

BEFORE THE GUAM PUBLIC UTILITIES COMMISSION



IN THE MATTER OF:) GPA Docket 20-16
)
The Application of the Guam Power)
Authority Requesting to Retire Piti 8 & 9) **ALJ REPORT**
Units and to Procure 60MW of Renewable)
Energy.)
_____)

INTRODUCTION

This matter comes before the Guam Public Utilities Commission ["PUC"] upon the Petition of the Guam Power Authority ["GPA"] to review and approve GPA's request to retire Piti 8 & 9 units, and to procure 60MW of renewable energy.¹ GPA indicates that when the new 198MW power plant and 120MW Solar PV Energy are commissioned, the Piti 8 & 9 units will be operating as peak load or back-up units, instead of baseload units, with a capacity factor of less than 15%.² In addition, the inclusion of 50% renewables in the GPA island wide power system by 2035 will "decrease Piti Production to Practically Nothing."³

GPA further contends that it will be more cost effective for the Authority to rely upon the Aggreko 40 1MW plants then upon the Piti plants. GPA estimates that the 15-year nominal savings from retiring the Piti plants and relying upon the Aggreko plants will be \$1,122,559.00.⁴ GPA also suggests that reliance upon the Aggreko plants will avoid the cost of \$18.325M in converting the Piti plants from use of RFO to ULSD.⁵ Not only does GPA believe that reliance upon the Aggreko plants will be cheaper than continued reliance upon the Piti plants: GPA submits that the nature of the Aggreko 40 1MW units are movable and provide more operational flexibility and reliability for integration with Renewables.⁶

¹ GPA Petition to Retire Piti 8 & 9 Units and to Procure 60MW of Renewable Energy, GPA Docket 20-16, filed July 10, 2020.

² GPA Work Session, Presentation to the Consolidated Commission on Utilities, June 18, 2020, GPA Resolution No. 2020-14.

³ Id., at Energy Supply Paradigm Shift Conclusions.

⁴ Id.

⁵ Piti (MEC) 8 & 9 ULSD Conversion, June 23, 2020, at Revised ULSD Conversion Cost.

⁶ Id., at Energy Supply Paradigm Shift Conclusions.

GPA requests that the PUC authorize it to proceed with the retirement of the Piti 8 & 9 units "upon commissioning of the new 198MW Ukudu power plant, and the procurement of an additional 60MW of renewable resource."⁷

BACKGROUND

1. District Court of Guam, GPA-USEPA Consent Decree

In GPA Docket 20-01, on November 12, 2019, the Guam Power Authority petitioned the PUC for approval of the Consent Decree with the United States Environmental Agency ["USEPA"].⁸ The Consent Decree arose out of certain alleged violations by GPA of the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP).⁹ The PUC found that "Approval of the Consent Decree is in the best interest of GPA and the ratepayers of Guam..."¹⁰ Based upon its determinations, the PUC approved the Consent Decree between GPA and USEPA, and authorized GPA to enter into the Consent Decree.¹¹

On April 20, 2020, the Honorable Frances M. Tydingco-Gatewood, Chief Judge of the District Court of Guam, executed a Consent Decree in the case of United States of America, Plaintiff, v. Guam Power Authority and Marianas Energy Company, L.L.C., Defendants, Case No. 1:20-cv-0007.¹² The Consent Decree was voluntarily entered into by the Guam Power Authority and the United States, represented by the Department of Justice.

The Consent Decree addresses a number of specific matters concerning the Piti 8 & 9 plants.¹³ GPA is required to, and agreed to, construct a new pipeline to convey ULSD from the Navy Tie-in Apra Harbor, through either tank #1934 or #1935, to the Piti Units 8 & 9.¹⁴ GPA agreed to submit permits and approvals relative to the fuel switch to USLD for Piti Units 8 & 9, and to install oxidation catalysts by March 1, 2020. By July 1, 2020, GPA agreed to enter into a binding contract for the

⁷ GPA Petition, *supra*, at p. 2.

⁸ PUC Order, GPA Docket 20-01 dated December 5, 2019.

⁹ *Id.*, at p. 1.

¹⁰ *Id.*, at p. 4.

¹¹ *Id.*, at p. 6.

¹² United States of America, Plaintiff v. Guam Power Authority and Marianas Energy Company, L.L.C., Defendants, Consent Decree, Case No. 1:20-cv-0007. A copy of the Consent Decree is a part of the record in this Docket.

¹³ *Id.*, at p. 10.

¹⁴ *Id.*

performance of all work necessary to accomplish the fuel switch to ULSD and to install oxidation catalysts at Piti Units 8 & 9.¹⁵ By December 31, 2021, GPA agreed to complete the installation of oxidation catalysts at Piti Units 8 & 9, and to only use ULSD as a fuel to power Piti Units 8 & 9. Furthermore, GPA agrees to pay penalties for "failure to complete installation of oxidation catalysts at Piti Units 8 & 9..."¹⁶ If it uses other than ULSD at Piti Units 8 & 9 after December 31, 2021, it agrees to penalties ranging from \$1,000.00 per day up to \$5,000.00 per day.¹⁷

The Consent Decree further provides that its terms **"may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Decree, it shall be effective only upon approval by the Court."**¹⁸ (emphasis added). Any disputes must be resolved by a "Dispute Resolution" process.

2. GPA Actions subsequent to Signing of Consent Decree and Guam Consolidated Commission on Utilities GPA Resolution No. 2020-14

The Consent Decree of the District Court requiring GPA to convert Piti Units 8 & 9 to ULSD is still in full effect. To date it has not been altered or amended. However, since the Consent Decree was entered into on April 20, 2020, GPA has since determined that it wishes to retire the Piti 8 & 9 units, rather than converting them to ULSD as it agreed to do in the Consent Decree.

At the "Work Session" for the Guam Consolidated Commission on June 18, 2020, GPA presented its plan to CCU for the retirement of the Piti 8 & 9 plants. At the CCU Meeting on June 23, 2020, GPA presented a written justification for the retirement of the Piti 8 & 9 plants. Such justification also included comments by Marianas Energy Corporation ("MEC"). MEC opposed the retirement of the Piti 8 & 9 plants, arguing, *inter alia*, that reliance upon the Aggreko plant rather than the Piti plants would actually be more expensive; that the Piti plants would retain a higher capacity reserve in case of unforeseen delays in the capacity expansion of renewables, at a very attractive thermal efficiency; and, that given all the uncertainties concerning when the new Ukudu plant and the renewables would be

¹⁵ Id., at p. 11.

¹⁶ Id., at p. 18.

¹⁷ Id.

¹⁸ Id., at p. 29.

in operation, any decision on retirement of Piti 8 & 9 should be postponed until these uncertainties were resolved.¹⁹

At its meeting on June 23, 2020, the Guam Consolidated Commission on Utilities adopted and approved GPA Resolution No. 2020-14.²⁰ Specifically, the CCU requested, subject to the review and approval of the Public Utilities Commission, the following relief: "1. **GPA is approved to plan for the retirement of Piti #8 & #9** Slow Speed Diesel Units after the New Power Plant at Ukudu has commenced commercial operation. 2. GPA is authorized to request USEPA to modify the consent decree to address retirement of Piti 8 & 9 upon completion of the new 198-MW Ukudu power plant, in lieu of conversion of units to ULSD by December 31, 2021. 3. GPA is approved to execute a Renewable Acquisition for 60-MW of Solar-PV + Energy-shifting ESS." (emphasis added).

It is interesting to note that the CCU did not expressly approve the retirement of the Piti plants. What it did do was to authorize GPA **"to plan for the retirement of Piti #8 & #9."**

In the meantime, GPA has requested that USEPA modify the Consent Decree to allow Piti 8 & 9 to be retired upon commissioning of the new 198MW Ukudu plant, in lieu of conversion of the units to ULSD, by December 31, 2021.²¹ In its Petition, GPA requests that PUC approve the retirement of the plants upon the commissioning of the 198MW plant.

MEC submitted additional materials to the PUC on September 16, 2020.²² Therein MEC submits that GPA's cost comparison between the 80 MW plants and the Aggreko 40 MW units is not an "apples to apples" comparison. GPA intends to also rely upon 40MW of the Diesel units, but has not included the costs of such units in its analysis. What should also be compared is the Piti units versus Aggreko at 40MW each, at 103,000MW of energy production. If Piti units and Aggreko/diesels are compared at 80MW, MEC states that annual savings of using

¹⁹ Piti (MEC) 8 & 9, ULSD Conversion and MEC Comments, dated June 23, 2020, and (SUPPLEMENTAL), Consent Decree Requirement, dated June 23, 2020, attached hereto collectively as Exhibit "1".

²⁰ Guam Consolidated Commission on Utilities, GPA Resolution No. 2020-14, "Relative to Authorizing the Guam Power Authority to Retire Piti 8 & 9 Slow-Speed Diesel Units and to Procure 60-MW Installed Capacity from Renewable Energy," adopted and approved on June 23, 2020.

²¹ GPA Petition to Retire Piti 8 & 9 Units and to Procure 60MW of Renewable Energy, GPA Docket 20-16, filed July 10, 2020, at p. 1.

²² Letter from Rino Manzano, MEC Plant Manager, to PUC ALJ Fred Horecky dated September 16, 2020

the Piti plants would be \$4,092,326 per year, or \$45,418,500 for 15 years.²³ Finally, MEC has submitted the Report of BWSC, who has been involved since the beginning in the supply of the Piti Generators and the development of the plants. In the opinion of BWSC, it concludes that the Piti fuel conversion is the overall most beneficial solution to the community and the people of Guam.²⁴

ANALYSIS

1. The Report of Concentric Energy Advisors: PUC should not approve GPA's request to retire the Piti plants at the present time.

In order to thoroughly analyze the issues herein, the ALJ requested that PUC Consultant Concentric Energy Advisors provide an analysis of whether GPA should be authorized to retire the Piti 8 & 9 plants. On September 10, 2020, CEA submitted its final Report on "the Financial Convenience of Retirement of Piti 8 & 9 or Conversion to ULSD." CEA, through its principal Ruben Moreno, issued written questions to GPA and MEC, and also conducted oral conferences with both parties. The Report is on file herein, and copies thereof have been provided to the Commissioners.

The Report is a thorough analysis of issues regarding the alternatives of conversion or retirement of the Piti plant. CEA concludes as follows: "in sum, retirement of Piti plants 8 & 9 is financially more convenient than conversion to ULSD as long as the retirement takes place after the Ukudu plant becomes operational to ensure that reliability of the system is not affected."²⁵ CEA recommends that the PUC "should approve GPA's request to **proceed with the plan for the retirement of the Piti 8 & 9 units** upon commissioning of the new 198MW Ukudu power plant."²⁶

However, CEA does not suggest that PUC should presently approve the actual retirement of the plant, but conditions such approval for retirement upon provision by GPA of "evidence to the following three elements: 1) Evidence that the USEPA has agreed with the retirement of the plant instead of the conversion without negative impact to the Consent Decree; 2) the total cost to the ratepayer on an

²³ Id.

²⁴ Report of BWSC dated June 26, 2020, Re: MEC ULSD Conversion Project 6-5—2020.

²⁵ Opinion of Concentric Energy Advisors, Opinion on the Financial Convenience of Retirement of Piti 8 & 9 or Conversion to ULSD, dated September 10, 2020. At p. 2.

²⁶ Id., at p. 2.

expected basis will be lower with the retirement of Piti 8 & 9; and 3) The expected resiliency of the island's electric system will not deteriorate."²⁷

Given that the Consent Decree Order of the District Court of Guam that GPA is still required to convert the Piti Plants to ULSD, it would be premature for the PUC to now approve GPA's request to retire the Piti Plants unless and until the Consent Decree is modified to allow for retirement. GPA cannot undertake any action contrary to the consent Decree until it obtains the approval of USEPA and possibly the District Court. GPA cannot proceed with a plan to retire the Piti units or retire the units until it obtains approval under the Consent Decree process and complies with the elements specified by CEA.

It is not appropriate for the PUC to approve retirement of the Piti plants at the present time. The main reason is that the Consent Decree of the District Court of Guam requires that GPA convert Piti 8 & 9 plants to ULSD. The PUC approved the Consent Decree, and authorized GPA to enter into such Decree. PUC should not approve any alternative to the handling of the Piti plants which is not specifically referenced and authorized in the Consent Decree of the District Court of Guam.

2. GPA's request for approval to execute a Renewable Acquisition for 60-MW of Solar-PV+Energy-shifting ESS is not properly before the PUC.

GPA's Petition includes three separate requests for authorization by the PUC to procure 60MW of renewable energy. However, other than the bare requests for approval, there is no information provided concerning the proposed procurement for 60MW of renewable energy, including details of the project, proposed location, cost, or any other information concerning the nature and scope of the proposed procurement. The regular and ordinary procedure for GPA to request for a procurement is the filing of a petition with the PUC that specifically indicating the location, nature, scope, and cost of the project, and the justification for the procurement. Proposed procurement documents, including a draft contract, are ordinarily submitted. In this case GPA has not submitted any of the standard information provided. PUC does not yet have sufficient information to evaluate the proposed 60MW renewable energy/ESS proposal.

The GPA-PUC Contract Review Protocol establishes the obligation that GPA file a petition, which includes certain information, for any procurement:

²⁷ Id.

"With regard to any contract or obligation [procurement], which requires PUC approval under this Order, GPA shall initiate the regulatory review process through a petition, which shall be supported with the following:

- a) A resolution from the Consolidated Commission on Utilities [CCU], which confirms that after careful review of the documentation described in subparagraph (b) below and upon finding that the proposed procurement is reasonable, prudent and necessary, CCU has authorized GPA to proceed with the procurement, subject to regulatory review and approval.
- b) The documentation on which CCU based its approval under subparagraph (a) above, which shall include, at a minimum, a report from management or an independent third party, which contains the following:
 - i. A description of the project, including timeframes, time constraints and deadlines, and a justification of its need.
 - ii. An analysis from a technical and cost benefit perspective, of all reasonable alternatives for the procurement.
 - iii. A detailed review of the selected alternative, which establishes the basis of selection and that it is economically cost effective over its life.
 - iv. Cost estimates and supported milestones for the selected alternative.
 - v. The projected source of funding for the project with appropriate justification and documentation.
 - vi. A supporting finding that the procurement is necessary within the context of other utility priorities."²⁸

GPA should file an appropriate petition so that PUC can properly assess its request to procure 60MW of renewable energy.

²⁸ Contract Review Protocol for Guam Power Authority, Administrative Docket, dated February 15, 2008, at paragraph 7.

3. PUC authorization for GPA to request USEPA to modify the Consent Decree to address retirement of Piti 8 & 9 is not necessary.

The CCU has requested in Resolution 2020-14 that PUC authorize GPA to request USEPA to modify the Consent Decree to address retirement of Piti 8 & 9. The PUC is not a party to the Consent Decree proceeding in the District Court of Guam. As previously indicated, the Consent Decree itself provides remedies for GPA if it wishes to modify the provisions which require GPA to convert Piti units 8 & 9 to ULSD. Under Sections XII, Dispute Resolution, and XIX Modification of the Consent Decree, GPA has stated remedies which enable it to seek modification of the Consent Decree.

PUC approval is not required under the Consent Decree for modification to occur. A "material change" to the Consent Decree requires Court approval. It is possible that a modification of the conversion of the Piti units 8 & 9 to retirement, rather than conversion, will require the approval of the Court. GPA is clearly empowered to seek such modifications as it desires through the Consent Decree modification process. If the Consent Decree is materially modified, PUC approval would be required in accordance with GPA Docket 20-01.

4. PUC Approval for the Retirement of Piti Units 8 & 9 at present would be premature and contrary to the Consent Decree.

Approval by the PUC of retirement of Piti units 8 & 9 would place it in direct contradiction to the requirements of the Consent Decree that GPA convert the Piti plants to ULSD. Approval of plant retirement at this juncture would surely be an uncomfortable position for PUC to be in, particularly since it approved the Consent Decree, authorized GPA to sign the Decree, and in effect recognized the GPA is obligated to adhere to the requirements of the Consent Decree. The District Court of Guam has retained jurisdiction for resolving all disputes arising under the Decree, entering orders modifying the Decree, and effectuating or enforcing compliance with the terms of the Decree.²⁹

The District Court has jurisdiction over the issue of whether the conversion of the Piti 8 & 9 plants to ULSD should be modified. An order by the PUC that the Piti plants may be retired would be premature until the District Court first rules on whether the Consent Decree will be modified to allow for retirement. A premature

²⁹ United States of America, Plaintiff v. Guam Power Authority and Marianas Energy Company, L.L.C., Defendants, Consent Decree, Case No. 1:20-cv-0007, at pgs.23-25 and 29.

PUC order could constitute an interference with the jurisdiction of the District Court. In *West v. Lamb*, 497 F.Supp.989 (D. Nevada 1980), the District Court held that a Consent Decree Order of the Court would bind non-parties to the action to observe the Court's Order because of the "Supremacy Clause" of the Constitution of the United States. A Consent Decree of a Federal Court would "prevail" over the "order of any administrative body" of the state.³⁰ "Federal Preemption" bars any state or local action which is contrary to a Federal Order. *People v. Teledyne, Inc.*, 599 N.E.2d 472, (Ill. 1992). The District Court of Guam has previously invoked the Supremacy Clause concerning its Consent Decree over the Guam Solid Waste System and inconsistent local government actions.³¹

The PUC is an administrative agency, a public corporation of the government of Guam. In the legal hierarchy of state and federal orders, PUC is constrained to follow lawful orders of Federal Courts. PUC faced this dilemma with regard to solid waste rates for the Guam Solid Waste Authority. PUC previously took the position that it should not address such rates for so long as GSWA was under the jurisdiction of a federal court receivership. The above-referenced cases raise the concern that a ruling by the Guam Public Utilities Commission authorizing the retirement of the Piti plants would be contrary to the Consent Decree, could potentially usurp the jurisdiction of the District Court, and potentially violate the Supremacy Clause of the United States Constitution. PUC should await action by the District Court before it addresses these issues.

RECOMMENDATION

Based upon the record before the Commission and the review conducted herein, the ALJ recommends the following:

- (1) The PUC should not, at present, take action on GPA's plan to retire the Piti plants or authorize retirement of the plants. GPA should first seek modification of the Consent Decree, in accordance with the provisions thereunder, to allow for the retirement of the Piti plants, including any necessary court approval of the proposed modification.
- (2) If the Consent Decree is modified to provide for retirement of the Piti 8 & 9 plants, GPA must obtain final approval from the PUC for retirement of the plants. In such case, GPA must provide evidence to the PUC of the following

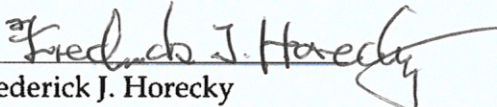
³⁰ Id., at pgs. 1006-1008.

³¹ U.S. v. Government of Guam, 2008WL732796.

three elements (in compliance with the recommendation of the CEA Report):
(a) Evidence that the USEPA and the District Court (if required) have agreed with the retirement of the plant instead of conversion without negative impact to the Consent Decree; (b) that the total cost to the ratepayers on an expected basis would be lower with the retirement of Piti 8 & 9; and (c) that the expected resiliency of the island's electric system will not deteriorate. In any application to PUC for approval of retirement, GPA should also establish that the proposed renewable assets will be fully available for use in the island wide power upon the commissioning of the new 198MW Ukudu power plant. Based upon the foregoing and any other relevant considerations, the PUC would determine whether retirement of the Piti 8 & 9 plants should be authorized.

- (3) A Proposed Order approving such recommendations is submitted herewith for the consideration of the Commissioners.

Respectfully submitted this 18th day of September, 2020.


Frederick J. Horecky
Chief Administrative Law Judge

PITI (MEC) 8 & 9 ULSD CONVERSION

MEC COMMENTS

June 23, 2020

Ex. 1



IMPACT OF CONVERTING PITI 8&9 TO ULSD

7

CONVERSION AND O&M

- **\$15.756M**
- Conversion cost
- Negotiations with MEC/BWSC ongoing

- **\$10 - \$15M**
- Plant life extension projects from 2019-2023 only.

- **\$17.5M is high should be \$8.2 M only**
- Annual O&M Baseload before Okudu Plant Start (see calculation on next slide)

- **\$3.7M**
- Annual O&M (at 14% Capacity Factor - Only 1 Unit) Intermediate Load (see calculation on next slide)

GPA is required to petition PUC to approve the \$20M conversion project and to utilize funds from the Cabras 3 & 4 insurance proceeds

IMPACT OF NEW GENERATION & RENEWABLES

- **14% capacity factor**
- Decreased capacity factor (from 80%) when Ukudu combined cycle & 160 MW solar projects are commissioned ~ CY 2023

- **Intermediate Load**
- Operational role changed from baseload to intermediate load in CY 2020

- **15.7 kWh per gallon ULSD**
- Decreased plant fuel efficiency post-conversion (from 17.9 kWh/gal RFO)
- ULSD produces less energy compared to RFO

MEC Comments: The plant thermal efficiency does not decrease. The single cycle thermal efficiency of the power plant is essentially the same after the conversion. The only difference is the difference in the fuel properties with different calorific values and density differences, but this has nothing to do with the thermal efficiency of the power plant.

Generation Plant Ownership

IPP plants transferred to GPA following the expiration of their capital leases

- In late 1990s, GPA entered into capital lease transactions for MEC Plant:
 - MEC 8: 44MW Baseload
 - MEC 9: 44MW Baseload
- Aggreko 40MW Temporary Lease to Own Power Contract began January 2016 and expires Jan 2021 with ownership to GPA. Annual cost about \$12M. Plant procured due to loss of Cabras 3&4 Plant due to explosion

Aggreko 40 MW Plant	MEC 8 and 9
<ul style="list-style-type: none"> GPA is paying \$4.8 million over 4 years as part of capital lease to own, which expires in January 2021 Additionally, GPA spends about \$12M annually for operation and maintenance of plant. <i>This cost is expected to drop to about \$5.5M annually after Jan 2020</i> Consist of 38 units of 1.1MW 	<ul style="list-style-type: none"> In January 2019, GPA took ownership of the MEC units 8 and 9 GPA paying \$15 million annually to MEC to continue to operate and recapitalize the plant up to January 2024 Plant energy production to decrease substantially when new plant Ukudu is commissioned

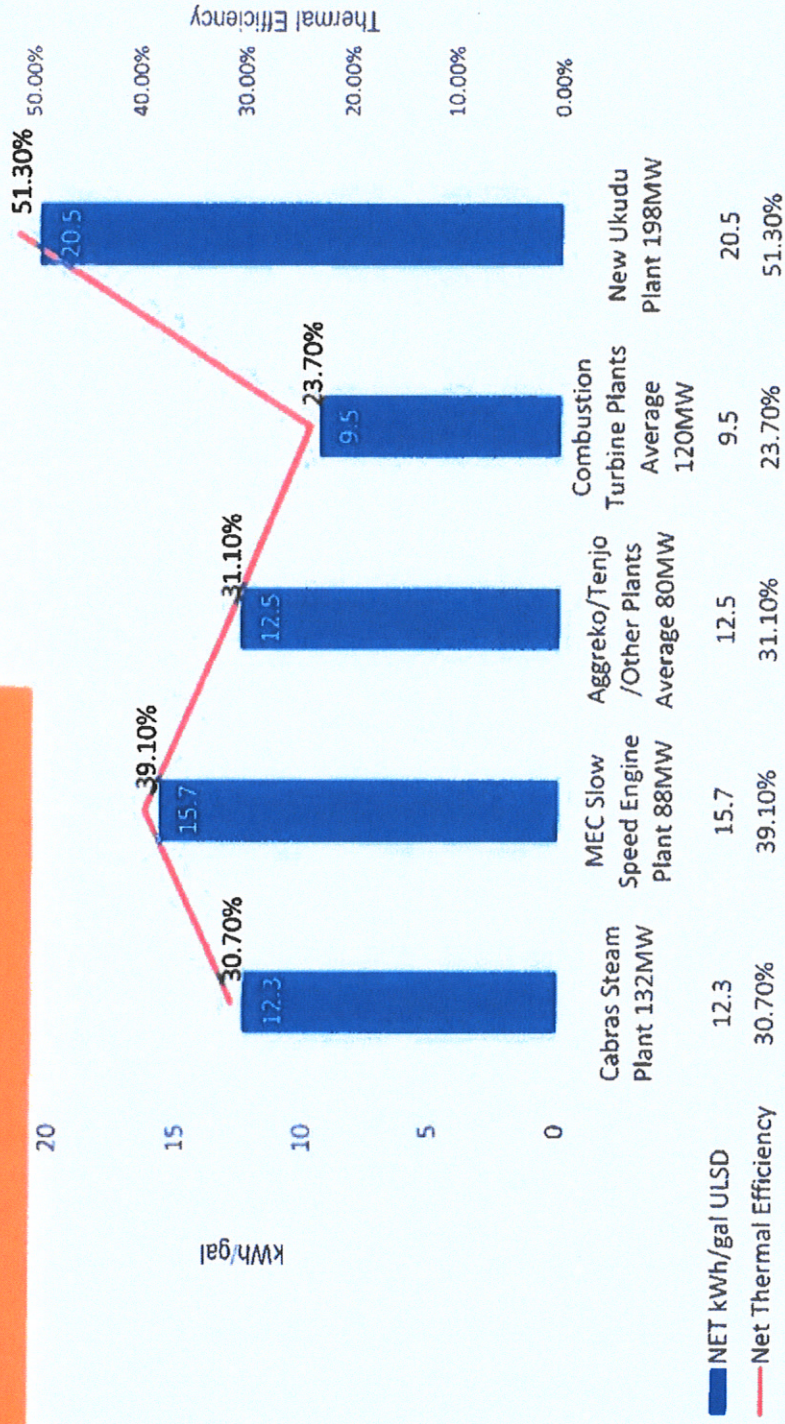
MEC's Comments: This is a significant and unjustified drop from \$12M to \$5M. It is very unclear what is included in this figure. Urea alone is \$0.7 Million a year. 40 small size units, means more moving parts and more maintenance – more people.

A price of 5.5 MUSD seems extremely low. Aggreko pricing is usually in the range 20.000 USD/MW per month in capacity charge, which sums to 9.1 MUSD for 40 MW per year. In addition they charge around 8 USD/MWh produced in energy charge, excl. fuel and lubrication oil. Lubrication oil costs would be around 275.000 USD per year additionally, based on 0,8 g/kWh and 3 EUR/kg system lube oil costs. It sounds very odd that the annual Aggreko O&M costs can drop from 12 MUSD to 5,5 MUSD. Before taken such an important decision, the figure has to be verified and it must be determined what is actually included in the 5,5 MUSD.

The Aggreko Units would require full overhaul at 25,000 – 30,000 hours (which would extend their lifetime by 15,000 - 20,000 hours). The budgetary cost for this is \$10-15m, and by looking at the accumulated running hours, it seems that the units are approaching this by early 2021.

Comparison of Plant Efficiencies

MEC's Comments: This graph show Piti plant using 20% less fuel per MWh produced than Aggreko plant. If renewables (or consumption) does not reduce the need for thermal engine production as forecasted there will be a huge fuel cost bill if retiring the Piti units.



PITI ULSD CONVERSION COST

19

Description:		Amount	Annual O&M Increase
ULSD Conversion all-in price		\$ 12,705,000	
2 Spares of Oxidation Catalyst		\$ 1,290,000	\$ 645,000
Spare Parts, Consumables		\$ 28,000	\$ 28,000
Emulsifier (1 Year Supply)		\$ 1,667,040	\$ 1,667,040
BWSC Withholding Tax		\$ 1,285,714	
Sub-Total		\$ 16,975,754	
Contingency (10%)		\$ 1,697,575	\$ 166,704.0
Sub-Total		\$ 18,673,329	
MEC EPC Fee (10%)		\$ 1,867,333	
Sub-Total		\$ 20,540,662	
GRT 5% on Local Labor		\$ 105,263	
Total ULSD Conversion Contract Price	\$	20,645,925	\$ 2,506,744
Construction Period: 14.5 Months After NTP/Deposit subject to labor availability			

See Correct Numbers on next provided slides

PITI ULSD CONVERSION COST: Corrected

11

Description:	Amount USD	Annual O&M Increase USD*
ULSD Conversion all-in price	12,705,000	43,000
2 Spares of Oxidation Catalyst		28,000
Spare Parts, Consumables	28,000	
Emulsifier (1 Year Supply)	0	200,045
BWSC Withholding tax	201,600	
Sub -Total	12,934,600	
Contingency (10%)	1,293,460	
Sub -Total	14,228,060	
MEC EPC Fee (10%)	1,422,806	
Sub -Total	15,650,866	
GRT 5% on Local Labor	105,263	
Total ULSD Conversion Contract Price	15,756,129	271,045
Construction Period: 14.5 Months After NTP/Deposit subject to labor availability		

*Annual O&M increase based on 1200 hrs and 103,000,000 KWh produced pr. year.

COMPARISON OF DIESEL PLANTS ANNUAL COST

12

Calendar year:	2018 Actuals	2023 Projected	2023 Projected	2023 Projected
Description	MEC RFO	MEC ULSD	Aggreko ULSD	Medium Speed Diesels ULSD
Annual Fixed Capacity Fee	None	None	None	None
Total kW Capacity	88,000	42,000	40,000	40,000
Annual All-In Cost:	\$8,268,941	\$3,685,667	\$5,500,000	\$3,000,000
Annual Capacity Factor	81.2%	28.0%	29.4%	29.4%
Annual Net kWh	626,154,555	103,000,000	103,000,000	103,000,000
Permit Energy Capacity	655,248,000	312,732,000	210,240,000	280,320,000
Annual Net \$/kWh	\$0.013	\$0.036	\$0.053	\$0.029
Thermal Efficiency	39.4%	39.4%	31.4%	33.9%
Net Heat Rate kWh/Gal ULSD	15.7	15.7	12.5	13.5
\$/BBL Fuel	\$64.00	\$85.00	\$85.00	\$85.00
\$/kWh Fuel Cost	\$0.10	\$0.13	\$0.16	\$0.15
Total All-In Cost	\$0.110	\$0.165	\$0.215	\$0.179
Age (Years)	19	24	7	31
Annual Availability	92%	92%	95%	92%
Total Individual Units	2	2	38	10
Forced Outage Rate:	5%	5%	2%	4%

PITI RETIREMENT IMPROVES AIR QUALITY

13

PITI 8 & 9 and AGGREKO MAXIMUM EMISSIONS				
	Low Sulfur RFO Piti Units 8 & 9	High Sulfur RFO Piti Units 8 & 9	ULSD Piti Units 8 & 9	ULSD Aggreko
SO ₂ (tons/year)	3,869	6,503	4.9	1.4
Nox (tons/year)	973	973	6,113	214
CO (tons/year)	104	104	820	250
VOC (tons/year)	22	22	290	33
PM _{Total} (tons/year)	293	449	322	14
TOTAL HAPS (tons/year)	13	13	4.8	1.4
capacity (MW)	88	88	88	40
fuel consumption (gallons)	41,417,695	41,417,695	46,967,265	12,080,308
power produced (KWh)	724,395,483	724,395,483	767,590,702	154,386,340

MEC's Comments: Tabulation is difficult to understand since production basis is very different! To be comparable, the pollution load should rather be specific, i.e. per MWhe produced.
Further, there are obvious grave mistakes. E.g. Piti NOx, CO & VOC does not go up after ULSD conversion. Especially CO and VOC goes down after installation of Oxy-cat. See alternative comparison table on the following slide

Alternative Emission/Air Quality Comparison (ref. previous slide)

13

Piti and Aggreko characteristic emissions

	Piti 8&9		Aggreko
	High Sulfur RFO	ULSD	
SO ₂ (tons/year)	832	0.61	0.93
NO _x (tons/year)	1489	1489	143 (1)
CO (tons/year)	62	16.8 (2)	167 (3)
VOC (tons/year)	33	16.5 (2)	21.73
PM (tons/year)	76	57	9.34 (4)
Total HAPS (tons/yr)	1.85 (5)	0.64 (5)	0.93 (5)
Power produced (k)	103,000,000	103,000,000	103,000,000

(1) Value based on original table scaled to 103 GWh.

This corresponds to about 75 ppm NO_x emission concentration, which appears rather unrealistic for this type of engine. With a more realistic 700 ppm result would be 1335 tons/year, roughly similar to Piti plant.

(2) With oxycat which is part of proposed ULSD conversion.

(3) Value based on original table scaled to 103 GWh.

Corresponds to about 150 ppm which is not compliant with US EPA guidelines

(4) Value based on original table scaled to 103 GWh. This corresponds to PM emission of approx. 15mg/Nm³, which appear rather optimistic.

(5) All values are based on original table scaled to 103 GWh.

(General) Resulting air quality will also depend on exhaust stack height and air dispersal efficiency.

Stack height on Aggreko units are with very limited release height, resulting in a higher ground level impact.

PITI RETIREMENT RESULTING COST SAVINGS

15

ULSD \$/BBL

\$85.00

Description:

PITI PLANT

AGGREKO

AGGREKO SCENARIO SAVINGS

ULSD Conversion Capital Investment:	\$	15,756,129	\$	-	\$	15,756,129
FULL OVERHAUL (25,000-30,000Hrs)			\$	15,000,000	\$	(15,000,000)
O&M Annual Cost:						
Non-Fuel	\$	3,685,667	\$	5,500,000	\$	(1,814,333)
ULSD Fuel	\$	13,298,491	\$	16,060,485	\$	(2,761,994)
MEC Annual Savings:					\$	(4,576,327)
15 Year Nominal Savings:					\$	(68,644,910)



ENERGY SUPPLY PARADIGM SHIFT CONCLUSION

16

Event	UKUDU	PITI	ESS	AGGREKO
UKUDU COMMISSIONING	↑ SYSTEM Reliability & Efficiency	↓ CAPACITY FACTOR 80% to 14%		Ownership Provides Operational Flexibility & Reliability at Reduced Costs
PITI SHIFTS FROM BASELOAD TO INTERMEDIATE ENERGY IN THE ECONOMIC MIX				
RENEWABLES THRU 2035		↓ PRODUCTION decreased	Shave Peaks & Reduce Reserve Margin	Small Size Works Well with Renewables
RETIREMENT OF PITI UNITS		↑ SAVINGS \$16M CapEx ↓ AIR EMISSIONS reduced		Limited Life Expectancy EPA Operating Hrs. Restrictions ↑ \$68M O&M (15 Yrs) ↑ \$15M Full Overhaul
PITI'S FUTURE ROLE AS AN INTERMEDIATE ENERGY PLANT IS NOT ECONOMICALLY FEASIBLE				

MEC's Comments-The conclusions are wrong:

- The calculated savings are dubious and does not take into account the 50 MW extra capacity Guam Piti offers. If the expansion of renewables or any other new projects are delayed for any reason, the result will be additional Aggreko units (with full capex and fee charges) and generation at 20% worse efficiency than Guam Piti.
- Compared to Guam Piti with its very high stack that ensure sufficient emission dispersal, the Aggreko units with small chimneys increase the emission ground level impact. Aggreko units worsen the air quality in the surrounding environment compared to Piti. This requires a detailed stack dispersal analysis to confirm this.

RECOMMENDATIONS

17

- CCU Approve and GPA to Petition PUC:
 - Retirement of PITI Plant after New Ukudu Plant is Commissioned
 - Retain AGGREKO as Intermediate Load Plant
 - Procure 60 MW of Utility Scale Full Load Shifting Renewables.
- GPA Request USEPA to Amend the Consent Decree Requirement to Convert PITI to ULSD by December 31, 2021 to Retirement of PITI after the Commissioning of Ukudu in Addition to Adding More Renewables into the System.
- With Approvals, Update Integrated Resource Plan to achieve a minimum of 50% Renewable Portfolio Standard by 2035

MEC's Recommendations:

Retaining Piti 8&9 plant as intermediary load plant is the best overall solution for Guam since:

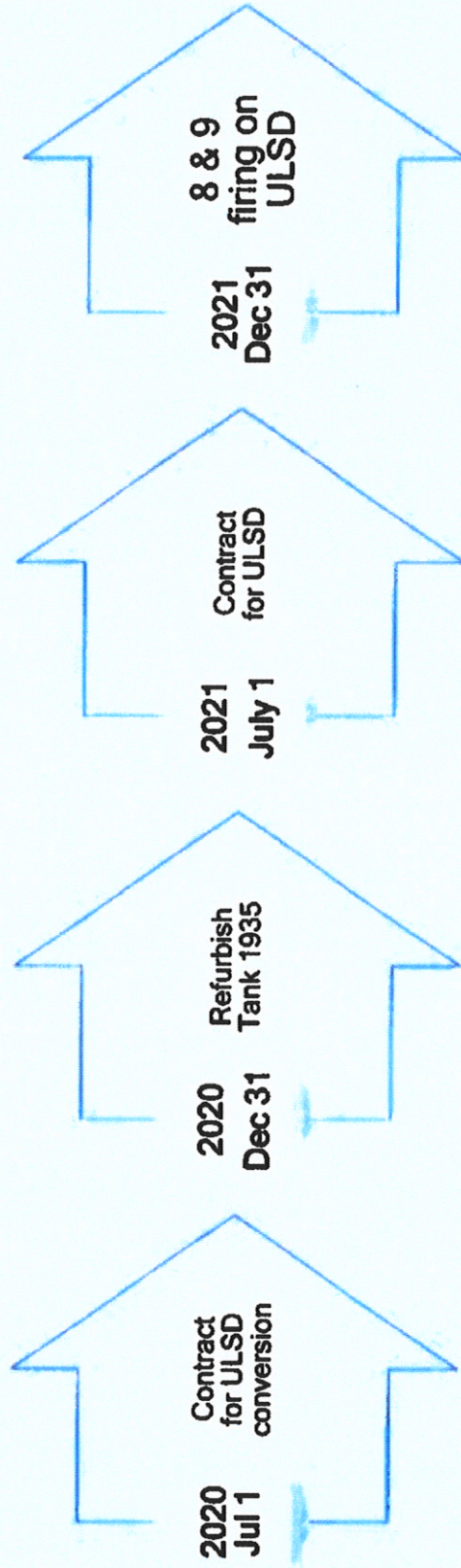
- Guam Piti after conversion complies with US EPA legislation
- It is the most financially attractive option
- It retains a higher capacity reserve in case of unforeseen delays in the capacity expansion of renewables and others at a very attractive thermal efficiency.

**PITI (MEC) 8 & 9
ULSD CONVERSION
(SUPPLEMENTAL)
Consent Decree Requirement**

June 23, 2020

PITI (MEC) 8 & 9 CONSENT DECREE REQUIREMENTS

19



AGGREKO COST AND OPERATING HOURS BREAKDOWN

20

Aggreko Cost Summary:

	FY 2019	FY 2023	FY 2023 Impact
Net kWh	97,171,000	103,000,000	
Capacity Charge	\$6,979,392	\$0	Goes Away; GPA Ownership Begins Jan 2021
Fixed O&M	\$2,227,560	\$2,227,560	
Emission Charge	\$285,000	\$0	Goes Away; GPA Ownership Begins Jan 2021
Rent to Own	\$1,800,000	\$0	Goes Away; GPA Ownership Begins Jan 2021
Sub-Total:	\$11,291,952	\$2,227,560	
Energy Conversion Charge @ \$4.4 / MWH	\$427,550	\$453,200	
Urea Charge @ \$5.8 / MWH	\$563,589	\$597,400	
Sub-Total Variable Cost	\$991,139	\$1,050,600	
Total Cost	\$12,283,091	\$3,278,160	FY 2023 O&M is \$3.28M
Add CIP including Overhaul of all units over 5 Years		\$2,221,840	Includes Overhaul of Units within 5 Years to last 10 years
All-in cost		\$5,500,000	

Summary of Unit Operating Hours:

Hours	Number of Units	Average Hours/Year	Total MW
< 12,000	13	2400	14.3
12,000 to 16,999	13	3400	14.3
17,000 to 21,999	6	4400	6.6
22,000 to 24,999	8	5000	8.8



FY 2020 PITI 8&9 COST

21

Costs Charged to Business Unit 55810-Piti 8&9											
Account	Description	October 2019	November 2019	December 2019	January 2020	February 2020	March 2020	April 2020	May 2020	Total	Projected Remaining Months
55810 Piti 8 & 9											
555004.43	Other Contractual	\$ 762,320	\$ 770,140	\$ 755,360	\$ 776,295	\$ 744,385	\$ 763,472	\$ 764,380	\$ 746,422	\$ 6,082,773	\$ 2,027,591
555004.38	Water				\$ 222,018	\$ 47,529	\$ 1,154	\$ 135,302	\$ 52,950	\$ 458,953	\$ 152,984
165000.8	Recapitalization fee-Projects	\$ 305,265	\$ 305,265	\$ 305,265	\$ 305,265	\$ 305,265	\$ 305,265	\$ 305,265	\$ 305,265	\$ 2,442,120	\$ 814,040
Sub Total											
		\$ 1,067,585	\$ 1,075,405	\$ 1,060,625	\$ 1,303,577	\$ 1,097,179	\$ 1,069,891	\$ 1,204,947	\$ 1,104,637	\$ 8,983,846	\$ 2,994,615
Paid by GPA											
Property Insurance											
Cylinder Oil		\$ 162,137	\$ 162,112	\$ 155,034	\$ 228,805	\$ 182,331	\$ -	\$ 224,466	\$ 187,205	\$ 1,302,090	\$ 434,030
Total											
		\$ 1,229,722	\$ 1,237,517	\$ 1,215,659	\$ 1,532,382	\$ 1,279,510	\$ 1,069,891	\$ 1,429,413	\$ 1,291,842	\$ 10,940,969	\$ 3,428,645
										\$ 11,978,461	\$ 14,368,715

O&M COST CALCULATION DATA PROVIDED BY MEC

22

PITI 8&9 ULSD PROJECTED EXPENSES

Total KW Capacity	42,000	79,600	84,000
Annual Capacity Factor	28%	14%	80%
Number of Units	1 Unit	2 Units	2 Units
Annual Gross Generation @ 28% Cap. Factor	106,500,000	106,500,000	588,672,000
Less Station Load (Est. at 2.2% of Gross Cap.	2,343,000	2,343,000	12,950,784
Less Transformer Load (Est. at 1% of Gross Cap)	1,065,000	1,065,000	5,886,720
Annual Net Generation	103,092,000	103,092,000	569,834,496
Fixed O&M Fee (Existing ECA):			
FOMR (Fixed O&M Rate (KW/mo 1996 Dollars)	4.413	4.413	4.413
Contracted Capacity	42,000	79,600	84,000
Availability Factor	1	1	1
GDP Current Quarter March-April 2020	113.043	113.043	113.043
GDP Base Quarter	73.276	73.276	73.276
Monthly Fixed O&M Fee (USD)	\$ 285,934	\$ 541,912	\$ 571,867
Annual Fixed O&M Fee (USD)	\$ 3,431,203	\$ 6,502,946	\$ 6,862,406
Variable O&M Fee (Existing ECA)			
VOMR Variable O&M Rate (KW/mo, 1996 Dollars)	0.0016	0.0016	0.0016
Energy (Actual Net Generation) per month	8,591,000	8,591,000	47,486,208
GDP Current Quarter March-April 2020	113.043	113.043	113.043
GDP Base Quarter	73.276	73.276	73.276
Monthly Variable O&M Fee	\$ 21,205	\$ 21,205	\$ 117,211
Annual Variable O&M Fee (USD)	\$ 254,464	\$ 254,464	\$ 1,406,535
Annual O&M Cost	\$ 3,685,667	\$ 6,757,411	\$ 8,268,941



PITI Unit Outages in Last 12 Months

23

Unit:	Planned (Days)	Unplanned (Days)	Total Outage (Days)	% Unavailable	# of Trip Off-Line
PITI 8 (44MW)	21	17	38	10.4%	8
PITI 9 (44MW)	31	29	60	16.4%	11

System Peak Demand Capability

24

Base Load Capacity:						
Description:	Quantity	MW	With Piti 8&9		Piti 8&9 Retired	
Ukudu Combustion Turbines	3	45	Total MW Capacity		Total MW Capacity	
Ukudu Steam Turbine	1	63	135		135	
MEC 8	1	44	63		63	
MEC 9	1	44	44		0	
Total Baseload Capacity	1	44	44		0	
			286		198	
Intermediate Capacity:						
Aggreko Diesels	38	1.1	40		40	
Diesels (Tenjo, Talofoto, Manengon)	10	4.4	44		44	
Total Intermediate			84		84	
Peaking / Emergency Capacity:						
Ukudu Standby Generators	26	2.5	65		65	
Dededo CT 1	1	20.0	20		20	
Dededo CT 2	1	20.0	20		20	
Macheche CT	1	20.0	20		20	
Yigo CT	1	20.0	20		20	
TEMES CT	1	40.0	40		40	
Total Emergency Generators			185		185	
Total Firm Capacity			555		467	
Largest Unit			63		63	
2nd Largest Unit			63		63	
Total Reserve Requirement:			126		126	
Peak Demand Capacity			429		341	
CY 2019 Peak Demand			255		255	
Phase III Load Shifting ESS -6 Hours			40		40	
Phase IV Load Shifting ESS -6 Hours			60		60	
New Peak Demand Capability			529		441	

Peak Demand Capacity of 341 MW can meet 4% growth for 10 years



REVISED ULSD CONVERSION COST

25

Description:		Amount
ULSD Conversion all-in price	\$	12,705,000
2 Spares of Oxidation Catalyst	\$	1,290,000
Spare Parts, Consumables	\$	28,000
Emulsifier (6-Month Supply)	\$	833,520
BWSC Withholding Tax	\$	201,600
Sub-Total	\$	15,058,120
Contingency (10%)	\$	1,505,812
Sub-Total	\$	16,563,932
MEC EPC Fee (10%)	\$	1,656,393
Sub-Total	\$	18,220,325
GRT 5% on Local Labor	\$	105,263
Total ULSD Conversion Contract Price	\$	18,325,588

Construction Period: 14.5 Months After NTP/Deposit subject to labor availability

REVISED AII - IN COST COMPARISON

26

Annual KWH Production: 103,165,000
 ULSD \$/BBL \$85.00

Description:	PITI PLANT	AGGREKO	AGGREKO SCENARIO SAVINGS
ULSD Conversion Capital Investment:	\$ 18,325,588	\$ -	\$ 18,325,588
Capitalized Maintenance Pending	\$ 8,750,000	\$ 11,109,200	\$ (2,359,200)
Investment Required:	\$ 27,075,588	\$ 11,109,200	\$ 15,966,388

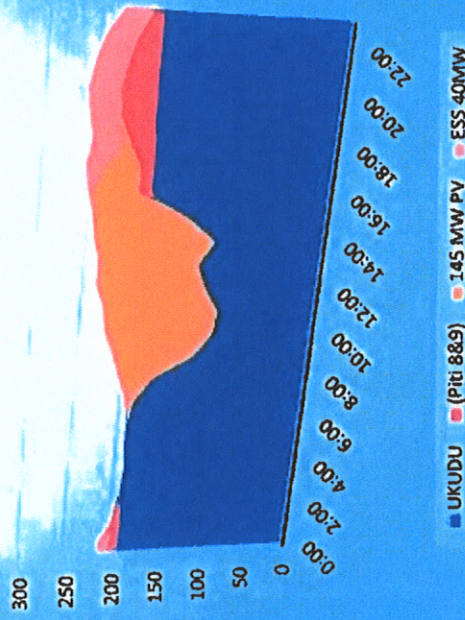
O&M Annual Cost:			AGGREKO SAVINGS
Non-Fuel	\$ 6,757,411	\$ 3,278,160	\$ 3,479,251
ULSD Fuel	\$ 13,298,491	\$ 16,702,905	\$ (3,404,414)
AGGREKO Annual Savings:			\$ 74,837
15 Year Nominal Savings			\$ 1,122,559

Future Energy Supply

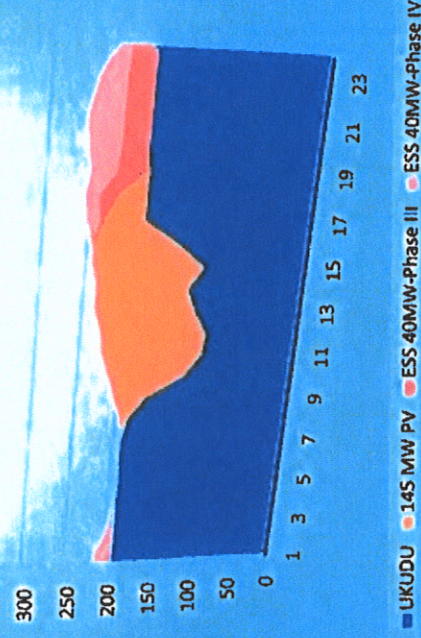
New combined cycle units and expanded renewable portfolio will supply over 75% of GPA energy supply

GPA is on track to achieve 25% to energy from renewables in 2023

CY 2023 Daily Plant Dispatch With Piti 8&9



CY 2023 Daily Plant Dispatch Piti 8&9 Retired and New Phase IV ESS



ENERGY SUPPLY PARADIGM SHIFT CONCLUSIONS

28

- New 198 MW Ukudu Plant Increases System Reliability and Efficiency
- Ukudu Plant Shifted PITI from Baseload to Intermediate Energy in Economic Dispatch Mix
- PITI Capacity Factor to Decrease from 80% to 14% when Ukudu is Commissioned
- 50% Renewables by 2035 Will Decrease PITI Production to Practically Nothing
- PITI Future Role as an Intermediate Energy Plant is not Economically Feasible
- Load Shifting Energy Storage Systems Will Shave Peaks and Eliminate Need for PITI
- Ownership of AGGREKO Provided Operational Flexibility and Reliability
- Retirement of PITI will Save Over \$20M in Capital Investments
- Retirement of PITI will Reduce Cost After 2024
- AGGREKO Plant Multi Units Works Well With Renewables by Providing System Inertia
- Ownership of AGGREKO Made Retirement of PITI Possible