

BEFORE THE GUAM PUBLIC UTILITIES COMMISSION

IN THE MATTER OF:) GPA Docket 18-08
)
The Application of the Guam Power for) PUC COUNSEL REPORT
Approving the Phase II Renewable)
Acquisition Award for GPA to Hanwha.)
_____)

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 Phase II Renewable Acquisition Award to Hanwha Energy Corporation.¹
2. GPA proposes to enter into contracts with Hanwha Energy Corporation ("Hanwha") for the construction of two 30MW solar PV projects in Dandan, Inarajan. Under the contracts, GPA will purchase roughly 144,000 MWH Net Annual Generation.²
3. There are two separate contracts. Under Proposal 1, GPA will purchase roughly 72,000 MWH Net Annual Generation at a price of \$62.45 per MWH.³ Under Proposal 2, GPA will purchase roughly 72,000 MWH Net Annual Generation at a price of \$65.99 per MWH.⁴

BACKGROUND

4. On June 26, 2014, the PUC authorized GPA to solicit competitive bids for up to 40MW of renewable energy in its Phase II Renewable Acquisition.⁵
5. In May 2016, GPA announced its Multi-Step Bid GPA-070-16 for 60MW of Renewable Energy Capacity with Energy Storage System for ramp control.⁶

¹ GPA Petition for Approval of the Phase II Renewable Acquisition Award to Hanwha Energy Corporation, GPA Docket 18-08, filed March 9, 2018.

² Guam Consolidated Commission on Utilities, Resolution No. 2018-04, Resolution Relative to Approval of the Phase II Renewable Energy Acquisition Award to Hanwha Energy Corporation, for 60MW of Renewable Energy Capacity, adopted February 27, 2018, at Exhibit A.

³ Id.

⁴ Id.

⁵ PUC Order, Procurement of Phase II Renewable Acquisition, GPA Docket 14-11, dated June 26, 2014, at p. 3.

⁶ GPA Petition for Approval of the Phase II Renewable Acquisition Award to Hanwha Energy Corporation, GPA Docket 18-0810, filed March 9, 2018, at p. 1.

6. GPA had advised the PUC both informally and in writing of its intent to seek 60MW of renewable energy capacity in its Phase II Renewables program.
7. GPA obtained price bids in January 2017 and determined that it wished to award renewable energy resource contracts up to 120MW. GPA felt that the increase in Megawatt power for award was justified because of the favorable price of solar power in comparison to fuel oil generated power under LEAC.⁷
8. Two bidders, KEPCO-LG CNS and Hanwa were selected to provide two plants each, or 60 MW, totaling 120MW of solar PV capacity.⁸
9. GPA determined that it was advisable to procure 120MW of renewable solar PV energy. The two proposed contracts with Hanwha, as those with KEPCO, have a 25-year term with annual escalator of the 1% on a renewable energy price.
10. Attached hereto as Exhibit A documents presented to the CCU, which explain details of the proposed Power Purchase Agreements between GPA and Hanwha Energy Corporation.
11. GPA intends to pay for the energy produced by the Hanwha 60MW plant through the Levelized Energy Adjustment Clause, which means that the cost of solar power purchased by GPA under the contract will be included in the fuel cost used to determine the customer LEAC rates.
12. As indicated, the contract will require the installation of Ramp Rate Control, in accordance with Appendix C of the proposed contracts. Hanwha will be also be required to comply with interconnection requirements under the proposed Interconnection Agreement, which is still being negotiated.
13. On February 27, 2018, the CCU approved the award of two 30MW proposals, totaling 60MW for Phase II Renewable Acquisition projects, to Hanwa Energy

⁷ PUC Counsel had discussions with GPA Counsel Graham Botha and Assistant GM John Cruz in January or February of 2017 concerning the interest of GPA in procuring 120 MW of additional solar power in Phase II of the Renewables Program.

⁸ GPA Petition for Approval of the Phase II Renewable Acquisition Award to KEPCO-LG CNS Consortium, GPA Docket 18-06, filed January 24, 2018, at p. 1.

Corporation and authorized GPA to seek contract review approval for the projects with the PUC.⁹

ANALYSIS

14. Since 2008, PUC has understood that GPA intended to undertake a second phase associated with its renewable energy resource acquisition process. Originally, GPA's goal was to acquire a total of approximately 80MW of renewable energy resources.¹⁰
15. The Phase II renewable energy acquisition was also included in GPA's 2013 IRP.
16. However, GPA has considerably increased the amount of renewable energy resources that it now intends to include within the island wide power system. The driver for such increase appears to be the lower price for renewable energy as compared with traditional fossil fuel energy.
17. Public Law 29-62 set certain "Renewable Portfolio Standards", which required GPA to establish portfolio goals, *inter alia*, of twenty-five percent (25%) of its net electricity sales by December 31, 2035.¹¹
18. With its proposed 120MW of solar energy, it appears that GPA will greatly exceed the legislative renewable portfolio standards. It is anticipated that, by 2020, 26% of GPA's sales will be through renewable energy production.¹²
19. GPA has provided various justifications for increasing the amount of solar energy. The Hanwha proposals would provide substantial savings to GPA over the term of the contracts based on current and projected LEAC rates.¹³

⁹ Guam Consolidated Commission on Utilities, Resolution No. 2018-04, Resolution Relative to Approval of the Phase II Renewable Energy Acquisition Award to Hanwha Energy Corporation, for 60MW of Renewable Energy Capacity, adopted February 27, 2018, at p. 4.

¹⁰ Georgetown Consulting Group, Docket 08-06, Petition for Contract Review of Renewable Energy Acquisition, dated April 18, 2009.

¹¹ Public Law 29-62 enacted March 25, 2008, Section 2 (12 GCA §8311).

¹² Guam Consolidated Commission on Utilities, Resolution No. 2018-04, Resolution Relative to Approval of the Phase II Renewable Energy Acquisition Award to Hanwha Energy Corporation, for 60MW of Renewable Energy Capacity, adopted February 27, 2018, at Exhibit D.

¹³ *Id.*; Hanwha's prices per MWH are roughly \$20 less expensive per MWH.

20. Renewable energy is furthermore “an effective hedge against rising fuel oil prices.” As the Commission has witnessed in recent LEAC proceedings, fuel prices have been increasing.
21. Furthermore, the energy prices under the renewable energy contracts are fixed with escalations of no more than the 1% annually.¹⁴
22. Counsel has two general concerns that need to be addressed by the PUC: (1) the increased procurement by GPA of solar power impacts LEAC rates. The issue is whether this cost is justified by the good that results from such sustainable energy which is beneficial to the ratepayers and the island of Guam; and (2) is there any danger that GPA is over-procuring energy? With over 200MW of solar energy proposed, new generation of 180MW, and 400MW of existing fossil fuel energy resources, could there be an excess of needed power production resources?
23. GPA will need to justify the total mix of energy resources that it is proposing, and that it is not procuring more generation capacity than necessary.
24. With regard to the proposed contract with Hanwha, there are new provisions which require energy storage and ramp control. It is desirable that GPA will require Hanwha to provide energy storage facilities enabling the shifting of solar energy to peak hour use.
25. In general, the proposed contracts are based upon earlier renewable energy contracts, such as the NRG contract, and appear to be well written and provide numerous provisions that protect GPA and its ratepayer interests in the event of contractor default. These provisions provide remedies to GPA and penalties in the event that the contractor defaults in the construction of the facilities or otherwise fails to deliver renewable energy in accordance with the agreements. The provisions appear to be standard and commercially reasonable.

RECOMMENDATION

26. Counsel recommends that the PUC approve GPA’s request to award Hanwha Energy Corporation for two 30MW renewable solar energy plants.

¹⁴ Id. at p. 2.

PUC Counsel Report
Approval for GPA Phase II
Renewable Acquisition
GPA Docket 18-08
March 23, 2018

27. A Proposed Order is submitted herewith for the consideration of the Commissioners.

Dated this 23rd day of March, 2018.

Frederick J. Horecky
PUC Legal Counsel

EXHIBIT A
Summary of Bid Proposals

Contract Year	Proposal 1			Proposal 2		
	Annual Price (\$/MWH)	Guaranteed Net Annual Generation (MWH/YR)	MicroGrid Operations Fixed Annual Fee	Annual Price (\$/MWH)	Guaranteed Net Annual Generation (MWH/YR)	MicroGrid Operations Fixed Annual Fee
1	\$ 62.45	72,005.00	\$ 1,287,082	\$ 65.99	72,005.00	\$ 1,287,082
2	\$ 63.08	71,831.00	\$ 1,264,710	\$ 66.65	71,831.00	\$ 1,264,710
3	\$ 63.71	71,245.00	\$ 1,244,969	\$ 67.32	71,245.00	\$ 1,244,969
4	\$ 64.35	70,865.00	\$ 1,225,229	\$ 67.99	70,865.00	\$ 1,225,229
5	\$ 64.99	70,485.00	\$ 1,206,804	\$ 68.67	70,485.00	\$ 1,206,804
6	\$ 65.64	70,306.00	\$ 1,188,380	\$ 69.36	70,306.00	\$ 1,188,380
7	\$ 66.30	69,724.00	\$ 1,171,271	\$ 70.05	69,724.00	\$ 1,171,271
8	\$ 66.96	69,344.00	\$ 1,155,479	\$ 70.75	69,344.00	\$ 1,155,479
9	\$ 67.63	68,693.00	\$ 1,139,686	\$ 71.46	68,693.00	\$ 1,139,686
10	\$ 68.31	68,780.00	\$ 1,123,894	\$ 72.17	68,780.00	\$ 1,123,894
11	\$ 68.99	68,202.00	\$ 1,108,101	\$ 72.89	68,202.00	\$ 1,108,101
12	\$ 69.68	67,821.00	\$ 1,093,625	\$ 73.62	67,821.00	\$ 1,093,625
13	\$ 70.37	67,440.00	\$ 1,079,149	\$ 74.36	67,440.00	\$ 1,079,149
14	\$ 71.08	67,252.00	\$ 1,064,672	\$ 75.10	67,252.00	\$ 1,064,672
15	\$ 71.79	66,678.00	\$ 1,051,512	\$ 75.85	66,678.00	\$ 1,051,512
16	\$ 72.51	66,296.00	\$ 1,038,352	\$ 76.61	66,296.00	\$ 1,038,352
17	\$ 73.23	65,915.00	\$ 1,025,191	\$ 77.38	65,915.00	\$ 1,025,191
18	\$ 73.96	65,722.00	\$ 1,012,031	\$ 78.15	65,722.00	\$ 1,012,031
19	\$ 74.70	65,151.00	\$ 998,871	\$ 78.93	65,151.00	\$ 998,871
20	\$ 75.45	64,770.00	\$ 987,026	\$ 79.72	64,770.00	\$ 987,026
21	\$ 76.21	64,388.00	\$ 975,182	\$ 80.52	64,388.00	\$ 975,182
22	\$ 76.97	64,190.00	\$ 963,338	\$ 81.33	64,190.00	\$ 963,338
23	\$ 77.74	63,623.00	\$ 951,493	\$ 82.14	63,623.00	\$ 951,493
24	\$ 78.52	63,241.00	\$ 939,649	\$ 82.96	63,241.00	\$ 939,649
25	\$ 79.30	62,859.00	\$ 927,805	\$ 83.79	62,859.00	\$ 927,805

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
1	Hanwha Energy Corporation Proposal 1&2 (60MW)	60 MW	\$ 22,820,053	\$ 44,934,650

Contract Year	Year 1	Year 2	Year 3	Year 4	Year 5	TOTALS
Hanwha Proposal 1 Energy Rate (\$/MWH)	62.45	63.08	63.71	64.35	64.99	
Energy Guarantee (MWH)	72,005	71,831	71,245	70,865	70,485	
Hanwha Proposal 2 Energy Rate (\$/MWH)	65.99	66.65	67.32	67.99	68.67	
Energy Guarantee (MWH)	72,005	71,831	71,245	70,865	70,485	
Hanwha Microgrid Operations Option	\$ 2,574,164	\$ 2,529,420	\$ 2,489,938	\$ 2,450,458	\$ 2,413,608	
Phase II Energy Costs	\$ 11,822,486	\$ 11,848,056	\$ 11,825,170	\$ 11,828,732	\$ 11,834,633	\$ 59,159,077
Current LEAC Rate (\$/MWH)	115	115	115	115	115	
Current Energy Costs	\$ 16,561,150	\$ 16,521,130	\$ 16,386,350	\$ 16,298,950	\$ 16,211,550	\$ 81,979,130
Proposed Savings	\$ 4,738,664	\$ 4,673,074	\$ 4,561,180	\$ 4,470,218	\$ 4,376,917	\$ 22,820,053

Year	2019	2020	2021	2022	2023	TOTALS
Projected LEAC Rate* (\$/MWH)	122.27	140.02	154.63	154.03	159.65	
Current Energy Costs	\$ 17,608,221	\$ 20,115,743	\$ 22,033,092	\$ 21,830,945	\$ 22,505,726	\$ 104,093,728
Proposed Savings	\$ 5,785,735	\$ 8,267,687	\$ 10,207,922	\$ 10,002,213	\$ 10,671,093	\$ 44,934,650

STRATEGIST CASE SUMMARY

	Base Case (No Phase II)	Case 1 (60MW)	SAVINGS
Present Value Utility Cost ³ (\$000)	6,896,417	6,662,844	233,572

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 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**

