

BEFORE THE GUAM PUBLIC UTILITIES COMMISSION

IN THE MATTER OF:) GPA Docket 15-16
)
The Petition of the Guam Power Authority)
for Approval of Procurement of the) **PUC COUNSEL REPORT**
Energy Storage System.)
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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 contract review and approval of GPA’s Procurement of the Energy Storage System.¹
2. GPA now requests that PUC approve the issuance of an Invitation for Bids [“IFB”] for an Energy Storage System. Submitted with GPA’s Petition are Volumes I through IV relative to the IFB for Energy Storage.²

BACKGROUND

3. GPA intends to issue a procurement for an Energy Storage System. This project involves the design, procurement and installation of a 40MW Energy Storage System (ESS) at the GPA Agana Substation Compound and interconnection to GPA power system.³
4. In the procurement, GPA will seek the services of an Engineer/Procure/Construct (EPC) or Design/Build (DB) contractor for the Energy Storage System Phase I Project.⁴
5. GPA seeks a “Turn-Key” project that will be fully operational upon commissioning and intends to enter into a 25-Year Performance-Based Operations and Maintenance (O & M) Contract with the successful bidder.⁵

¹ GPA Petition for Approval Procurement of the Energy Storage System, GPA Docket 15-16, filed June 19, 2015.

² Id.

³ Id at p.1.

⁴ Guam Consolidated Commission on Utilities Resolution No. 2015-30, Relative to the Approval to Submit to the Guam Public Utilities Commission (GPUC) the Energy Storage System Phase I Draft Bid Documents, adopted May 26, 2015.

⁵ Id at p.1.

6. The objective of this Project is to help alleviate existing under frequency load shedding issues and support renewable energy integration.⁶
7. The cost is estimated at \$35M. Project schedules estimate contract award by November 2015 with project completion scheduled for December 2016.⁷
8. The Bid will be a two-step process. Step One will establish a Qualified Bidders List (QBL) based on acceptable submitted non-priced Bid information for Technical Qualifications Proposals. Step Two will evaluate Priced Proposals from the vendors identified on the QBL, and award a contract to a Qualified Bidder.⁸
9. The preferred ESS site is the GPA Agana Substation Compound with the ESS connected at the 115K Voltage Level. GPA indicates the Agana Substation is adequate for the proposed facility; however it is possible that there are asbestos and lead-based paint in the existing building. The successful Bidder will be responsible for all mitigation/remediation efforts.⁹
10. The selected Contractor and/or Energy Storage System manufacturer is required to provide a 20-Year service and parts warranty that guarantees that the ESS performs, at a minimum according to the power overtime curve set forth in Appendix O, the guaranteed availability and guaranteed efficiency for the entire warranty period.¹⁰
11. The Contractor shall provide full service operations and maintenance (O&M) of the Energy Storage System to GPA for period of 25-Years after commissioning. Service shall include all aspects of daily operation and monitoring of the ESS and all periodic maintenance procedures covering electrical systems, mechanical systems, grounding/lightning protection systems, fire suppression systems, etc.¹¹

⁶ Id.

⁷ Issues for Decision [attached to Petition for Approval of Procurement of the Energy System], GPA Docket 15-16, filed June 19, 2015.

⁸ Volume 1, Commercial Terms & Condition, Invitation for Multi-Step Bid No. GPA-XXX-15, Energy Storage System Phase I.

⁹ Volume II, Technical Qualification Requirements, Invitation for Multi-Step Bid No. GPA-XXX-15, Energy Storage System Phase I, Proposed Energy Storage System, Section 1.2 at p.2.

¹⁰ Id at Section 3.3.10, Warranty, at p.11.

¹¹ Id at Section 3.4.1, p.11.

12. GPA previously conducted a study to determine the feasibility of adding an ESS and the performance of the GPA System with the addition of an ESS.¹² The Study was prepared by TG Engineers, PC and Electric Power Systems (EPS).¹³
13. The Study has recommended that “based on life cycle cost analysis, a battery-based ESS... the type of battery technology recommended at this time is lithium-ion or advanced lead-acid”¹⁴
14. However, the Invitation for Bids does not specify any particular technology for the energy storage purposes and would also allow submittal of “flywheel” technology for the IFB.
15. GPA has also prepared a draft “FORMAL CONTRACT”, which the selected Contractor would sign. The contract sets forth the duties and responsibilities of the Contractor, as well as the compensation to be paid.¹⁵
16. The Consolidated Commission on Utilities (CCU) Resolution No. 2015-30 authorized the GPA General Manager to petition the PUC for approval of the procurement of the Energy Storage System.¹⁶

ANALYSIS

17. The PUC has already approved funding for the Energy Storage Project in GPA Docket 14-09 in the amount of \$35M. There the PUC authorized the issuance of Revenue Bonds for various projects, including the Energy Storage Project. The Energy Storage Project was responsible for nearly one half of the cost of the Improvement Projects to be funded by the Revenue Bonds.¹⁷

¹² GPA Energy Storage Feasibility Study, Appendix H to the IFB.

¹³ Id. Executive Summary, at p.5.

¹⁴ Id.

¹⁵ Volume III, Draft Energy Storage Contract, Invitation for Multi-Step Bid No. GPA-XXX-15, Energy Storage System Phase I.

¹⁶ GPA Petition for Approval Procurement of the Energy Storage System, GPA Docket 15-16, filed June 19, 2015.

¹⁷ PUC Order and Law 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.

18. PUC Consultant Slater, Nakamura & Co, LLC, recommended that the ESS Project be approved in its Memorandum Review of Energy Storage System dated November 25, 2014.¹⁸ In its Order dated December 1, 2014, the PUC approved the expenditure in the amount of \$35M for the Energy Storage and Renewable Energy Mitigation Project.¹⁹ Said Order required GPA to seek prior approval from the PUC before issuing its procurement for Energy Storage.²⁰
19. However, a continuing concern about the ESS Project is whether \$35M will be sufficient to fund the project. PUC Consultant Slater, Nakamura & Co., LLC, previously determined that the proceeds of the bond issuance earmarked for Energy Storage will not be sufficient to fully fund the 40MW project.²¹
20. Slater-Nakamura also indicated that the proposed \$35M did not include the Operation and Maintenance costs contemplated under the 25-Year Contract between GPA and selected Contractor.
21. In the Feasibility Study Report, GPA's Consultants indicated that "the estimated budgetary project cost for a battery based ESS located at Agana Substation is \$49.6M".²²
22. On July 8, 2015, representatives of the Guam PUC and GPA met at GPA to discuss funding and other issues relative to the proposed ESS Project.²³ The purpose of the meeting was to provide PUC an opportunity to present questions to GPA concerning the project.
23. GPA GM Benavente indicated that, if ESS Project cost exceeded \$35M, GPA would propose contract "deductions" with the selected Contractor; for example, battery

¹⁸ Slater, Nakamura & Co., LLC, Memorandum on Review of Energy Storage System, GPA Docket 14-09, dated November 25, 2014, at p. 4.

¹⁹ PUC Order, Guam Power Authority's Request for Use of 2014 Bond Proceeds on Projects, GPA Docket 14-09, December 1, 2014, at p. 6.

²⁰ Id.

²¹ Slater, Nakamura & Co., LLC, Report on the Review of the Proposed Bond Financing under GPA Docket 14-09, filed July 27, 2014, at p.10.

²² GPA Engineering & Technical Services for Energy Storage Feasibility Study (Final Report), GPA-RFP-13-007, issued August 29, 2014, at p.4.

²³ Chairman Johnson, Commissioner Niven and PUC Counsel Horecky met GPA Officials including GM Benavente, GPA Counsel Botha, and SPORD staff John Cruz and Lorraine Shinohara. The purpose of the meeting was to enable the PUC to better understand funding and other aspects related to the ESS procurement.

size could be reduced from 40MW to 35MW. GPA believes that the actual cost for the system will be less than originally anticipated due to declining energy storage costs. In the event that costs exceed bond funded amounts of \$35M, GPA will also seek funding from other sources. However, the need for future funding may well present an obstacle that GPA will need to overcome.

24. PUC Counsel inquired as to how GPA intended to structure this project. It was unclear whether GPA was seeking an independent power producer who would be responsible for the cost of the ESS and would merely be paid by GPA upon a long term O&M Contract. GM Benavente verified that GPA will be responsible for the entire cost of the ESS System. The selected Contractor will be responsible for the construction of the ESS and its operation and maintenance over the 25-Year period.
25. In response to the Chairman's question as to whether a "Compressed Air Energy System" could be a part of the ESS project, GPA's SPORD head John Cruz indicated that CAES applications for stored energy systems are far much slower systems than are required for the GPA contingency reserve application. A stored air system cannot meet the contingency reserve requirement of the GPA system due to its response characteristics.²⁴
26. GPA was queried concerning the reliability of a battery energy storage system. GPA's Consultant, Dave Burlingame, indicated that ESS is a proven technology. It should be extremely reliable in achieving the results sought by GPA in terms of Fault induced Delayed Voltage Recovery.
27. GPA confirmed that the ESS would be operational within one year after the award of the contract. GPA also decided not to limit the IFB to battery storage systems (thus allowing "flywheel" or other proposals) in order to broaden the possible technological solutions. GPA indicated it did so in accordance with recommendation of the PUC Consultant Slater-Nakamura to issue an IFB which was "technology neutral".
28. Chairman Johnson also asked about the projected lifetime of battery based storage systems. Mr. Cruz indicated that different responses, varying from five to ten years, were given by different suppliers. The useful life depends upon the technology used. The GPA Study Report indicates that the life span of such

²⁴ Electric Power Systems Inc. Consulting Engineers, CAES-Existing Projects, Slide Presentation, July, 2015.

systems is expected to be roughly 20 years. The IFB does require a twenty year warranty.

29. GPA has asserted that the ESS system will improve system reliability, improve power quality and reduce underfrequency outages by 77%.
30. Commissioner Niven asked whether ESS Systems were in commercial operation in the United States. GPA's Consultant indicated that there are a number of such systems in operation, and one in particular in his state residence, Alaska. The Alaska ESS System provides 25MW of reliable power to the power system.

RECOMMENDATIONS

31. Counsel recommends that the PUC approve GPA's Petition to procure an Energy Storage System.
32. Since neither the terms of the Final Contract, nor the price for the Energy Storage System, are known at the present time, GPA should be required to present the final Phase I Energy Storage Contract to the PUC for review and prior approval.
33. A Proposed Order is submitted herewith for the consideration of the Commissioners.

Dated this 13th day of July, 2015.

Frederick J. Horecky
PUC Legal Counsel