table 4: EXTERNAL OVERRIDE CONTROLS

Provide functionality to trigger manual discharge, using the following parameters:
Continuous discharge power
Operator set point discharge time
Operator set point “On” ramp rate (MW / min or immediate)
Operator set point “Off” ramp rate (MW / min or immediate)
Reactive power set point (MVAR)
Reactive power set point timer (Hours)
Power factor set point
In addition to the MESA-ESS specification of Charge/Discharge Storage Control Mode, provide the following functionality when the ESS is in Charge/Discharge Control Mode:
ESS shall respond to external command signals to execute manual discharge or apply reactive power within 10 seconds of receiving the signal.
If present conditions do not permit requested discharge (e.g., SOC is too low), BESS shall report the maximally conforming parameters which are available over DNP 3.0.
During manual discharge or manual reactive control, ESS shall indicate which, if any, autonomous functions are disabled or degraded.
After manual discharge cycle is complete, ESS shall resume autonomous functions including automatic SOC management.

Table 5: CONNECTION AND DISCONNECTION FROM LADWP GRID

CONNECTION AND DISCONNECTION FROM LADWP GRID
<p>While voltage and frequency remain within the specified voltage and frequency windows, the ESS shall remain connected to the LADWP grid unless instructed otherwise by disconnection signal or otherwise unavailable. System will stay connected and operational pursuant of Monthly Guaranteed Availability of the Agreement.</p>
<p>Provide function for commanded disconnection from LADWP grid both remotely and via local HMI. This is to be used for routine disconnection when sufficient warning is available to permit normal standard disconnect procedures by the ESS.</p>
<p>Provide functionality to accept an emergency disconnect input in the form of a dry contact. If instructed to open the ESS must immediately cease operation.</p>
<p>Startup and connection time from an “Off” or “Disconnected” state to “Connected and Idle” shall be no more than 300 seconds if the BESS/inverter thermal management loads are energized and the inverters are not set to “Sleep Mode”.</p> <p>If the BESS is “Disconnected” but the main breaker is still closed, the BESS shall provide Buyer a timeout setpoint that causes the BESS to transition to a “Disconnected” state with the breaker closed but the inverters set to “Sleep Mode” after a Buyer setpoint number of minutes. The time to return from “Disconnected” and “Sleep Mode” to “Connected and Idle” shall be no more than 600 seconds if the BESS main breaker is closed and thermal management loads are energized. If a “Disconnected” or “Off” state opens the BESS main breaker, which removes battery and inverter thermal management power, then startup and connection time will be dependent on local temperature conditions and may exceed 600 seconds.</p> <p>The BESS shall report estimated time to “Connected and Generating” at all times. Inverters in “Sleep Mode” represents state where inverters are not switching and not synchronized to the grid.</p>
<p>4 seconds maximum time for ESS Point of Delivery disconnection after receiving emergency stop signal.</p>
<p>The ESS shall isolate from the grid upon detection of a short or open condition on the main power line, while control systems remain powered via a UPS or alternate auxiliary power source.</p>
<p>The ESS shall reconnect to the grid when main power is restored, provided the control systems remain powered by the UPS or an alternative auxiliary power source.</p>
<p>The ESS shall have a microprocessor-based relay protection system (such as SEL 351) with CTs and PTs to detect overcurrent and to disconnect the AC breaker.</p>

Table 6: REMOTE MONITORING AND CONTROL

REMOTE MONITORING AND CONTROL REQUIREMENTS
The ESS-LADWP communication mechanism for data transfer during faults/triggered actions shall have 1 second sampling time.
The ESS shall be connected to external communications systems via one console for LADWP EMS and one console for local control.
The ESS shall set heartbeat timer to ensure communication path is online and processor is functioning.
<u>Minimum available metrics via both data transfer and operator control updated by event driven data or buffers.</u>
<p>The ESS shall also monitor and be capable of controlling the following:</p> <ul style="list-style-type: none"> • Current operational status • Total real power (MW) • Total reactive power (MVAR) • Total complex power (MVA) • State-of-charge (SOC), expressed as a percent, defined as ESS Energy Available for discharge / Guaranteed ESS Energy • Current power capabilities in all quadrants • Voltage and frequency as measured at Point of Delivery • Operation mode • Fault codes / description <p>The Respondent shall supply the points list and sampling frequency.</p> <p>The ESS shall have 2 seconds maximum response time for implementing changes to set points.</p>

Availability Percentage

The “Availability Percentage” shall be calculated as follows:

Availability shall be calculated as follows:

Power Availability:

$$\left(\frac{MW_A}{MW_R} \right) \times 100$$

Storage Availability:

$$\left(\frac{\text{Usable MWh available in Period}^*}{\text{Guaranteed MWh in Period}} \right) \times 100$$

Performance Unavailability:

$$\left(\frac{A + B + C}{D} \right) \times 100$$

Availability Percentage:

$$[W_1(\text{Power Availability}) + W_2(\text{Storage Availability}) - \text{Performance Unavailability}]$$

Where:

- MW_R = Project’s Guaranteed Rated Capacity
- MW_A = Minimum of (Available Charge Capacity MW, Available Discharge Capacity MW) excluding oversized capacity
- W_1, W_2 = Weight factor for Power Availability and Storage Availability = 0.5
- A = Planned Maintenance Exceedance Hours
- B = Unplanned Maintenance Hours
- C = Underperformance Hours due to other factors as stated in Appendix 4 excluding Available Capacity
- D = Total Hours in the Measurement Period = (Number of Days in Measurement Period) x 24 Hours
- Availability: The Project is visible on Respondent’s SCADA system, can be controlled via SCADA, and perform as defined.
- Usable MWh available in Period will be used from the most recent Facility Testing (Section 9) excluding oversize storage capacity.
- Total Hours in the Measurement Period means twenty-four (24) multiplied by the number of days in such Measurement Period
- Planned Maintenance Allowance means number of hours in a Measurement Period that the Project is planned to have a regularly scheduled maintenance performed. Any major overhaul of the Project shall be included in proposal of planned maintenance hours. Pre-defined years in which major overhaul will take place shall also be provided. Any partial outage for maintenance during an hour shall count as a full hour for purposes of this definition.
- Unplanned Maintenance means any outage that has not been planned and communicated to Buyer in advance. Outages due to factors that are not in the control of Respondent, including Force Majeure, a Buyer Default, and certain permitted testing (such as performance testing) shall not be counted as “unplanned” hours in the calculation of the availability. Any partial outage during an hour shall count as a full hour for purposes of this definition.

Figure 1: AVAILABILITY PERCENTAGE CALCULATION

Monthly Capacity Payment

Buyer shall pay Respondent a Monthly Capacity Payment calculated as the following:

(Contract Price x Guaranteed Rated Capacity x Availability Percentage) - EIM/FMM/EDAM pass-through penalty

Figure 2: MONTHLY CAPACITY PAYMENT CALCULATION

Exhibit 1: ESS Specifications Datasheet

The Respondent shall fill in the specified parameters in the attached ESS Specifications Datasheet as applicable. Please indicate N/A for non-applicable items.

Exhibit 2: Key Personnel Experience and Resumes

Exhibit 3: Project Information

Exhibit 4: Degradation Curve