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9 *Attorney for Guam Power Authority*

10 **BEFORE THE GUAM PUBLIC UTILITIES COMMISSION**

11 **IN THE MATTER OF:**

**GPA DOCKET NO. 24-08**

12 **GUAM POWER AUTHORITY**  
13 **LEVELIZED ENERGY ADJUSTMENT**  
14 **CLAUSE (LEAC)**

**THE GUAM POWER AUTHORITY'S**  
**SUBMISSION OF ITS LEAC UPDATE**  
**REPORT**

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17  
18 The Guam Power Authority hereby submits its LEAC update report in accordance with  
19 paragraph 5 of the ordering provisions of the Guam Public Utilities Commission's Order of  
20 January 25, 2024, in this matter, which requires GPA to "file updates with the PUC on  
21 actual costs to date versus the cost estimates included in its Petition [of December 6, 2023,]  
22 in this docket for each of six months for the period from February through July 2024 as soon  
23 as such actual costs become available." See Attachment (Demand Side Management Review  
24 Savings Analysis by Utility Financial Solutions, LLC, Feb. 4, 2024). GPA represents  
25 that, as of January 31, 2024, the under-recovery fuel balance is \$33,303,174.00.

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27  
28 Respectfully submitted this 15th day of March, 2024.

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30 *Attorney for Guam Power Authority*

31  
32 By: \_\_\_\_\_

*M. Wołoschuk*  
Marianne Wołoschuk  
GPA Legal Counsel



## **Guam Power Authority Demand Side Management Review**

**February 4, 2024**



**Corporate location:**

**Utility Financial Solutions, LLC**

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**Submitted Respectfully by:**

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February 4, 2024

Mr. John Cruz  
Guam Power Authority

Utility Financial Solutions, LLC (UFS) appreciates the opportunity to provide this draft report on the filing to the Guam Public Utilities Commission on GPA's Demand Side Management Program.

This report was drafted from the requirements in GPA Docket 20-05. The analysis shows great returns from the DSM program. The calculated island wide savings for the period of June 1, 2020 – July 31, 2023 is approximately \$53 million and includes a combination of customer savings and future GPA capital expenditures. The total cost of the program between during this time was \$6.5 million dollars. The calculations are provided with detail in the following report.

Please review the report and note questions and comments. Once you have had a chance to review the study, we propose holding a virtual meeting to discuss the report and your comments.

If you have any questions as you do your review, don't hesitate to contact either me at 616 403 5450 ([mbeauchamp@ufsweb.com](mailto:mbeauchamp@ufsweb.com)) or Russ Hissom at 608 628 4020 ([rhissom@utilityeducation.com](mailto:rhissom@utilityeducation.com)). We appreciate the opportunity to be of service.

Sincerely,



Mark Beauchamp, CPA, MBA, CMA

President, Utility Financial Solutions, LLC

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## 1. Introduction

On May 28, 2020, the Guam Public Utilities Commission (PUC) issued Order GPA Docket 20-05 regarding Guam Power Authority's (GPA) reporting requirements for its Demand Side Management (DSM) program and related request adjustments to the GPA's Levelized Energy Adjustment Clause (LEAC).

The order requires GPA to submit a report with the PUC at the same time it files a petition for a change in the LEAC. The order states the report will include:

1. Total amount of funds collected in the prior period for DSM, and the extent to which such amount was an over or under-recovery of the DSM amount of \$1.5 million to be recovered.
2. All expenses by GPA during the prior LEAC period for DSM, including rebates, program costs, and every expenditure of every nature.
3. Estimated fuel saving during the prior LEAC period resulting from DSM programs.
4. Projected and requested price per kWh to arrive at the funding amount of \$1.5 million for the LEAC period.

The analysis expanded upon these original requirements to include total customer savings and total ratepayers savings due to future reductions in capital expenditures. This savings is anticipated due to future capacity (demand) reductions as a result of the DSM program. In summary, the calculated island wide savings for the period of June 1, 2020 – July 31, 2023 is approximately \$53 million, this includes a combination of the following:

- Customer energy savings of \$27 million from charges for LEAC and reduced energy consumption. GPA rate schedule charges 0.0869 per kWh for non-fuel energy consumption. It was assumed savings would occur primarily within the lower cost tier 2 residential rate.
- Future reductions in capital expenditures of \$26 million from the reduced demand placed on the system because of implementation of the DSM program. Reducing peak system demands will result in delaying future capital expenditures or prevent capacity additions for power generation, transmission and distribution transformers.
- The cost of the DSM program during this period was \$6.6 million resulting in savings to the GPA and customers of \$47 million.
- Energy consumption during the period was reduced by over 81 million kWh's, although not quantified in this report, reducing energy will reduce GPA's carbon emission.

This analysis to support these findings is included within the report and appendices.

## 2. Other PUC order comments

The authorized funding for DSM each six-month period was targeted at \$1.5 million. GPA is required to place all funds obtained from the LEAC for DSM in a separate account, called the Energy Sense/DSM Fund Account. The Energy Sense Account is to be kept separate from all other GPA accounts and only used for funding the specific DSM programs approved by the PUC. During the period of the report the DSM account has been overfunded by \$2.4 million. This is shown in table four of this report.

## 3. Assumptions

This report was prepared using the following assumptions:

1. Expenditure amounts are taken from reports developed by GPA from charges to the GPA general ledger.
2. The minimum Seasonal Energy Efficiency Ratio (SEER) rating used was a SEER of 13 based on the Guam Tropical Energy Guide. (Appendix B)
3. The customer rebate forms included customer SEER rating for appliances purchased and SEER rating for appliance replaced. Much of the data did not list the SEER on the appliance replaced. When data was not available UFS assumed a 13 SEER for the asset replaced.
4. The hours of A/C operation on the Island of Guam is 4,896 hours per year as calculated based on the Cooling degree days. This calculation is shown in table one below:

**Table 1 – Hours per Year A/C Operation: Island of Guam**

<b>Hours per year of operation of A/C</b>		
CDD 65 - 5/1/20 - 4/30/21		6,119.60
Degree Hours		24.00
<b>Annual Hours</b>		<b>146,870</b>
Design Temp in F		95.00
Base - F		65.00
Design less Base - F		30.00
<b>Hours per Year of Operation</b>		<b>4,896</b>

5. Energy efficiency programs will reduce the need for future capacity additions for generation, transmission, and substation transformers. The estimate of capacity impacts was based on the 2016 electric cost of service study. A correlation was identified relating the reduced need for future capacity additions for each kWh reduced on an annual basis. The correlation is identified in the table below:

**Table 2 – Reduction in System Capacities (kW)**

<b>Determination of Reduction in System Capacities</b>	
Annual Residential Usage 2016	500,694,269
Residential Usage at time of GPA system peak	99,801
<b>kW reduction per Annual kWh reduction</b>	<b>0.00020</b>

6. GPA has residential rebate programs that include lighting, appliances, washers & dryers and Air Conditioning. The kWh savings identified in this report included only rebate programs for residential air conditioning. It is expected the expansion of the programs will increase future energy savings. Some appliances purchased under the rebate program will be replaced at some point and for purposes of this analysis it is assumed the SEER rating of the replacement appliances will be the same or the SEER rating will be improved.

#### 4. DSM funds collected through the LEAC and over/under recovery

As authorized by the PUC, GPA tracks all DSM collections through the LEAC. GPA deposits the DSM collections in the Energy Sense/DSM Fund Account. The funds collected for each LEAC period are shown in the following table:

**Table 3 – DSM Revenues Collected by LEAC Period**

LEAC_Period	LEAC-DSM Revenue Collected
6/1/2020-7/31/2020	\$ 660,407
8/1/2020-1/31/2021	\$ 1,881,739
2/1/2021-7/31/2021	\$ 1,959,557
8/1/2021-1/31/2022	\$ 1,921,470
2/1/2022-7/31/2022	\$ 1,904,663
8/1/2022-1/31/2023	\$ 1,906,947
2/1/2023-7/31/2023	\$ 1,686,616
<b>Total</b>	<b>\$ 11,921,399</b>

Since June 1, 2020, GPA has collected \$11,921,399 of DSM revenues.

Since June 1, 2020, GPA has collected a cumulative \$2,421,399 more in DSM revenues compared to the amount authorized in Order GPA Docket 20-05.

Table Four below: shows the actual collections of DSM revenues compared to the amount authorized in Order GPA Docket 20-05:

**Table 4 – Actual DSM Revenues Compared to Revenues Authorized in Order GPA Docket 20-05**

LEAC_Period	Funds Collected	Authorized DSM Revenues to be Collected	Difference Between Actual & Authorized DSM Collections	Cumulative Difference
6/1/2020-7/31/2020	\$ 660,407	\$ 500,000	\$ 160,407	\$ 160,407
8/1/2020-1/31/2021	\$ 1,881,739	\$ 1,500,000	\$ 381,739	\$ 542,146
2/1/2021-7/31/2021	\$ 1,959,557	\$ 1,500,000	\$ 459,557	\$ 1,001,703
8/1/2021-1/31/2022	\$ 1,921,470	\$ 1,500,000	\$ 421,470	\$ 1,423,173
2/1/2022-7/31/2022	\$ 1,904,663	\$ 1,500,000	\$ 404,663	\$ 1,827,836
8/1/2022-1/31/2023	\$ 1,906,947	\$ 1,500,000	\$ 406,947	\$ 2,234,783
2/1/2023-7/31/2023	\$ 1,686,616	\$ 1,500,000	\$ 186,616	\$ 2,421,399
<b>Total</b>	<b>\$ 11,921,399</b>	<b>\$ 9,500,000</b>	<b>\$ 2,421,399</b>	

**5. DSM expenses for the prior LEAC period**

GPA tracks all expenses made for DSM programs, including rebates, program costs, and all other expenditures. The actual DSM expenses for each LEAC period are shown in table five.

**Table 5 – Actual DSM Expenses by LEAC Period**

LEAC_Period	Total Expenditures
6/1/2020-7/31/2020	\$ 352,815
8/1/2020-1/31/2021	\$ 1,367,064
2/1/2021-7/31/2021	\$ 1,356,343
8/1/2021-1/31/2022	\$ 1,002,669
2/1/2022-7/31/2022	\$ 1,164,713
8/1/2022-1/31/2023	\$ 483,202
2/1/2023-7/31/2023	\$ 827,086
<b>Total</b>	<b>\$ 6,553,891</b>

Total GPA DSM program expenditures since June 1, 2020 are \$6,553,891. Table Six identifies how the funds were expended.

**Table 6 – Detailed DSM Program Expenditures**

LEAC_Period	Ductless Split Air Conditioning Units Rebates	Central Air Conditioning Units Rebates	Washer and Dryer Units	Commercial Ductless Split Air Conditioning Units Rebates	GPA Labor, Marketing and Rebate Support	Total Expenditures
6/1/2020-7/31/2020	\$ 320,375.00	\$ 500.00	\$ 25,000.00		\$ 6,940.08	\$ 352,815
8/1/2020-1/31/2021	\$ 1,217,351.00	\$ 2,400.00	\$ 61,000.00		\$ 86,312.88	\$ 1,367,064
2/1/2021-7/31/2021	\$ 1,128,200.00	\$ 2,300.00	\$ 75,800.00	\$ -	\$ 150,042.91	\$ 1,356,343
8/1/2021-1/31/2022	\$ 805,250.00	\$ 2,300.00	\$ 94,600.00	\$ 200.00	\$ 100,318.84	\$ 1,002,669
2/1/2022-7/31/2022	\$ 901,249.00	\$ 5,700.00	\$ 83,200.00	\$ 3,100.00	\$ 171,464.08	\$ 1,164,713
8/1/2022-1/31/2023	\$ 327,150.00	\$ 3,250.00	\$ 22,800.00	\$ 4,000.00	\$ 126,001.52	\$ 483,202
2/1/2023-7/31/2023	\$ 620,395.00	\$ 500.00	\$ 50,400.00	\$ 5,100.00	\$ 150,690.87	\$ 827,086
<b>Total</b>	<b>\$ 5,319,970.00</b>	<b>\$ 16,950.00</b>	<b>\$ 412,800.00</b>	<b>\$ 12,400.00</b>	<b>\$ 791,771.18</b>	<b>\$ 6,553,891</b>

**6. Estimated fuel saving during prior LEAC period resulting from DSM programs**

The estimated fuel savings are calculated for the each LEAC period, using industry methods to measure fuel savings by type of customer installation. The nature of DSM programs is that the fuel savings for a customer installation of commercial lighting or residential/commercial air conditioning will not match the spending period to install the commercial lighting or air conditioning units. Illustration 1 shows this process:

Illustration 1 – Timing of Fuel Savings vs. DSM Expenditures



The analysis shows great returns from the program. Savings on fuel by GPA is only part of the equation. Customers lower their energy consumption, thus lowering their electric bills. The DSM program reduces GPA’s peak system demand (kW), which allows for better utilization of GPA power resources and helps GPA delay the need for further peaking resources and capital expenditures.

The calculated island wide savings for the period of June 1, 2020 – July 31, 2023 is approximately \$53 million and includes a combination of customer savings and reductions in future GPA capital expenditures.

The estimated savings for each LEAC period is shown in the following table: (Greater detail in provided in Appendix A)

**Table 7 – Est. Customer and Capital Savings from DSM Programs by LEAC Period**

Reporting Period	Annual kWh's reduction during period	kWh Cumulative annual saving since June 2020	kWh Saving during period from Energy Scense Program	Customer Savings During Period - Dollars	Peak Demand Reduction - kW	GPA Future Capital Savings	Total Island Wide Savings
6/1/2020-7/31/2020	794,167	794,167	101,208	\$ 17,577	158	\$ 395,189	\$ 412,766
8/1/2020-1/31/2021	2,479,828	3,273,995	742,007	128,864	494	1,233,998	1,362,862
2/1/2021-7/31/2021	13,492,239	16,766,233	5,555,226	1,093,657	2,689	6,713,932	7,807,589
8/1/2021-1/31/2022	10,512,858	27,279,091	11,474,245	2,751,576	2,095	5,231,349	7,982,926
2/1/2022-7/31/2022	11,686,894	38,965,985	16,949,933	5,016,950	2,329	5,815,567	10,832,516
8/1/2022-1/31/2023	6,945,704	45,911,690	21,702,311	8,413,056	1,384	3,456,282	11,869,338
2/1/2023-7/31/2023	5,570,890	51,482,580	24,572,357	9,962,764	1,110	2,772,155	12,734,919
<b>Total</b>	<b>51,482,580</b>		<b>81,097,287</b>	<b>\$ 27,384,444</b>	<b>10,262</b>	<b>\$ 25,618,472</b>	<b>\$ 53,002,916</b>

**7. Projected and requested price per kWh for DSM funding for the LEAC period**

To date, GPA has collected \$11,921,399 of DSM revenues (Table Four), while spending \$6,553, 891 on DSM programs. The balance in the GPA EnergySense account is \$5.3 million.

Due to the balance of \$5.3 million in the EnergySense account, GPA requests a factor of \$0.00 (zero) for DSM program funding in the LEAC factor for this period. GPA will continue to provide its customers with options under the DSM program in this LEAC period and will fund those program costs through the available funds in the EnergySense account.

## 8. Other reporting matters

GPA also reports the following:

1. GPA has placed all funds collected for DSM through the LEAC in the Energy Sense/DSM Fund Account.
2. DSM funds were used only for funding the specific DSM programs approved by the PUC.
3. There were ten new DSM programs approved by the PUC for implementation. GPA has focused on the following programs – residential/commercial air conditioning and washer and dryer rebate

**Appendix A - Monthly Calculation of Customer Savings from  
DSM Program**

June 1, 2020 – July 31, 2023

Monthly Period	Rebates Issued	Monthly kWh Savings	LEAC Charge per kWh	Rate Savings Second Tier	Rate Savings per kWh	Customer Savings
1	309	35,028	0.0868	0.0869	0.1737	\$ 6,083
2	282	66,181	0.0868	0.0869	0.1737	11,494
3	94	76,338	0.0868	0.0869	0.1737	13,258
4	117	88,690	0.0868	0.0869	0.1737	15,403
5	54	93,696	0.0868	0.0869	0.1737	16,272
6	6	94,806	0.0868	0.0869	0.1737	16,465
7	96	115,643	0.0868	0.0869	0.1737	20,084
8	734	272,833	0.0868	0.0869	0.1737	47,383
9	853	483,850	0.1100	0.0869	0.1969	95,256
10	856	656,870	0.1100	0.0869	0.1969	129,318
11	868	839,527	0.1100	0.0869	0.1969	165,278
12	852	994,860	0.1100	0.0869	0.1969	195,858
13	984	1,182,934	0.1100	0.0869	0.1969	232,884
14	998	1,397,186	0.1100	0.0869	0.1969	275,064
15	841	1,562,493	0.1304	0.0869	0.2173	339,483
16	752	1,697,173	0.1304	0.0869	0.2173	368,745
17	771	1,836,727	0.1508	0.0869	0.2377	436,535
18	790	1,973,278	0.1508	0.0869	0.2377	468,989
19	799	2,131,317	0.1715	0.0869	0.2583	550,579
20	762	2,273,258	0.1715	0.0869	0.2583	587,246
21	622	2,409,941	0.1808	0.0869	0.2677	645,158
22	855	2,606,373	0.1808	0.0869	0.2677	697,744
23	733	2,735,613	0.2096	0.0869	0.2964	810,896
24	718	2,881,190	0.2096	0.0869	0.2964	854,048
25	943	3,069,651	0.2096	0.0869	0.2964	909,912
26	844	3,247,165	0.2516	0.0869	0.3385	1,099,191
27	952	3,389,462	0.2516	0.0869	0.3385	1,147,360
28	886	3,488,801	0.2960	0.0869	0.3829	1,335,907
29	783	3,575,310	0.2960	0.0869	0.3829	1,369,033
30	832	3,668,219	0.3186	0.0869	0.4054	1,487,265
31	728	3,754,544	0.3186	0.0869	0.4054	1,522,265
32	658	3,825,974	0.3186	0.0869	0.4054	1,551,226
33	640	3,896,427	0.3186	0.0869	0.4054	1,579,791
34	792	3,986,569	0.3186	0.0869	0.4054	1,616,339
35	648	4,058,332	0.3186	0.0869	0.4054	1,645,435
36	676	4,134,056	0.3186	0.0869	0.4054	1,676,137
37	698	4,206,758	0.3186	0.0869	0.4054	1,705,613
38	750	4,290,215	0.3186	0.0869	0.4054	1,739,451
<b>Total</b>	-	<b>\$ 81,097,287</b>				<b>\$ 27,384,444</b>

## **Appendix B – Guam Tropical Energy Guide**

**Table 503.2.3(2)  
Unitary Air Conditioners and Condensing Units, Electrically Operated, Minimum Efficiency Requirements**

Equipment Type	Size Category	Subcategory or Rating Condition	Minimum Efficiency <sup>b</sup>		Test Procedure <sup>a</sup>
			Split system	Single package	
Air cooled, (Cooling mode)	< 65,000 Btu/h <sup>d</sup>	Split system	13.0 SEER		AHRI 210/240
		Single package	13.0 SEER		
	≥65,000 Btu/h and <135,000 Btu/h	Split system and single package	11.0 EER <sup>c</sup>		AHRI 210/240
		Split system and single package			
	≥135,000 Btu/h and <240,000 Btu/h	Split system and single package		10.6 EER <sup>c</sup>	AHRI 340/360
		Split system and single package			
≥240,000 Btu/h	Split system and single package	9.5 EER <sup>c</sup> 9.2 IPLV <sup>c</sup>		AHRI 340/360	