

BEFORE THE GUAM PUBLIC UTILITIES COMMISSION

IN THE MATTER OF:) GPA Docket 15-16
)
The Petition of the Guam Power Authority)
for Approval of the Award of the Energy) **PUC COUNSEL REPORT**
Storage Contract to LG CNS.)
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)
_____)

INTRODUCTION

1. This matter comes before the Guam Public Utilities Commission [“PUC”] upon the Petition of the Guam Power Authority [“GPA”] for Approval of the Award of the Energy Storage Contract to LG CNS.¹

BACKGROUND

2. The proposed 40MW Energy Storage System has been before the PUC on a number of previous occasions.
3. In 2014, the PUC approved funding for the Energy Storage System [“ESS”] in the amount of \$35M.²
4. In 2015, after a thorough review of the Invitation for Bids, the PUC authorized GPA to undertake the procurement of the proposed Energy Storage System.³
5. Thereafter, GPA hired Andriano E. Balajadia, P.E., and his subcontractor Electric Power Systems, to assist with the development of the bid documents and provide technical support during the ESS procurement process. The total contract cost was \$367,219.⁴
6. Originally, the project was expected to take one year to complete and be finished by December 2016; however, GPA amended the project bid from one 40MW facility to a project involving the installation and interconnection of a 24MW ESS at the GPA

¹ GPA Petition for Approval of the Award of the Energy Storage System to LG CNS, GPA Docket 15-16, filed February 8, 2017.

² PUC Order Approving Long-Term Debt, GPA Docket 14-09, In Re: Guam Power Authority’s Request to Issue GPA Revenue Bonds, dated July 31, 2014.

³ PUC Order, GPA Docket 15-16, the Petition of the Guam Power Authority for Approval of Procurement of the Energy Storage System, GPA Docket 15-16, dated July 16, 2015, at p. 5.

⁴ Guam Consolidated Commission on Utilities Resolution No. 2017-06, Authorizing Management of Guam Power Authority (GPA) to Award the Energy Storage Phase I Contract to LG CNS, adopted January 24, 2017, at p. 1.

Agana Substation and a 16MW ESS at the Talofofu Substation. The Talofofu ESS project was conceived to provide power and system reliability and renewable energy integration.⁵

7. Through Invitation for Multi-Step Bid No. GPA -182-15, GPA solicited the services of an Engineer/Procure/Construct (EPC) contractor to provide a “turn-key” project based on the following:
 - The ESS projects will be commissioned within 12 months after the award of the contract
 - The technology proposed for the ESS will have at least 1 year of commercial operations history in a utility environment
 - The ESS will deliver energy directly to the existing GPA transmission system
 - The ESS will have a minimum 20-year warranty
 - A 25-year performance-based Operations and Maintenance (O&M) contract will be provided with the ESS.⁶
8. Four bids were submitted in response to the IFB; however, two bids were disqualified.⁷
9. Based upon the evaluation of the Evaluation Committee, it recommended that LG CNS be awarded the contract for the Energy Storage System. The approved bid of LG CNS for design and construction of the 24MW Agana project was \$16,799,554; for the 16MW Talofofu project, \$18,199,516. The total design and construction cost is \$34,999,070.⁸ A breakdown of the bid cost is attached hereto as Exhibit “1”.⁹

⁵ Amendments to IFB No.: GPA-082-15

⁶ Guam Consolidated Commission on Utilities Resolution No. 2017-06 *supra*, at pgs. 1-2.

⁷ Phone conversation between GPA Counsel Graham Botha and PUC Counsel Frederick Horecky on February 20, 2017; Response of Special Project Engineer Lorraine O. Shinohara to PUC questions, dated February 15, 2017.

⁸ Memorandum from the Evaluation Committee to the Supply Management Administrator, Re: Multi-Step Bid No. GPA-082-15, dated January 23, 2017.

⁹ LG CNS Priced Proposal dated January 13, 2017.

10. The Fixed Operations and Maintenance Fee for the entire 25 year period is set forth in Exhibit "2", a copy of which is attached hereto.¹⁰ The yearly amounts for both ESS projects range from over \$200,000 in the first year to over \$400,000 in the 25th year.¹¹
11. The Guam Consolidated Commission on Utilities approved LG CNS as the lowest and most qualified bidder and awarded the contract to LG CNS.¹²

ANALYSIS

12. In response to the GPA IFB, LG CNS submitted an extensive Technical Proposal, which included product descriptions, drawings, proposed warranty, O&M agreement, and the legal, financial and other information required by GPA.¹³
13. LG CNS is a corporation which operates worldwide, with headquarters in locations including Korea, Japan, and the United States.¹⁴
14. In the past two years, LG CNS has deployed at least 4 ESS projects; it has 29 years of experience and almost 10,000 employees. It is connected with other worldwide companies such as LG Energy and LG Chem, which provide extensive services in the energy field, including manufacturer of lithium ion batteries for ESS projects.
15. LG CNS currently serves as the contractor for a 52MW ESS project with Korea Electric Power Corporation.
16. LG CNS has a detailed and extensive work plan for its ESS proposal, which outlines its approach for the entire process, from mobilization to commissioning and environmental cleanup.¹⁵
17. LG CNS has analyzed the frequency load shedding issues and the need for renewable energy integration. LG CNS contends that "regulation by battery will help manage the frequency spikes for the whole system."¹⁶

¹⁰ Memorandum from the Evaluation Committee to the Supply Management Administrator, Re: Multi-Step Bid No. GPA-082-15, dated January 23, 2017.

¹¹ Id.

¹² Guam Consolidated Commission on Utilities Resolution No. 2017-06, *supra*, at p. 2.

¹³ LG CNS Technical Proposal through to IFB No.: GPA-082-15, Part 1, December 5, 2016.

¹⁴ www.lgcns.com, Company Overview.

¹⁵ LG CNS Technical Proposal, Part 1, pages 24-66.

¹⁶ Id. at p. 16.

18. It further posits that “ESS Technology, when it is combined with renewables, is one of the best options to support renewable stabilization and ... a proven technology for frequency regulation...”¹⁷
19. LG CNS has agreed that it will comply with the specific requirement for the 24MW ESS in Agana to maintain the 24MW rated power output for 15 minutes while satisfying the 12-hour Frequency Regulation Duty Cycle. The 16MW ESS in Talofofo will control the ramp-rate of the 25MW solar farm to 1% of rated power output per minute (250kW/min.) at the guaranty success rate of 97%.¹⁸
20. In general, LG has manufacturing facilities around the world, and a staff of engineers and personnel that can assist with any issues that arise on Guam with regard to the ESS projects. LG CNS also has Operations and Maintenance experience with ESS projects comparable in size to that which will be constructed on Guam.
21. From his review of the LG CNS Technical Proposal and other documents, Counsel concludes that LG CNS should be able to undertake and implement the proposed projects on Guam. LG CNS appears to be a company with the requisite experience and skills to implement the ESS projects on Guam.
22. LG CNS has also agreed to undertake the Operations and Maintenance Contract for the ESS projects for a period of 25 years. On various occasions in its Bid documents, LG CNS states its opinion that it is advantageous to have the same contractor do the construction and implementation of the ESS project, as an EPC, and also undertake the Operation and Maintenance Contract for the 25 year period.
23. From the inception of this Bid, GPA has insisted that the selected Contractor provide a 20 year service and parts warranty in its proposal. LG CNS provided a proposed warranty agreement in its technical proposal which appeared to comply with the bid requirements. Under the warranty proposed, LG CNS would have extended the warranty for an additional 5 year warranty period, or up to 25 years, for the life of the O&M contract.¹⁹

¹⁷ Id. at p. 17.

¹⁸ Id. at pgs. 54-55.

¹⁹ LG CNS Technical Proposal, Part 1, p. 72.

24. However, GPA has determined that it will not use the LG CNS proposed warranty, but will adhere to the warranty requirements in Volume II, Technical Qualification Requirements of Multi-Step GPA-082-15, Section 3.3.10. A copy of the Warranty provision is attached hereto as Exhibit "2". At present, GPA believes that the cost of the additional 5 year warranty is too great; however, it retains the option to purchase the additional warranty at a later time, if prudent.²⁰ GPA has the option of extending the warranty another 5 years at any time after the contract is awarded for the additional price indicated under Additive Bid Item 4 in the Priced Proposal.²¹
25. The "Draft Contract" attached as Exhibit "B" to GPA's Petition herein, was a template only which did not have the Contractor's (i.e. LG CNS America Inc.) name filled in or other pertinent information. However, on February 15, 2017, GPA submitted complete files of all IFB documents, including the proposed Contract between LG CNS America Inc. and the Guam Power Authority.²²
26. The revised Contract includes such matters as the total design and construction fee owed of \$34,999,070, and the yearly Fixed O&M Annual Fees for the 24MW Agana and 16MW Talofoto projects. The contract also incorporates all documents concerning the Bid Volumes related to the Multi-Step Bid No. GPA-082-15. The contract does not expressly include, on its face, the provisions relating to Warranty. However, the Contract incorporates Volume II, Section 3.3.10 of the IFB, which is the Warranty provision.
27. The contract and projects thereunder are specified as a "turn-key" project, to insure that when LG CNS turns over the project to GPA, it will immediately be ready for use as an energy storage system.²³ The Contract, §5.2, provides for payment terms upon monthly billings and for a ten percent (10%) retention amount. The payments required under the Contract are consistent with §4.15, Contract Price, and §4.16 the payment Schedule, of Volume I: Commercial Terms & Conditions, Multi-Step GPA-082-15.
28. The Contract has standard provisions that should protect GPA's interest.

²⁰ Phone Conversation between GPA Counsel Graham Botha and PUC Counsel Fred Horecky on February 21, 2017.

²¹ Email1 from Special Projects Engineer Lorraine Shinohara to PUC Counsel Fred Horecky dated February 21, 2017.

²² Contract-Energy Storage System Phase I, submitted February 15, 2017.

²³ Phone conversation between GPA Counsel Graham Botha and PUC Counsel Frederick Horecky on February 20, 2017; Response of Special Project Engineer Lorraine O. Shinohara to PUC questions, dated February 15, 2017.

29. With regard to the proposed funding, PUC has already approved the \$35M for the two ESS projects (Agana and Talofofa). In addition, GPA seeks approval for the fixed annual O&M amounts, ranging from over \$200,000 to over \$400,000, over a 25-year O&M period.²⁴ GPA seeks to fund the annual O&M payments through its O&M Budget. The total amount for such fixed fees will be over \$7M for the twenty year period.
30. In light of the nearly \$35M price tag for the ESS projects, the fixed fee amounts bid by LG CNS for the 25 year O & M Contract appear to be reasonable. LG CNS's Bid was one-half that of the other bidder LSIS.²⁵
31. GPA also requests to fund the bid development support contract with Adriano Balajadia, P.E., in the amount of \$367,219, through the FY2018 CIP Budget. According to Counsel Botha, the amount of the Balajadia Contract was already paid from the \$35M Bond funds. Therefore, funds will be needed from the FY2018 CIP Budget to pay the ESS project costs.
32. Because the amount of \$367,219 for the Balajadia contract was used from the \$35M, there is only a balance of \$34,632,781 for the design and construction of the ESS. The bid from LG CNS for the design and construction is \$34,999,070. The amount is \$366,289 over the available balance. This overage will be funded through the FY2018 CIP Budget.²⁶
33. GPA and LG CNS have addressed safety issues concerning the ESS projects. Section 4.8 of the LG CNS Technical Proposal addresses safety issues and mitigation techniques. If a fire occurs, the automatic fire suppression system will release a gas to suppress it. In addition, the battery cells are designed to prevent fires. Tests have been done on the batteries that show, even when the cell temperature rises to 150 degrees Celsius, any risks such as explosions are not expected.²⁷

RECOMMENDATIONS

²⁴ GPA Petition for Approval of the Award of the Energy Storage System to LG CNS, GPA Docket 15-16, filed February 8, 2017.

²⁵ Phone conversation between PUC Counsel Fred Horecky, GPA Counsel Graham Botha, and Special Projects Engineer Lorraine Shinohara on February 21, 2017.

²⁶ Email2 from Special Projects Engineer Lorraine Shinohara to PUC Counsel Fred Horecky dated February 21, 2017.

²⁷ Email1 from Special Projects Engineer Lorraine Shinohara to PUC Counsel Fred Horecky dated February 21, 2017.

34. Counsel recommends that the PUC approve GPA's Award of the Energy Storage Contract to LG CNS.
35. The Contract between LG CNS America Inc. and GPA should be approved.
36. The annual fixed fees for the 25 year O & M Contract should be approved.
37. The payment of the amount of \$367,219 from the FY 2018 CIP Budget, to reimburse the design and construction costs for the ESS projects, should be approved.
38. A Proposed Order is submitted herewith for the consideration of the Commissioners.

Dated this 21st day of February, 2017.

Frederick J. Horecky
PUC Legal Counsel



Energy Storage System
Phase I
(IFB No. GPA-082-15)

ATTENTION: JOHN M. BENAVENTE, P.E.
GENERAL MANAGER
GUAM POWER AUTHORITY
POST OFFICE BOX 2977
HAGATNA, GUAM 96932-2977
ATTENTION: SUPPLY MANAGEMENT ADMINISTRATOR

Priced Proposal Date: January 13, 2017
Date of Expiration: September 13, 2017

SUBJECT: Multi-Step Bid No.: GPA-082-15 for Energy Storage Systems Phase I

LG CNS is pleased to submit Price Proposals in response to GPA's 'INVITATION FOR MULTI-STEP BID NO.: GPA-082-15 ENERGY STORAGE SYSTEM PHASE I'.

For the detailed price proposal, please see the Attachment:

1. Priced Proposal Worksheet for 24MW Agana Substation ESS
2. Priced Proposal Worksheet for 16MW Talofoto Substation ESS
3. Alternative Priced Proposal Worksheet for 16MW Talofoto Substation ESS

Should you have any further clarification, please do not hesitate to contact me at
Mobile: +82-10-2299-5139 or E-mail: hjtae@lgcns.com

Sincerely Yours,

A handwritten signature in black ink, appearing to read 'Tony H. Tae', is written over a horizontal line.

Tony Hyunjoon Tae
ESS Sales Representative
LG CNS

Attachment 1.

Priced Proposal Worksheet
Energy Storage System Phase I
24 MW Agana Substation ESS

Bidder: LG CNS

Basic Bid

Item	Description	Unit	Qty	Material	Labor	Equipment	Total Cost
1	Mobilization	LS	1	9,370	93,697	14,054	117,121
2	Permits, Bonds and Codes	LS	1	33,451	635,570	0	669,021
3	Construction Site Survey and Surface Investigation	LS	1	2,090	35,119	4,599	41,808
4	Interconnection Design	LS	1	6,614	72,755	3,307	82,676
5	Installation Design	LS	1	13,030	389,041	11,309	413,380
6	Equipment Cost, Procurement and Delivery	LS	1	8,711,617	572,868	263,319	9,547,804
7	On-Site Construction, Installation and Interconnection	LS	1	1,786,161	1,195,117	520,999	3,502,277
8	Commissioning and Performance Testing	LS	1	2,096	217,266	3,381	222,743
9	Demobilization	LS	1	4,805	75,246	25,571	105,622
10	Warranty	LS	1				2,051,209
11	Environmental Clean-Up and Building Renovation	LS	1	3,006	28,105	14,782	45,893

Basic Bid Total Cost: \$16,799,554

Basic Bid Total Cost in Words Sixteen millions Seven hundred Ninety Nine thousands Five hundred Fifty Four dollars

Additive Bid Item 1 – Full-Service Operations and Maintenance

Year	Fixed O&M Fee
1	108,520
2	111,259
3	114,075
4	116,969
5	119,943
6	123,000
7	126,143
8	129,373
9	132,693
10	136,106

Year	Fixed O&M Fee
11	139,615
12	143,222
13	146,931
14	150,744
15	154,663
16	158,694
17	162,837
18	167,098
19	171,479
20	175,984

Year	Fixed O&M Fee
21	180,617
22	185,380
23	190,279
24	195,316
25	200,498

Item	Description	Unit	Qty	Total Cost
Additive Bid Item 2	Additional Spinning Reserve Capability	LS	1	0 ^{**}
Additive Bid Item 3	Expansion Capability	\$/MW	1	1,620,015
Additive Bid Item 4	5-Year Warranty Extension	LS	1	2,747,867
Additive Bid Item 5	Underground Fiber Optic Communication Line	LS	1	Not Applicable
Additive Bid Item 6	Price Deduction Option for MW Capacity Size Reduction	\$/MW	1	333,890

* All prices shall include overhead, administration costs, profit and applicable taxes.

** Zero Cost for 24MW Additional Spinning Reserve Capability

Attachment 2.

Priced Proposal Worksheet
Energy Storage System Phase I
16 MW Talofoto Substation ESS

Bidder: LG CNS

Basic Bid

Item	Description	Unit	Qty	Material	Labor	Equipment	Total Cost
1	Mobilization	LS	1	11,642	96,682	14,980	123,304
2	Permits, Bonds and Codes	LS	1	14,278	698,768	11,727	724,773
3	Construction Site Survey and Surface Investigation	LS	1	2,767	38,046	4,479	45,292
4	Interconnection Design	LS	1	5,232	64,757	3,497	73,486
5	Installation Design	LS	1	9,242	349,472	8,718	367,432
6	Equipment Cost, Procurement and Delivery	LS	1	11,083,241	345,480	87,280	11,516,001
7	On-Site Construction, Installation and Interconnection	LS	1	1,609,649	865,876	398,848	2,874,373
8	Commissioning and Performance Testing	LS	1	2,475	229,504	5,748	237,727
9	Demobilization	LS	1	7,494	83,805	23,125	114,424
10	Warranty	LS	1				2,087,185
11	Environmental Clean-Up and Building Renovation	LS	1	1,260	23,884	10,375	35,519

Basic Bid Total Cost: \$18,199,516

Basic Bid Total Cost in Words: Eighteen millions One hundred Ninety Nine thousands Five hundred Sixteen dollars

Additive Bid Item 1 - Full-Service Operations and Maintenance

Year	Fixed O&M Fee
1	108,520
2	111,259
3	114,075
4	116,969
5	119,943
6	123,000
7	126,143
8	129,373
9	132,693
10	136,106

Year	Fixed O&M Fee
11	139,615
12	143,222
13	146,931
14	150,744
15	154,663
16	158,694
17	162,837
18	167,098
19	171,479
20	175,984

Year	Fixed O&M Fee
21	180,617
22	185,380
23	190,279
24	195,316
25	200,499

Item	Description	Unit	Qty	Total Cost
Additive Bid Item 2	Additional Spinning Reserve Capability	LS	1	4,596,799
Additive Bid Item 3	Expansion Capability	\$/MW	1	1,555,514
Additive Bid Item 4	5-Year Warranty Extension	LS	1	3,663,822
Additive Bid Item 5	Underground Fiber Optic Communication Line	LS	1	Not Applicable
Additive Bid Item 6	Price Deduction Option for MW Capacity Size Reduction	\$/MW	1	301,479

*All prices shall include overhead, administration costs, profit and applicable taxes.

Attachment 3.

Alternate Priced Proposal Worksheet for Reduced Talofoto Land Space
Energy Storage System Phase I
16 MW Talofoto Substation ESS

Bidder: LG CNS

Basic Bid

Item	Description	Unit	Qty	Material	Labor	Equipment	Total Cost
1	Mobilization	LS	1	11,642	96,682	14,979	123,303
2	Permits, Bonds and Codes	LS	1	28,252	1,382,653	23,204	1,434,109
3	Construction Site Survey and Surface Investigation	LS	1	3,712	51,039	6,009	60,760
4	Interconnection Design	LS	1	10,068	124,602	6,729	141,399
5	Installation Design	LS	1	21,159	800,139	19,960	841,258
6	Equipment Cost, Procurement and Delivery	LS	1	14,556,951	453,760	114,635	15,125,346
7	On-Site Construction, Installation and Interconnection	LS	1	3,849,953	2,071,000	953,963	6,874,916
8	Commissioning and Performance Testing	LS	1	3,908	362,456	9,078	375,442
9	Demobilization	LS	1	9,074	101,480	28,002	138,556
10	Warranty	LS	1				2,570,266
11	Environmental Clean-Up and Building Renovation	LS	1	2,288	43,352	18,833	64,473

Basic Bid Total Cost: \$27,749,828

Basic Bid Total Cost in Words: Twenty Seven millions Seven hundred Forty Nine thousands Eight hundred Twenty Eight dollars

Additive Bid Item 1 – Full-Service Operations and Maintenance

Year	Fixed O&M Fee
1	119,372
2	122,385
3	125,483
4	128,666
5	131,937
6	135,300
7	138,757
8	142,310
9	145,962
10	149,717

Year	Fixed O&M Fee
11	153,577
12	157,544
13	161,624
14	165,818
15	170,129
16	174,563
17	179,121
18	183,808
19	188,627
20	193,582

Year	Fixed O&M Fee
21	198,679
22	203,918
23	209,307
24	214,848
25	220,547

Item	Description	Unit	Qty	Total Cost
Additive Bid Item 2	Additional Spinning Reserve Capability	LS	1	Not Applicable
Additive Bid Item 3	Expansion Capability	\$/MW	1	Not Applicable
Additive Bid Item 4	5-Year Warranty Extension	LS	1	3,663,822
Additive Bid Item 5	Underground Fiber Optic Communication Line	LS	1	Not Applicable
Additive Bid Item 6	Price Deduction Option for MW Capacity Size Reduction	\$/MW	1	301,479

* All prices shall include overhead, administration costs, profit and applicable taxes.

Multi-Step Bid No. GPA-082-15
Energy Storage System Phase I
Step 2 Evaluation of Priced Proposals Results

	LG CNS		LSIS	
	24 MW Agana	16 MW Talofoto	24 MW Agana	16 MW Talofoto
Design & Construction	\$ 16,799,554	\$ 18,199,516	\$ 25,096,815	\$ 22,079,750
Fixed O&M Annual Fee				
Year 1	\$ 108,520	\$ 108,520	\$ 394,662	\$ 394,662
Year 2	\$ 111,259	\$ 111,259	\$ 394,662	\$ 394,662
Year 3	\$ 114,075	\$ 114,075	\$ 394,662	\$ 394,662
Year 4	\$ 116,969	\$ 116,969	\$ 394,662	\$ 394,662
Year 5	\$ 119,943	\$ 119,943	\$ 394,662	\$ 394,662
Year 6	\$ 123,000	\$ 123,000	\$ 394,662	\$ 394,662
Year 7	\$ 126,143	\$ 126,143	\$ 394,662	\$ 394,662
Year 8	\$ 129,373	\$ 129,373	\$ 394,662	\$ 394,662
Year 9	\$ 132,693	\$ 132,693	\$ 394,662	\$ 394,662
Year 10	\$ 136,106	\$ 136,106	\$ 394,662	\$ 394,662
Year 11	\$ 139,615	\$ 139,615	\$ 394,662	\$ 394,662
Year 12	\$ 143,222	\$ 143,222	\$ 394,662	\$ 394,662
Year 13	\$ 146,931	\$ 146,931	\$ 394,662	\$ 394,662
Year 14	\$ 150,744	\$ 150,744	\$ 394,662	\$ 394,662
Year 15	\$ 154,663	\$ 154,663	\$ 394,662	\$ 394,662
Year 16	\$ 158,694	\$ 158,694	\$ 394,662	\$ 394,662
Year 17	\$ 162,837	\$ 162,837	\$ 394,662	\$ 394,662
Year 18	\$ 167,098	\$ 167,098	\$ 394,662	\$ 394,662
Year 19	\$ 171,479	\$ 171,479	\$ 394,662	\$ 394,662
Year 20	\$ 175,984	\$ 175,984	\$ 394,662	\$ 394,662
Year 21	\$ 180,617	\$ 180,617	\$ 394,662	\$ 394,662
Year 22	\$ 185,380	\$ 185,380	\$ 394,662	\$ 394,662
Year 23	\$ 190,279	\$ 190,279	\$ 394,662	\$ 394,662
Year 24	\$ 195,316	\$ 195,316	\$ 394,662	\$ 394,662
Year 25	\$ 200,498	\$ 200,499	\$ 394,662	\$ 394,662
Site Present Value	\$ 17,521,245	\$ 18,841,964	\$ 28,435,773	\$ 25,589,486
Total Cost	\$ 36,363,208		\$ 54,025,259	

sodding, and erosion control fabrics; restore roads, structures, and utilities; and plant trees, shrubbery, grasses, and other vegetation. The CONTRACTOR shall document and report on these activities. All costs associated with withdrawing from the site after completion of work, including CONTRACTOR's personnel, facilities, equipment, cleaning and securing the site shall be included.

3.3.10. Warranty

The CONTRACTOR shall provide the standard warranty specified in Volume I, Section 4 for all work resulting from the project. Additionally, the CONTRACTOR and/or Energy Storage System manufacturer(s) shall provide a 20-year service and parts warranty that guarantees the ESS performs, at a minimum, according to the guaranteed availability of 95% and the guaranteed AC-AC round-trip efficiency of 90%. The availability and efficiency shall be assessed by GPA annually. The CONTRACTOR shall proceed with corrective measures within seven days of notification by GPA if the performance guarantee is not met and shall resolve the issue within six months.

The 24 MW ESS must also maintain the 24 MW rated power output for 15 minutes while also satisfying the 12-hour Frequency Regulation Duty Cycle from PNNL-22010 Rev 2 Protocol for Uniformly Measuring and Expressing the Performance of Energy Storage Systems provided in Appendix U for the entire warranty period. The ESS must also be able to provide frequency regulation appropriately and as described in Section 4.4.2 throughout the entire warranty period.

The 16 MW ESS must also control the ramp-rate of the 25 MW solar farm to 1% of rated power output per minute (250 kW/min) at the guaranteed success rate of 97%. The net output of the solar farm and ESS shall be measured from a metering device to calculate the ramp-rate. The success rate shall be calculated every second for one-minute intervals. If the ramp-rate is less than or equal to 250 kW/min, it shall be counted as successful. At least 97% of the total number of calculated ramp-rates must be considered successful. The success rate performance shall be assessed by GPA monthly. The CONTRACTOR shall proceed with corrective measures within seven days of notification by GPA if the success rate falls below 97% for a given month and shall resolve the issue within six months.

3.3.11. Environmental Compliance, Clean-Up and Building Renovation

The CONTRACTOR shall perform all work required for any environmental clean-up required at the project site. The CONTRACTOR shall also ensure environmental protective measures are in place to prevent pollution, chemical spills or other environmental hazards during construction and throughout the life of the ESS.

For the 24 MW ESS, the CONTRACTOR shall also perform all work required for environmental clean-up including, but not limited to, lead-based paint and asbestos removal from the existing building at the Agana Substation. The CONTRACTOR shall be responsible for further structural analyses for final suitability determination and all renovation work needed for proper occupancy if the existing building at the Agana Substation is used to house part or all of the 24 MW ESS. The Preliminary Environmental Assessment can be found within the GPA Energy Storage Feasibility Study in Appendix H.

The Energy Storage Systems should be designed to meet normal utility standards regarding ambient temperature ranges, humidity ranges, air quality, emissions, seismic, audible noise (similar to power transformers), EMI, fire protection (NFPA standards), and flood protection.

3.4. Additive Bid Items