APPENDIX D PRELIMINARY DUE DILIGENCE LIST

ATTACHMENT C

This Attachment C to Appendix D (Preliminary Due Diligence List) to the RFP includes select questions from Attachments 1, 2, 3, 4, and 7 to Appendix B-2 (Scope Book) to the RFP. This Attachment C applies to proposals for BOT transactions and Self-Build Options.

PERFORMANCE GUARANTEES (FROM ATTACHMENT 1 TO APPENDIX D)

The following table requests inputs regrading performance guarantees for the Facility. Bidder shall complete all information requested in the table. If Bidder's data differs from that specified in the table, Bidder shall provide Bidder's corrected data and provide the justification for the change.

	PERFORMANCE GUARANTEES						
Nº	CHARACTERISTICS	UNITS	DATA	NOTES			
1	MINIMUM CRITERIA						
1.1	Guaranteed Plant Capacity (@ POI)	MWac					
1.2	Guaranteed Availability (Required / As Bid)	%	98% /				
1.3	Project Total Energy Yield in Year 1 (Net)	MWh		Based on TMY. Actual site measured weather data to be used during testing.			
1.4	Minimum Acceptance Criteria for Performance Testing (Required / As Bid)	%	95% Plant Capacity 98%Availability/				
1.5	BESS Energy Storage Capacity (Net) (@ POI)	MWh					
1.6	BESS Discharging Power Capacity (Net) (@ POI)	MW					
1.7	BESS Round Trip Efficiency (@ BESS)	%		DC & AC			

PERFORMANCE MODEL (PV_{SYST}) (FROM ATTACHMENT 2 TO APPENDIX D)

The following table requests inputs to and results from the Performance Model (PVsyst). Bidder shall complete all information requested in the table. If Bidder's data differs from that specified in the table, Bidder shall provide Bidder's corrected data and provide the justification for the change.

	PERFORMANCE MODEL					
Nº	CHARACTERISTICS	UNITS	DATA	NOTES		
1	REFERENCE SITE CONDITIONS	-				
1.1	Global Horizontal Irradiation (GHI) @ ground level	kWh/m²				
1.2	Diffuse Horizontal Irradiation (DHI) @ ground level	kWh/m²				
1.3	Ambient temperature	°F				
1.4	Altitude (above sea level)	ft				

	PERFORMANCE MODEL				
Nº	CHARACTERISTICS	UNITS	DATA	NOTES	
2	WEATHER DATA	-			
2.1	Data source	-			
2.2	Period of data collection	years			
2.3	Distance from site or spatial resolution	km			
2.4	Uncertainty	%			
3	MODEL PARAMETERS	-			
3.1	Installed Capacity (DC)	kWp		Total peak DC power	
3.2	Nominal Power (AC)	kW		Total nominal inverter output	
3.3	Nominal Power at POI (AC)	kW			
3.4	DC/AC ratio	-			
3.5	PV modules	-			
3.5.1	PV module manufacturer and model	-			
3.5.2	PV module power at STC	Wp			
3.5.3	Technology	-			
3.5.4	Power	%/K			
3.5.5	Voltage	%/K			
3.5.6	Current	%/K			
3.5.7	NOCT	°F			
3.5.8	Annual degradation factor	%	0.6 /		
3.5.9	Number of PV modules per string	-			
3.5.10	Total number of PV modules installed	-			
3.5.11	Total number of strings	-			
3.5.12	Product warranty period (Required / As Bid)	years	10 /		
3.5.13	Power warranty (Required / As Bid)	years	25 /		
3.5.14	Certifications	-			
3.6	Inverters	-			
3.6.1	Inverter manufacturer and model	-			
3.6.2	Input voltage rating	VDC			
3.6.3	Number of strings per inverter	-			
3.6.4	Number of inverters	-			
3.6.5	Maximum efficiency	%			
3.6.6	European weighted efficiency	%			
3.6.7	CEC weighted efficiency	%			
3.6.8	Max. standby consumption	W			
3.6.9	Max. self-consumption (operation)	W			
3.6.10	Cooling method	-			
3.6.11	Heating system	-			
3.6.12	Product warranty period (Required / As Bid)	years	5 /		
3.6.13	Certifications	-			

	PERFORMANCE MODEL				
Nº	CHARACTERISTICS	UNITS	DATA	NOTES	
3.7	Mounting System	-			
3.7.1	Tilt angle of fixed tilt system or rotation limits of tracking system	0			
3.7.2	Backtracking	Yes / No			
3.7.3	Orientation of PV modules (azimuth)	0			
3.7.4	Installation type (portrait / landscape)	-			
3.7.5	Rows and columns per mounting structure	- x -			
3.7.6	Ground Coverage Ratio	%			
3.8	Array losses	-			
3.8.1	Module quality loss	%			
3.8.2	Module mismatch losses	%			
3.8.3	String mismatch losses	%			
3.8.4	Light induced degradation losses	%			
3.8.5	IAM losses defined by manufacturer	Yes / No			
3.8.6	Constant thermal loss factor	W/m²/k			
3.8.7	Wind loss factor	W/m ² /k/m/s			
3.8.8	Soiling losses	%			
3.8.9	Spectral correction applied	Yes / No			
3.9	Cabling	-			
3.9.1	DC ohmic losses @STC (Max/Calculated)	%			
3.9.2	AC ohmic losses @STC (Max/Calculated)	%			
3.10	Transformers	-			
3.10.1	Transformer type	-			
3.10.2	Number of transformers	-			
3.10.3	Iron losses	%			
3.10.4	Resistive losses @ STC	%			
3.11	System losses	-			
3.11.1	First year degradation	%			
3.11.2	Annual degradation	%			
3.11.3	Light soaking effect	%			
3.11.4	Inverter losses	%			
3.11.5	Auxiliary losses	%			
3.11.6	Unavailability	%			
3.12	Combined Uncertainty	%			

	PERFORMANCE MODEL					
Nº	CHARACTERISTICS	UNITS	DA	TA	NOTES	
4	ANNUAL PERFORMANCE RESULTS	-	PVsyst Results	Final Results	Final Results include all post-processing	
4.1	Net electricity production	-				
4.1.1	Year 1, P50	MWh/yr				
4.1.2	Year 1, P90	MWh/yr				
4.1.3	25-year average, P50	MWh/yr				
4.2	Specific Yield (first year, P50)	kWh/kWp/yr				
4.3	Performance Ratio (first year, P50)	%				
4.4	Document number of the attached calculation/report	-				

DESIGN AND OPERATIONAL DATA (FROM ATTACHMENT 3 TO APPENDIX D)

The following table details design and operational requirements for the Facility. Bidder shall complete all information requested in the table. If Bidder's data differs from that specified in the table, Bidder shall provide Bidder's corrected data and provide the justification for the change.

	DESIGN AND OPERATIONAL DATA					
Nº	CHARACTERISTICS	UNITS	DATA	NOTES		
1	DESIGN CONDITIONS	-				
1.1	Design lifetime of the plant (Required / As Bid)	years	25 /			
1.2	Average elevation	ft a.s.l				
1.3	Ambient Temperature Recorded (Minimum/Average/Maximum)	°F				
1.4	Design Temperature for Operation (Minimum/Maximum)	°F				
1.5	Design Relative Humidity	%				
1.6	Design wind speed (per ASCE 7, Risk Category III)	mph		If equipment selection is to be based on 10-minute mean wind velocity at 10 m above ground level, a correlation factor of 0.67 with 3 second gust may be used. Category C surface roughness as per ASCE shall be considered.		
1.7	Rainfall (Annual Avg/Annual Max/1-day Max)	in				
1.8	Typical meteorological year (GHI)	W/m²				
1.9	Seismic Zone	-		Zone and ground acceleration values shall be confirmed by the geotechnical study.		
1.10	Available Area required (approx.)	acres				
2	GENERAL PLANT DATA	-				
2.1	PV technology type	-				
2.2	Installed Capacity (total DC peak power)	MWp				

DESIGN AND OPERATIONAL DATA					
Nº	CHARACTERISTICS	UNITS	DATA	NOTES	
2.3	Nominal Power (AC) (total nominal inverter output)	MW			
2.4	Nominal Power at POI (AC)	MW			
2.5	DC/AC ratio	-			
2.6	Auxiliary Power (Average/Peak)	MW			
2.7	Annual Auxiliary Power	MWh		Year 1 based on TMY	
2.8	Total area covered by PV arrays	acres			
2.9	Total area of Project	acres			
2.10	Row to row spacing	ft			
2.11	Ground Coverage Ratio	%			
2.12	Shading losses due to internal row spacing	%			
2.13	Total number of PV panels	Qty			
2.14	Total number of strings	Qty			
2.15	Total number of racking system tables	Qty			
2.16	Total number of combiner boxes	Qty			
2.17	Total number of inverters	Qty			
2.18	Total number of batteries/enclosures	Qty			
2.19	Total number of LV/MV transformers	Qty			
2.20	Total number of MV/HV transformers	Qty			
3	MONTHLY PERFORMANCE RATIOS	-			
3	January	- %			
3.1	January	%			
3.1 3.2	January February	%			
3.1 3.2 3.3	January February March	% % %			
3.1 3.2 3.3 3.4	January February March April	% % %			
3.1 3.2 3.3 3.4 3.5	January February March April May	% % % %			
3.1 3.2 3.3 3.4 3.5 3.6	January February March April May June	% % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7	January February March April May June July	% % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8	January February March April May June July August	% % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9	January February March April May June July August September	% % % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10	January February March April May June July August September October November December	% % % % % % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11	January February March April May June July August September October November December PR Base	% % % % % % % % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11 3.12	January February March April May June July August September October November December PR Base YEARLY PERFORMANCE RATIOS	% % % % % % % % % % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11 3.12 3.13 4	January February March April May June July August September October November December PR Base YEARLY PERFORMANCE RATIOS Year 1	% % % % % % % % % % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11 3.12 3.13	January February March April May June July August September October November December PR Base YEARLY PERFORMANCE RATIOS	% % % % % % % % % % % % % % % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11 3.12 3.13 4 4.1 4.2 4.3	January February March April May June July August September October November December PR Base YEARLY PERFORMANCE RATIOS Year 1 Year 2 Year 3	% % % % % % % % % % % % % % % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11 3.12 3.13 4 4.1 4.2	January February March April May June July August September October November December PR Base YEARLY PERFORMANCE RATIOS Year 1 Year 2	% % % % % % % % % % % % % % % % % % %			
3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11 3.12 3.13 4 4.1 4.2 4.3	January February March April May June July August September October November December PR Base YEARLY PERFORMANCE RATIOS Year 1 Year 2 Year 3	% % % % % % % % % % % % % % % % % % %			

	DESIGN AND OPERATIONAL DATA					
Nº	CHARACTERISTICS	UNITS	DATA	NOTES		
4.7	Year 7	%				
4.8	Year 8	%				
4.9	Year 9	%				
4.10	Year 10	%				
4.11	Year 11	%				
4.12	Year 12	%				
4.13	Year 13	%				
4.14	Year 14	%				
4.15	Year 15	%				
4.16	Year 16	%				
4.17	Year 17	%				
4.18	Year 18	%				
4.19	Year 19	%				
4.20	Year 20	%				
4.21	Year 21	%				
4.22	Year 22	%				
4.23	Year 23	%				
4.24	Year 24	%				
4.25	Year 25	%				
5	ANNUAL DEGRADATION FACTOR	-				
5.1	Year 1	%				
5.2	Year 2	%				
5.2 5.3	Year 2 Year 3	%				
		+				
5.3	Year 3	%				
5.3 5.4	Year 3 Year 4	% %				
5.3 5.4 5.5	Year 3 Year 4 Year 5	% % %				
5.3 5.4 5.5 5.6	Year 3 Year 4 Year 5 Year 6	% % %				
5.3 5.4 5.5 5.6 5.7	Year 3 Year 4 Year 5 Year 6 Year 7	% % % %				
5.3 5.4 5.5 5.6 5.7 5.8	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8	% % % % % %				
5.3 5.4 5.5 5.6 5.7 5.8 5.9	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11	% % % % % % % % % % %				
5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10	% % % % % %				
5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 5.11 5.12 5.13	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12 Year 13	% % % % % % % % % % % % %				
5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 5.11 5.12 5.13 5.14	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12 Year 13 Year 14	% % % % % % % % % % % % % %				
5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 5.11 5.12 5.13 5.14 5.15	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12 Year 13 Year 14 Year 15	% % % % % % % % % % % % % % % %				
5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 5.11 5.12 5.13 5.14 5.15 5.16	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12 Year 13 Year 14 Year 15 Year 16	% % % % % % % % % % % % % % % % %				
5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 5.11 5.12 5.13 5.14 5.15 5.16 5.17	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12 Year 13 Year 14 Year 15 Year 16 Year 17	% % % % % % % % % % % % % % % % % % %				
5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 5.11 5.12 5.13 5.14 5.15 5.16	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12 Year 13 Year 14 Year 15 Year 16 Year 17 Year 18	% % % % % % % % % % % % % % % % %				
5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 5.11 5.12 5.13 5.14 5.15 5.16 5.17	Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12 Year 13 Year 14 Year 15 Year 16 Year 17	% % % % % % % % % % % % % % % % % % %				

	DESIGN AND OPERATIONAL DATA					
Nº	CHARACTERISTICS	UNITS	DATA	NOTES		
5.21	Year 21	%				
5.22	Year 22	%				
5.23	Year 23	%				
5.24	Year 24	%				
5.25	Year 25	%				
6	YEARLY PRODUCTION	-				
6.1	Year 1	MWh/yr				
6.2	Year 2	MWh/yr				
6.3	Year 3	MWh/yr				
6.4	Year 4	MWh/yr				
6.5	Year 5	MWh/yr				
6.6	Year 6	MWh/yr				
6.7	Year 7	MWh/yr				
6.8	Year 8	MWh/yr				
6.9	Year 9	MWh/yr				
6.10	Year 10	MWh/yr				
6.11	Year 11	MWh/yr				
6.12	Year 12	MWh/yr				
6.13	Year 13	MWh/yr				
6.14	Year 14	MWh/yr				
6.15	Year 15	MWh/yr				
6.16	Year 16	MWh/yr				
6.17	Year 17	MWh/yr				
6.18	Year 18	MWh/yr				
6.19	Year 19	MWh/yr				
6.20	Year 20	MWh/yr				
6.21	Year 21	MWh/yr				
6.22	Year 22	MWh/yr				
6.23	Year 23	MWh/yr				
6.24	Year 24	MWh/yr				
6.25	Year 25	MWh/yr				

KEY EQUIPMENT DATASHEETS (FROM ATTACHMENT 4 TO APPENDIX D)

The following table details requirements for the designated equipment. Bidder shall complete all information requested in the table. If Bidder's data differs from that specified in the table, Bidder shall provide Bidder's corrected data and provide the justification for the change.

	RACKING/TRACKER SYSTEM				
Nº	CHARACTERISTICS	UNITS	DATA	NOTES	
1	GENERAL	-			
1.1	Manufacturer	-			
1.2	Туре	Fixed / Tracking			
2	BASIC DATA	-			
2.1	Type of foundations	-			
2.2	Type of supporting profiles	-			
2.3	Corrosion protection	Yes / No			
2.4	Type of corrosion protection	-			
2.5	Design wind speed (per ASCE 7, Risk Category III)	mph		See Design and Operational Data Sheet No. 1.6	
2.6	kWp per table	kWp			
2.7	Number or tables	-			
3	TRACKER SYSTEM	-			
3.1	Type of tracking system	-			
3.2	Tracking range	0			
3.3	Backtracking	Yes / No			
3.4	Rows per tracker actuator	-			
3.5	Strings per row	-			
3.6	Power per tracker	kWp			
3.7	Drive type	-			
3.8	Power consumption	kWh/MWp/yr			
3.9	Stow Wind Speed	mph			
3.10	Motors per MWp	-			
4	WARRANTIES	-			
4.1	Product warranty period (Required / As Bid)	years	5 & 10 /	5 years for moving parts and 10years for structural parts	
4.2	Certifications	-			
1 - Bidde	er is allowed to add/include any information	considered as importan	t.		

LV/MV TRANSFORMER					
Nº	CHARACTERISTICS	UNITS	DATA	NOTES	
1	GENERAL	-			
1.1	Manufacturer	-			
1.2	Type/Model	-			
1.3	N⁰ of units	-			
2	TRANSFORMER CHARACTERISTICS	-			
2.1	Type of Transformer	-			
2.2	3 x single phase or three-phase	-			

	LV/MV TRANSFORMER					
Nº	CHARACTERISTICS	UNITS	DATA	NOTES		
2.3	Core or shell	-				
2.4	Type of tank	-				
2.5	Type of cooling	-				
2.6	Vector group	-				
2.7	Rated frequency	hz				
2.8	Transformer life value at IEC conditions	-				
2.9	Rated power based @ 20°C	kW				
2.10	Higher grid voltage	kV				
2.11	Primary rated current	Α				
2.12	Tappings	-		See Section Error! Reference source not found. of MFS		
3	OTHERS	-				
3.1	Temperature rising windings	٥F				
3.2	LV	-				
3.3	MV	-				
4	WARRANTIES	-				
4.1	Product warranty period (Required / As Bid)	months	18 or 36 /	18 mo. from energization or 36 mo. from delivery to project site		
4.2	Certifications	-				

^{1 -} Bidder is allowed to add/include any information considered as important.

^{2 –} Bidder to complete for each type of LV/MV transformer used on the Project including inverter station transformers and BESS transformers.

	GENERATOR STEP-UP (GSU) TRANSFORMER							
Nº	CHARACTERISTICS	UNITS		DATA		NOTES		
1	GENERAL	-						
1.1	Manufacturer	-						
1.2	Type/Model	-						
1.3	N⁰ of units	-						
2	TRANSFORMER CHARACTERISTICS	-						
2.1	Type of transformer	-						
2.2	Installation	-						
2.3	Rated frequency	-						
2.4	Number of phases	-						
2.5	Number of windings	-						
2.6	Winding material	-				Must be Copper		
2.7	Cooling class	-						
3	CAPACITY	-						
3.1	Base rating	MVA						
3.2	1st stage fans	MVA						
3.3	2nd stage fans	MVA	-					
4	WINDING DATA	-	Primary (H)	Secondary (X)	Tertiary (Y)			
4.1	Voltage rating	kV						

GENERATOR STEP-UP (GSU) TRANSFORMER							
Nº	CHARACTERISTICS	UNITS	DATA	NOTES			
4.2	Transformer internal ANSI BIL	kV					
4.3	Transformer bushing ANSI BIL	kV					
4.4	Neutral BIL	kV					
4.5	Winding connection	-					
5	SYSTEM DATA	-					
5.1	Utility tie	MVA					
5.2	Utility tie	V					
5.3	MVA/HP	MVA					
5.4	MVA/HP	HP					
1 - Bidde	1 - Bidder is allowed to add/include any information considered as important.						

MEDIUM VOLTAGE SWITCHGEAR						
Nº	CHARACTERISTICS	UNITS	DATA	NOTES		
1	GENERAL	-				
1.1	Manufacturer	-				
1.2	Type/Model	-				
1.3	Nº machines	-				
2	RATINGS	-				
2.1	Rated voltage	kV				
2.2	Insulated rated voltage	kV				
2.3	Rated frequency	hz				
2.4	Rated short-duration power- frequency withstand voltage	kV				
2.5	Rated lightning impulse withstand voltage	kV				
2.6	Rated short-circuit breaking current, max.	kA				
2.7	Rated short-time withstand current, 3s, max.	kA				
2.8	Rated short-circuit making current, max.	kA				
2.9	Rated peak withstand current, max.	kA				
2.10	Rated main busbar current	Α				
2.11	Rated normal current of feeder, circuit- breaker, max.	А				
2.12	Rated normal current of feeder, switch-disconnector	Α				
2.13	Rated normal current of feeder, switch-disconnector with fuses	А				
2.14	Degree of protection standard	-				
1 - Bidde	er is allowed to add/include any information cons	sidered as ir	mportant.			

	BATTERY						
Nº	CHARACTERISTICS	UNITS	DATA	NOTES			
1	GENERAL	-					
1.1	Manufacturer	-					
1.2	Type/Model	-					
1.3	Quantity required	Qty					
2	RATINGS	-					
2.1	Continuous Real Power - Discharge (Rated/Maximum)	MW					
2.2	Continuous Real Power - Charge (Rated/Maximum)	MW					
2.3	Continuous Apparent Power - Charge (leading and lagging) (Rated/Maximum)	MVA					
2.4	Continuous Apparent Power - Discharge (leading and lagging) (Rated/Maximum)	MVA					
2.5	Continuous Reactive Power (Rated/Maximum)	MVARs					
2.6	Rated Discharge Energy (BOL)	MWh					
2.7	Rated Continuous AC Current	А					
2.8	Output Voltage Range (AC grid voltage)	kV					
2.9	Output Frequency Range	hz					
2.10	Maximum Ramp Rate (charging/discharging)	MW/min		Specify any associated parameters such as State of Change			
2.11	Charge Time (Minimum/Typical/Maximum)	hr		From minimum to rated maximum State of Change			
2.12	Recommended Charge Power	MW					
2.13	Typical Charge Time (include any rest period between charge and discharge cycle)	hr					
2.14	Expected Availability of System	%					
2.15	Typical Start Up Time / Shut Down Time	s					
3	EFFICIENCY AND CYCLE LIFE	-					
3.1	Cycle Life @ Full rated power.	qty					
3.2	Total Round Trip Efficiency, 100% DOD Cycles, Full rated power (BOL and EOL)	%					
3.3	Total Round Trip Efficiency, 100% DOD Cycles, 50% rated power (BOL and EOL)	%					
3.4	Total Round Trip Efficiency, 50% DOD Cycles, Full rated power (BOL and EOL)	%					
3.5	Total Round Trip Efficiency, 50% DOD Cycles, 50% rated power (BOL and EOL)	%					
3.6	Total Round Trip Efficiency, 25% DOD Cycles, Full rated power (BOL and EOL)	%					
3.7	Total Round Trip Efficiency, 25% DOD Cycles, 50% rated power (BOL and EOL)	%					
4	AUXILIARY POWER	-					

	BATTERY							
Nº	CHARACTERISTICS	UNITS	DATA	NOTES				
4.1	Average Auxiliary Power Required (continuous/peak)	kW						
4.2	Auxiliary Nominal Voltage	VAC						
5	ENVIRONMENT	-						
5.1	Rate Operating Temperature Range (Minimum-Maximum)	٥F						
6	BATTERY CONTAINER/ENCLOSURE THERMAL MANAGEMENT	-						
6.1	Startup Time (Typical/Maximum)	S						
6.2	Shutdown Time (Typical/Maximum)	S						
6.3	Estimated Planned Outages	hr/yr						
7	BATTERY CONTAINER/ENCLOSURE THERMAL MANAGEMENT	-						
7.1	Cooling Method	-						
7.2	Configuration (i.e. 2 x 100%)	-						
7.3	Cooling Air Requirement	cfm						
7.4	Heating System	-						
8	WARRANTIES	-						
8.1	Product warranty period (Required / As Bid)	years	10 /					
8.2	Certifications	-						

^{1 –} Bidder is permitted to add/include any information considered as important.

^{2 –} Efficiency is defined as the ratio of the output energy delivered to the input energy collected to restore the BESS to the initial charge.

	BALANCE OF PLANT							
Nº	CHARACTERISTICS	UNITS	DATA	NOTES				
1	COMBINER BOXES	-						
1.1	Number of strings	-						
1.2	Permissible DC voltage	Vdc						
1.3	1.3 String voltage, temperature and surge protection monitoring							
1.4	String current monitoring	Yes / No						
1.5	Output DC switch	Yes / No						
1.6	Surge protection on DC side	-						
1.7	Design Ambient Temperature (min/max)	°F						
1.8	Enclosure Rating	-						
1.9	Warranties (As Required / As Bid)	years	5 /					
1.10	Certifications	-						
2	INSTRUMENTATION AND CONTROL	-						
2.1	Number of operator stations	Qty						

	BALANCE OF PLANT							
Nº	CHARACTERISTICS	UNITS	DATA	NOTES				
2.2	Meteorological Stations	Qty		Minimum 2				
2.2.1	GHI Pyranometer	Qty		per met station				
2.2.2	POA Pyranometer	Qty		per met station				
2.2.3	Ambient temperature	Qty		per met station				
2.2.4	Module temperature	Qty		per met station				
2.2.5	Wind speed (anemometer)	Qty		per met station				
2.2.6	Relative Humidity Sensor	Qty		per met station				
2.2.7	Soiling Monitoring System/Sensor	Qty		per met station				
2.2.8	Data Logger	Qty		per met station				
2.2.9	Battery Backup (required/as bid)	hr	12 /	per met station				
2.2.10	Cloud sensor	Qty		per met station				

APPROVED MANUFACTURERS LIST (FROM ATTACHMENT 7 TO APPENDIX D)

Approved Manufacturers List								
Major Equipment								
	Jinko	Trina	LG	Hanwha Q CELLS	Canadian Solar			
PV Modules	FirstSolar	Astronergy	Talesun	LONGi	Phono Solar (SUMEC)			
	Yingli	JA Solar	Suntech	SunPower	REC Solar			
	Risen	HT Solar						
Inverters	GE	TMEIC	Schneider	Power Electronics	SMA			
liverters	Chint	Ingeteam	ABB					
	Array Technologies Inc.	NexTracker	GameChange	SunLink	Shoals			
Racking System	RBI	Schletter	TerraSmart	Ideematec	Unirac			
	SunPower	Soltec	Nclave					
	ABB	Waukesha	Siemens	Alstom	Hyundai			
Transformer	Virginia Transformer	Pennsylvania Transformer	Cooper PACS					
Switchgear	ABB	Cutler- Hammer	GE	Powell				
Balance of Plan	Balance of Plant							
Combiner / Recombiner Boxes	SolarBOS	Shoals	Bentek					
Disconnects	Square D	Siemens	Eaton	ABB	SMA			
Data Logger	Campbell Scientific	Kipp and Zonen						

Pyranometer	Kipp and Zonen	Eppley Laboratory	EKO				
Temperature Sensor (cell)	Aros Solar Technology						
Anemometer	Gill Instruments						
Power Distribution Center	Powell	Zachry	PACS	Alstom			
HV Circuit Breakers	ABB	GE-Hitachi	Mitsubishi	Siemens			
HV Disconnect Switch	Pascor	Southern- States					
Battery Energy Storage System							
Batteries	Samsung	LG Chem	BYD	Panasonic	Tesla		
Power Conversion	SMA	TMEIC	Schneider	Power Electronics	Ingeteam		
System	ABB	Chint					