



**CONSOLIDATED
COMMISSION ON UTILITIES**

Guam Power Authority • Guam Waterworks Authority
P.O.BOX 2977 • Agana, Guam 96932

RESOLUTION NO. 2016-59

**AUTHORIZING MANAGEMENT OF THE GUAM POWER AUTHORITY
(GPA) TO FUND THE GPA/NAVY SYSTEM IMPROVEMENT STUDY FOR
RENEWABLES INTEGRATION**

WHEREAS, GPA has actively pursued integration of utility scale renewable contracts to meet Guam's Renewable Portfolio Standards (RPS) and to support GPA Integration Resource Plan (IRP) recommendation to lower production costs, provide fuel diversification and to promote environmental stewardship since 2007;

WHEREAS, prior to the completion of the 2008 IRP, GPA obtain PUC approval to initiate its Renewable Energy Acquisition (Phase I) as the preliminary investigation of renewables as a resource option had potential immediate savings due to high and volatile fuel costs; and

WHEREAS, GPA successfully contracted two companies resulting from its second attempt of Phase I solicitation for a total of 35 MW of renewable resource capacity; and

WHEREAS, on October 30, 2015, NRG formally commissioned the 25.65 MW photovoltaic solar facility in Dandan and has been delivering renewable energy into the GPA grid since; and

WHEREAS, the PGR 9.35 MW did not meet the contract commercial operation date of March 14, 2016 and the contract was not extended; and

WHEREAS, as of end of July 2016, GPA has processed over 1098 net metering customers totaling over 11 MW of installed rated capacity since 2009; and

WHEREAS, GPA currently has an open solicitation for Phase II of its Renewable Acquisition for up to 60 MW of renewable resource capacity under Power Purchase Agreements expected to close October 19, 2016; and

1 **WHEREAS**, GPA and Navy has successfully negotiated a lease of approximately 164
2 acres of Navy land for GPA develop approximately 45MW solar photovoltaic installations which
3 is presently pending PUC approval; and

4 **WHEREAS**, upon the commercial operation of the NRG 25.65 MW Solar PV facility in
5 Dandan, the GPA system further impacted by its net metering customers has to respond to 10-15
6 MW power production swings due to Guam weather; and

7 **WHEREAS**, GPA is presently reevaluating its Energy Storage System (ESS) bid to
8 address this impact and is requiring the Phase II renewable acquisition proposals for intermittent
9 or non-firm projects to include ESS to minimize grid issues caused by the projects integration;
10 and

11 **WHEREAS**, GPA and Navy have had several discussions beginning in May regarding
12 Navy future renewable projects estimated at 160 MW of rated capacity which included solar
13 powered appliances, roof and ground mounted solar systems, and wind turbines at various DOD
14 sites; and

15 **WHEREAS**, since the initial GPA and Navy meeting, Navy has downsized their project
16 listing to about 35MW-50MW excluding Phase III for this study based on their expectation of
17 projects most likely could be approved; and

18 **WHEREAS**, GPA intends to holistically evaluate integration of all existing Renewable
19 Energy in the grid including the 1 MW of solar on Navy to date, GPA's Solar and Wind projects
20 (~27 MW), GPA NEM customers (11 MW) and future renewable energy integration projects
21 including 50 MW from Navy, 100 MW from Phase II and Phase III, and an evaluation of
22 projected additional NEM customers; and

23 **WHEREAS**, GPA currently has a contract with Andriano E. Balajadia, P.E. for services
24 related to electric power system grid studies, interconnection studies to integrate intermittent
25 renewable energy with GPA's grid, feasibility studies for energy storage systems, and
26 developing specifications for procuring and commissioning an ESS, and providing technical
27 support the ESS procurement; and

28 **WHEREAS**, consulting engineer, Andriano E. Balajadia, P.E., has retained as its
29 subcontractor, Electric Power Systems, whom Navy has deemed a very qualified firm having
30 performed numerous aforementioned studies for Hawaiian utilities; and

1 **WHEREAS**, GPA desires to enter into a Task Order Agreement with Andriano E.
2 Balajadia, P.E. to perform a System Improvement Plan for the proposed GPA and US Navy
3 renewable energy projects for the amount of \$1,145,377 to evaluate proposed Navy renewable
4 integration and system impact studies; and

5 **WHEREAS**, this consulting contract was used to complete the ESS Feasibility Study and
6 develop the ESS procurement documents currently being solicited; and

7 **WHEREAS**, this consulting contract has a current approved task amount of \$ 846,957.78
8 and if the proposed Task Order Agreement is approved, the total expenditures under the contract
9 will be **\$1,992,334.78**; and

10 **WHEREAS**, **Exhibit A** contains the most recent scope of work and budget received
11 from Andriano E. Balajadia, P.E. and his subcontractor, Electric Power Systems, for this work;
12 and

13 **WHEREAS**, Navy has agreed to fund \$250,000 towards system study based on the
14 Navy's share of the projected scope through a Memorandum of Understanding (Exhibit B); and

15 **WHEREAS**, Guam Power Authority (GPA) issued its 2014 Series A Revenue Bond on
16 September 18, 2014 providing a funding source for LNG Initial Startup Summary totaling \$3
17 million; and

18 **WHEREAS**, since PUC has deferred approval for LNG, GPA has reassigned a portion of
19 the LNG Initial Startup Bond Funds to support IRP related activities (Exhibit C); and

20 **WHEREAS**, GPA desires to fund the balance of project costs totaling \$895,377 through
21 the LNG Initial Startup Bond Funds; and

22 **WHEREAS**, under its procurement protocol, GPA must file and receive approval from
23 the Guam Public Utilities Commission for contracts that exceed \$1.5M; and

24 **WHEREAS**, this contract scope of work includes work related to outstanding questions
25 from the PUC; and

26 **WHEREAS**, GPA must file and receive approval from the Guam Public Utilities
27 Commission for use of the bond funds; and

28
29 **NOW, THEREFORE BE IT RESOLVED**, by the Consolidated Commission on
30 Utilities as follows:
31


1 1. The General Manager of the Guam Power Authority is authorized to file with and obtain
2 approval from the Guam PUC:

- 3 a. To enter into a Task Order Agreement under the existing contract with Andriano
4 E. Balajadia, P.E. for the amount of \$1,145,377 to perform a System
5 Improvement Plan for the proposed GPA and US Navy renewable energy
6 projects; and
7 b. To use 2014 Series A Revenue Bond to fund the Task Order Agreement.

8
9 **RESOLVED**, that the Chairman certifies and the Secretary attests to the adoption of
10 this Resolution.

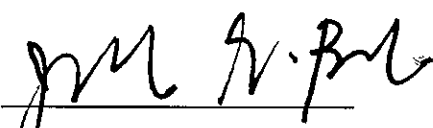
11
12 **DULY AND REGULARLY ADOPTED** this 27th day of September, 2016.

13
14 **Certified by:**

15 
16 _____

17 **JOSEPH T. DUENAS**
18 Chairperson
19 Consolidated Commission on Utilities

Attested by:

20 
21 _____

22 **J. GEORGE BAMBA**
23 Secretary
24 Consolidated Commission on Utilities

1
2 **SECRETARY'S CERTIFICATE**
3

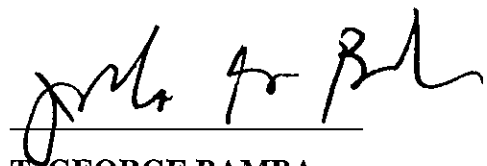
4 I, **J. George Bamba**, Secretary for the Consolidated Commission on Utilities do hereby
5 certify that the foregoing is a full, true, and correct copy of the resolution duly adopted at a
6 regular meeting of the members of Guam's Consolidated Commission on Utilities, duly and
7 legally held at the meeting place thereof on September 27, 2016, at which meeting of all said
8 members had due notice and at which at least a majority thereof were present, and
9

10 At said meeting said resolution was adopted by the following vote:

11
12 Ayes: 3
13 Nays: 0
14 Absent: 2
15 Abstain: 0
16

17 As of the date of this certification, said original resolution has not been amended,
18 modified, or rescinded since the date of its adoption, and the same is now in full force and effect.
19

20 **SO CERTIFIED** this 27th day of September, 2016.
21

22 
23

24 **T. GEORGE BAMBA**

25 Secretary

26 Consolidated Commission on Utilities
27
28

"EXHIBIT A"

A. E. Balajadia, P.E.

P.O. Box 642
Hagatna, Guam 96932
aeb.pe1881@gmail.com

April 12, 2016

Mr. John C. Cruz, Jr., P.E.
Manager, GPA Strategic Planning
& Operations Research Department
P.O. Box 2977
Hagatna, GU 96932

Subject: System Improvement Plan for Renewables – Guam Power Authority

Dear Mr. Cruz:

A. Balajadia, PE, Consulting Engineer (ABCE) is pleased to present a proposal to the Guam Power Authority (GPA) to perform a System Improvement Plan for Renewables (Study) for the proposed GPA and US Navy renewable energy projects. ABCE has engaged the services of Electric Power Systems Inc (EPS) to provide major technical assistance on this project.

GPA/HNEI/NAVFAC have all identified the need for a coordinated system integration and project interconnection study and overall system improvement study, examining the grid impacts of increased renewable generation on the GPA and Navy systems, and defining system impacts and resulting integration requirements. The overall focus of the study will be to assess the impact to the generation, transmission, and distribution systems of GPA and the distribution system of the Navy of the proposed Renewable Energy (RE) projects. The study will:

- Use the identified impacts to evaluate integration requirements for each group of projects on the Navy and GPA systems;
- Evaluate the impacts using several generation plans;
- Analyze a wide array of potential solutions to mitigate the effects of the intermittent generation to the transmission and distribution systems;
- Recommend plans to reliably integrate these renewable resources to the transmission, distribution, and generation systems.

The study will identify the impacts that the renewable energy projects have on the Navy and GPA systems in the short-term and long-term using the projects identified by the Navy and GPA. The study will recommend mitigation steps that satisfy the short-term needs of the GPA system and keep GPA on track for its long-term goals.

In addition to evaluating the system impact and integration requirements of the renewable projects, ABCE/EPS will evaluate the GPA transmission system to determine the ability of the transmission system to serve the proposed generation alternatives of the GPA system in conjunction with the RE projects. ABCE/EPS will evaluate losses, stability, and load serving capability of the transmission system, and will recommend changes to the system, if required, to meet the approved reliability and operating standards.

SCOPE

The scope of work has been developed through discussions involving GPA, EPS, the Hawaii Natural Energy Institute (HNEI), ABCE, and the Naval Facilities Engineering Command (NAVFAC). The detailed scope of work is described in the enclosures and attached proposal documents provided by EPS and includes the scope of work, data requirements, deliverables, study schedule, project costs and man-hours information. study are included in the EPS enclosure.

Should the project be cancelled, costs incurred by ABCE and EPS up to the time of cancellation shall be billed, including those costs incurred in order to complete the studies to a satisfactory stopping point, as requested by the client. Costs for time or charges not completed at the time of cancellation, shall not be billed.

If you have any questions, please feel free to give me a call at 415-812-1037.

Sincerely,

Andriano E. Balajadia, P.E.

Table 1

	EPS STFF ENG	EPS PRNC ENG	EPS COST	DURATION WEEKS	AEB HRS (4/WK)	AEB COST	AEB COST
ASSMPTNS, METH, KICK-OFF	150	75	39600	4	16	1840	
TRANSIENT STAB MODEL VALIDTN	150	75	39600	4	16	1840	
STEADY STATE TRANSM ANALYS	120	40	27360	3	12	1380	
TRANSM LNG RNGE PLNNG	150	75	39600	4	16	1840	
DISTRB ANAL - GPA	280	100	65280	4	16	1840	
DISTRB ANAL - USN	250	75	55200	4	16	1840	
SYS OP IMPACT TRANS STAB	250	120	64920	7	28	3220	
UFLS EVAL	220	85	52680	3	12	1380	
TRANSM PROT REVIEW	200	120	57120	6	24	2760	
ENER STORGE & REG REQRMTS	200	140	61440	6	24	2760	
R E PROJ INTER CONN & INTEGRT REQRMTS	180	75	44280	4	16	1840	
EXCSS ENRG EST & MITGTN	200	100	52800	6	24	2760	
RISK ASSMNT 8 PROJ TIMING	250	180	77880	7	28	3220	
TRAINING	100	250	77100	6	24	2760	
PRGRSS MTGS	60	150	49260			0	
PROJ MGMT	80	300	77280			0	
CONCLSNS & RECCMDTNS	120	80	36000	2	8	920	
DRAFT REPRTS	200	180	70080	6	24	2760	
FINAL REPRT	125	75	35700	1	4	460	
						0	
TOTALS	3285	2295	1023180	77	308	35420	

	EPS STFF ENG	EPS PRNC ENG	EPS COST	DURATION WEEKS	AEB HRS (4/WK)	AEB COST	AEB COST
AEB COST							35420
AEB ADMIN 4%							40927
EPS COST							1023180
GRT TAX							45850
TOTAL PROP COST							1145377

GPA SYSTEM IMPROVEMENT PLAN FOR RENEWABLES			
PROPOSAL WORK SCOPE & COST ESTIMATE			
TASKS	MAN-HOURS	COSTS	
1. STUDY KICK-OFF, ASSUMPTIONS & METHODOLOGY, DATA	32	3,680	
2. TRANSMISSION SYSTEM ANALYSIS & EVALUATION	28	3,220	
3. DISTRIBUTION SYSTEMS ANALYSIS & EVALUATION	32	3,680	
4. SYSTEM OPERATIONS ANALYSIS & ANALYSIS	64	7,360	
5. RENEWABLE ENERGY IMPACTS, INTEGRATION, MITIGATION	92	10,580	
6. TRAINING & PROGRESS MEETINGS	24	2,760	
7. CONCLUSIONS, RECOMMENDATIONS, & REPORT PREPARATION	36	4,140	
SUBTOTAL		35,420	
ELECTRIC POWER SYSTEMS INC COST		1,023,180	
ABC ENGINEER ADMIN (4% OF EPS COST)		40,927	
GRT TAX		45,850	
TOTAL PROJECT COST		1,145,377	