



REVIEW OF GUAM POWER AUTHORITY REQUEST FOR APPROVAL OF AN ENERGY STORAGE RATE

APRIL 21, 2021

PREPARED FOR

Guam Public Utility Commission

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I. INTRODUCTION

On February 21, 2020, Guam Power Authority (GPA) filed a two-page Petition for Creation of New Energy Storage Rate (the Petition). The Energy Storage Rate would be applicable to new Net Metering (NM) customers who opt not to use frequency control capability or an Energy Storage System (ESS) with the installation of a new solar photovoltaic (PV) or wind turbine system. GPA proposes the initial Energy Storage Rate to be set at \$2.43 per kW of installed capacity per month. The Energy Storage Rate would not be applicable to customers who opt to use frequency control capability or an ESS, but the Petition provides no details on the specifications, including identifying additional customer costs, required for those installations.

The Petition identifies a July 2018 Joint Renewable Integration Study (JRIS) conducted with the U.S. Navy. GPA states that this study concluded that new PV installations should have frequency control capability or ESS. GPA did not supply the study or a specific excerpt from the study to provide the details surrounding that recommendation.

I.1 Key Findings

In our review of the Petition and responses to PUC information requests (IRs), we have the following findings:

- GPA is not in compliance with the May 30, 2019 NM Commission Order, namely:
 - The completion of a system distribution impact study, which includes a full benefit-cost analysis of the impacts distributed generation
 - An independent study determining the cost of grid and other services used by NM customers and the specific value of those services to NM customers
- GPA has not provided sufficient support justifying its proposed Energy Storage Rate
- Based on the information provided to date, GPA's analysis has not sufficiently supported to what extent rooftop solar is the primary cause for increased automatic under-frequency load shedding (UFLS) events
- The technical requirements necessary for the option to invest in energy storage in lieu of the Energy Storage Rate is vague and uncertain, resulting in paying the Energy Storage Rate as the only option for new NM customers

- All customers should pay for system improvements, including utility-owned storage and frequency control capability
- The Energy Storage Rate calculation is arbitrary and not designed to recover costs specifically caused by new NM customers
- Any proposal to change the NM compensation rate should only come after GPA is in full compliance with the NM Order

II. FINDINGS AND RECOMMENDATIONS

Daymark Energy Advisors reviewed the information included in the GPA Petition and provided a number of information requests to which GPA submitted additional information. In this section we provide detail to support our overall recommendation that the Petition is premature and not sufficiently justified and should therefore be denied.

II.1 Non-Compliance with NM order

In 2008, the Public Utilities Commission (Commission or PUC) approved a NM Rider. The NM Rider initially stipulated that once the number of NM customers exceeded 1,000, the PUC would review the NM Rider. This threshold was reached in June 2016. On October 4, 2018, GPA petitioned the PUC to replace the NM Rider with a “Value of Solar Policy”.

In its May 30, 2019 Order relative to GPA’s 2018 petition, the PUC ordered the following¹:

1. GPA’s request to modify the then current NM Rider from providing the retail rate for NM credits to providing only avoided cost for NM credits, with a five-year phase-in approach, as set forth in its Petition, was denied.
2. The PUC established a new level of penetration in the NM Rider which redefined when the PUC would be required to undertake a review of the NM program.
3. The NM Rider cap was amended from a customer cap of 1,000 NM customers to an aggregate kW cap set at 10% of GPA’s August 1, 2017 system peak demand of 261 MW.

¹ Guam PUC Docket No. 19-04

4. The NM Rider should be amended by deleting: "However, at the time the number of Customers exceeds one-thousand (1000) customers this issue will be reviewed by the PUC and a determination made as to the continued offering of the NM Rider for new net metering customers."
5. In place of the deleted provision, the following amendment should have been added to the NM Rider:

"However, when the capacity of Customer-Generator installations on the GPA system exceeds an aggregate KW cap (10%) of the utility's system peak demand (261 MW), the PUC will review the net metering program, determine whether the NM Rider should continue to be offered for new "net metering" customers, and consider whether any other adjustments should be made to compensation rates paid by GPA to customer-generators for capacity generation."

6. GPA may petition the PUC for further changes to the NM Rider, including the rate of compensation paid to NM customers, prior to the time at which the aggregate kW cap (10%) of the utility's system peak demand is met, but only if it has met all of the following preconditions:

(1) the distribution system impact study which GPA has already planned shall be completed;

(2) GPA shall have conducted and completed a full, balanced benefit-cost analysis that analyzes all of the impacts distributed generation has on the distribution system, especially specific to the location of the distribution generation on the system;

(3) A third-party consultant, undertakes and completes an independent study determining the cost of grid and other services used by NM customers and which identifies, in detail, the specific value of those services to NM customers.

The studies referenced in (2) and (3) above shall only be undertaken upon joint approval of the PUC and GPA, and shall be undertaken at the expense of GPA.

7. GPA was ordered to complete the planned system distribution impact study and include in that study a balanced locational and full benefit-cost analysis of how distributed generation impacts the distribution system.

8. GPA was ordered to provide a rebate program for battery storage in the DSM program and encourage solar providers to include storage with solar systems and explain the benefits to customers.
9. If GPA continues to be concerned about lost revenue, it should provide appropriate evidence during its next filed base rate case.

GPA is not yet in compliance with the ordering paragraphs 6 and 7 of the 2018 NM Order.

- GPA's Petition was filed prior to reaching the NM cap, although none of the studies required by the NM order have been completed.
- GPA's Petition seeks to change the level of compensation paid to NM customers by adding a charge applicable to those customers which would result in lower overall compensation for excess generation supplied to the grid. This is clearly a violation of the NM Order's requirement that GPA complete various studies/analyses prior to requesting a change to the NM compensation rate. Although GPA's response to IR 5 shows that NM penetration is now above the 26.1 MW cap, the Petition was filed prior to reaching the established cap.
- Based on GPA's response to RFI 6, they are currently undertaking a distribution study with Landis and Gyr. GPA is also undertaking a study with Utility Financial Service LLC investigating rates associated with NM and addressing rates that consider the locational value of solar and technically and economically feasible non-wires alternatives to solve distribution problems identified in the distribution study.

The Petition is premature given these studies have not been completed.

Although the ordering paragraph 8 of the NM Order required GPA to provide a rebate program for battery storage in the DSM program, ordering paragraph 7 from the PUC's order in Docket No. 20-05 related to GPA's demand side management plan stated the following:

Of the ten new DSM programs approved by the PUC for implementation, GPA shall initially focus on the following two areas: commercial lighting and residential/commercial air conditioning.

Based on the Commission's order in Docket No. 20-05, we are not considering GPA out of compliance as it relates to the previously ordered battery storage rebate requirement. That being said, since the other requirements described above of the NM Order have not been met, we recommend that the Commission deny this Petition.

II.2 GPA's support for request

The Petition fails to prove causation between the system issues identified and the amount of NM on the system. Specifically, Exhibit C to Resolution No. 2020-01 of the Consolidated Commission on Utilities is a line graph that overlays NM capacity and underfrequency outages². This simple dual axis line graph is insufficient to prove to what extent the growth in NM causes increases in UFLS events.

The Petition also states, "The Joint Renewable Integration Study (JRIS) conducted with the Navy in July 2018 has determined that new PV installations should have Frequency Control Capability or Energy Storage System (ESS)." Since this statement lacked context, RFI 2 asked for a copy of the JRIS, but GPA did not provide it based on security issues. To provide additional context related to the JRIS, GPA provided an attachment to their response to RFI 2 entitled "Transmission System Study", which is a presentation on GPA's transmission system. Daymark is not challenging the results of the Transmission System Study but believes an insufficient amount of evidence was supplied to determine the level of UFLS caused by NM. The resolution in Exhibit C describes a 25 MW utility-scale solar PV farm, but makes no distinction between the solar farm's impact on the system versus the impact of NM. With this lack of causation, it is difficult to accurately develop a charge designed to recover these costs. Even if causation were established, the lack of a full benefit-cost analysis of NM does not allow NM benefits to offset such costs in a rate calculation.

Finally, the Petition seeks to add a new charge to NM customers under the premise that additions of solar generation on Guam are primarily responsible for increases in UFLS. The attachment to GPA's response to RFI 14 suggests otherwise. On page 2 of this response, Table 3 shows that a majority of the UFLS events were caused by fossil fuel generators. This again supports our position that GPA has not properly determined the extent to which NM is impacting UFLS.

² Referred to as under-frequency load shedding (UFLS) in this report.

II.3 ESS and frequency control capabilities in lieu of the Energy Storage Rate is vague and uncertain

The Petition lacks sufficient detail to properly evaluate GPA's proposal to require that new NM customers pay an Energy Storage Rate or install ESS or frequency control capability. Although GPA responses to information requests by the PUC added more context, GPA's proposal for rate modification lacks adequate evidence to support new requirements placed on new NM customers nor does GPA have clear guidelines for such requirements at the current time.

- On technology choice, GPA's Response for RFI 1-B discusses the options for frequency control capability, and GPA admits there are likely several solutions and that they are conducting studies with Utility Financial Services LLC and Landis and Gyr on this front. GPA states: "GPA will add or modify its requirements when it completes these studies". They go on to say that in the future, "GPA will have to tune its requirements as new systems are introduced". This level of uncertainty in technology requirements for customers who desire to invest in ESS or frequency control capabilities severely diminishes that option, likely making it no realistic option. If potential new NM customers and installers are uncertain exactly what technologies will be required and the associated costs, it is highly likely they will default to paying the Energy Storage Rate.
- It is also unclear how GPA would enforce the utilization of customer-owned ESS. GPA states that it will require an additional meter for new NM customers. In their response to RFI 1-B, GPA states, "GPA will require new systems to install a GPA meter between the AC output of the inverter and the customer electric service panel. The placement of this meter will depend on the specifics of the NEM system configuration and interconnection." This again adds uncertainty to the option of installing ESS, making it an untenable choice for potential future NM customers.

Combining the lack of evidence and the uncertainty of GPA's requirements, the Petition provides insufficient information upon which to take action.

II.4 System upgrade costs should apply to all customers

Although, as stated above, GPA has not provided sufficient evidence to support the claim that NM is causing system issues, it is discriminatory to attempt to pay for system upgrades by charging new NM customers if all customers benefit from these upgrades.

System upgrade needs should be funded by all customers unless costs can clearly be assigned to the specific cost causers. The required distribution system impact study, including a full benefit-cost analysis of NM, will also provide clarity by including system benefits of NM. The benefit-cost analysis should include benefits and costs as it relates to GPA's entire system, not just distribution.

II.5 Energy Storage Rate calculations

The Petition did not include calculations of the proposed Energy Storage Rate of \$2.43 per kW of installed NM capacity for new NM customers who opt not to install their own ESS or frequency control capability. This information was included in the April 13, 2021 Public Hearing, but it appears to be based on numbers that are not relevant to new NM customers. The annual cost basis of the Energy Storage Rate is designed to recover a \$21 million investment in a 24,000 kW battery system. The annual revenue requirement on that investment is calculated to be around \$1.4 million. GPA then assigns half of that annual revenue requirement to the Energy Storage Rate and uses the installed capacity of current NM customers as the billing determinant. This appears to arbitrarily assign half of future system-wide energy storage requirements to provide frequency control capabilities to NM customers. Again, GPA has not provided sufficient evidence to support to what extent NM customers are causing UFLS events. If the PUC determines that an Energy Storage Rate for new NM customers is justified, GPA should be required to calculate a rate designed to recover costs directly related to those new NM customers. In addition, GPA should be required to specifically identify to what extent NM has impacted UFLS as compared to other causes.

III. CONCLUSION

By the filing of this Petition, which is a means to change the compensation rate for NM customers, GPA is out of compliance with the Order from Docket No. 19-04, which required a distribution system impact study, a benefit-cost analysis that analyzes all of the impacts distributed generation has on the distribution system, and an independent study determining the cost of grid and other services used by NM customers and which identifies, in detail, the specific value of those services to NM customers.

In addition:

- GPA has not sufficiently supported its proposal to require new NM customers to pay an Energy Storage Rate by proving to what extent system issues are caused by NM customers.

- The requirements and level of investment required in order for customers to choose to invest in energy storage in lieu of the Energy Storage Rate is vague and uncertain, essentially making it no choice at all
- All customers should pay for system improvements, including utility-owned storage and frequency control capability
- The Energy Storage Rate calculation is arbitrary and does not accurately and directly assign costs to new NM customers

As a result, we recommend the PUC deny the Petition.