Energy Storage Glossary of Terms

0% State of Charge	The lowest State of Charge to which the energy storage system (system) can be consistently discharged without damage beyond expected degradation from normal use.
100% State of Charge	The highest State of Charge to which the system can be consistently charged without damage beyond expected degradation from normal use.
Ancillary Services (AS or A/S)	CAISO Definition: Regulation, Spinning Reserve, Non-Spinning Reserve, Voltage Support and Black Start together with such other interconnected operation services as the California ISO may develop in cooperation with Market Participants to support the transmission of Energy from Generation resources to Loads while maintaining reliable operation of the California ISO Controlled Grid in accordance with WECC standards and Good Utility Practice.
Annual Dmax Degradation Rate %	Expected annual degradation in Dmax expressed as the percent decrease in Dmax from year start to year end.
Annual Duration Energy Degradation Rate (ADDR)	Means the rate at which the amount of Design Duration Energy will be reduced to account for expected degradation at the start of each Contract Year. The ADDR is measured as a percentage.
Automatic Generation Control (AGC)	CAISO Definition: Generation equipment that automatically responds to signals from the California ISO's EMS control in Real-Time to control the Power output of Generating Units within a prescribed area in response to a change in system frequency, tie-line loading, or the relation of these to each other, so as to maintain the target system frequency and the established Interchange with other Balancing Authority Areas within the predetermined limits.
Capability	Means the Dmax, Cmax, and the Storage Energy
Charging Energy	The amount of Energy withdrawn from the Participating Transmission Owner's electrical system or the CAISO Grid to be stored by the Project and discharged at a later time as measured in MWh at the Electric Revenue Meter of the Project. Charging Energy never includes Station Use.
Charge Duration	The time from 0% State of Charge to 100% State of Charge when charging at Cmax, understanding that charging may curtail as the State of Charge approaches 100%. The Charge Duration should be interpreted as the fastest charging time to 100% State of Charge under normal operations.
Cmax	The maximum steady state power the system can continuously charge from 0% State of Charge to 100% State of Charge measured by the Electric Revenue Meter at

Energy Storage Glossary of Terms

	the Electrical Delivery Point.
Cmax Duration	The amount of time the Project is able to charge at Cmax.
Commercially Operable	With respect to the Project, is a condition occurring after such time as Mechanical Completion has occurred, commissioning is complete, the Project has been shown by an Initial Performance Test to be capable of delivering at least ninety-nine percent (99%) of the Design Duration Energy to the CAISO Grid on a sustained basis, and the Project (including each and every Unit) has been released by the EPC Contractor to Seller for commercial operations.
Commercial Operation Date	Means the date on which all Units at the Project have become Commercially Operable. For purposes of clarity, the Commercial Operation Date may be different than the date the CAISO declares the Project commercially operable.
Contract Year	Means a period of twelve (12) consecutive months; the first Contract Year shall commence on the Initial Delivery Date; and each subsequent Contract Year shall commence on the anniversary of the Initial Delivery Date. The final Contract Year may be a period of less than twelve (12) consecutive months.
Degraded Duration Energy	The Design Duration Energy adjusted downward by the applicable Energy Degradation Factor at the end of each Contract Year.
Delivered Discharge Energy	Means all Energy discharged from the Project as measured in MWh by the Electric Revenue Meter at the Electrical Delivery Point.
Design Duration Energy	Means the Delivered Discharge Energy the Project can deliver when discharging at the Design Dmax during the Design Dmax Duration following charging from 0% State of Charge to 100% State of Charge during the Design Charge Duration.
Discharge Duration	The time from 100% State of Charge to 0% State of Charge when discharging at Dmax, understanding that output may curtail as the State of Charge approaches 0%. The Discharge Duration should be interpreted as the fastest discharging time from 100% State of Charge to 0% State of Charge under normal operation.
Dmax	The maximum steady state power the Project can continuously discharge from 100% State of Charge to 0% State of Charge measured by the Electric Revenue Meter at the Electrical Delivery Point.
Dmax Duration	The amount of time the Project is able to discharge at Dmax.
Electric Revenue Meter	Means the measurement device(s) used by the interconnecting Transmission Provider to measure deliveries of Product at the Electrical Delivery Point for purposes of billing.
Electrical Delivery Point	Is the specified point of interconnection for the Project to the CAISO-controlled grid and is specified in the relevant Agreement.

Energy Storage Glossary of Terms

Energy Management System (EMS)	CAISO Definition: A computer control system used by electric utility dispatchers to monitor the real-time performance of the various elements of an electric system and to control Generation and transmission facilities.
Energy Storage Services	Means, collectively or individually, the acceptance of Charging Energy at the Project, the storing of Energy in the Project, and the delivery of Energy at the Electrical Delivery Point from the Project, all in accordance with Buyer's schedule and the terms of an agreement.
Full Duty Cycle	Means a discharge of the system during the Discharge Duration immediately followed by charging the system during the Charging Duration.
Guaranteed Efficiency	A guaranteed measure for the ratio of the Delivered Discharge Energy to Charging Energy of the Project. The Guaranteed Efficiency is a percentage.
Interconnection Agreement	Means the agreement and associated documents (or any successor agreement and associated documentation approved by FERC) by and among Seller, the Participating Transmission Owner, and the CAISO governing the terms and conditions of the Project's interconnection with the CAISO Grid, including any description of the plan for interconnecting the Project to the CAISO Grid.
Non-spinning Reserve	CAISO Definition: The portion of resource capacity that is capable of being synchronized and Ramping to a specified load in ten minutes (or that is capable of being interrupted in ten (10) minutes) and that is capable of running (or being interrupted) for at least thirty (30) minutes from the time it reaches its award capacity.
Operational Limitations	The parameters describing the physical capabilities of the system.
Participating Transmission Owner	Means an entity that (i) owns, operates and maintains transmission lines and associated facilities and/or has entitlements to use certain transmission lines and associated facilities and (ii) has transferred to the CAISO operational control of such facilities and/or entitlements to be made part of the CAISO Grid.
Product	Means all Delivered Discharge Energy, Ancillary Services, Other Products, and Capacity Attributes produced by or associated with the Project and the Energy Storage Services, all of which shall be delivered for Buyer's exclusive use pursuant to the terms of an agreement.
Ramping	CAISO Definition: Changing the loading level of a resource in a constant manner over a fixed time (e.g., Ramping up or Ramping down). Such changes may be directed by a computer or manual control.

Energy Storage Glossary of Terms

Regulation	CAISO Definition: The service provided either by resources certified by the CAISO as equipped and capable of responding to the CAISO's direct digital control signals, or by System Resources that have been certified by the CAISO as capable of delivering such service to the CAISO Balancing Authority Area, in an upward and downward direction to match, on a Real-Time basis, Demand and resources, consistent with established NERC and WECC reliability standards and any requirements of the NRC. Regulation is used to control the operating level of a resource within a prescribed area in response to a change in system frequency, tie line loading, or the relation of these to each other so as to maintain the target system frequency and/or the established Interchange with other Balancing Authority Areas within the predetermined Regulation Limits. Regulation includes both an increase in Energy production by a resource or decrease in Energy consumption by a resource (Regulation Up) and a decrease in Energy production by a resource or increase in Energy consumption by a resource (Regulation Down). Regulation Up and Regulation Down are distinct capacity products, with separately stated requirements and ASMPs in each Settlement Period.
Regulation Down	CAISO Definition: Regulation reserve provided by a resource under CAISO EMS control that can decrease its Energy production or increase its Energy consumption in response to a direct electronic signal from the CAISO to maintain standard frequency in accordance with established Reliability Criteria.
Regulation Energy Management (REM)	A market enhancement for a shorter duration non-generating resource (NGR) that enables new types of resources to participate in the CAISO regulation markets. Please refer to the CAISO Tariff for additional details.
Regulation Up	CAISO Definition: Regulation provided by a resource under CAISO EMS control that can increase its Energy production or decrease its Energy consumption in response to a direct electronic signal from the CAISO to maintain standard frequency in accordance with established Reliability Criteria.
Resource Adequacy	Means the procurement obligation of load serving entities, including Buyer, as such obligations are described in CPUC Decisions D.04-10-035 and D.05-10-042 and subsequent CPUC decisions addressing Resource Adequacy issues, as those obligations may be altered from time to time, and all other capacity procurement obligations established by any other entity, including the CAISO.
Spinning Reserve	CAISO Definition: The portion of unloaded synchronized resource capacity that is immediately responsive to system frequency and that is capable of being loaded in ten (10) minutes, and that is capable of running for at least thirty (30) minutes from the time

Energy Storage Glossary of Terms

	it reaches its award capacity.
Stand-by Energy Consumption	Means the average hourly consumption of Energy by system, measured over 24 consecutive hours when system is idle but ready for immediate operation.
Stand-by Self Discharge	Means the difference between starting SOC at 75% and ending SOC after 24 hour period while system is idle but ready for immediate operation.
State of Charge (SOC)	Means the amount of Delivered Discharge Energy stored in a Unit expressed as a percent of the maximum amount of Delivered Discharge Energy a Unit is capable of storing (e.g., 80% SOC).
Station Use	Means the electrical load of the Project's auxiliary equipment that is necessary for operation of the Project. The auxiliary equipment includes, but is not limited, to forced and induced draft fans, air conditioner systems, heating systems, cooling towers, plant lighting and control systems, any heating or cooling equipment necessary to keep energy storage componentry within their normal operating temperatures, any motors or pumps required for moving material within the energy storage system, and any other electrical loads required for the Energy Storage Services.
Storage Energy	The Delivered Discharge Energy the system can deliver from 100% State of Charge to 0% State of Charge.