



CONSOLIDATED COMMISSION ON UTILITIES

Guam Power Authority | Guam Waterworks Authority

P.O. Box 2977 Hagatna, Guam 96932 | (671) 648-3002 | guamccu.org

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RESOLUTION NO. 2018-01

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RESOLUTION RELATIVE TO APPROVAL OF THE PHASE II RENEWABLE ENERGY ACQUISITION AWARD TO KEPCO-LG CNS MANGILAO SOLAR, LLC., FOR 60 MW OF RENEWABLE ENERGY CAPACITY

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WHEREAS, in May 2016 GPA announced GPA Multi-Step Bid No: GPA- 070-16 for 60MW of Renewable Energy Resource capacity with ESS for ramp control; and

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WHEREAS, in January 2017 GPA obtained the price bids and KEPCO-LG CNS Mangilao Solar, LLC., is one of the two (2) lowest responsive bidders (Hanwha Energy Corporation is the other bidder) providing two proposals for 30MW solar PV projects totaling 60 MW of solar PV capacity with ESS for ramp control; and

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WHEREAS, the responsive bidders provided price proposals for the energy and ramp controls to include interconnection costs of each 30MW proposal. **Exhibit A** provides a summary of the energy price proposals which shows the first year price for KEPCO-LG CNS Mangilao Solar, LLC is \$85.50/\$/MWH; and

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WHEREAS, GPA evaluates bidder’s price proposal against GPA’s variable operating costs primarily made up of fuel costs; and

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WHEREAS, GPA has determined that KEPCO-LG CNS Mangilao Solar, LLC proposals would provide substantial savings to GPA over the term of the contracts based on current and projected LEAC rates; and

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WHEREAS, the table below represents the projected savings of potential award case **Exhibit B** contains case summaries; and

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CASE	Description	Project Size	5 Year Projected Savings On Current LEAC (\$115/MWH)	5 Year Projected Savings on Projected LEAC	Present Value Utility Cost Savings thru Contract Term
1	KEPCO Proposal 1&2 (60MW)	60 MW	\$ 20,470,866	\$43,331,390	\$90,301,058

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24 **WHEREAS**, GPA considers renewable energy as an effective hedge against rising fuel oil
25 prices; and

26 **WHEREAS**, the bid prices proposed are an excellent fuel hedge as the bidders' energy
27 prices are fixed with escalations no more than 1% annually for all proposals. **Exhibit C**
28 summarizes GPA historical LEAC; and

29 **WHEREAS**, renewable energy is sustainable energy and good for the island; and

30 **WHEREAS**, Public Law 29-62 sets renewable goals under the Renewable Portfolio
31 Standards (RPS); and

32 **WHEREAS**, the award of 120MW contracts including Hanwha Energy Corporation 60
33 MW project is projected to increase GPA's ratio of renewable energy to sales up to 26% by 2020.
34 **Exhibit D** is a projected RPS outlook; and

35 **WHEREAS**, KEPCO-LG CNS Mangilao Solar, LLC has concurred with GPA
36 recommendations from the system impact study which is incorporated in the contract documents;
37 and


38 **WHEREAS**, GPA would like to proceed with an approval to award KEPCO-LG CNS
39 Mangilao Solar, LLC a total of 60MW of renewable energy capacity contract subject to PUC
40 approval.

41 **NOW, THEREFORE, BE IT RESOLVED, by the CONSOLIDATED COMMISSION**
42 **ON UTILITIES, the GOVERNING BODY of the GUAM POWER AUTHORITY as**
43 **FOLLOWS:**


- 44 1. The CCU authorizes GPA to petition the PUC for approval to award Phase II Renewable
45 Acquisition Bid of two 30MW proposals totaling 60MW to KEPCO-LG CNS Mangilao
46 Solar, LLC as required under the PUC Procurement Protocol.
- 47 2. The CCU authorizes GPA to contract KEPCO-LG CNS Mangilao Solar, LLC for renewable
48 energy subject to PUC approval.

49 **RESOLVED**, that the Chairman certifies and the Board Secretary attests to the adoption of
50 this Resolution.

51 DULY AND REGULARLY ADOPTED AND APPROVED THIS 23RD DAY OF
52 JANUARY 2018.

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54 Certified by:
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58 **JOSEPH T. DUENAS**
59 Chairperson
60 Consolidated Commission on Utilities
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Attested by:


J. GEORGE BAMBA
Secretary
Consolidated Commission on Utilities

62 **I, J. George Bamba**, Secretary for the Consolidated Commission on Utilities (CCU), as
63 evidenced by my signature above do certify as follows:

64 The foregoing is a full, true, and accurate copy of the resolution duly adopted at a regular
65 meeting of the members of Guam Consolidated Commission on Utilities, duly and legally held
66 at a place properly noticed and advertised at which meeting a quorum was present and the
67 members who were present voted as follows:

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69 Ayes: 5
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71 Nays: 0
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73 Absent: 0
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75 Abstain: 0



EXHIBIT A
Summary of Bid Proposals

Contract Year	Proposal 1		Proposal 2	
	Annual Price (\$/MWH)	Guaranteed Net Annual Generation (MWH/YR)	Annual Price (\$/MWH)	Guaranteed Net Annual Generation (MWH/YR)
1	\$ 85.50	74,542.29	\$ 85.50	74,542.29
2	\$ 86.35	73,974.68	\$ 86.35	73,974.68
3	\$ 87.22	73,604.26	\$ 87.22	73,604.26
4	\$ 88.09	73,233.84	\$ 88.09	73,233.84
5	\$ 88.97	73,058.88	\$ 88.97	73,058.88
6	\$ 89.86	72,493.01	\$ 89.86	72,493.01
7	\$ 90.76	72,122.59	\$ 90.76	72,122.59
8	\$ 91.67	71,752.18	\$ 91.67	71,752.18
9	\$ 92.58	71,573.23	\$ 92.58	71,573.23
10	\$ 93.51	71,011.34	\$ 93.51	71,011.34
11	\$ 94.44	70,640.93	\$ 94.44	70,640.93
12	\$ 95.39	70,270.51	\$ 95.39	70,270.51
13	\$ 96.34	70,087.58	\$ 96.34	70,087.58
14	\$ 97.31	69,529.68	\$ 97.31	69,529.68
15	\$ 98.28	69,159.26	\$ 98.28	69,159.26
16	\$ 99.26	68,788.84	\$ 99.26	68,788.84
17	\$ 100.25	68,601.94	\$ 100.25	68,601.94
18	\$ 101.26	68,048.01	\$ 101.26	68,048.01
19	\$ 102.27	67,677.59	\$ 102.27	67,677.59
20	\$ 103.29	67,307.18	\$ 103.29	67,307.18
21	\$ 104.33	67,116.29	\$ 104.33	67,116.29
22	\$ 105.37	66,566.34	\$ 105.37	66,566.34
23	\$ 106.42	66,195.92	\$ 106.42	66,195.92
24	\$ 107.49	65,825.51	\$ 107.49	65,825.51
25	\$ 108.56	65,630.64	\$ 108.56	65,630.64

EXHIBIT B
Proposal Evaluation Summary

CASE	Description	Project Size	5 Year Projected Savings On Current LEAC (\$115/MWH)	5 Year Projected Savings on Projected LEAC	Present Value Utility Cost Savings* thru Contract Term
1	KEPCO Proposal 1&2 (60MW)	60 MW	\$ 20,470,866	\$ 43,331,390	\$ 90,301,058

CASE 1 - KEPCO Proposal 1&2 (60MW)

5 Year Sample Calculation of Project Costs & Savings

Contract Year	Year 1	Year 2	Year 3	Year 4	Year 5	TOTALS
1 KEPCO Proposal 1 Energy Rate (\$/MWH)	85.50	86.35	87.22	88.09	88.97	
2 Energy Guarantee (MWH)	74,542.29	73,974.68	73,604.26	73,233.84	73,058.88	
3 KEPCO Proposal 2 Energy Rate (\$/MWH)	85.50	86.35	87.22	88.09	88.97	
4 Energy Guarantee (MWH)	74,542.29	73,974.68	73,604.26	73,233.84	73,058.88	
5 Phase II Energy Costs (60MW)	\$ 12,746,603	\$ 12,776,037	\$ 12,839,183	\$ 12,902,315	\$ 13,000,205	\$ 64,264,343
6 Current LEAC Rate ¹ (\$/MWH)	115	115	115	115	115	
7 Current Energy Costs	\$ 17,144,727	\$ 17,014,176	\$ 16,928,980	\$ 16,843,784	\$ 16,803,542	\$ 84,735,209
8 Proposed Savings	\$ 4,398,125	\$ 4,238,139	\$ 4,089,797	\$ 3,941,469	\$ 3,803,337	\$ 20,470,866

Year	2019	2020	2021	2022	2023	TOTALS
10 Projected LEAC Rate ² (\$/MWH)	122.27	140.02	154.63	154.03	159.65	
11 Projected Energy Costs	\$ 18,228,695	\$ 20,716,064	\$ 22,762,713	\$ 22,560,701	\$ 23,327,561	\$ 107,595,733
12 Proposed Savings	\$ 5,482,092	\$ 7,940,027	\$ 9,923,529	\$ 9,658,385	\$ 10,327,356	\$ 43,331,390

STRATEGIST CASE SUMMARY

	Base Case (No Phase II)	Case 1 (60MW)	SAVINGS
Present Value Utility Cost ³ (\$000)	6,896,417	6,806,116	90,301

Notes:

1. The Current LEAC is used in this case evaluation to demonstrate minimum savings potential with \$115/MWH LEAC rate presently proposed for next LEAC period.
2. Projected LEAC is based on STRATEGIST software output that analyzes generation costs for various generation resources and its operating characteristics. This LEAC is based on load and fuel forecasts done by LEIDOS in 2016.
3. Present Value Utility Cost is an evaluation of generation operating costs in the STRATEGIST software. This is used to determine cost impact of generation resources and their operation variables (efficiency, fuel costs, capacity, etc.) based on energy requirements.

EXHIBIT C
Historical LEAC Summary

EFFECTIVE DATES	FUEL RECOVERY RATE (\$ per Kwh)
10/01/00	0.053613
04/01/01	0.053613
10/01/01	0.048625
04/01/02	0.042901
10/01/02	0.048831
04/01/03	0.048831
10/01/03	0.062333
04/01/04	0.059753
10/01/04	0.059753
01/01/00	0.073010
01/01/00	0.088918
01/01/00	0.098589
02/01/07	0.108893
08/13/07	0.123957
03/01/08	0.150467
06/01/08	0.170440
10/01/08	0.187750
12/01/08	0.171050
02/01/09	0.157630
05/01/09	0.136450
08/01/09	0.129670
02/01/10	0.150460
08/31/10	0.124650
02/01/11	0.161530
08/01/11	0.192220
02/01/12	0.191980
04/01/12	0.192310
02/01/13	0.209271
08/01/13	0.182054
02/01/14	0.172986
08/01/14	0.176441
11/01/14	0.146666
02/01/15	0.102054
08/01/15	0.104871
02/01/16	0.086613
08/01/16	0.086613
02/01/17	0.105051
08/01/17*	0.115725

**Proposed LEAC Rate*

EXHIBIT D

Projected Renewable Energy & Renewable Portfolio Standards (RPS) for 120 MW Phase II Award

	Net Metering Renewable Energy (MWH)	NRG Renewable Energy (MWH)	GPA Wind Turbine (MWH)	Phase II - Hanwha, 60MW (MWH)	Phase II - KEPCO, 60MW (MWH)	Phase III, 40MW (MWH)	Total Renewable Production (MWH)	GPA Total Sales (MWH)	% Projected Renewable Production vs. Sales	RPS % (By End of Year)
2015	8,034	17,597					25,630	1,536,927	2%	5%
2016	19,559	48,221	474				68,253	1,584,685	4%	5%
2017	25,271	51,627	482				77,380	1,546,044	5%	5%
2018	40,393	51,412	482				92,287	1,554,108	6%	5%
2019	57,629	51,133	482				109,244	1,557,331	7%	5%
2020	57,629	50,992	482	144,010	149,085		402,198	1,558,272	26%	8%
2021	57,629	50,601	482	143,662	147,949	80,510	480,834	1,547,800	31%	8%
2022	57,629	50,393	482	142,490	147,209	80,175	478,377	1,544,574	31%	8%
2023	57,629	50,083	482	141,730	146,468	79,740	476,131	1,544,540	31%	8%
2024	57,629	49,781	482	140,970	146,118	79,520	474,499	1,550,854	31%	8%
2025	57,629	49,599	482	140,612	144,986	78,911	472,219	1,566,472	30%	10%
2026	57,629	49,391	482	139,448	144,245	78,585	469,780	1,577,646	30%	10%
2027	57,629	49,122	482	138,688	143,504	78,102	467,527	1,597,005	29%	10%
2028	57,629	48,987	482	137,386	143,146	77,631	465,262	1,614,448	29%	10%
2029	57,629	48,612	482	137,560	142,023	77,348	463,654	1,620,517	29%	10%
2030	57,629	48,411	482	136,404	141,282	77,023	461,230	1,631,977	28%	15%
2031	57,629	48,147	482	135,642	140,541	76,604	459,045	1,644,069	28%	15%
2032	57,629	48,017	482	134,880	140,175	76,393	457,577	1,661,486	28%	15%
2033	57,629	47,649	482	134,504	139,059	75,808	455,131	1,670,464	27%	15%
2034	57,629	47,451	482	133,356	138,319	75,495	452,731	1,684,195	27%	15%
2035	57,629	47,191	482	132,592	137,578	75,083	450,555	1,698,373	27%	25%

Notes:

1. Sales is from 2016 forecast for 2017-2035 (LEIDOS Jan. 2016 Forecast)
2. Net Metering projection is from LEIDOS Forecast for 2017 thru 2019 and fixed thereafter
3. NRG (Phase I) production is based on contract guarantees from 2017 thru 2035
4. Phase II is based on Project Guarantees for 120MW. Phase III renewable projections are based NRG contract guarantees.
5. GPA wind turbine assumes average capacity factor since commissioning (20%) from 2017 thru 2035
6. DSM values are not included.

EXHIBIT E

Renewable Portfolio Standards (RPS) Tracking Projection thru 2035

