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7/25/2018	7/25/2018	Consolidated Commission on Utilities	CCU meeting materials, minutes and resolutions related to / ratified at the CCU meeting of July 24, 2018.*	34-18-2134	ED

CCU #34-18-2134
Speaker Benjamin J.F. Cruz

JUL 25 2018
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Dear Gov. Calvo and Speaker Cruz,

Pursuant to P.L. 31-233 the Budget Act, attached are meeting materials, minutes and resolutions related to / ratified at the CCU meeting of July 24, 2018. These files are also posted on the CCU website, guamccu.org.

Respectfully,
B. Lou Sablan
Board Secretary

2018 JUL 25 PM 3:59

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Resolution 40-FY2018 Approval for Rte 4 Relief Sewer Line Rehab and Replaceme...
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CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671) 648-3002 | guamccu.org

Regular Board Meeting
CCU Conference Room, Gloria B. Nelson Public Service Building
5:30 p.m., July 24, 2018

AGENDA

1. CALL TO ORDER

2. APPROVAL OF MINUTES

3. COMMUNICATIONS
   - 3.1 Public Comments (2 min. per person)

4. GPA
   - 4.1 Old Business
   - 4.1.1 Generation Financing
   - 4.2 New Business
   - 4.2.1 GM Report
   - 4.2.2 Financials
   - 4.2.3 Resolution 2018-014 /GWA Resolution 38-FY2018 IT Policy Initiatives
   - 4.2.4 Resolution 2018-015 Multi-step Bid BOT Specs for New 120-180MW Generation Capacity

5. GWA
   - 5.1 New Business
   - 5.1.1 GM Report
   - 5.1.2 Financials
   - 5.1.3 Resolution 38-FY2018 / GPA Resolution 2018-014 IT Policy Initiatives
   - 5.1.4 Resolution 39-FY2018 Creation of Utility Laboratory Technician Series of Positions
   - 5.1.5 Resolution 40-FY2018 Contract Approval Route 4 Relief Sewer Line Rehabilitation & Replacement Proj
   - 5.1.6 Resolution 41-FY2018 Relative to GovGuam Claim No. 2017-015.

6. ANNOUNCEMENTS
   - 6.1 Next CCU Meetings: GWA Work Session: 8/21; GPA Work Session 8/23; CCU Meeting 8/28

7. EXECUTIVE SESSION
   - 7.1 Personnel Matter
   - 7.2 Litigation Matter

8. ADJOURNMENT

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671) 648-3002 | guamccu.org

Regular Board Meeting
CCU Conference Room, Gloria B. Nelson Public Service Building
5:30 p.m., June 6, 2018

MINUTES

1. CALL TO ORDER

The Chairman called the CCU regular meeting of May 22, 2018 to order at 5:33 p.m. He said all five (5) Commissioners were present. Others in attendance include:

Commissioners:

Joseph T. Duenas	CCU Chairman
Francis Santos	CCU Vice Chairman
George Bamba	CCU Secretary
Judith P. Guthertz	CCU Treasurer
Simon A. Sanchez	CCU Member

Executive Mgmt.:

John Benavente	GM / GPA
Miguel Bordallo	GM / GWA
Melinda Mafnas	AGMO / GPA
John Cruz	AGMET / GPA
Tricee Limtiaco	AGMA / GPA
John Kim	CFO / GPA
Gilda Mafnas	CFO (A) / GPA
Graham Botha	Staff Attorney / GPA
Kelly Clark	Staff Attorney / GWA

Management & Staff:

Paul Kemp	AGM Compliance & Safety / GWA
Tom Cruz	Chief Engineer / GWA
Cora Montellano	Asst. CFO / GPA
Dave Fletcher	GWA
Art Perez	Communications / GPA
Patti Diego	Communications / GPA
Vincent Pangelinan	GWA
Frankie Meno	GWA
Heidi Ballendorf	Communications / GWA
Rick Peredo	IT / GPA
Ann Borja	Mgmt. Analyst / GWA Ex. Office
Lou Sablan	Board Secretary / CCU

Guest:

John S. Aguon	Adztech-GCA
Angela Perez	AM Insurance
Annmarie Muna	AM Insurance
Charlene Calvo	IPE
Dan Del Priore	GFT
Fred Horecky	PUC

2. APPROVAL OF MINUTES

The Minutes of May 22, 2018 was presented for approval.

Comm. Bamba motioned to approve the Minutes subject to verification and written correction; second by Comm. Guthertz. There was no further discussion or objection and the motion passed.

3. COMMUNICATIONS

3.1 Public Comments - none

4. NEW BUSINESS

4.1 GWA

4.1.1 GM Report

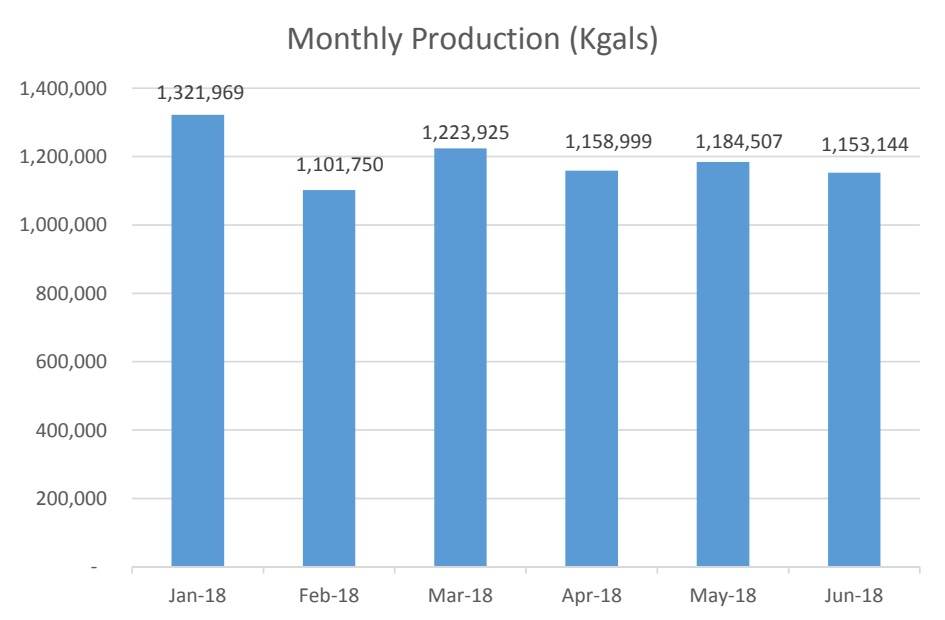
There was nothing new to report from the report given at the GWA work session. Some highlights are noted below. A full set of the GM Report is available upon request:

Operations Update

Production

Monthly Production Summary - May 2018					
Deep Wells				35.2	MGD
	Active wells =	95	of 120		
	Avg days in operation =	31.00	days		
	Total Production =	1,089,902	Kgals		
Springs				0.00	MGD
	Avg days in operation =	0	days	*placed on standby	
	Total Production =	0	Kgals		
Ugum Surface Water Plant				2.0	MGD
	Avg days in operation =	31	days		
	Total Production =	61,545	Kgals		
Tumon Maui Well				1.07	MGD
	Avg days in operation =	31	days		
	Total Production =	33,060	Kgals		
		1,184,507	Kgals	38.2	MGD

Monthly Production Summary - June 2018					
Deep Wells				35.4	MGD
	Active wells =	94	of 120		
	Avg days in operation =	30.00	days		
	Total Production =	1,062,758	Kgals		
Springs				0.00	MGD
	Avg days in operation =	0	days	*placed on standby	
	Total Production =	0	Kgals		
Ugum Surface Water Plant				1.9	MGD
	Avg days in operation =	30	days		
	Total Production =	58,373	Kgals		
Tumon Maui Well				1.03	MGD
	Avg days in operation =	30	days		
	Total Production =	32,013	Kgals		
		1,153,144	Kgals	38.4	MGD



Distribution

Monthly Distribution Summary - May 2018					
Water Booster Pump Stations					
	District	No. of Stations	Total Pumps	Pumps Operating	% Operationa
	Northern	11	21	20	95.2%
	Central	7	15	13	86.7%
	Southern	7	15	14	93.3%
		25	51	47	92.2%

Monthly Distribution Summary - June 2018					
Water Booster Pump Stations					
	District	No. of Stations	Total Pumps	Pumps Operating	% Operational
	Northern	11	21	20	95.2%
	Central	7	15	13	86.7%
	Southern	7	15	15	100.0%
		25	51	48	94.1%

Wastewater Collections

Monthly Collections Summary - May 2018					
Wastewater Pump Stations					
	District	No. of Stations	Total Pumps	Pumps Operating	% Operational
	Northern	22	52	45	86.5%
	Central	29	63	54	85.7%
	Southern	27	54	43	79.6%
		78	169	142	84.0%

Monthly Collections Summary - June 2018					
Wastewater Pump Stations					
	District	No. of Stations	Total Pumps	Pumps Operating	% Operational
	Northern	22	52	44	84.6%
	Central	29	63	45	71.4%
	Southern	27	54	41	75.9%
		78	169	130	76.9%

Wastewater Treatment

Monthly Wastewater Treatment Summary - May 2018				
WW Treatment Plants - Flows				
	Facility	**Avg. Daily Flows**	**Sludge (lbs)**	**Sludge Disp. ($)**
	Hagatna	4.93	583,080	$ 52,477
	Northern	5.32	786,700	$ 70,803
	Agat	0.63		
	Baza	0.25		
	Umatac	0.30		
	Inarajan	0.07		
		11.50	1,369,780	$ 123,280

Monthly Wastewater Treatment Summary - June 2018				
WW Treatment Plants - Flows				
	Facility	**Avg. Daily Flows**	**Sludge (lbs)**	**Sludge Disp. ($)**
	Hagatna	4.67	717,120	$ 64,541
	Northern	5.78	836,600	$ 75,294
	Agat	0.86		
	Baza	0.25		
	Umatac	0.30		
	Inarajan	0.06		
		11.92	1,553,720	$ 139,835

OPERATIONAL ISSUES

Production & Distribution

- Leak repair
  - Crews maintaining performance - As of June 30th, there were less than 40 pending repairs
    - 88% reduction from 2017-2018 Maximum of 283 pending
    - 80% reduction from 2018 Maximum of 179 pending
  - IFB for advanced remote leak detection services should be advertised next month
- WSCC –
  - SCADA FAT completed
  - Coordination of WSCC – PSCC layout on-going
  - SCADA equipment and installation requirements on-going
- Pump and motor inventories okay; additional orders for recent replacements are being made
- GWA Crane Repair –new cable installation pending; load testing completed.

Wastewater Collection & Treatment

- CCTV & Collections System:
  - Planning department assisting CCTV Crews to revise completed reports to meet appropriate industry standards
  - SSES and CCTV-based repairs to collection lines and SMHs are being conducted by Ops personnel
- Pump stations
- Facility maintenance efforts have been completed
- Minimum pump and motor inventory levels being established (similar to effort with deep-wells)
- Critical spares and replacements procurement is on-going

Treatment Plants

- Hagatna WWTP
  - Effluent pumps back up
  - Centrifuges: one operational, repairs to 2nd are almost complete.
- Northern WWTP
  - Both centrifuges back in operation
- Agat-Santa Rita WWTP
  - Solids process commissioning (GBTs, Centrifuges) to be completed in the next 2 weeks
  - With that, critical process facilities all operating and substantially complete
- U-M WWTP
  - Work on-going at the site
  - Significant delays have occurred because of USF&W / EPA permitting issues
- Baza Gardens
  - Work on-going for all 3 phases
  - Anticipated completion is now Sep 30th
  - Delay letter has been sent to USEP

Marbo (Andy-South) Wells – Status

- Involuntary reversion appears imminent; GWA Counsel transmitted draft easement documents to GSA for consideration with DoD
- No updates - Waiting on response from GSA

One Guam Update

- Santa Rosa Tank:
  - GWA and DOD are finalizing the design of the Intertie. All the property maps were completed and submitted to DOD.
  - Once the maps are completed, the letter to General Cox will be finalized for the temporary easement.
  - The After-Action Report format is being reviewed.
  - The Standard Operation Procedure (SOP) and MOU are being reviewed by DOD.
- Agat-Santa Rita WWTP
  - Compensation for the Agat-Santa Rita easement is still under discussion. Waiting on Navy Real Estate
- Date Sharing MOU has been drafted – under review and comment
  - This MOU will outline the standards for GIS, hydraulic and other data to be shared between DOD and GWA.

OEA Grant Summary

- NDWWTP Upgrades
  - 60% design submittal scheduled for Sep 24th.
  - Sitework bid package to be issued Sep 12th
  - Vertical bid package planned for issuance Mar 2019

- Outfall Diffuser:
  - Re-bid package under review by GWA
  - To be advertised by end of July
  - Bids expected in September

- Sewer Line Interceptor Design-Build
  - Contract Award / NTP pending insurance requirements
  - Design and prep work is set to start
  - Construction start expected in January

- NGLA Observation wells – Design work completed
  - Bid package drawings and specs under review by GWA
  - Permitting issues being resolved and permits being obtained by PM/CM
  - Bid package to be issued once permits approved – expected in Mar 2019

NRW – Update

- Water Loss Control Program activities are on-going
  - Latest water audit results reviewed by Technical Consultant under EPA grant. Scope

- modifications being proposed for Consultant due to GWA's progress on refining audit results
- Production meter replacement program is under design for 65 well sites. Portable flow meter is being procured to calibrate existing meters.
- District Metering Areas are currently being developed for pilot project. Locations have been identified. Grant application was submitted for this pilot project
- DOI Grant application has been approved for training and equipment.

4.1.2 Financials

There was nothing new to add to financials as previously reported at the GPA Work Session. Some highlights are noted here. A full copy of the report is available upon request.

Base Rate Through May 31, 2018

$000	Monthly Budget Revenues	Actual Monthly Revenues	Variance		PY FY17	CY vs PY Variance	
October	$ 13,873	$ 13,625	$ (248)	↓	$ 13,702	$ (77)	↓
November	13,451	13827	$ 376	↑	13,622	$ 205	↑
December	13,599	13,968	$ 369	↑	13,695	$ 273	↑
January	13,114	13,534	$ 420	↑	13,220	$ 314	↑
February	12,422	12,522	$ 100	↑	12,454	$ 68	↑
March	13,534	13,776	$ 242	↑	14,123	$ (347)	↓
April	13,525	13,351	$ (174)	↓	13,224	$ 127	↑
May	14,568	14,011	$ (557)	↓	14,617	$ (606)	↓
June	14,386				13,722		
July	14,759				14,151		
August	14,183				14,244		
September	13,651				$ 13,874		
Total	$ 165,064	$ 108,614	$ 529		$ 164,649	$ (44)	



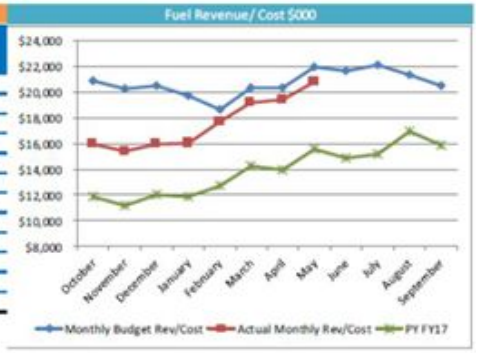
MWh Sales Through May 31, 2018

	Monthly Budget Sales	Actual Monthly Sales	Variance		PY FY17	CY vs PY Variance	
October	136,219	133,262	(2,957)	↓	133,620	(358)	↓
November	132,132	136,044	3,912	↑	133,235	2,809	↑
December	133,625	138,587	4,962	↑	134,634	3,953	↑
January	128,711	133,882	5,170	↑	131,461	2,421	↑
February	121,668	119,241	(2,426)	↓	117,617	1,624	↑
March	132,587	132,693	106	↑	135,131	(2,438)	↓
April	132,532	130,565	(1,967)	↓	132,587	(2,022)	↓
May	142,956	138,085	(4,871)	↓	143,013	(4,928)	↓
June	141,064				137,777		
July	144,404				139,227		
August	139,093				138,797		
September	133,658				132,993		
Total	1,618,650	1,062,360	1,930		1,610,093	1,061	



Fuel Revenue Through May 31, 2018

$000	Monthly Budget Rev/Cost	Actual Monthly Rev/Cost	Variance		PY FY17	CY vs PY Variance	
October	$ 20,928	$ 15,936	$ (4,992)	↓	$ 11,894	$ 4,042	↑
November	20,300	15,400	$ (4,899)	↓	11,215	$ 4,185	↑
December	20,529	16,007	$ (4,522)	↓	12,036	$ 3,971	↑
January	19,774	16,036	$ (3,738)	↓	11,867	$ 4,169	↑
February	18,692	17,763	$ (930)	↓	12,751	$ 5,012	↑
March	20,370	19,180	$ (1,190)	↓	14,248	$ 4,932	↑
April	20,361	19,441	(920)	↓	13,940	5,500	↑
May	21,963	20,854	(1,109)	↓	15,596	5,258	↑
June	21,672				14,859		
July	22,185				15,175		
August	21,369				16,947		
September	20,534				15,895		
Total	$ 248,677	$ 140,617	$ (22,300)		$ 166,425	$ 37,069	



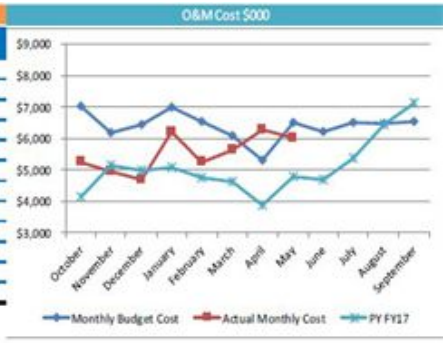
- Under recovery of LEAC - $10.6 million

Number of Customers Through May 31, 2018						
	2Q2017	3Q2017	4Q2017	1Q2018	2Q2018	3Q2018
Residential	43,718	43,902	43,991	43,898	44,065	44,086
Commercial	5,236	5,252	5,226	5,231	5,262	5,281
Government	1,077	1,071	1,073	1,076	1,086	1,088
Streetlights	800	824	823	908	1,005	1,059
Navy	1	1	1	1	1	1
	50,832	51,050	51,114	51,114	51,419	51,515



O&M Cost Through May 31, 2018

$000	Monthly Budget Cost	Actual Monthly Cost	Variance		PY FY17	CY vs PY Variance	
October	$ 7,040	5,239	1,801	↑	4,135	(1,103)	↓
November	6,182	4,941	1,240	↑	5,158	217	↑
December	6,428	4,694	1,735	↑	4,966	273	↑
January	7,001	6,204	797	↑	5,092	(1,112)	↓
February	6,522	5,252	1,270	↑	4,748	(504)	↓
March	6,091	5,638	453	↑	4,612	(1,026)	↓
April	5,320	6,269	(949)	↓	3,892	(2,378)	↓
May	6,495	6,005	491	↑	4,772	(1,233)	↓
June	6,221				4,702		
July	6,508				5,385		
August	6,462				6,445		
September	6,526				7,338		
Total	$ 76,796	$ 44,242	$ 6,838		$ 61,045	$ (6,866)	



- DSC greater than target of 1.75

Debt service coverage (DSC) calculation-indent	2013	2014	2015	2016	2017	YTD May 2018
Senior lien coverage	3.36	3.16	3.62	3.28	2.65	2.68
Aggregate debt service coverage	1.88	1.98	2.62	3.28	2.65	2.68
Debt service coverage (DSC) calculation-IPP as O&M						
Senior lien coverage	2.16	2.25	2.56	2.45	1.79	1.80
Aggregate debt service coverage	1.21	1.41	1.85	2.45	1.79	1.80

4.1.3 Resolution No. 34-FY2018/GPA Resolution No. 2018-13 Change Order for the GPWA SCADA System Contract to Include the Ugum Surface Water Treatment Plant SCADA integration Upgrade

If approved, this resolution will allow the upgrade / integration of the Ugum SWTP to the new GPWA SCADA System. The upgrades need to be performed first to integrate the Ugum SWTP SCADA system to the new GPWA SCADA System. The upgrades include major replacements and improvements on the Main Programmable Logic Controller, SCADA Server, SCADA client workstations, Profibus cabling and integration of the remote raw water pump station to the plant, software upgrades and motor control drives.

The upgrades shall correct the following issues, which does not include all issues described in the Siemens assessment report:

- The Ugum SCADA System consists of a SCADA Server with 2 client workstations but only the SCADA Server is operational. The SCADA Server is also running on Windows Server 2003 which is obsolete and no longer supported by Microsoft. Data trending is not archived properly resulting in loss of data. The Raw Water Pump Station, where the treatment process begins, is not visible in the control system. The Main PLC consists of a Read Access Memory (RAM) that will lose the program and all stored information in event of a momentary power loss and failure of the backup batteries which can cause the plant to shut down. The backwash for Cell #1 is not working properly; the cause has not been found.

- The Ugum SWTP is the major water source to the villages of Talofofo, Malojloj, Inarajan, Merizo and Umatac. The change order is necessary and urgent to ensure continual operation of the plant to deliver reliable water service to these areas. SCADA integration is necessary to allow the operations of Ugum SWTP to be visible to GWA Systems Control Center and key Water personnel to better coordinate and manage the water operations. Additionally, the change order is necessary to address the Ugum SWTP's cyber security vulnerabilities that have been identified in the Ernest and Young's vulnerability and cyber security assessment.

The total amount of the change order proposal is Six Hundred Eighty-Seven Thousand Five Hundred Six Dollars and Twenty-Five Cents ($687,506.25). The funding will come from 2016 CIP funds. It will take about 126 calendar days to complete the project.

Comm. Bamba motioned to approve GWA Resolution 34-FY2018 / GPA Resolution 2018-13 second by Comm. Santos. There was no further discussion or objection and the motion passed.

4.1.4 Resolution No. 35-FY2018 MOU for the Renewal of the GWA / GFT Collective Bargaining Agreement

The objective is to renew the effectivity of the expiring Collective Bargaining Agreement between Guam Waterworks Authority (GWA) and its employees (represented by Guam Federation of Teachers Union or GFTU), in compliance to Guam's laws. Effective date is upon the approval of the Consolidated Commission on Utilities and signature by the General Manager.

In discussion it was mentioned this process is an annual review - GFT reviews and renews every year. Sixty-three (63) GWA employees are members of this union

Comm. Guthertz motioned to approve Resolution 35-FY2018 second by Comm. Bamba. There was no further discussion or objection and the motion passed.

4.1.5 Resolution No. 36-FY2018 Design Services for the Pressure Zone Realignment and Tank Repair/Replacement Contract

The design for the Pressure Zone Realignment and Tank Repair/Replacement project is based on work required to accomplish zone realignment and system improvements in the draft 2017 Water Resource Master Plan. Twenty (20) firms RFP picked up and five (5) firms submitted. GHD was recommended for the award.

The key elements of this project are divided into several tasks:

1. Pressure zone realignment
2. Zone metering
3. Hydraulic modeling
4. Tank repair/replacement/modification and site upgrades
5. Water audit and trial district metering areas
6. Limited construction management services for pressure zone construction work

This project is necessary in order for GWA to have a properly functioning water system, which includes proper pressure zoning, metering, working facilities (tanks, bps, and all other critical facilities).

The project encompasses the entire island. The pressure zone areas (22) include the following:

1	Yigo North	12	Harmon Industrial
2	Yigo South	13	Tumon/Tamuning/Hagatna North
3	Astumbo	14	Tumon/Tamuning/Hagatna Central
4	Route 15	15	Tiyan
5	Barrigada	16	Mangilao
6	Barrigada Subzone	17	Ordot/Sinajana
7	Hyundai	18	Pago Bay
8	Hyundai Subzone	19	Santa Ana Lower
9	Mangilao North	20	Santa Ana Upper
10	Mangilao Central	21	Chalan Palaun
11	Kaiser	22	Santa Rita

The tanks (10) include the following:

1	Umatac Subdivision	6	Agat No. 1
2	Windward Hills	7	Malojloj
3	Umatac No. 1	8	Upper Nimitz
4	Kaiser	9	Lower Nimitz
5	Pigua	10	Agat No. 2

The fee proposal from the A/E is for Two Million Five Hundred Thirty-Nine Thousand Nine Hundred Ninety-One Dollars ($2,539,991.00). With a ten percent (10%) contingency in the amount of Two Hundred Fifty-Three Thousand Nine Hundred Ninety-Nine Dollars and Ten Cents ($253,999.10) included, the total authorized funding requested is Two Million Seven Hundred Ninety-Three Thousand Nine Hundred Ninety Dollars and Ten Cents ($2,793,990.10). The funding source is multi-faceted: PW 09-04: Pressure Zone Realignment/Development 2005 Improvements, PW 09-10: Water Reservoir Internal/External Corrosion Rehabilitation Program, PW 09-11: Water System Reservoirs 2005 Improvements and PW 12-01: Water Audit Program and Water Loss Control Plan

GWA expects to complete all design within 18 months; however, project duration may extend depending on property issues or acquisition. The A/E is aware that the project may extend.

Comm. Bamba motioned to approve Resolution 36-FY2018 second by Comm. Guthertz, There was no further discussion or objection and the motion passed.

4.1.6 Resolution No. 37-FY2018 Approval of Expenditures for Security Services Contract in Excess of the General Manager's Authority

There is an ongoing need to maintain the existing security services at several GWA facilities including the GWA Upper Tumon Facility and the main building and inside the customer service area, the laboratory, customer parking lot, and warehouse and FMES areas.

The service will cost approximately Two Hundred Thirty Thousand Dollars ($230,000.00) per year based on previous expenditures and will be funded by revenue funds. The contract extends to the end of FY 2018 and a new procurement will be initiated and a contract will be in place prior to the expiration.

Comm. Bamba motioned to approve Resolution 37-FY2018 second by Comm. Guthertz. There was no further discussion or objection and the motion passed.

ACTION: GWA Master Plan - the Chairman asked GM Bordallo to give status update on public outreach to the CCU by email and to schedule Agat village on June 26

4.2 GPA

4.2.1 GM Report

4.2.1.1 Update

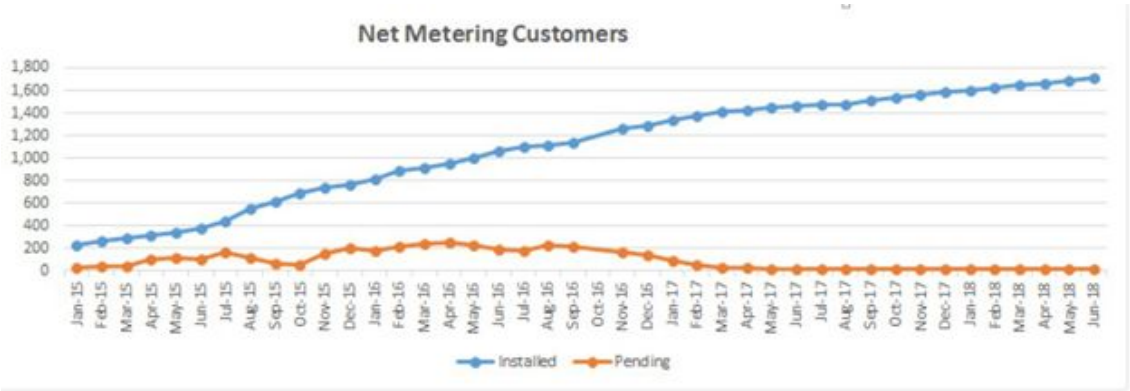
GM Benavente gave his usual GM update. Below are some highlights; a copy the entire report is available upon request.

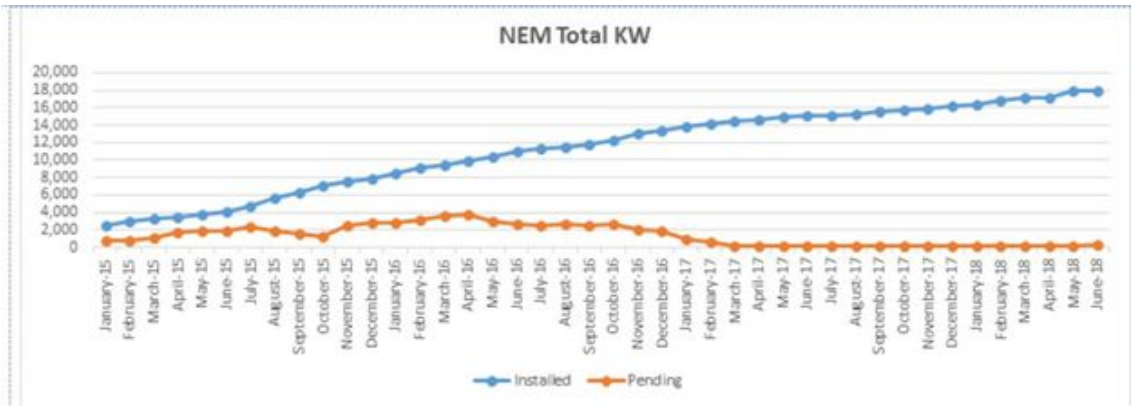
The following summarizes the expected generation capacity projection for July 2018. All base load units are expected to be in operation for the month. The Cabras steam units are currently limited to 50 MW each to minimize the potential for boiler tube leaks which is a common occurrence for them.

July 2018 Projected Capacity:	**360 MW**
July 2018 Projected Demand	**250 MW**
Projected Reserve Margin	**110 MW**

2. Net Metering Summary Ending June 2018:

Description:	Count	Kw	
Active	**1,710**	**16,849**	
Pending	20	129	
Totals:	1,730	16,978	
Service:	**Count**	**KW**	**Kw/Customer**
Residential	1,620	14,806	9.1
Others	90	2,043	22.7
Total:	1,710	16,849	9.9
% Residential	**94.7%**	**87.9%**	
Estimated 12 Months Revenue Impact:	**$3,360,697**		





3. Demand Side Management (DSM) Program Expenses Thru June 2018.

All Expenses – Fiscal Year

Description	FY16	FY17	FY18 as of June 30	Total to Date
Regular/OT Pay	$11,348.80	$22,256.00	$17,423.89	$51,028.69
Other Contractual	$28,278.50	$73,010.05	$38,992.25	$152,820.80
Bank Fees	$155.00	$1,032.06	$315.00	1,502.06
Paid Rebates-Split AC	$154,700.00	$557,275.00	$854,875.00	$1,566,850.00
Paid Rebates-Central AC	$3,400.00	$8,200.00	$1,300.00	$12,900.00
Paid Rebates-Washer/Dryer	$2,800.00	$7,425.00	$20,000.00	$30,225.00
Total Expenses	$200,682.30	$669,198.11	$932,906.14	$1,815,326.55

SUMMARY

DESCRIPTION	AMOUNT
Initial DSM Budget FY'16	$1,806,014.00
Interest Income as of June 18	$4,231.57
Total Expense	**$1,815,326.55**
Ending Balance as of June 18	$(5,080.98)
Addtl. Budget: Approved (FY'18)	$1,139,189.00
Total Ending Balance as of June 18:	**$1,134,108.02**

1. **Net Metering Customer Credit Recommendation:** GPA has schedule a public hearing for Wednesday July 18th at 5:30pm here at Fadian. The public hearing is for GPA to present its recommendation which it made to the CCU on the phased reduction of net metering credits. GPA will report to the CCU on July 24th the results of the public hearing and any changes it desires to make based on the public's input. Once the CCU approves GPA's recommendation, GPA could petition the PUC for their approval.

2. **PUC Dockets: The PUC approved the recommendation to hold LEAC at its current rate thru January 31, 2019.**

3. **New Power Plant Procurement:**

    - GPA completed the transaction for the Ukudu land on Friday July 13, 2018. GPA now owns the 60 acres.
    - Multi-Step Bid Invitation No. 034-18 qualified bidder list has been established and consist of seven (7) proponents. These proponents will be provided the bid specifications once CCU approves the package subject to PUC approval.

4. **Supervisory Control and Data Acquisition (SCADA) Commissioning:** The installation of the new SCADA system is now underway. The targeted commissioning date is October 2018. The SCAWA system is designed for Power, Water and Wastewater operations.

5. **Liberation Day Parade:** The parade is this weekend, Saturday July 21, 2018. GPWA is participating in the parade and will also have a food tent in Hagatna across the entrance to the Hagatna Waste Water treatment Plant. Please join us for this celebration.

6. **Apprentice Graduation:** The graduation ceremony for fifteen (15) apprentices occurred on Friday July 13, 2018 and received excellent media coverage. The next cycle of twenty (20) apprentices mostly in the T&D area is targeted to begin in October 2018. There are 314 qualified applicants vying for the program.

7. **Tropical Storm Maria:** The storm passed over Guam on July 5th, 2018. Storm blacked out the island for about half an hour. All customers were restored within two days. The estimated damage is about $234K.

8. **Senator Nelson Informational Hearing:** GPA provided an informational hearing to Senator Nelson on July 12, 2018. The informational briefing focused on LEAC, New Power Plant, and System Status. The presentation is attached for your perusal.

9. **GMH Main Electrical Panel Maintenance:** GPA has completed its task of conducting preventive maintenance on the GMH electrical panels. The maintenance was done between 6am to 2pm this past Sunday, July 15, 2018. GMH operated on standby generator power during the outage and there was no interruption of power to GMH. GPA has now completed its work with GMH. GPA is preparing a standard operating procedure for GMH for use in the event of an emergency. Please see the attached presentation of the work done.

10. **Key Performance Indicators –** the GM provided graphs not included here but available upon request.

4.2.1.2 Net Metering Credits

The GM presented managements proposal relative to the Net Metering issue. The presentation highlighted different factors that directly and indirectly influenced management's recommendation and included an overview of net metering policies in various states in the country that I've included here.

There are Thirty Eight (38) States, Washington D.C., and Four (4) Territories Offer Net Metering and utilities in two additional states (Idaho and Texas that adopted Net Metering (Full Retail Credit). Arizona, Georgia, Hawaii, Indiana, Maine and Mississippi have compensation other than net metering. The Value of Solar (VOS) is an alternative to net metering. Customers buy from the grid at retail rate and sell to the grid at an established VOS rate. Only Minnesota and Austin Energy (Texas) has adopted a VOS rate.

Guam's NEM Program was mandated in 2004. Guam has been crediting NEM customers full retail rate over the past 13 years. Excess credit carried over or paid out annually at full retail rate.
PUC to evaluate program and credits provided when GPA has 1,000 NEM Customers which occurred in June 2016.
As of April 2018, GPA has 1,658 NEM Customers (94.8% Residential), with 17,218 KW of capacity. The revenue impact on non-NEM ratepayers is estimated at $3.1M annually. CCU/GPA conducted its first public hearing on NEM in August 2016 to gather input from stakeholders in order to prepare its filing to the PUC for changes in rate credits in order to achieve parity amongst all ratepayers. A total of five (5) other public meetings were held since to continue to discuss and gather input from stakeholders.

Sone key points from the Public Meetings:

- The B&V report provides all the gain to GPA and did not represent true value of solar
- NEM Owner wants to recover his investment. Asked for grandfathering until he does so. He said it will take 7 years to recover his $60K investment
- NEM not meant to be money making business but a fair exchange of trade energy…some customers making money from units sized beyond their needs
- The applicability of NEM program to 3rd party providers need to be clarified
- PV provider wants NEM program to continue up to 20% penetration similar to Hawaii
- PV provider wanted more time to provide a report on Value of Solar and bring to GPA for information. Report was conducted and presented by Clean Power Research on April 18, 2018
- Provider commented the NEM energy saves the utility cost on:
    - Maintenance cost for generations, poles, labor, lines, substations, transformers, etc.
    - Reduction of line losses because energy is near customers
    - Costs associated with fuel and fuel shipments
    - Helps GPA achieve energy portfolio reducing need for more renewable projects
    - Savings to environment; lessens carbon foot print

- Provider-GPA should consider subsidies for home energy storage systems
- Provider-GPA should consider grandfathering NEM customers through a phased approach

The GM further presented various solar PV energy production characteristics to include what Utility scale PV output looks like, NEM customer profiles & variations, the correlation of PV NEM for different locations. After several studies and reviews, its managements opinion that solar PV on Guam without adequate energy storage capacity does not reduce peak demand and does not eliminate conventional capacity needs.

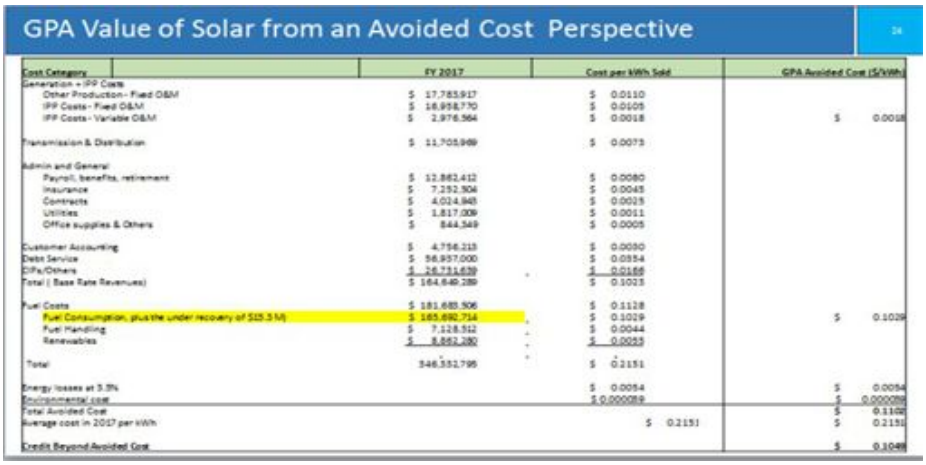
At the end of this segment of his presentation GM Benavente pointed out some policy issues and the value of the grid to NEM customers shared here:

Value of Solar (VOS) Policy Issues:

- Replacement for Net Metering Program
- Grandfathering existing registered NEM customers
  - Allow customers who own system to recover investment
  - Phase in VOS rates over an extended time period
- GPA files for PUC approval:
  - Reassessed VOS rates each LEAC for Avoided Energy Value
  - Reassessed VOS rates for other VOS components
    - Annually
    - Periodically over a set number of years
    - When GPA's generation mix changes

Value of the Grid to NEM Customers:

- NEM customers receive services from the grid including:
  - Use the grid to sell power (get credit at full retail rate for excess production)
  - Use the grid to energize their homes at night
  - Frequency regulation absorbed by grid for intermittencies
  - Reactive power supply
  - Voltage regulation
  - Stand-by power on overcast days when the sun does not shine
- Monthly fixed charge of $15 does not recover cost to serve from grid
  - Most of GPA fixed cost is recovered in the energy use (kWh) rate component which is typically zero for NEM customers



GPA Value of Solar from an Avoided Cost Perspective

Cost Category	FY 2017	Cost per kWh Sold	GPA Avoided Cost ($/kWh)
Generation + IPP Costs			
Other Production - Fixed O&M	$ 17,783,917	$ 0.0110	
IPP Costs - Fixed O&M	$ 16,958,770	$ 0.0105	
IPP Costs - Variable O&M	$ 2,976,564	$ 0.0018	$ 0.0018
Transmission & Distribution	$ 11,705,949	$ 0.0073	
Admin and General			
Payroll, benefits, retirement	$ 12,862,412	$ 0.0080	
Insurance	$ 7,252,304	$ 0.0045	
Contracts	$ 4,014,945	$ 0.0025	
Utilities	$ 1,817,009	$ 0.0011	
Office supplies & Others	$ 844,549	$ 0.0005	
Customer Accounting	$ 4,756,213	$ 0.0030	
Debt Service	$ 56,957,000	$ 0.0354	
CIPs/Others	$ 24,731,439	$ 0.0185	
Total (Base Rate Revenues)	$ 164,640,289	$ 0.1023	
Fuel Costs	$ 181,683,506	$ 0.1128	
Fuel Consumption, plus the under recovery of $15.3 M	$ 165,692,714	$ 0.1029	$ 0.1029
Fuel Handling	$ 7,128,512	$ 0.0044	
Renewables	$ 8,862,280	$ 0.0055	
Total	346,352,795	$ 0.2151	
Energy losses at 3.3%		$ 0.0054	$ 0.0054
Environmental cost		$ 0.000089	$ 0.000089
Total Avoided Cost			$ 0.1102
Average cost in 2017 per kWh		$ 0.2151	$ 0.2151
Credit Beyond Avoided Cost			$ 0.1049

Based on the illustration above the overpayment that GPA pays to NEM customers translates to $3M per year over and above the avoided cost based on what GPA currently pays NEM customers ($.21 vs. $.1049)

The GM also talked about energy storage. GPA will soon have new 40MW energy storage system that will be commissioned in Oct. 2019. GPA can provide energy storage at the cost illustrated below:

FY2019	
Total KWH Sales Projected:	1,610,093,011
ESS Annual Debt Service & O&M:	$ 2,829,348
$/kWh:	$0.0018

In summary Net Metering was established 13 years ago in 2004. Substantial Changes has occurred on GPA delivery cost and more changes expected by 2022. Customer Owned NEM System recovers its investment within 5 to 8 years from installation at GPA full Retail Rate Credit. Customer Owned NEM System recovers its investment within 8 to 16 years from installation at GPA LEAC Avoided Cost Rate Credit. It appears Zero Down Customers with 2.9% escalators will incur higher cost over the life of their 25 year contract

Managements recommendation includes:
1. CCU approve a GPA filing as shown herein at its July/August 2018 Meeting
2. Recommend an implementation plan for billing NEM customers on net billing: Buy All/Sell All or similar billing models
3. GPA files with GPUC for adjustment of net metering credits from retail to avoided cost
4. For existing NEM Customers, implement a Grandfather phase-in approach over 5 to 8 years to the GPA avoided cost credit. Adjustments for LEAC, line loss and variable cost changes done annually.
5. For future NEM customers, credit set at GPA avoided cost

In discussion it was determined to have another NEM work session to present management's recommendation to the public allowing them an opportunity to ask clarifying questions.

ACTION: The Chairman asked GM Benavente to have a public meeting at beginning of July before the work sessions. He suggested to put a link to GPA's recommendation in all 44,000 customers billing statement in July and to have the recommendation in the website.

4.2.2 Financials

FYTD June 2018 Budget vs Actual ($000)				
Category	**Description**	**Budget FYTD18**	**Actual FYTD18**	**Variance**
Rate Based Revenues	Water	$53,474	$50,921	($2,552)
	Wastewater	29,896	29,557	(339)
	Total	83,370	80,479	(2,891)
Operations & Maintenance	Salaries & Benefits	18,012	14,849	(3,163)
	Power	9,522	10,931	1,409
	Water Purchases	6,490	6,811	321
	A&G	9,070	8,010	(1,061)
	Contractual	3,939	3,402	(537)
	Total	$63,392	$60,345	($3,047)

Key Financial Ratios ($000)

Category	FY18	FY17
Accounts Payable $$/Days	$4,342 / 46 days	$5,390 / 59 days
Accounts Receivable $$/Days	$15,848 / 59 days	$15,451 / 51 days
Days Cash On Hand	156 days	184 days
Annual Debt Service (Revenue Bonds)	$26,739	$24,563
Debt Service Coverage (Bond/PUC)	1.74 / 2.16	1.98 / 2.44

Debt as a Percent to Gross Revenue

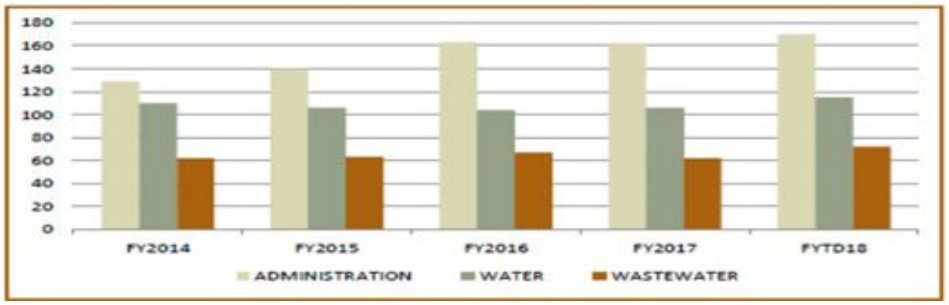


Top Ten Largest Water and Wastewater Customers – June 2018

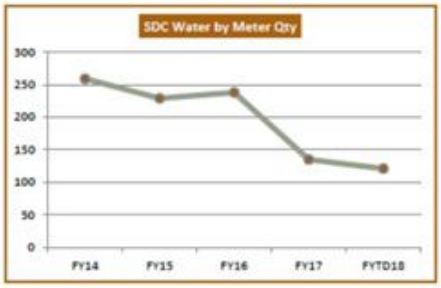
Water				Wastewater		
Customer Name	FYTD18 Revenues	% of Total		Customer Name	FYTD18 Revenues	% of Total
1) MDI GUAM CORPORATION/LEOPALACE	$985,874	1.94%	1)	AIR FORCE DOD	$2,700,025	9.12%
2) PACIFIC ISLANDS CLUB	909,167	1.79%	2)	NAVY DOD	1,755,393	5.93%
3) HOTELS OF THE MARIANAS INC	739,619	1.45%	3)	HOTELS OF THE MARIANAS INC	790,900	2.67%
4) HYATT	669,134	1.31%	4)	HYATT	716,318	2.42%
5) HOTEL NIKKO GUAM	631,022	1.24%	5)	HOTEL NIKKO GUAM	674,248	2.28%
6) GUAM REEF HOTEL INC	615,987	1.21%	6)	GUAM REEF HOTEL INC	659,228	2.23%
7) SHERATON LAGUNA GUAM RESORT	569,039	1.12%	7)	SHERATON LAGUNA GUAM RESORT	608,798	2.06%
8) MDI GUAM CORPORATION/WESTIN	494,833	0.97%	8)	MDI GUAM CORPORATION/WESTIN	529,088	1.79%
9) OUTRIGGER GUAM RESORT	478,263	0.94%	9)	OUTRIGGER GUAM RESORT	512,420	1.73%
10) GOODWIND DEVELOPMENT CORP	466,501	0.92%	10)	GOODWIND DEVELOPMENT CORP	497,524	1.68%
Total	$6,559,440	12.89%		Total	$9,443,943	31.91%

FTE by Major Division

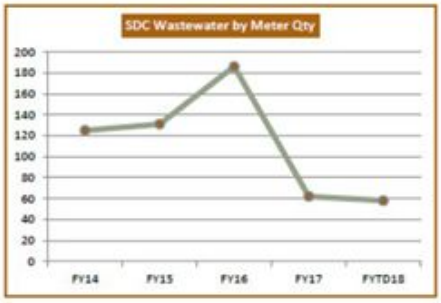
DIVISION	FY2014	FY2015	FY2016	FY2017	FYTD18
ADMINISTRATION	129	140	163	162	170
WATER	110	106	104	106	115
WASTEWATER	62	63	67	62	72
TOTAL NUMBER OF STAFF	301	309	334	330	357
Gross Salaries & Wages ($000)	15,585	17,590	16,008	16,963	12,488
Water Customers	41,702	41,274	41,858	42,181	42,863
Staff to Customers Ratio	0.72%	0.75%	0.80%	0.78%	0.83%



SDC Water & Wastewater (Meter Quantity)



Actual Meter Sizes (Inches)	FY 2014	FY 2015	FY 2016	FY 2017	FYTD18
5/8 x 3/4	248	220	239	129	113
1	5	5	7	2	1
1 1/2	1	1	1	1	3
2	3	2	4	2	3
3	1	-	1	-	-
4	-	1	-	-	1
6	-	-	-	1	-
8	1	-	-	-	-
10	-	-	-	-	-
Total SDC by Water	259	229	252	135	121



Actual Meter Sizes (Inches)	FY 2014	FY 2015	FY 2016	FY 2017	FYTD18
5/8 x 3/4	115	124	179	58	50
1	4	3	2	-	1
1 1/2	1	1	1	1	3
2	3	2	3	2	3
3	1	-	1	-	-
4	-	1	-	-	1
6	-	-	-	1	-
8	1	-	-	-	-
10	-	-	-	-	-
Total SDC by Wastewater	125	131	186	62	58

4.2.3 Relative to Generation Financing

Relative to the financing of the new 180MW power plant, the Chairman said the current policy as adopted is to build, operate and transfer (BOT) with an IPP and the GM is moving forward with this concept in the bid specs so the Commission cannot let this matter go unresolved much longer. At the July meeting the CCU will meet (with exception of Comm. Bamba, who has recused himself), and debate / resolve this matter at that time.

4.2.4 Resolution 2018-11 Levelized Energy Adjustment Clause (LEAC)

The objective of the Levelized Energy Adjustment Clause (LEAC) rate is to recover the cost of fuel and authorized fuel related expenses to the extent that it does not cause extraordinary hardships on GPA customers. In the upcoming LEAC period, we are proposing not to change the current LEAC rate of $0.154242/kWh, however if the price of fuel increased above the estimated $77.13 per barrel, GPA will petition PUC for a new LEAC rate effective November 1, 2018.

The projected under-recovery for the LEAC period with no change to the rate is $10.1M by the end of the LEAC period between August 1, 2018 to January 31, 2019. The funding source is the LEAC surcharge imposed on all ratepayers with the exception of the Navy. The Navy is billed on actual fuel cost basis each month.

Leaving the rate as is means GPA will delay some planned project. The reason for not increasing rate is to try to mitigate some of the impact. It is not a free ride and cannot go on forever and the public needs to understand this. Chairman Sanchez said historically under recovery has been greater than 10M. GPA can tolerate this for now and is willing to hold the rate status quo between now and January 31st.

Comm. Bamba motioned to approve Resolution 2018-22 second by Comm. Guthertz. There was no further discussion or objection and the motion passed unanimously.

4.2.5 Resolution 2018-12 Relative to Hyundai RFO Fuel Contract Extension

The Guam Power Authority's current contract for the Supply of Residual Fuel Oil No.6 is expiring in August 31, 2018. Solicitation for a new supplier is in progress and award of the contract is anticipated to be in September 2018.

An extension of the current contract for 3 months is necessary to allow the supplier for the new contract sufficient time for mobilization. Residual Fuel Oil No.6 will be supplied to the baseload plants - Cabras 1&2 and MEC 8&9. The 3-month contract extension shall commence on or September 01, 2018 and will expire on November 30, 2018. **It is** estimated to exceed $1.5M requiring prior approval from the PUC and will be funded by fuel revenue funds. The IFB solicitation is in progress. Award of contract is anticipated to be in August 2018.

Comm. Sanchez motioned to approve Resolution 2018-12 second by Comm. Guthertz. There was no further discussion or objection and the motion passed.

4.2.6 Resolution 2018-13/GWA Resolution No. 34-FY2018 Change Order for the GPWA SCADA System Contract to Include the Ugum Surface Water Treatment Plant SCADA integration Upgrade

Resolution 2018-13 / GWA Resolution 34-FY2018 was discussed and voted upon under GWA Section 4.1.3 of these Minutes. For the record, the vote was repeated accordingly:

Comm. Bamba motioned to approve GWA Resolution 34-FY2018 / GPA Resolution 2018-13 second by Comm. Santos. There was no further discussion or objection and the motion passed.

5. OLD BUSINESS - None

6. ANNOUNCEMENTS

6.1 Next CCU Meetings

The Chairman announced that the next meeting would be the GWA work session on July 17, GPA work session on July 19 and the regular monthly CCU meeting on July 24.

He also mentioned that Legal Counsel Botha has recommended an item for discussion in Executive Session and asked for a motion.

Comm. Bamba motioned to move the meeting to Executive Session second by Comm. Guthertz. There was no objection and the meeting moved to executive session.

The Chairman called for a 5-minute break. It was 6:58 p.m.

7. EXECUTIVE SESSION

Executive Session began at 7:06 p.m.

7.1 Personnel Matter

This matter was discussed.

8. ADJOURNMENT

With no further business to discuss, the meeting adjourned at 8:00 p.m.

\\s\\
bls
Attested:

_____	_____
JOSEPH T. DUENAS, Chairman	J. GEORGE BAMBA, Secretary

GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUAHAN
P.O.BOX 2977 • AGANA, GUAM U.S.A. 96932-2977

TO: **Consolidated Commission on Utilities**

FROM: **General Manager**

DATE: **July 24, 2018**

SUBJECT: **General Manager's Report**

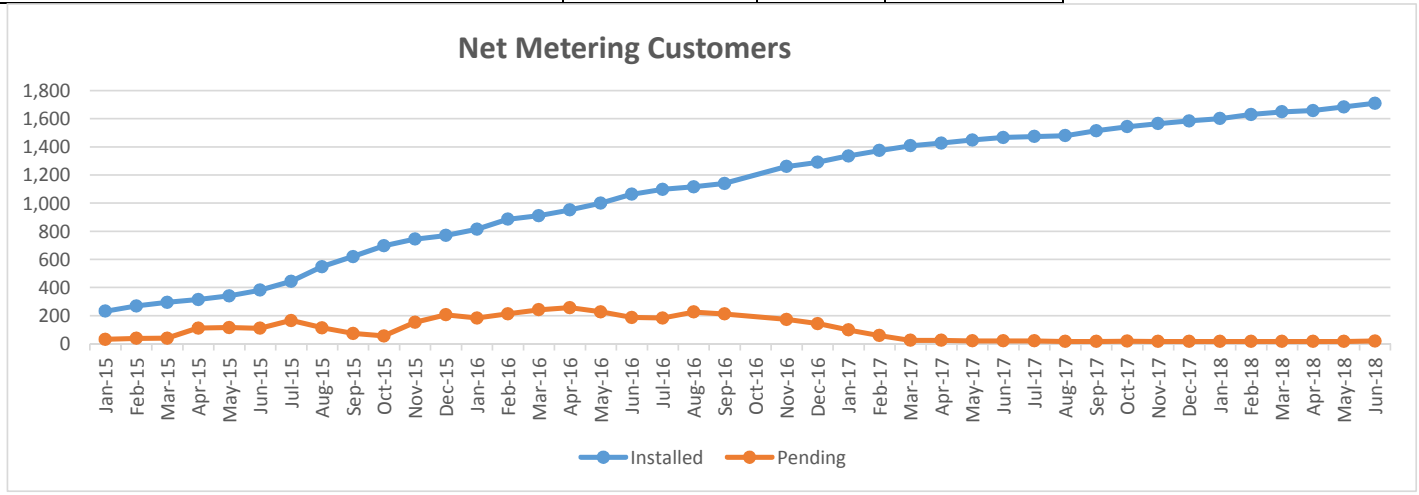
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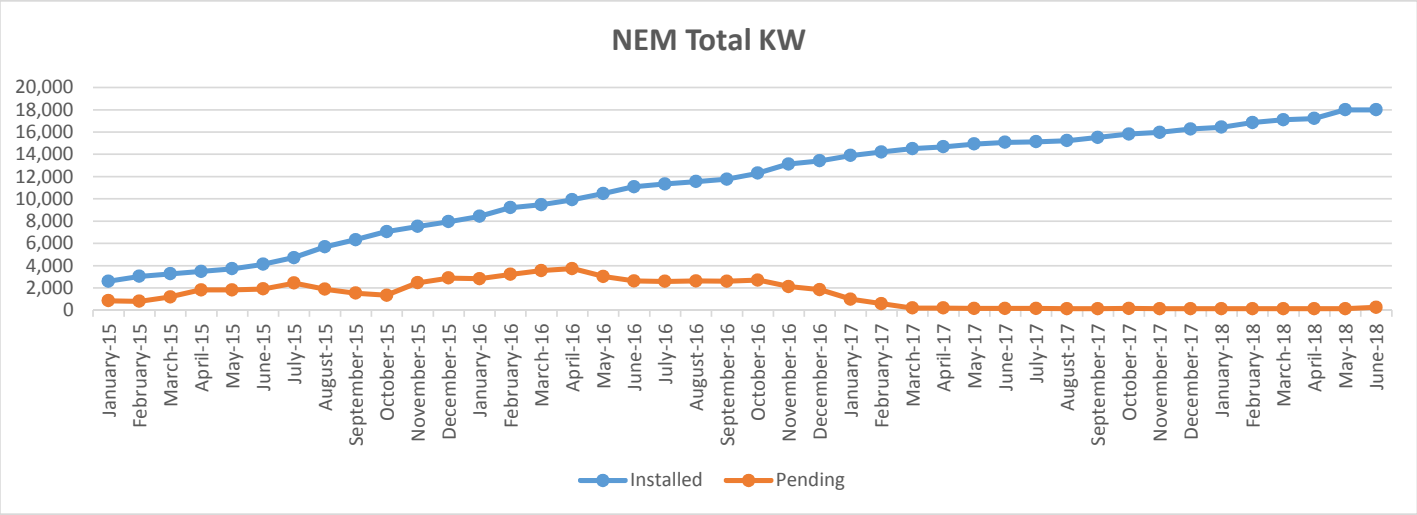
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July 2018 Projected Demand	**250 MW**
Projected Reserve Margin	**110 MW**

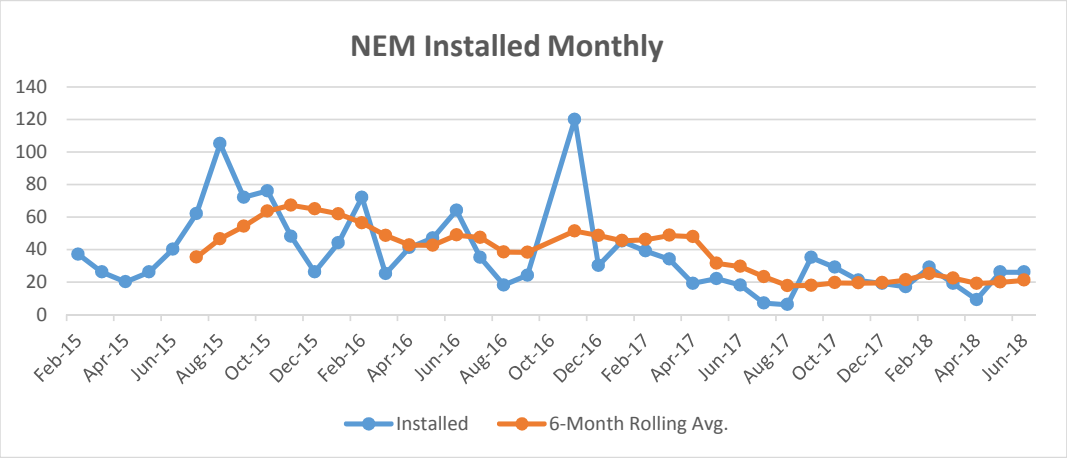
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% Residential	**94.7%**	**87.9%**	
Estimated 12 Months Revenue Impact:	**$3,360,697**		




NEM Total KW
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
January-15
February-15
March-15
April-15
May-15
June-15
July-15
August-15
September-15
October-15
November-15
December-15
January-16
February-16
March-16
April-16
May-16
June-16
July-16
August-16
September-16
October-16
November-16
December-16
January-17
February-17
March-17
April-17
May-17
June-17
July-17
August-17
September-17
October-17
November-17
December-17
January-18
February-18
March-18
April-18
May-18
June-18
Installed
Pending


NEM Installed Monthly
140
120
100
80
60
40
20
0
Feb-15
Apr-15
Jun-15
Aug-15
Oct-15
Dec-15
Feb-16
Apr-16
Jun-16
Aug-16
Oct-16
Dec-16
Feb-17
Apr-17
Jun-17
Aug-17
Oct-17
Dec-17
Feb-18
Apr-18
Jun-18
Installed
6-Month Rolling Avg.

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Paid Rebates-Split AC	$154,700.00	$557,275.00	$854,875.00	$1,566,850.00
Paid Rebates-Central AC	$3,400.00	$8,200.00	$1,300.00	$12,900.00
Paid Rebates-Washer/Dryer	$2,800.00	$7,425.00	$20,000.00	$30,225.00
Total Expenses	**$200,682.30**	**$669,198.11**	**$932,906.14**	**$1,815,326.55**

SUMMARY

DESCRIPTION	AMOUNT
Initial DSM Budget FY'16	$1,806,014.00
Interest Income as of June 18	$4,231.57
Total Expense	**$1,815,326.55**
Ending Balance as of June 18	$(5,080.98)
Addtl. Budget: Approved (FY'18)	$1,139,189.00
Total Ending Balance as of June 18:	**$1,134,108.02**

4. **Net Metering Customer Credit Recommendation:** GPA scheduled a public hearing on Wednesday July 18th at 5:30pm here at Fadian. The public hearing was for GPA to present its recommendation which it made to the CCU on the phased reduction of net metering credits. GPA will report to the CCU the results of the public hearing and any changes it desires to make based on the public's input. Once the CCU approves GPA's recommendation, GPA could petition the PUC for their approval.

5. **PUC Dockets: The PUC approved the recommendation to hold LEAC at its current rate thru January 31, 2019.**

6. **New Power Plant Procurement:**

   - GPA completed the transaction for the Ukudu land on Friday July 13, 2018. GPA now owns the 60 acres.
   - Multi-Step Bid Invitation No. 034-18 qualified bidder list has been established and consist of seven (7) proponents. These proponents will be provided the bid specifications once CCU approves the package subject to PUC approval.

7. **Supervisory Control and Data Acquisition (SCADA) Commissioning:** The installation of the new SCADA system is now underway. The targeted commissioning date is October 2018. The SCADA system is designed for Power, Water and Wastewater operations.

8. **Liberation Day Parade:** The parade was held this past weekend, Saturday July 21, 2018. GPWA participated in the parade and we also had a food tent. The celebration was a success and our GPWA float placed 3rd under the Government of Guam category.

9. **Apprentice Graduation:** The graduation ceremony for fifteen (15) apprentices occurred on Friday July 13, 2018 and received excellent media coverage. The next cycle of twenty (20) apprentices mostly in the T&D area is targeted to begin in October 2018. There are 314 qualified applicants vying for the program.

10. **Tropical Storm Maria:** The storm passed over Guam on July 5th, 2018. Storm blacked out the island for about half an hour. All customers were restored within two days. The estimated damage is about $234K.

11. **Senator Nelson Informational Hearing:** GPA provided an informational hearing to Senator Nelson on July 12, 2018. The informational briefing focused on LEAC, New Power Plant, and System Status. The presentation is attached for your perusal.

12. **GMH Main Electrical Panel Maintenance:** GPA has completed its task of conducting preventive maintenance on the GMH electrical panels. The maintenance was done between 6am to 2pm on Sunday, July 15, 2018. GMH operated on standby generator power during the outage and there was no interruption of power to GMH. GPA has now completed its work with GMH. GPA is preparing a standard operating procedure for GMH for use in the event of an emergency. Please see the attached presentation of the work done.

13. **Key Performance Indicators:** The following are updated indicators thru June 2018.

John M. Benavente, P.E.

Informational Briefing to Senator Telena Nelson

July 12, 2018

I Liheslaturan Guahan Public Hearing Room

Briefing Topics:

- Levelized Energy Adjustment Clause (LEAC)
- Status of Current Power Systems
- Update on the 180 MW Power Plant

LEAC

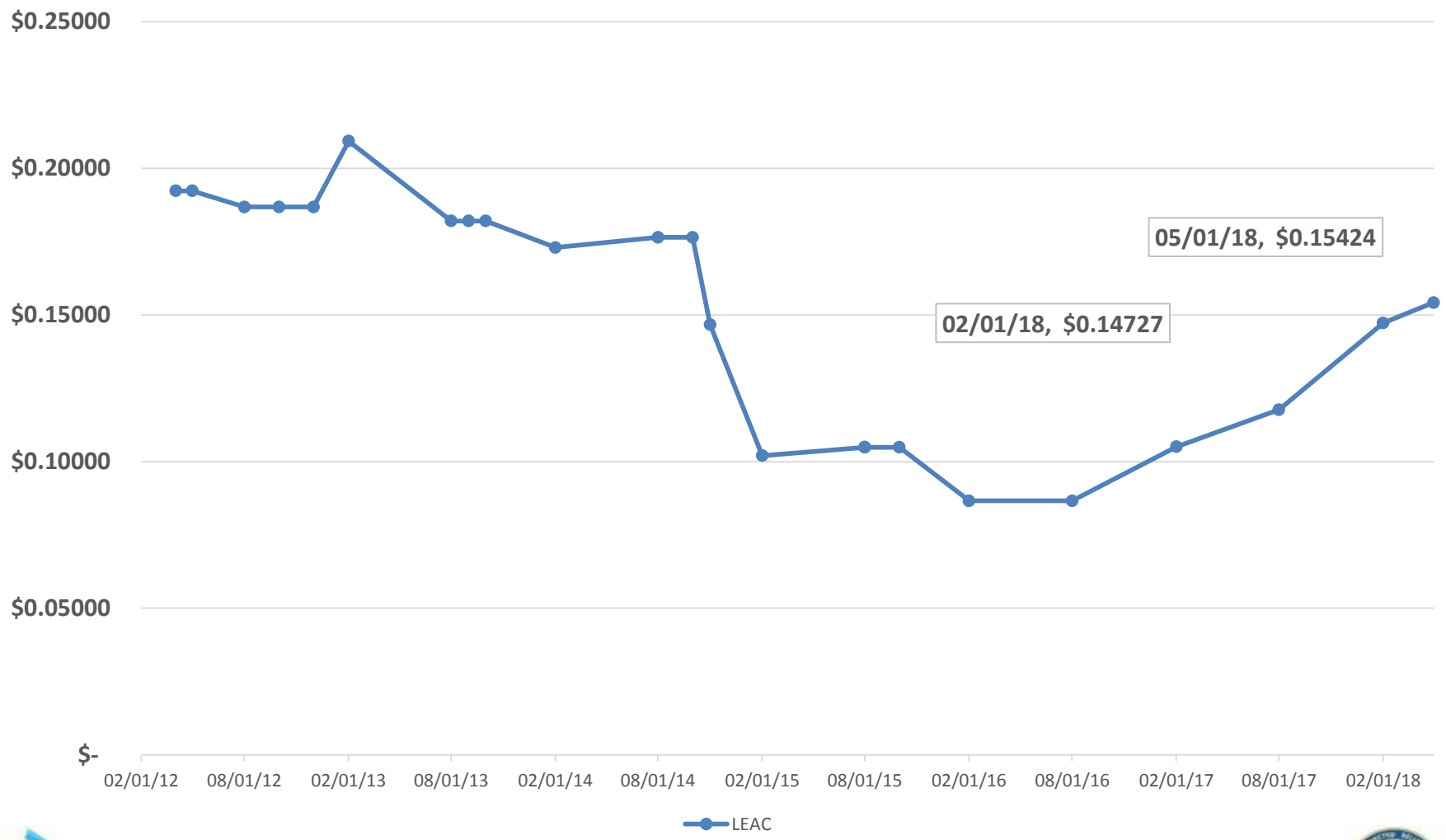
Power Rate Increases

- GPA base rate has been about the same since October 1, 2013.
- The decreases and increases in power rates have been due to adjustments to the Levelized Energy Adjustment Clause (LEAC) which are directly related to fuel oil expenses. The LEAC Clause is adjusted to be revenue neutral.

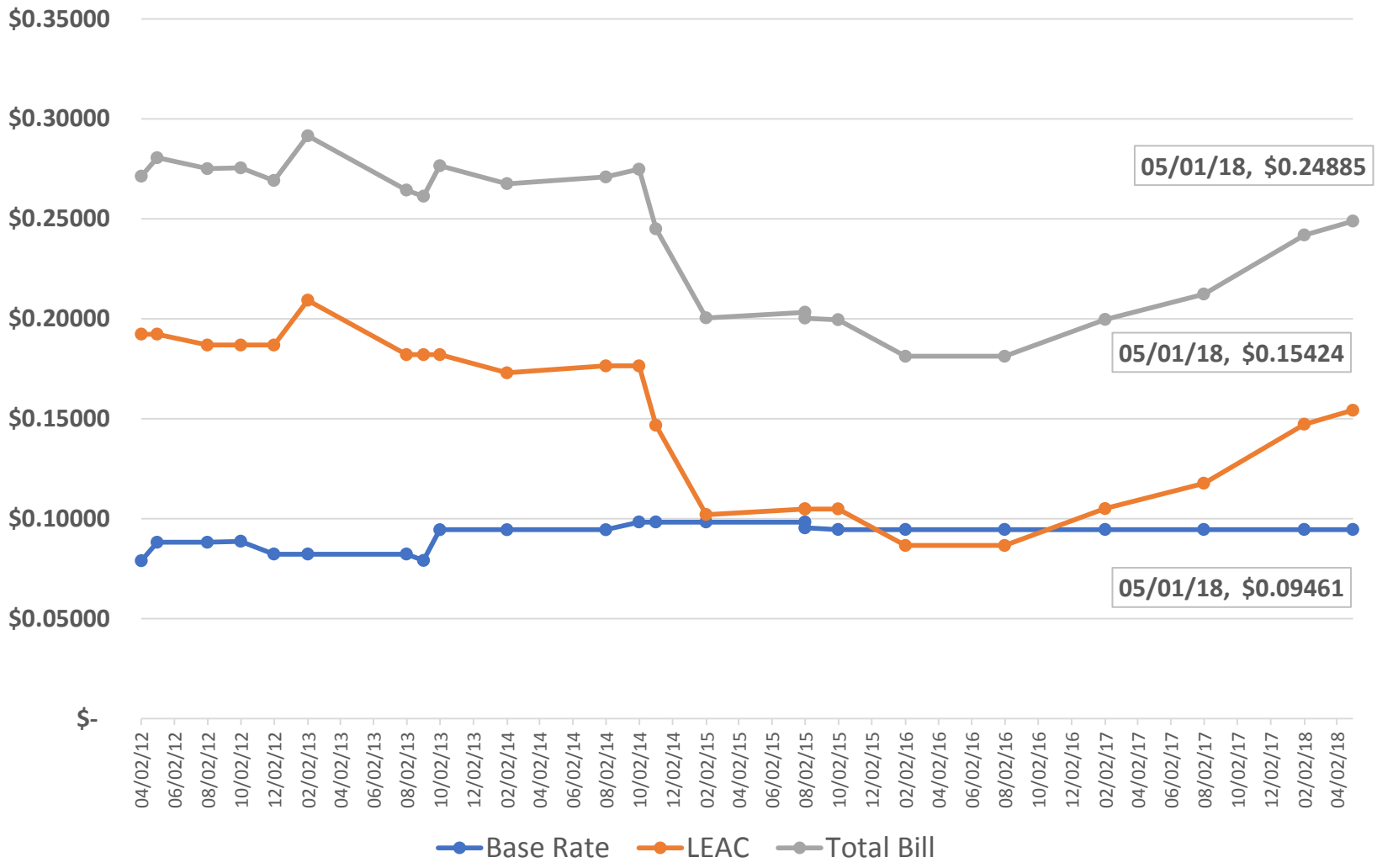
LEAC Update – GPA Fuel Purchases (Per Barrel)



Historical Residential LEAC Rate



Historical Residential Rate



Historical LEAC Over (Under) Recovery

LEAC Period From	LEAC Period To	Approved LEAC Rate	Actual Over (Under) Recovery	
4/1/2012	7/31/2012	$ 0.192310	$ (3,040,418)	
8/1/2012	1/31/2013	$ 0.186834	$ (2,494,052)	
2/1/2013	7/31/2013	$ 0.209271	$ 1,345,259	
8/1/2013	10/31/2013	$ 0.182054	$ 1,300,093	
2/1/2014	7/31/2014	$ 0.172986	$ (1,137,034)	
8/1/2014	10/31/2014	$ 0.176441	$ (4,646,872)	
11/1/2014	1/31/2015	$ 0.146666	$ 661,428	
2/1/2015	7/31/2015	$ 0.102054	$ 1,757,878	
8/1/2015	1/31/2016	$ 0.104871	$ (2,467,151)	
2/1/2016	7/31/2016	$ 0.086613	$ (2,668,603)	
8/1/2016	1/31/2017	$ 0.086613	$ (9,915,360)	
			$ (5,315,360)	a
2/1/2017	7/31/2017	$ 0.105051	$ (14,050,504)	
8/1/2017	01/31/1018	$ 0.117718	$ (16,775,982)	
2/1/2018	4/30/2018	$ 0.147266	$ (13,005,689)	
5/1/2018	7/31/2018	$ 0.154242	$ (9,460,187)	

a) Under-recovery Balance after applying the $4.6 million from Insurance.

LEAC Update – Scenario Model Runs

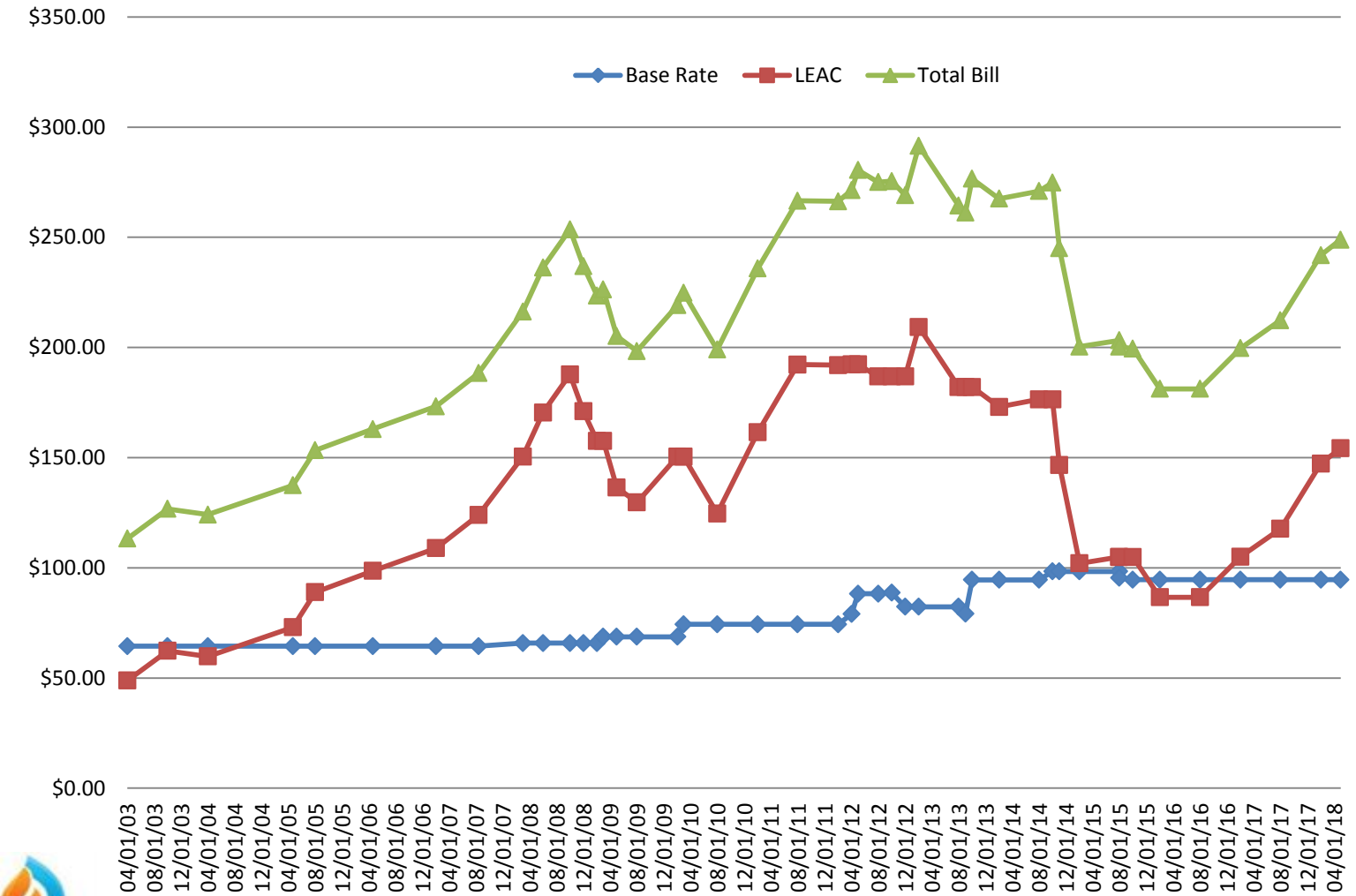
	Proposed Effective 8/01/2018	Scenario 1 Fuel Price (May 7-11, 2018)		
		No Change in Fuel Price	@ Zero Cost Recovery	@ Full Cost Recovery
1	Average Price per Bbl-RFO	$ 65.23	$ 74.59	$ 74.59
2	Average Price per Gal-Diesel	$ 9.86	$ 97.05	$ 97.05
3	Proposed LEAC Rate	**$ 0.154242**	**$ 0.154242**	**$ 0.165100**
4	Monthly Increase/(Decrease) - 1000 kWh	$ -	$ -	$ 10.86
5	% Increase/(Decrease) in LEAC	0.00%	0.00%	7.04%
6	% Increase/(Decrease) in Total Bill	0.00%	0.00%	4.36%
7	Fuel Cost (Over) Under Recovery at the end of the period	**($3.0M)**	**$7.1M**	$ -

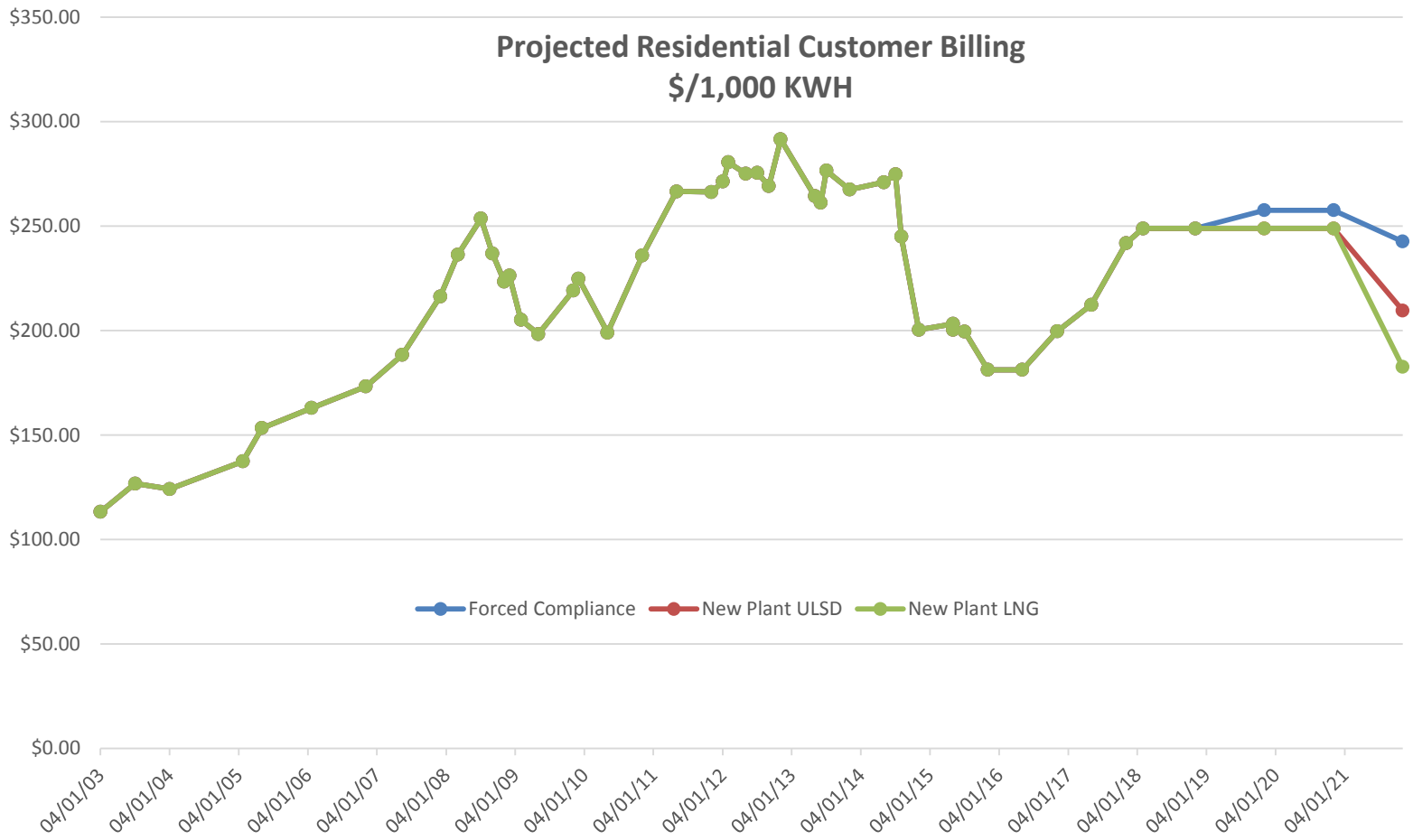
LEAC Update – Scenario Model Runs

Proposed Effective 8/01/2018

		Scenario 2 Fuel Price (May 24-June 1, 2018)		
		No Change in Fuel Price	@ Zero Cost Recovery	@ Full Cost Recovery
1	Average Price per Bbl-RFO	$ 65.23	$ 77.13	$ 77.13
2	Average Price per Gal-Diesel	$ 89.86	$ 98.54	$ 98.54
3	Proposed LEAC Rate	**$ 0.154242**	**$ 0.154242**	**$ 0.169464**
4	Monthly Increase/(Decrease) - 1000 kWh	$ -	$ -	$ 15.22
5	% Increase/(Decrease) in LEAC	0.00%	0.00%	9.87%
6	% Increase/(Decrease) in Total Bill	0.00%	0.00%	6.12%
7	Fuel Cost (Over) Under Recovery at the end of the period	**($3.0M)**	**$10.1M**	$ -

Historical Residential Bill
$/1,000 KWH




Projected Residential Customer Billing
$/1,000 KWH
$350.00
$300.00
$250.00
$200.00
$150.00
$100.00
$50.00
$0.00
Forced Compliance
New Plant ULSD
New Plant LNG
04/01/03
04/01/04
04/01/05
04/01/06
04/01/07
04/01/08
04/01/09
04/01/10
04/01/11
04/01/12
04/01/13
04/01/14
04/01/15
04/01/16
04/01/17
04/01/18
04/01/19
04/01/20
04/01/21

Summary

- GPA petitioned the PUC on Jun 15, 2018 to maintain the Fuel Recovery Factor at $.154242/kWh effective for the period from August 1, 2018 thru January 31. 2019. The PUC has approved the petition.
- The change reflects no increase in the LEAC factor and no increase for a residential customer utilizing an average of 1,000 kilowatt hours per month up to January 31, 2019.
- GPA could file an interim petition should fuel prices rise substantially above $77/Barrel.
- The highest monthly residential bill for the average 1,000 KWH consumer was about $291 in Feb 2013.
- Implementation of GPA near term (within 4 years) plans could drop the average bill as low as $182 per month with the completion of about 160 MW of utility scale renewable projects and the new power plant burning ULSD and natural gas.

Status of Current Power Systems

Generation System Update

Generation System Update for June 2018

The expected generation capacity situation for June 2018 is as follows:

- The peak demand for June is projected to be 255 MW.
- The system is now heading into the higher peak months of the summer. Last year, the peak demand was 261 MW on August 1st 2017. It is anticipated peak demand for CY 2018 may be 265 MW.

June 2018 Projected Capacity:	**385 MW**
June 2018 Projected Demand:	**255 MW**
Projected Reserve Margin:	**130 MW**

GPA Will Not Be Able To Meet Demand Without New Power Plant By 2021

This table is provided to show that without a new power plant, GPA will not be able to meet load growth by 2022. Furthermore, as shown, because we lack adequate base load capacity, GPA's fuel related cost to provide additional energy to new customers will continue to drive its total energy cost higher because energy production would come from costlier less efficient standby units. The lack of new units which could work with intermittent renewables will result in limited solar PV additions into the grid thereby limiting cost saving opportunities.

Summary of System Generating Capacity With No New Baseload					**With New 180MW**
Description (MW)	**FY 2015**	**FY2017**	**FY2018**	**FY2021**	**FY2022**
Baseload Capacity	299	208	208	208	268
Emergency/Standby Capacity	120	200	200	200	200
Total Capacity	**419**	**408**	**408**	**408**	**468**
Peak Demand (Customer Requirement)	249	261	266	283	283
Reserve Margin (Balance between Capacity and Requirement)	170	147	142	125	185
Loss of Two Largest Units (Overhaul + Forced Outage)	(132)	(120)	(120)	(120)	(88)
Reserve After Loss of Two Largest Units	**38**	**27**	**22**	**5**	***97**
Utility Scale Renewables Capacity (MW)	**0**	**25**	**25**	**185**	**185**
% Energy from Baseload	98.0%	80.0%	62.2%	62.2%	**72.6%**
% Energy from Renewables	**0.0%**	**3.5%**	**3.5%**	**26.4%**	**26.4%**
% Energy from Emergency/Peaker	2.0%	16.5%	16.5%	11.4%	1.0%

Status of New Power Plant Procurement

New Power Plant Procurement:

- **Acceptable Bidder List of Qualified Proponents has been Established.**
- **Final specifications will be submitted to CCU and PUC approval this month.**

Bid Submittals (Step 1) were opened on April 5, 2018.
Eighteen (18) submittals were received.

1. APTIM
2. Green Globe Solutions
3. Guam Power Partners
4. Hanwha Energy
5. Karpower International
6. KEPCO/EWP
7. Korea Midland Power
8. Korea Southern Power
9. Osaka Gas Co.
10. POSCO Energy
11. Proman Global Dev.
12. Samsung C&T Corp.
13. Shanghai Electric Power
14. Sojitz
15. Summit Power Group
16. TEMES
17. Toyota Tsusho Corp.
18. Wartsila

Qualified Proponents will proceed to **Step 2 (Technical and Price Bid)**

1. Hanwha Energy
2. KEPCO/EWP
3. Osaka Gas Company
4. POSCO Energy
5. Samsung C&T Corporation
6. Toyota Tsusho Corporation
7. Wartsila

180 MW Plant Projected Schedule (Update)

Land Purchase Price: *$10,788,653*

Land Rezoning Efforts: *Done*

Land PUC Approval: *Done*

IFB Qualification Period: *Done (7 Proponents Acceptable)*

Bid Technical Specifications Approval *3Q 2018*

Bid Submittal Date: *4Q 2018*

Contract Award: *1Q 2019*

Construction Commences: *2Q 2019*

Plant Commissioned: *2Q 2022*

Milestone	2017			2018												2019												2020-2022					
	4Q			1Q			2Q			3Q			4Q			1Q			2Q			3Q			4Q			1Q			2Q		
	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Land Acquisition & Rezoning																																	
IPP IFB Qualification Period																																	
IPP IFB Technical Specification Period																																	
Technical Bid Docs Review/Approval																																	
Bid Solicitation/Submittals/Review																																	
Approval of IPP Award																																	
Construction Period																																	

Summary

- GPA plants have aged significantly and the Cabras units are constantly having boiler tube leaks. We will need to spent millions to keep units running.
- GPA needs new base load units to provide reliable and low cost energy. A new power plant up to 180 MW of capacity has been approved and under bid.
- GPA manages an island-wide power delivery system; significant and continuous effort underway to strengthen the system.

T&D System Update

Tropical Storm Maria

July 5, 2018

Pre-Storm and Post-Storm Recovery

Pre-Storm Inspection & Clearing

UMATAC



BARRIGADA



DEDEDO



Response During Storm

TALOFOFO



MANGILAO



MTM



Post-Storm Clearing & Restoration



Tarzan Falls

Ypao Beach Road



Vegetation and high winds blew down several spans of power lines

Post-Storm Clearing & Restoration





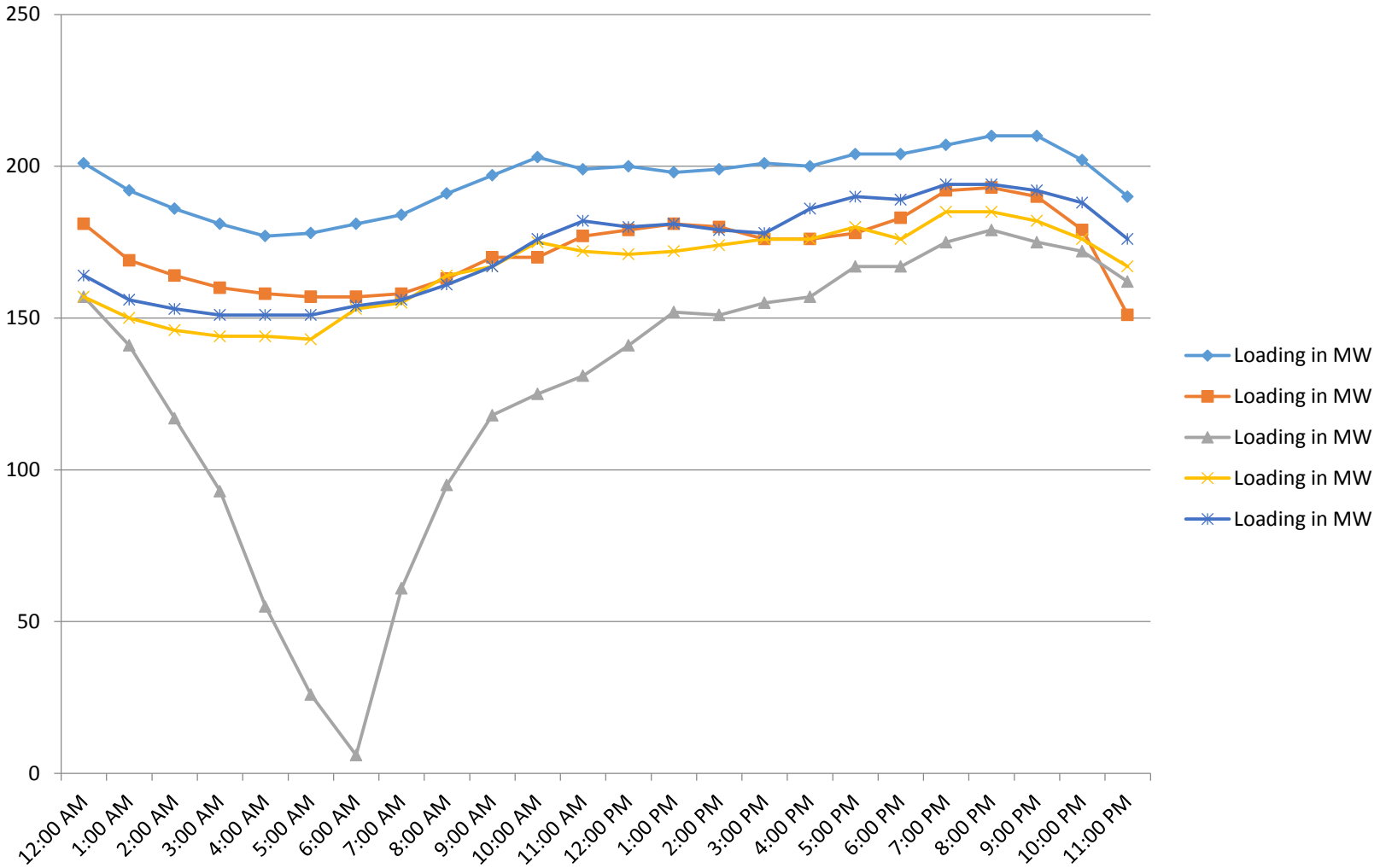
GPA received numerous trouble calls concerning trees falling into power lines. Many of these areas were within residential neighborhoods. Crews took great care to ensure the safety of residents before restoring the power lines.

Community Support





MW Loading of Storm versus Normal Day



Tropical Storm Maria Damage

- Preliminary Damage Assessment:
- T&D Damages: $203,104
- Generation Damages: $31,690
- TOTAL ESTIMATED Damages: $234,794

Transmission & Distribution System

- 29 Substations connected through 189 miles of 115 kV and 34.5 kV lines
- Substations supply 67 distribution feeders with 1,638 miles of primary and secondary distribution lines
- GPA delivery system is managed through the Power System Control Center located adjacent to the Cabras Power Plant
- New Supervisory Control and Data Acquisition (SCADA) Center being installed at Fadian facility and expected to be operational by October 2018
- GPA has placed vital power transmission lines underground that connect system to key components of Guam's economy
- 60% of system load is served through new underground infrastructure
- GPA continues to harden its overhead system by replacing wood poles with concrete (about 90% hardened to date)
- GPA continues its village underground hybrid system which places secondary lines underground (24.4% of customers completed)

T&D SYSTEM

Description	Overhead Miles	Underground Miles	TOTAL Miles
Transmission Lines	154	35	189
Distribution Lines	1,331	307	1,638
Substations	29		
Distribution Feeders	67		
GPA Customers Served	50,763		

Sector	# of Feeders	Transmission Lines (mi)	Distribution Lines (mi)	# of Crews
North	33	72	790	4
Central	23	47	552	2
South	11	70	296	2

UNDERGROUND SYSTEMS

Customers Served by Underground Systems

Underground Systems	# of Customers
GPA Hybrid Projects	2,037
Underground Subdivisions	10,359
TOTAL CUSTOMERS	12,396
% of All (50,763 Customers)	**24.4%**

Hybrid – Overhead primary lines, pole mounted transformers, secondary underground lines

Underground – Underground primary lines, padmount transformers, secondary underground lines

UNDERGROUND SYSTEMS

Customers Served by Underground Systems

Hybrid Capital Improvement Projects	# of Customers
Agat	422
Santa Rita	244
Dededo Village	868
Dededo Kaiser	274
Talofofo	229
TOTAL CUSTOMERS	2,037

UNDERGROUND SYSTEMS

Customers Served by Underground Systems

Underground Subdivisions	# of Customers
Agana Heights	258
Agat	575
Asan	264
Barrigada	452
Dededo	3,527
Hagatna	91
Inarajan	32
Mangilao	229
Merizo	38

Underground Subdivisions	# of Customers
Ordot/Chalan Pago	373
Santa Rita	268
Sinajana	665
Tamuning	2,321
Umatac	29
Yigo	505
Yona	732
TOTAL CUSTOMERS	**10,359**

STAFFING

Transmission & Distribution

Section	FY2016	FY2017
Overhead	48	48
Underground	11	12
Substation	18	17
Meter	12	8
Relay	7	7
Administration	7	5
TOTAL FTE	103	97
Eligible Retirees (30+ years)		**9**
Eligible Retirees (25-29 years)		**11**
Apprenticeship Program *(Commencing FY 2018)*		10-15

Transmission & Distribution ACTIVITIES

- Customer Work Orders
- 24/7 Troubleshooting
- Streetlight Repairs/Installation
- Line Hardware Maintenance
- Wood Pole Replacements/Pole Painting
- Vegetation Management

CUSTOMER WORK ORDERS

- Line Extensions
- New Installation – OH, UG, Hybrid
- GPA Plant Improvements
- Work Clearances
- Temporary Power
- Reconnections/Removals/Relocations
- Approximately 400 work orders received monthly

TROUBLESHOOTING

- Daily trouble calls
- 5 2-man crews of journeymen linemen handle trouble shooting activities -24/7
- Approximately 200 trouble calls monthly
- Most efforts today are reactive to customer complaints
- Plan is to eventually use smart grid data to identify and make needed repairs proactively

STREETLIGHTS

- Over 10,000 lights remaining to upgrade from HPS to LED
- Re-bid for more LED in process
- New rate for LED lights established and approved by CCU and PUC

LINE HARDWARE MAINTENANCE

- Line Inspection
- Infrared/Thermal Vision – discovers hot spots
- Predictive Line maintenance - detect signature anomalies on Electrical Equipment before any failures occur
- Hardware change outs of crossarms, insulators, fuse cutouts, static wire ongoing
- Much of the grid is several decades old and hardware such as cross arms, fuse cutouts, insulators need replacement in some areas

WOODEN POLE REPLACEMENT PROGRAM

POLE TYPE	COUNT
Wood	4,443
Concrete	29,751
Steel	2,086
TOTAL POLES	36,280
% Concrete/Steel	87.8%

– Replacement program on-going and crews prioritize hollow/rotten poles for replacement

POLE PAINTING PROGRAM WITH MAYORS

- Mayors paint poles 8 feet from ground level with Reflective Paint
- Mayors receive credit for poles painted every 2-3 years as necessary – based on normal wear
- Credit estimated at $10 per pole
- Budgeted for paint supplies in FY 2018

VEGETATION MANAGEMENT PROGRAM

Vegetation Management Activities

- Vegetation Management Contractor to focus on Main Routes/Main Lines
- Policy/Agreement with Village Mayors
- In-House Trimming
- Program Goals
  - 2 to 3-year program to achieve consistent maintenance and get ahead of vegetation growth

Vegetation Management Activities

Policy with Village Mayors

- Crews trim vegetation away from energized lines
- Mayors maintain vegetation below the "Critical Area"
- Obtain assistance from Mayors to cut down trees which grow high enough to reach lines. Helps avoid damages during storms and expedites power recovery
- GPA credits mayors based on linear footage cleared on a monthly/annual basis
- Credits can apply towards GPA T&D Services (lighting for ball field, electrical assistance, etc.)
- Credit amount will be based on similar costs paid to existing contractors ~ $2/per linear foot

Policy with Village Mayors

- Crews trim vegetation away from energized lines – the Critical Area
- Mayors maintain vegetation below the Critical Area

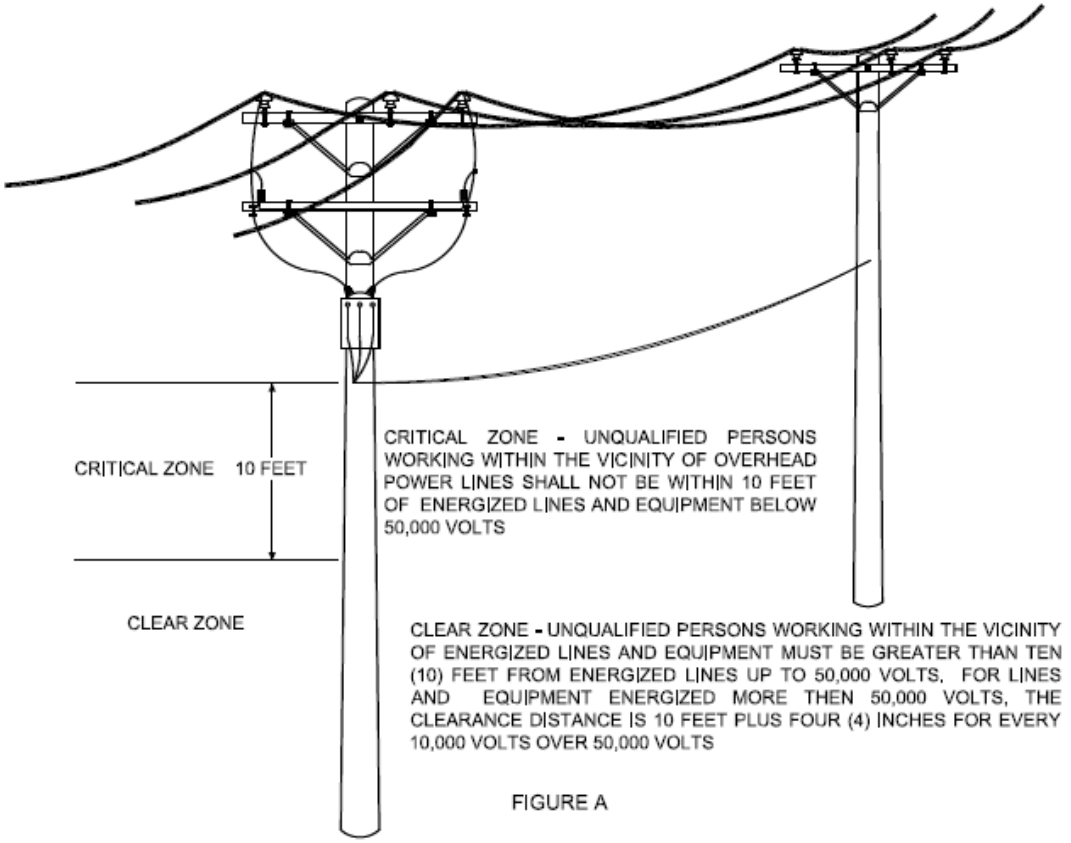


FIGURE A

- Worked with Village Mayors to finalize program – 11 Mayors interested in participating
- Formal launching targeted for Oct 1, 2018

Vegetation Management Activities

<u>T&D to establish Tree Trimming Team</u>

- Team consists of Operators and Tree Trimmers
- One crew for each Sector – North, Central, South
- Operators & Tree Trimmers to be hired FY 2018

<u>Equipment Purchases</u>

- 3 Mulchers – Delivered
- 3 Boom Mowers-Telescoping Trimmer
- 3 Dump Trucks

} Arrived February 2018

VEGETATION MANAGEMENT

MULCHERS - Delivered







Telescoping Trimmer

- Delivered







Summary

- The grid is substantially improved and reliable. Work continues towards a fully underground system.
- Programs are being implemented to continue to improve reliability.
- Vegetation management is a significant challenge, but programs are being implemented to establish a sustainable program. The public's help will be needed in order to substantially eliminate vegetation outages.
- Manpower is being added in order to keep up with the system's and customer needs. Apprenticeship program is being continued in order to have an adequate experienced workforce for many years.
- Questions? Thank you!

Assessment & Maintenance of Guam Memorial Hospital (GMH) Main Distribution Panel

July 15, 2018



Sequence of Events

- Initial assessment conducted by GPA on June 27th
- Thermal Vision conducted by GPA on June 29th
- GMH approved Scope of Work July 9th
- Outage Taken on July 15th to conduct preventive maintenance and to correct discrepancies shown in following page found through a thermal vision inspection.
  - These are the highest points of possible failure
- Outage also allowed for upgrading of the GPA pad mount switch which was planned earlier

SCOPE OF GPA WORK

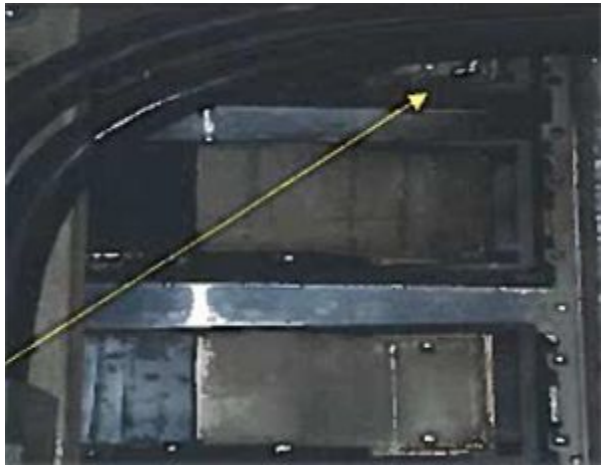
- Wipe down all equipment and remove all dust
- Cover and seal exposed, unused conduits
- Create labels for all equipment
- Clean all mating surfaces and apply a light coat of corrosion grease
- Wire brush secondary conductor ends or cut and re-terminate if necessary
- Upgrade GPA Pad mounted Switch

HOT SPOTS IDENTIFIED









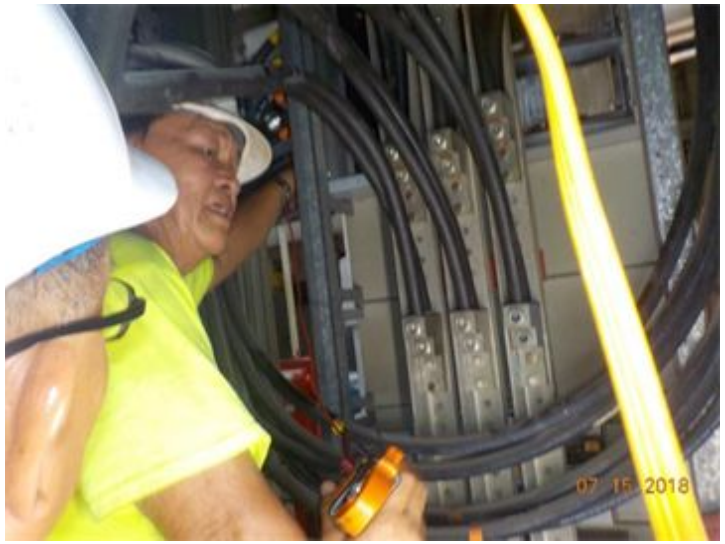
Bus and Disconnect Removed

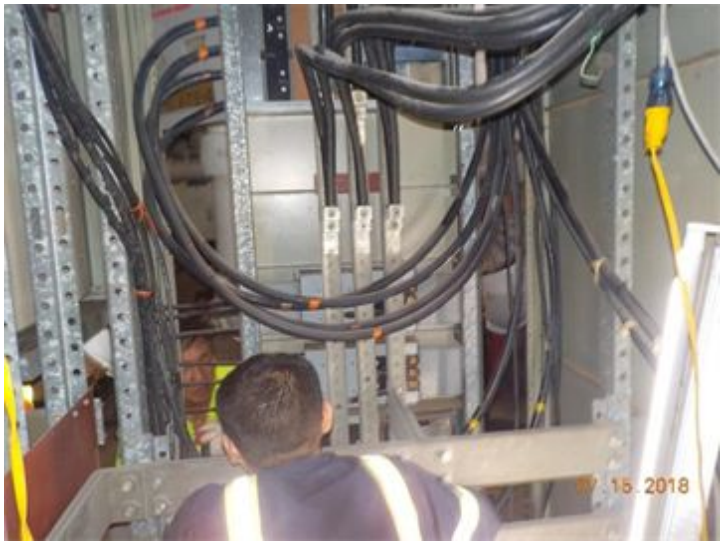




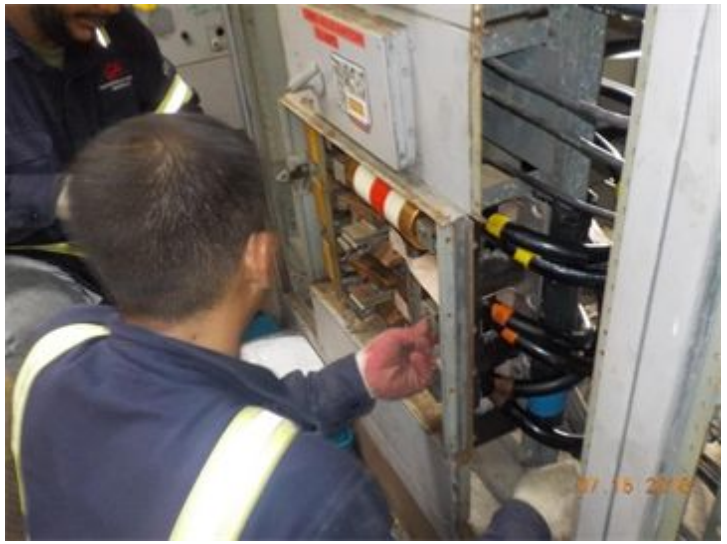


Route conductors to Spare Disconnect









Cleaned mating surface & provided a light coat of corrosion grease. Install new 500A fuses



Before



After



Tighten Terminal Lugs







GMH PERSONNEL VACUUMED INSIDE THE COMPARTMENTS AND WIPED BUS BARS AND CABLES





COVERED UNUSED CONDUITS

GPA PAD MOUNT SWITCH REPLACEMENT









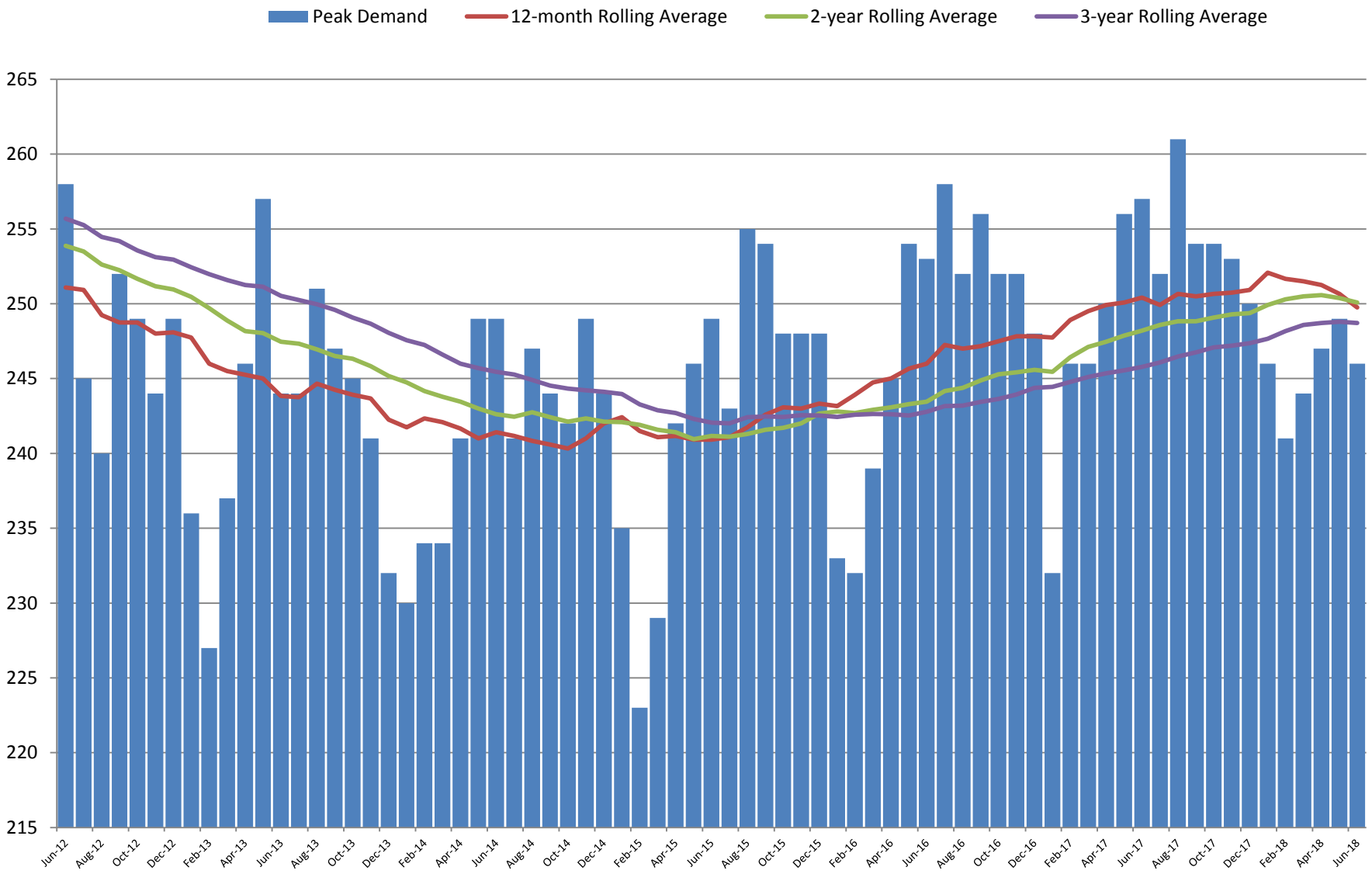
GPA PAD MOUNT SWITCH REPLACEMENT



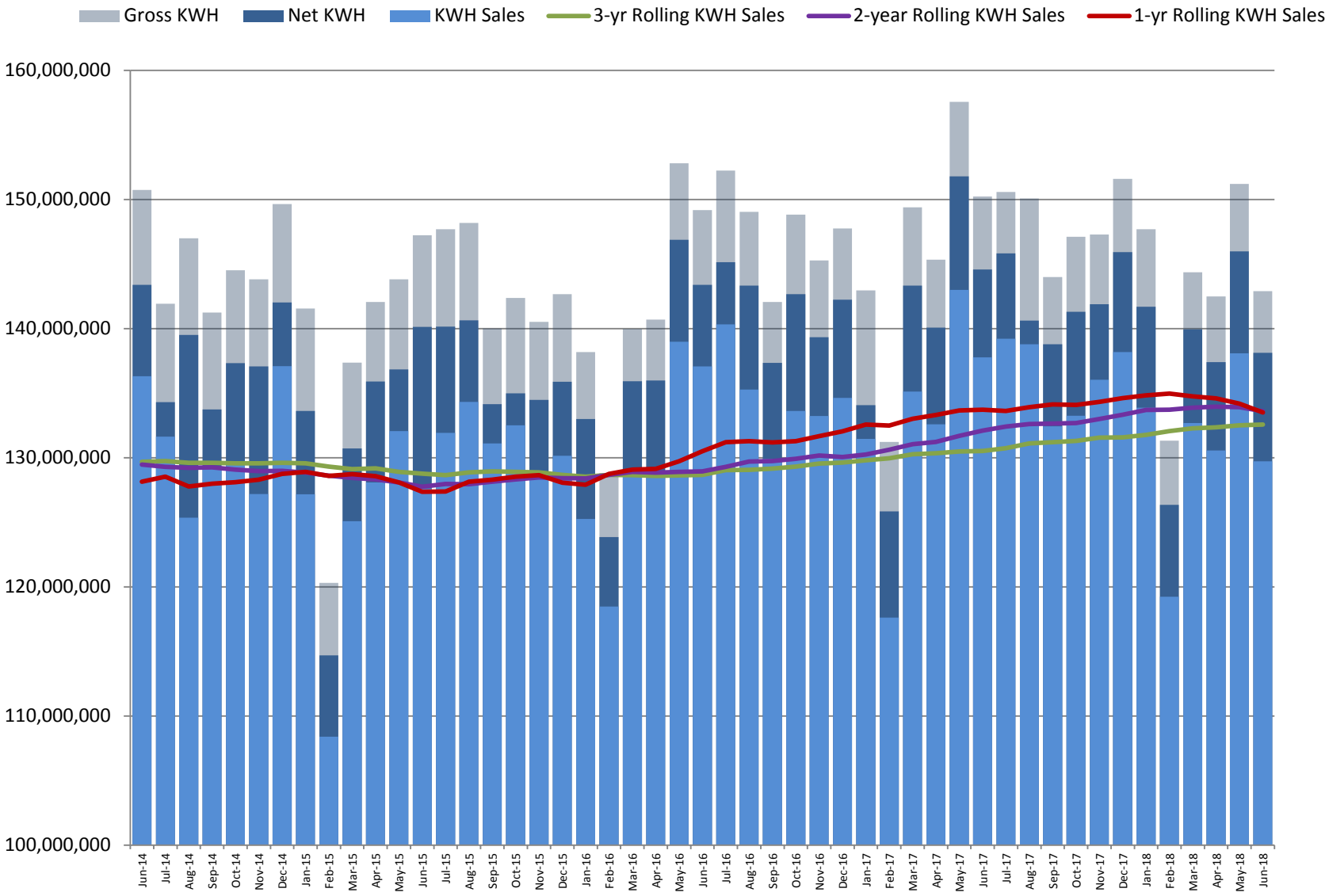




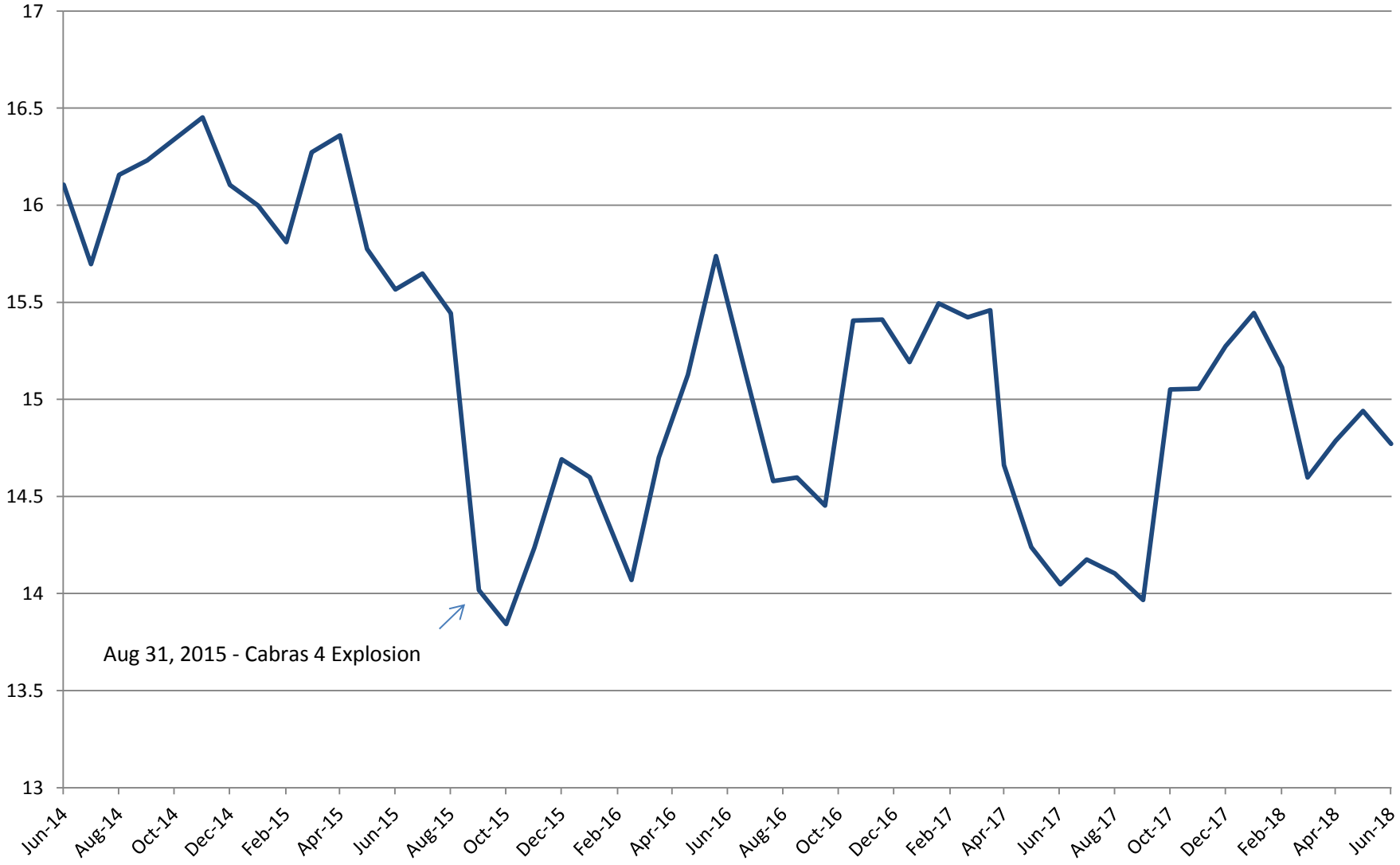
Historical Monthly Peak Demand
June 2012 - June 2018



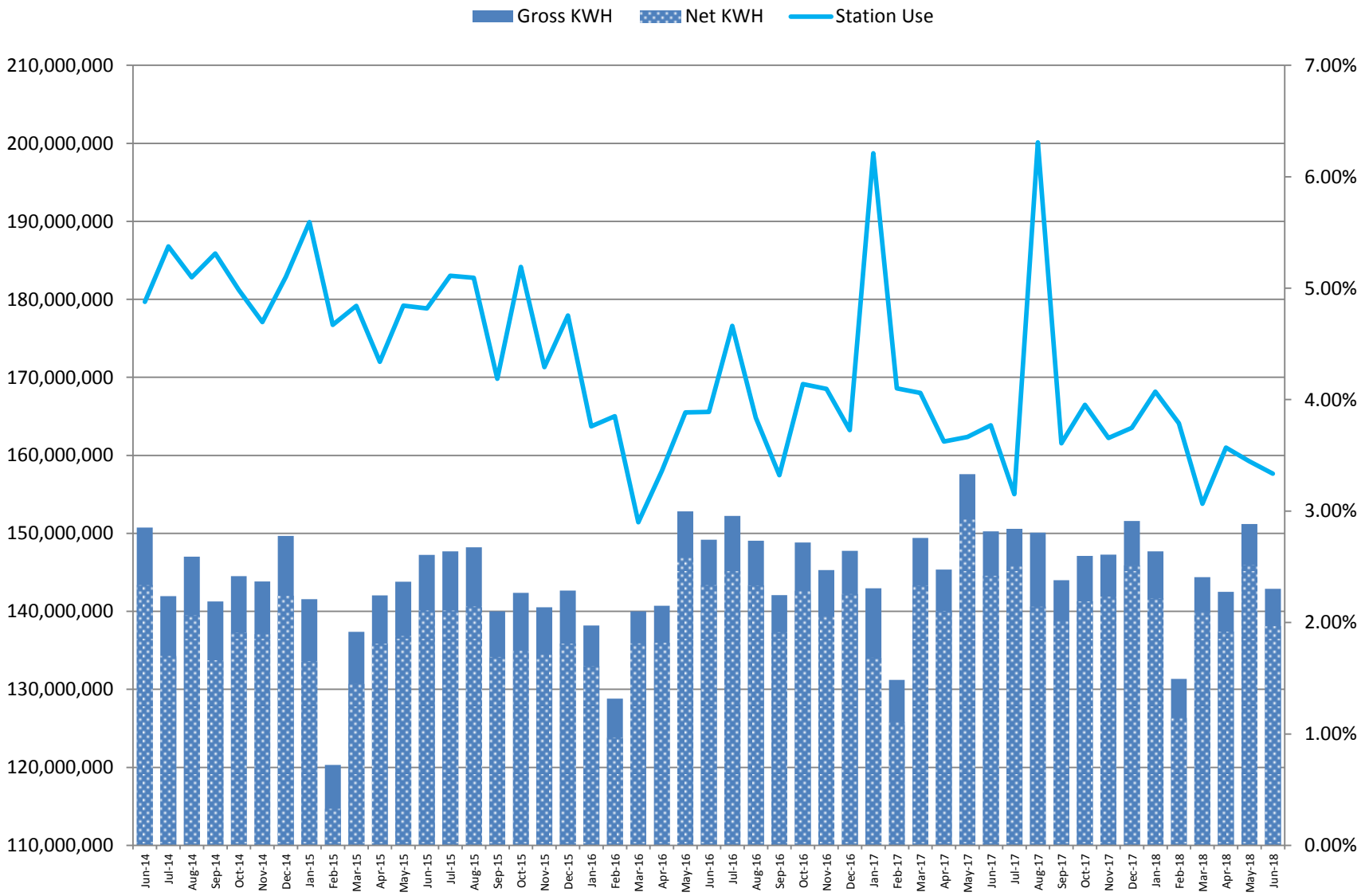
Historical KWH Sales
June 2014 - June 2018



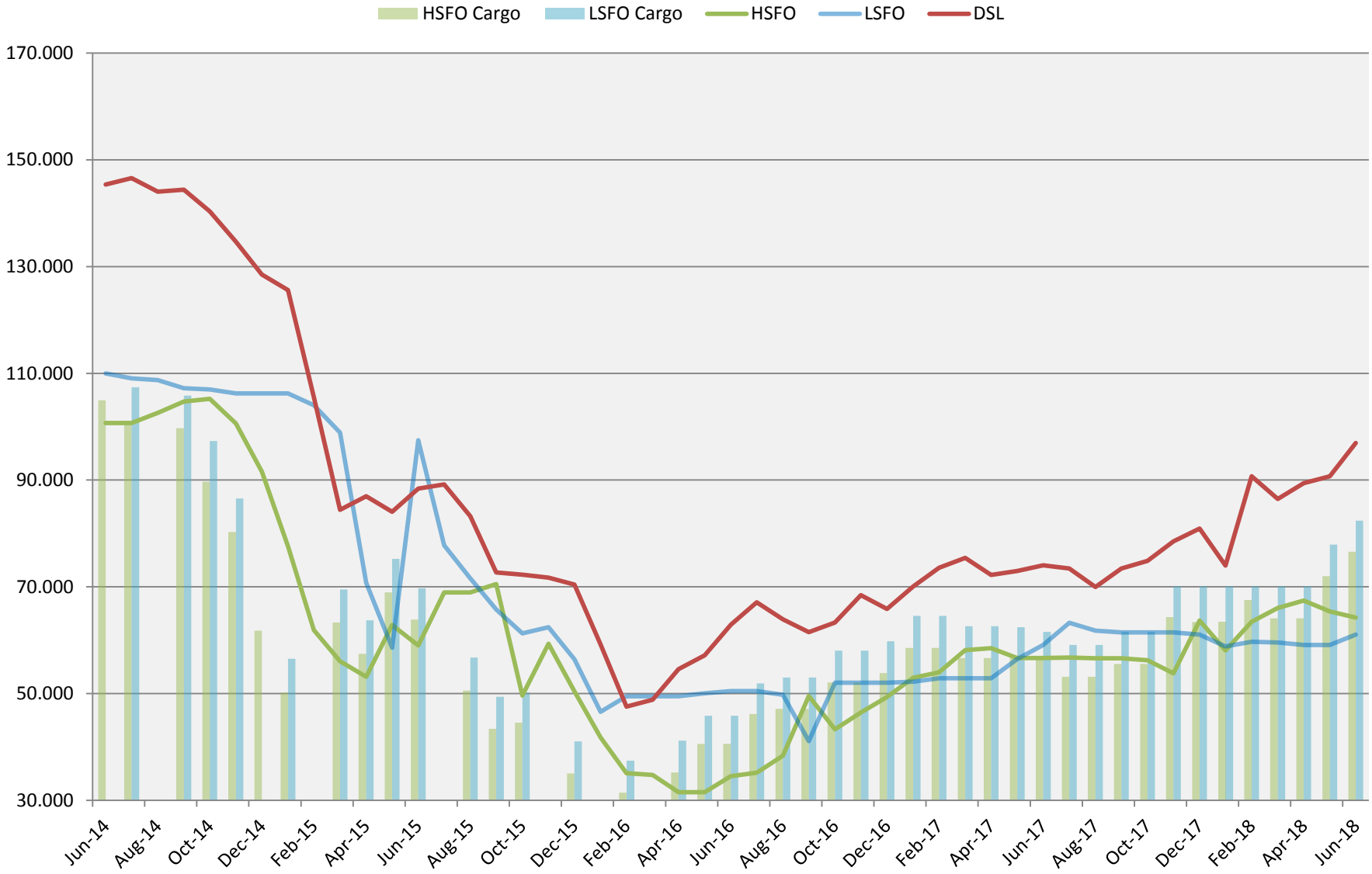
SYSTEM GROSS HEAT RATE
(KWH/Gal)
June 2014 - June 2018



Gross and Net Generation (KWH)
June 2014- June 2018

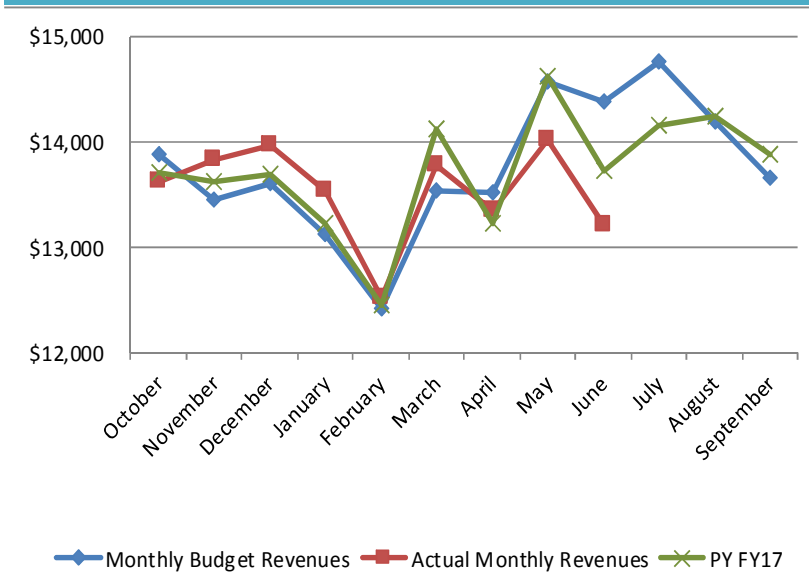


Fuel Cargo and Fuel Consumption Costs ($/bbl)
June 2014 - June 2018



June 2018 Monthly Financial Highlight

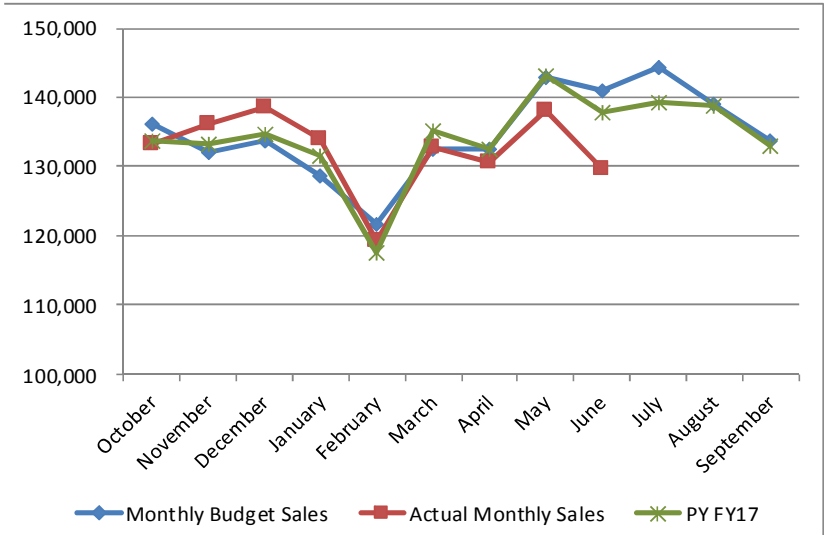
Base Rate Revenue $000



Base Revenue Through June 30, 2018

$000	Monthly Budget Revenues	Actual Monthly Revenues	Variance		PY FY17	CY vs PY Variance	
October	$ 13,873	$ 13,625	$ (248)	↓	$ 13,702	$ (77)	↓
November	13,451	13,827	$ 376	↑	13,622	$ 205	↑
December	13,599	13,968	$ 369	↑	13,695	$ 273	↑
January	13,114	13,534	$ 420	↑	13,220	$ 314	↑
February	12,422	12,522	$ 100	↑	12,454	$ 68	↑
March	13,534	13,776	$ 242	↑	14,123	$ (347)	↓
April	13,525	13,351	$ (174)	↓	13,224	$ 127	↑
May	14,568	14,011	$ (557)	↓	14,617	$ (606)	↓
June	14,386	13,201	$ (1,185)	↓	13,722	$ (521)	↓
July	14,759				14,151		
August	14,183				14,244		
September	13,651				13,874		
Total	**$ 165,064**	**$ 121,815**	**$ (656)**		**$ 164,649**	**$ (565)**	

MWh Sales

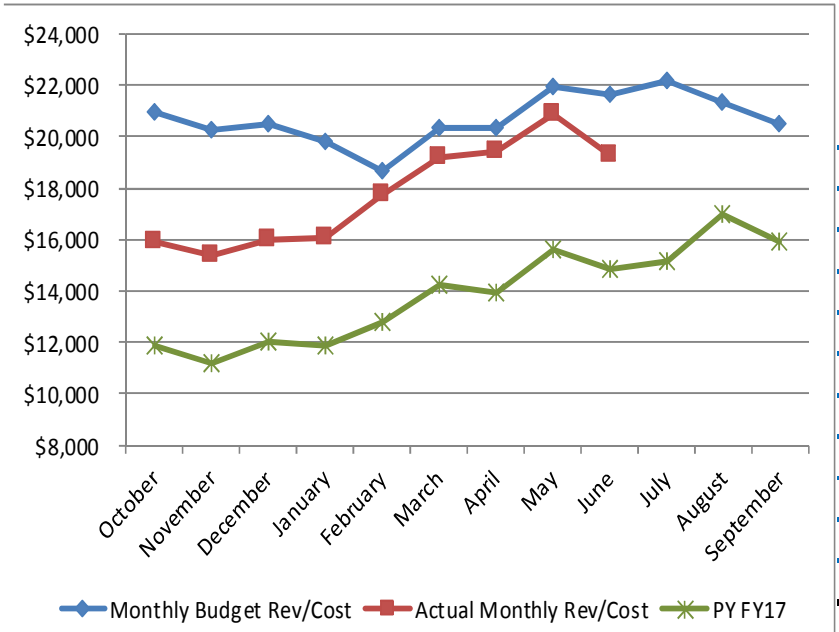


MWH Sales Through June 30, 2018

gwh	Monthly Budget Sales	Actual Monthly Sales	Variance		PY FY17	CY vs PY Variance	
October	136,219	133,262	(2,957)	↓	133,620	(358)	↓
November	132,132	136,044	3,912	↑	133,235	2,809	↑
December	133,625	138,587	4,962	↑	134,634	3,953	↑
January	128,711	133,882	5,170	↑	131,461	2,421	↑
February	121,668	119,241	(2,426)	↓	117,617	1,624	↑
March	132,587	132,693	106	↑	135,131	(2,438)	↓
April	132,532	130,565	(1,967)	↓	132,587	(2,022)	↓
May	142,956	138,085	(4,871)	↓	143,013	(4,928)	↓
June	141,064	129,728	(11,336)	↓	137,777	(8,049)	↓
July	144,404				139,227		
August	139,093				138,797		
September	133,658				132,993		
Total	**1,618,650**	**1,192,088**	**(9,407)**		**1,610,093**	**(6,988)**	

June 2018 Monthly Financial Highlight (Continued)

Fuel Revenue/ Cost $000



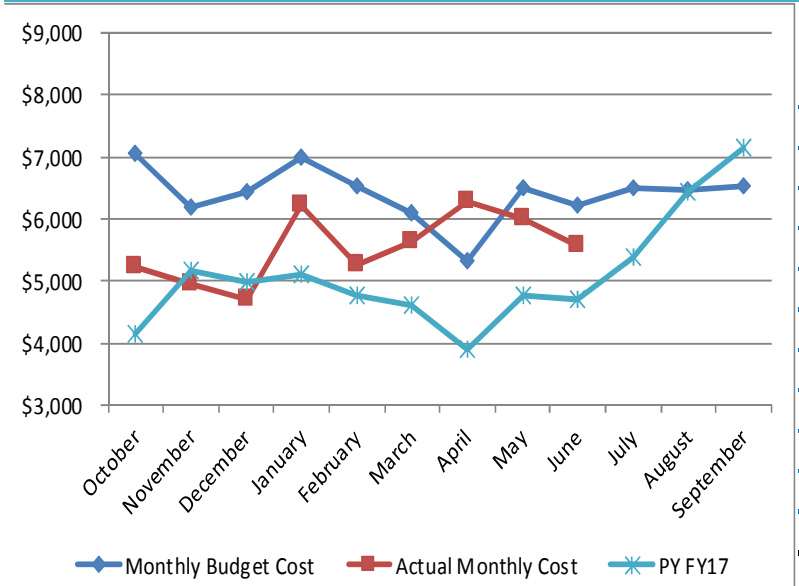
Fuel Revenue Through June 30, 2018

$000	Monthly Budget Rev/Cost	Actual Monthly Rev/Cost	Variance		PY FY17	CY vs PY Variance	
October	$ 20,928	$ 15,936	$ (4,992)	↓	$ 11,894	$ 4,042	↑
November	20,300	15,400	$ (4,899)	↓	11,215	$ 4,185	↑
December	20,529	16,007	$ (4,522)	↓	12,036	$ 3,971	↑
January	19,774	16,036	$ (3,738)	↓	11,867	$ 4,169	↑
February	18,692	17,763	$ (930)	↓	12,751	$ 5,012	↑
March	20,370	19,180	$ (1,190)	↓	14,248	$ 4,932	↑
April	20,361	19,441	(920)	↓	13,940	5,500	↑
May	21,963	20,854	(1,109)	↓	15,596	5,258	↑
June	21,672	19,252	(2,420)	↓	14,859	4,393	↑
July	22,185				15,175		
August	21,369				16,947		
September	20,534				15,895		
Total	**$ 248,677**	**$ 159,868**	**$(24,720)**		**$ 166,425**	**$ 41,462**	

- Under recovery of LEAC - $8.9 million

June 2018 Monthly Financial Highlight (Continued)

O&M Cost $000



O&M Cost Through June 30, 2018

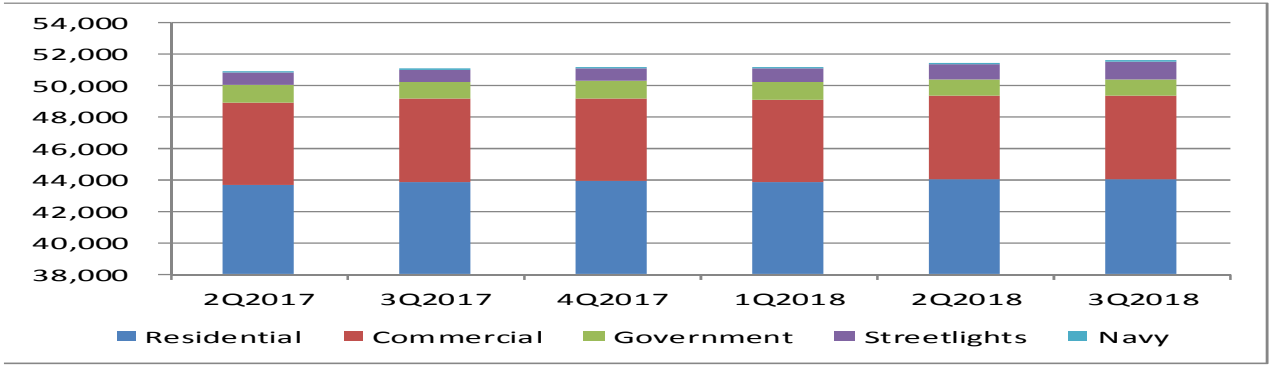
$000	Monthly Budget Cost	Actual Monthly Cost	Variance		PY FY17	CY vs PY Variance	
October	$ 7,040	5,239	1,801	↑	4,135	(1,103)	↓
November	6,182	4,941	1,240	↑	5,158	217	↑
December	6,428	4,694	1,735	↑	4,966	273	↑
January	7,001	6,204	797	↑	5,092	(1,112)	↓
February	6,522	5,252	1,270	↑	4,748	(504)	↓
March	6,091	5,638	453	↑	4,612	(1,026)	↓
April	5,320	6,269	(949)	↓	3,892	(2,378)	↓
May	6,495	6,005	491	↑	4,772	(1,233)	↓
June	6,221	5,558	662	↓	4,702	(856)	↓
July	6,508				5,385		
August	6,462				6,445		
September	6,526				7,138		
Total	**$ 76,796**	**$ 49,800**	**$ 7,500**		**$ 61,045**	**$ (7,722)**	

June 2018 Monthly Financial Highlight (Continued)

Number of Customers Through June 30, 2018

	2Q2017	3Q2017	4Q2017	1Q2018	2Q2018	3Q2018
Residential	43,718	43,902	43,991	43,898	44,065	44,074
Commercial	5,236	5,252	5,226	5,231	5,262	5,278
Government	1,077	1,071	1,073	1,076	1,086	1,092
Streetlights	800	824	823	908	1,005	1,091
Navy	1	1	1	1	1	1
Total	50,832	51,050	51,114	51,114	51,419	51,536

Number of Customers



Debt service coverage (DSC) calculation-indenture	2013	2014	2015	2016	2017	YTD June 2018
Senior lien coverage	3.36	3.16	3.62	3.28	2.65	2.68
Aggregate debt service coverage	1.88	1.98	2.62	3.28	2.65	2.68
Debt service coverage (DSC) calculation-IPP as O&M						
Senior lien coverage	2.16	2.55	2.56	2.45	1.79	1.80
Aggregate debt service coverage	1.21	1.41	1.85	2.45	1.79	1.80

GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUAHAN
P.O.BOX 2977 • AGANA, GUAM U.S.A. 96932-2977

GUAM POWER AUTHORITY
FINANCIAL STATEMENT OVERVIEW
May 2018

Attached are the financial statements and supporting schedules for the month and fiscal year ended May 31, 2018.

Summary
The increase in net assets for the month ended was $1.5 million as compared to the anticipated net increase of $0.9 million projected at the beginning of the year. The total kWh sales for the month were 3.41% less than projected and non-fuel revenues were $0.6 million less than the estimated amount. O & M expenses for the month were $5.9 million which was $0.5 million less than our projections for the month. Other expenses for the month such as interest expense, IPP costs, (net of interest income and other income) totaled to $3.6 million, which was $0.4 million less than the projected amounts. There were no other significant departures from the budget during the period.

Analysis

Description	Previous Month	Current Month	Target
Quick Ratio	2.75	2.95	2
Days in Receivables	38	41	52
Days in Payables	22	21	30
LEAC (Over)/Under Recovery Balance -YTD	$13,005,690	$10,642,841	$12,413,898
T&D Losses	4.91%	4.90%	<7.00%
Debt Service Coverage	1.80	1.80	1.75
Long-term equity ratio	16%	17%	30 – 40%
Days in Cash	185	175	60

The Quick Ratio has been a challenge for GPA historically. However, over the last two fiscal years, the influx of cash from insurance proceeds continued to improve this ratio. GPA has current obligations of approximately $62 million and approximately $182 million in cash and current receivables. Debt Service Coverage ratio is calculated using the methodology in use before the Fiscal Year 2002 change in accounting practice.

Financial Statement
May 2018
Significant Assumptions

The significant assumptions in the financial statements are as follows:

- Accrual cutoff procedures were performed at month end
- An inventory valuation is performed at year-end only
- Accounts Receivable includes accruals based on prior months' usage.

Prepared by:	Reviewed by:	Approved by:
Lenora M. Sanz Controller	John J.E. Kim Chief Financial Officer	John M. Benavente, P.E. General Manager

GUAM POWER AUTHORITY
(A COMPONENT UNIT OF THE GOVERNMENT OF GUAM)
Statements of Net Position
May 31, 2018 and September 30, 2017

	Unaudited May 2018	Audited September 2017	Change from Sept 30 2017
ASSETS AND DEFERRED OUTFLOWS OF RESOURCES			
Current assets:			
Cash and cash equivalents:			
Held by trustee for restricted purposes:			
Interest and principal funds	7,856,241	18,061,879	(10,205,638)
Bond indenture funds	52,353,537	56,907,535	(4,553,998)
Held by Guam Power Authority:			
Bond indenture funds	141,238,461	132,579,889	8,658,572
Self insurance fund-restricted	19,255,426	19,251,372	4,054
Energy sense fund	1,422,419	1,074,491	347,928
Total cash and cash equivalents	222,126,084	227,875,166	(5,749,082)
Accounts receivable, net	39,149,125	77,826,132	(38,677,007)
Total current receivables	39,149,125	77,826,132	(38,677,007)
Materials and supplies inventory	12,746,821	11,989,745	757,076
Fuel inventory	51,176,543	52,387,369	(1,210,826)
Prepaid expenses	4,837,380	629,586	4,207,794
Total current assets	330,035,953	370,707,998	(40,672,045)
Utility plant, at cost:			
Electric plant in service	1,043,421,617	1,038,121,362	5,300,255
Construction work in progress	23,761,974	18,480,173	5,281,801
Total	1,067,183,591	1,056,601,535	10,582,056
Less: Accumulated depreciation	(586,146,363)	(561,829,334)	(24,317,029)
Total utility plant	481,037,228	494,772,201	(13,734,973)
Other non-current assets:			
Investment - bond reserve funds held by trustee	48,461,349	48,576,863	(115,514)
Unamortized debt issuance costs	2,598,116	4,267,305	(1,669,189)
Total other non-current assets	51,059,465	52,844,168	(1,784,703)
Total assets	862,132,646	918,324,367	(56,191,721)
Deferred outflow of resources:			
Deferred fuel revenue	10,642,841	16,751,048	(6,108,207)
Unamortized loss on debt refunding	28,010,300	11,076,064	16,934,236
Pension	8,698,853	8,698,853	0
Unamortized forward delivery contract costs	531,118	637,358	(106,240)
Total deferred outflows of resources	47,883,112	37,163,323	10,719,789
	910,015,758	955,487,690	(45,471,932)

GUAM POWER AUTHORITY
(A COMPONENT UNIT OF THE GOVERNMENT OF GUAM)
Statement of Net Position, Continued
May 31, 2018 and September 30, 2017

	Unaudited May 2018	Audited September 2017	Change from Sept 30 2017
LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION			
Current liabilities:			
Current maturities of long-term debt	1,630,000	1,780,000	(150,000)
Current obligations under capital leases	18,126,544	23,330,193	(5,203,649)
Accounts payable			
Operations	21,419,977	56,723,139	(35,303,162)
Others	3,960,189	7,597,801	(3,637,612)
Accrued payroll and employees' benefits	702,264	1,546,860	(844,596)
Current portion of employees' annual leave	2,284,459	2,045,201	239,258
Interest payable	5,345,925	15,065,830	(9,719,905)
Customer deposits	8,283,415	8,209,228	74,187
Total current liabilities	61,752,773	116,298,252	(54,545,479)
Regulatory liabilities:			
Provision for self insurance	19,550,977	19,550,977	0
Total regulatory liabilities	19,550,977	19,550,977	0
Long term debt, net of current maturities	606,044,689	590,568,862	15,475,827
Obligations under capital leases, net of current portion	14,333,278	24,428,832	(10,095,554)
Net Pension liability	82,863,526	85,875,217	(3,011,691)
DCRS sick leave liability	4,008,397	4,008,397	0
Employees' annual leave net of current portion	1,086,456	1,086,456	0
Customer advances for construction	385,500	369,180	16,320
Total liabilities	790,025,596	842,186,173	(52,160,577)
Deferred inflows of resources:			
Unearned forward delivery contract revenue	1,946,726	2,336,071	(389,345)
Pension	788,894	788,894	0
Total deferred inflows of resources	2,735,620	3,124,965	(389,345)
Commitments and contigencies			
Net Position:			
Net investment in capital assets	(58,824,189)	(40,220,468)	(18,603,721)
Restricted	10,422,199	15,232,832	(4,810,633)
Unrestricted	165,656,531	135,164,187	30,492,344
Total net position	117,254,541	110,176,552	7,077,989
	910,015,758	955,487,690	(45,471,932)

GUAM POWER AUTHORITY
(A COMPONENT UNIT OF THE GOVERNMENT OF GUAM
Statement of Revenues, Expenses and Changes in Net Assets

	May 31			Eight Months Ended May 31		
	Unaudited 2018	Audited 2017	% of change Inc (dec)	Unaudited 2018	Audited 2017	% of change Inc (dec)
Revenues						
Sales of electricity	34,865,003	30,213,220	15	249,231,087	212,206,156	17
Miscellaneous	173,842	256,403	(32)	1,256,765	1,630,506	(23)
Total	35,038,845	30,469,623	15	250,487,852	213,836,662	17
Bad debt expense	(86,583)	(93,433)	(7)	(692,667)	(696,966)	(1)
Total revenues	34,952,262	30,376,190	15	249,795,185	213,139,696	17
Operating and maintenance expenses						
Production fuel	20,853,541	15,595,840	34	140,622,284	103,548,130	36
Other production	1,494,243	1,098,598	36	11,044,059	9,667,780	14
	22,347,784	16,694,438	34	151,666,343	113,215,910	34
Depreciation	2,947,511	7,375,681	(60)	25,580,227	32,316,527	(21)
Energy conversion cost	1,436,403	1,710,763	(16)	11,970,389	12,820,984	(7)
Transmission & distribution	1,085,365	952,077	14	8,634,551	7,741,044	12
Customer accounting	491,008	274,381	79	3,479,030	2,669,566	30
Administrative & general	2,847,590	2,353,353	21	20,391,525	16,600,299	23
Total operating and maintenance expenses	31,155,661	29,360,693	6	221,722,065	185,364,330	20
Operating income	3,796,601	1,015,497	274	28,073,120	27,775,366	1
Other income (expenses)						
Interest income	373,878	117,128	219	1,687,508	934,743	81
Interest expense and amortization	(2,606,335)	(2,833,791)	(8)	(21,460,093)	(22,700,698)	(5)
Bond issuance costs	67,464	76,827	(12)	(1,979,129)	614,616	(422)
Assets written off	0	0		0	0	
Allowance for funds used during construction	190,759	305,095	(37)	1,180,090	2,529,395	(53)
Other expense	(298,846)	(201,691)	0	(526,183)	(394,040)	34
Total other income (expenses)	(2,273,080)	(2,536,432)	(10)	(21,097,807)	(19,015,984)	11
Income (loss) before capital contributions	1,523,521	(1,520,935)	(200)	6,975,313	8,759,382	(20)
Capital contributions	7,906	1,861	0	102,672	38,422	167
Increase (decrease) in net assets	1,531,427	(1,519,074)	(201)	7,077,985	8,797,804	(20)
Total net assets at beginning of period (restated)	115,723,115	72,139,708	60	110,176,557	61,822,830	78
Total net assets at end of period	117,254,542	70,620,634	66	117,254,542	70,620,634	66

GUAM POWER AUTHORITY
(A COMPONENT UNIT OF THE GOVERNMENT OF GUAM)
Statements of Cash Flows
Period Ended May 31, 2018

	Month Ended 5/31/2018	YTD Ended 5/31/2018
Increase(decrease) in cash and cash equivalents		
Cash flows from operating activities:		
Cash received from customers	$33,108,313	$ 288,404,387
Cash payments to suppliers and employees for goods and services	32,926,999	254,588,558
Net cash provided by operating activities	$181,314	33,815,829
Cash flows from investing activities:		
Interest and dividends on investments and bank accounts	373,878	1,687,508
Net cash provided by investing activities	373,878	1,687,508
Cash flows from non-capital financing activities		
Interest paid on short term debt	(6,352)	(50,935)
Provision for self insurance funds	-	(4,054)
Net cash provided by noncapital financing activities	(6,352)	(54,989)
Cash flows from capital and related financing activities		
Acquisition of utility plant	(1,374,249)	(11,845,250)
Principal paid on bonds and other long-term debt	-	(3,550,000)
Interest paid on bonds(net of capitalized interest)	190,759	(27,597,196)
Interest paid on capital lease obligations	(241,250)	(2,351,775)
Interest & principal funds held by trustee	(2,483,991)	10,205,638
Reserve funds held by trustee	(43,299)	115,514
Bond funds held by trustee	(56,218)	4,553,998
Principal payment on capital lease obligations	(1,902,848)	(15,299,203)
Grant from DOI/FEMA	7,906	102,672
Debt issuance costs/loss on defeasance	(333,577)	18,875,827
Net cash provided by (used in) capital and related financing activities	(6,236,767)	(26,789,776)
Net (decrease) increase in cash and cash equivalents	(5,687,926.39)	8,658,572
Cash and cash equivalents, beginning	146,926,387	132,579,889
Cash and cash equivalents-Funds held by GPA, May 31, 2018	**$ 141,238,461**	**$ 141,238,461**

GUAM POWER AUTHORITY
(A COMPONENT UNIT OF THE GOVERNMENT OF GUAM)
Statements of Cash Flows, continued
Period Ended May 31, 2018

	Month Ended 5/31/2018	YTD Ended 5/31/2018
Reconciliation of operating earnings to net cash provided by operating activities:		
Operating earnings net of depreciation expense and excluding interest income	$3,796,601	$28,073,120
Adjustments to reconcile operating earnings to net cash provided by operating activities:		
Depreciation and amortization	2,947,511	25,580,227
Other expense	(231,372)	(2,505,312)
(Increase) decrease in assets:		
Accounts receivable	(1,804,748)	38,677,007
Materials and inventory	32,732	(757,076)
Fuel inventory	(4,338,691)	1,210,826
Prepaid expenses	988,508	(4,207,794)
Unamortized debt issuance cost	23,667	1,669,189
Deferred fuel revenue	2,362,849	6,108,207
Unamortized loss on debt refunding	229,166	(16,934,236)
Unamortized forward delivery contract costs	13,280	106,240
Increase (decrease) in liabilities:		
Accounts payable-operations	(2,105,974)	(35,303,162)
Accounts payable-others	(677,497)	(3,985,540)
Accrued payroll and employees' benefits	(1,095,907)	(844,596)
Net pension liability	(292,833)	(3,011,691)
Employees' annual leave	62,414	239,258
Customers deposits	320,276	74,187
Customer advances for construction	-	16,320
Unearned forward delivery contract revenue	(48,668)	(389,345)
Net cash provided by operating activities	**$181,314**	**$ 33,815,829**

GUAM POWER AUTHORITY
Financial Analysis
5/31/2018

Quick Ratio

Reserve Funds Held by GPA	141,238,461
Current Accounts Receivable	40,943,576
Total Cash and A/R (A+B)	182,182,037
Total Current Liabilities	61,752,773
Quick Ratio (F/G)	**2.95**

Days in Receivables

FY 18 Moving 12 Mos.-Actual	368,098,985
No. of Days	365
Average Revenues per day (A/B)	1,008,490
Current Accounts Receivable	40,943,576
Days in Receivables (D/C)	**41**

Days in Payables

FY 18 Moving 12 Months-Actual	450,263,654
No. of Days	365
Average Payables per day (A/B)	1,233,599
Current Accounts Payables	25,380,166
Days in Payables (D/C)	**21**

Long term equity ratio

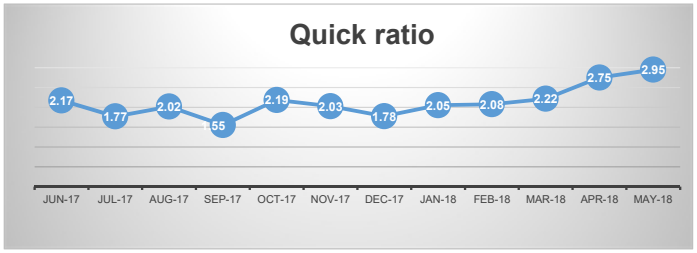
Equity	$	117,254,541.00
Total Long term Liability	$	589,162,846.00
Total Equity and liability	$	706,417,387.00
Long term equity ratio (A/C)		**17%**

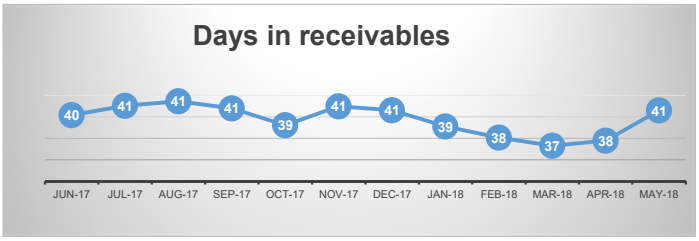
Days cash on hand

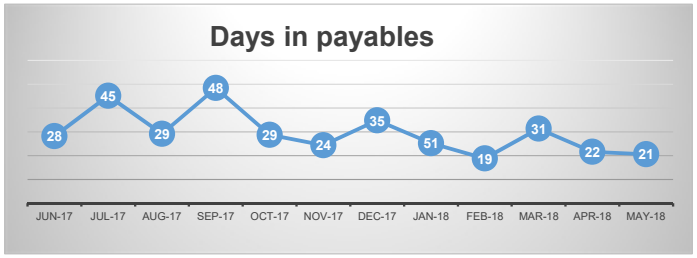
Unresctricted cash & cash equivalents	141,238
No. of Days -YTD	243
A x B	34,320,946
Total Operating expenses excluding depreci	196,142
Days cash on hand	**175**

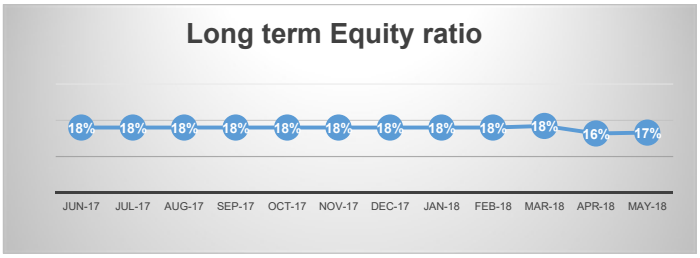
Days' Liquidity

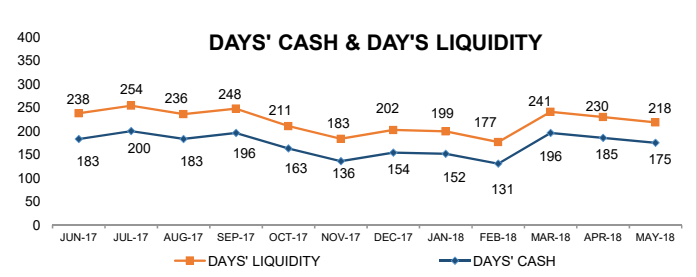
Unresctricted cash , cash equivalents & revc	176,238
No. of Days -YTD	243
A x B	42,825,946
Total Operating expenses excluding depreci	196,142
Days liquidity	**218**











GUAM POWER AUTHORITY
ACCRUED REVENUE
MAY 2018

	FOR THE MONTH ENDED MAY		SEVEN MONTHS ENDED MAY	
	2018	2017	2018	2017
KWH SALES:				
Residential	44,782,019	46,940,445	334,973,180	329,615,950
Small Gen. Non Demand	7,216,684	7,375,238	54,969,964	54,896,103
Small Gen. Demand	16,316,998	16,415,592	124,781,697	125,360,434
Large General	26,377,222	27,209,329	208,467,322	208,584,456
Independent Power Producer	26,295	97,039	364,430	693,237
Private St. Lights	34,126	31,956	263,236	310,941
Sub-total	94,753,344	98,069,599	723,819,828	719,461,121
Government Service:				
Small Non Demand	1,224,286	1,242,514	9,745,582	9,003,048
Small Demand	8,098,401	8,507,100	63,634,757	64,836,553
Large	6,622,597	6,712,069	50,993,697	49,620,504
Street Lighting	761,901	771,506	5,770,092	6,457,688
Sub-total	16,707,185	17,233,190	130,144,128	129,917,793
Total	111,460,529	115,302,789	853,963,956	849,378,914
U. S. Navy	26,624,376	27,710,121	208,396,216	211,920,311
GRAND TOTAL	138,084,906	143,012,910	1,062,360,172	1,061,299,225
REVENUE:				
Residential	$ 11,371,498	$ 9,464,539	$ 77,648,495	$ 63,785,583
Small Gen. Non Demand	$ 2,127,563	$ 1,782,557	$ 14,978,149	$ 12,853,312
Small Gen. Demand	$ 4,513,787	$ 3,828,208	$ 31,836,542	$ 27,181,234
Large General	$ 6,798,955	$ 5,621,797	$ 49,276,449	$ 41,473,123
Independent Power Producer	$ 7,068	$ 20,386	$ 84,575	$ 142,724
Private St. Lights	$ 26,776	$ 24,432	$ 202,614	$ 206,075
Sub-total	$ 24,845,648	$ 20,741,919	$ 174,026,823	$ 145,642,052
Government Service:				
Small Non Demand	$ 372,707	$ 313,817	$ 2,757,215	$ 2,231,439
Small Demand	$ 2,323,025	$ 1,985,615	$ 16,981,217	$ 14,933,916
Large	$ 1,840,797	$ 1,572,201	$ 13,161,573	$ 11,013,100
Street Lighting	$ 477,272	$ 439,403	$ 3,535,184	$ 3,615,895
Sub-total	$ 5,013,801	$ 4,311,036	$ 36,435,189	$ 31,794,349
Total	$ 29,859,448	$ 25,052,955	$ 210,462,012	$ 177,436,401
U. S. Navy	$ 5,005,555	$ 5,160,265	$ 38,769,075	$ 34,769,756
GRAND TOTAL	$ 34,865,003	$ 30,213,220	$ 249,231,087	$ 212,206,157
NUMBER OF CUSTOMERS:				
Residential	44,086	43,803	44,013	43,669
Small Gen. Non Demand	4,172	4,130	4,150	4,124
Small Gen. Demand	988	988	985	988
Large General	119	117	119	116
Independent Power Producer	2	3	2	3
Private St. Lights	533	530	530	525
Sub-total	49,900	49,571	49,798	49,425
Government Service:				
Small Non Demand	691	684	684	683
Small Demand	350	346	351	347
Large	47	45	47	45
Street Lighting	526	293	433	232
Sub-total	1,614	1,368	1,515	1,306
Total	51,514	50,939	51,312	50,731
US Navy	1	1	1	1
	51,515	50,940	51,313	50,732

GUAM POWER AUTHORITY
ACCRUED REVENUE

	TWELVE MONTHS ENDING	MAY 2018	APRIL 2018	MARCH 2018	FEBRUARY 2018	JANUARY 2018	DECEMBER 2017	NOVEMBER 2017	OCTOBER 2017	SEPTEMBER 2017	AUGUST 2017	JULY 2017	JUNE 2017
KWH SALES:													
Residential	511,692,832	44,782,019	41,394,961	41,541,824	36,809,815	42,067,765	43,307,944	43,386,853	41,682,000	41,491,015	44,434,719	45,094,364	45,699,553
Small General Non Demand	83,973,560	7,216,684	6,694,385	6,976,607	6,154,115	6,844,713	6,956,278	7,060,041	7,067,142	7,022,092	7,347,440	7,087,373	7,546,692
Small General Demand	189,472,188	16,316,998	15,390,268	15,917,309	14,164,319	15,562,774	15,848,505	15,789,397	15,792,127	15,509,408	16,488,257	15,839,125	16,853,701
Large General	314,456,097	26,377,222	25,681,619	26,155,199	23,674,407	26,242,185	27,485,887	26,267,661	26,583,141	25,432,034	27,038,013	27,119,633	26,399,095
Private Outdoor Lighting	444,702	34,126	27,531	32,791	32,408	32,358	35,129	35,042	33,851	76,532	33,324	35,412	36,199
Independent Power Producer	633,016	26,295	27,405	28,536	28,976	27,011	40,140	93,823	92,244	34,586	57,754	82,800	93,447
Sub-Total	1,100,672,395	94,753,344	89,216,169	90,652,265	80,864,040	90,776,805	93,673,883	92,632,817	91,250,505	89,565,666	95,399,508	95,258,706	96,628,687
Government Service:													
Small Non Demand	14,644,779	1,224,286	1,180,911	1,193,794	1,119,571	1,248,251	1,272,026	1,255,131	1,251,612	1,246,106	1,243,487	1,254,979	1,154,625
Small Demand	95,676,806	8,098,401	7,720,850	7,889,205	7,377,578	8,102,981	8,063,549	8,098,974	8,283,218	8,084,368	8,147,386	7,962,644	7,847,651
Large	76,271,161	6,622,597	6,142,309	6,226,210	5,905,830	6,315,619	6,812,255	6,550,623	6,418,254	6,493,449	6,520,699	6,219,351	6,043,966
Street Lighting (Agencies)	8,827,010	761,901	699,601	743,499	669,689	716,067	697,921	668,464	812,949	697,002	877,130	638,971	843,815
Sub-Total	195,419,757	16,707,185	15,743,671	16,052,709	15,072,669	16,382,918	16,845,750	16,573,193	16,766,033	16,520,925	16,788,702	16,075,944	15,890,058
Total	1,296,092,152	111,460,529	104,959,840	106,704,974	95,936,708	107,159,724	110,519,633	109,206,010	108,016,537	106,086,591	112,188,210	111,334,651	112,518,745
U.S. Navy	315,061,806	26,624,376	25,605,624	25,988,485	23,304,608	26,722,147	28,067,673	26,837,883	25,245,420	26,906,320	26,608,721	27,892,205	25,258,344
Grand Total	1,611,153,958	138,084,906	130,565,464	132,693,459	119,241,316	133,881,870	138,587,306	136,043,893	133,261,957	132,992,911	138,796,930	139,226,856	137,777,089
REVENUE:													
Residential	$ 114,464,890	$ 11,371,498	$ 10,082,308	$ 10,154,660	$ 9,633,432	$ 8,985,179	$ 9,238,911	$ 9,263,463	$ 8,919,044	$ 8,887,320	$ 9,762,810	$ 9,056,344	$ 9,109,920
Small General Non Demand	$ 22,165,569	$ 2,127,563	$ 1,903,541	$ 1,988,097	$ 1,869,658	$ 1,741,922	$ 1,765,223	$ 1,789,263	$ 1,792,881	$ 1,783,997	$ 1,902,660	$ 1,709,931	$ 1,790,832
Small General Demand	$ 46,724,824	$ 4,513,787	$ 4,108,079	$ 4,266,730	$ 4,006,949	$ 3,714,258	$ 3,769,415	$ 3,699,298	$ 3,758,026	$ 3,692,273	$ 3,964,157	$ 3,527,191	$ 3,704,661
Large General	$ 71,981,386	$ 6,798,955	$ 6,399,879	$ 6,565,683	$ 6,086,686	$ 5,762,313	$ 6,067,740	$ 5,793,817	$ 5,801,375	$ 5,643,059	$ 6,028,539	$ 5,589,484	$ 5,443,855
Private Outdoor Lighting	$ 303,495	$ 26,776	$ 22,912	$ 25,785	$ 25,733	$ 25,133	$ 25,553	$ 25,471	$ 25,250	$ 25,361	$ 25,094	$ 25,099	$ 25,329
Independent Power Producer	$ 152,882	$ 7,068	$ 7,057	$ 7,406	$ 7,969	$ 6,029	$ 9,249	$ 20,053	$ 19,744	$ 17,076	$ 14,804	$ 17,270	$ 19,157
Sub-Total	$ 255,793,046	$ 24,845,648	$ 22,523,776	$ 23,008,362	$ 21,630,428	$ 20,234,834	$ 20,876,091	$ 20,591,366	$ 20,316,320	$ 20,049,087	$ 21,698,063	$ 19,925,320	$ 20,093,753
Government Service:													
Small Non Demand	$ 4,038,785	$ 372,707	$ 350,949	$ 356,541	$ 335,126	$ 332,434	$ 341,017	$ 334,963	$ 333,478	$ 333,079	$ 332,325	$ 319,135	$ 297,031
Small Demand	$ 24,877,380	$ 2,323,025	$ 2,164,585	$ 2,224,973	$ 2,094,220	$ 2,016,922	$ 2,046,340	$ 2,043,720	$ 2,067,433	$ 2,050,292	$ 2,052,253	$ 1,907,628	$ 1,885,990
Large	$ 19,127,838	$ 1,840,797	$ 1,676,200	$ 1,707,269	$ 1,628,297	$ 1,525,771	$ 1,652,805	$ 1,583,988	$ 1,546,446	$ 1,575,080	$ 1,573,445	$ 1,424,292	$ 1,393,449
Street Lighting (Agencies)	$ 5,357,984	$ 477,272	$ 452,952	$ 455,729	$ 439,995	$ 427,482	$ 416,951	$ 419,351	$ 445,451	$ 436,808	$ 516,047	$ 418,012	$ 451,933
Sub-Total	$ 53,401,987	$ 5,013,801	$ 4,644,687	$ 4,744,512	$ 4,497,638	$ 4,302,609	$ 4,457,113	$ 4,382,022	$ 4,392,807	$ 4,395,259	$ 4,474,070	$ 4,069,066	$ 4,028,403
Total	$ 309,195,033	$ 29,859,448	$ 27,168,463	$ 27,752,874	$ 26,128,065	$ 24,537,443	$ 25,333,204	$ 24,973,388	$ 24,709,127	$ 24,444,346	$ 26,172,133	$ 23,994,386	$ 24,122,156
U.S. Navy	$ 58,903,953	$ 5,005,555	$ 5,623,411	$ 5,202,943	$ 4,155,974	$ 5,033,103	$ 4,642,130	$ 4,254,065	$ 4,851,893	$ 5,325,383	$ 5,019,382	$ 5,331,702	$ 4,458,411
Grand Total	$ 368,098,985	$ 34,865,003	$ 32,791,874	$ 32,955,817	$ 30,284,040	$ 29,570,546	$ 29,975,334	$ 29,227,453	$ 29,561,020	$ 29,769,728	$ 31,191,516	$ 29,326,087	$ 28,580,567
NUMBER OF CUSTOMERS:													
Residential	43,986	44,086	43,991	44,065	43,995	44,119	43,898	43,996	43,950	43,991	43,969	43,866	43,902
Small General Non Demand	4,145	4,172	4,183	4,154	4,153	4,142	4,129	4,131	4,134	4,127	4,134	4,131	4,145
Small General Demand	984	988	988	987	991	981	981	982	982	980	981	984	988
Large General	118	119	119	119	118	119	118	117	119	116	115	116	116
Private Outdoor Lighting	529	533	536	526	527	527	530	527	530	526	527	526	527
Independent Power Producer	3	2	2	2	2	2	3	3	3	3	3	3	3
Sub-Total	49,763	49,900	49,819	49,853	49,786	49,890	49,659	49,756	49,718	49,743	49,729	49,626	49,681
Government Service:													
Small Non Demand	682	691	692	689	684	686	679	678	676	675	678	678	677
Small Demand	351	350	350	350	351	350	350	354	351	353	351	352	349
Large	46	47	47	47	47	47	47	47	46	45	45	45	45
Street Lighting (Agencies)	387	526	513	479	421	389	378	378	377	297	297	297	297
Sub-Total	1,467	1,614	1,602	1,565	1,503	1,472	1,454	1,457	1,450	1,370	1,371	1,372	1,368
Total	51,230	51,514	51,421	51,418	51,289	51,362	51,113	51,213	51,168	51,113	51,100	50,998	51,049
U.S. Navy	1	1	1	1	1	1	1	1	1	1	1	1	1
Grand Total	51,231	51,515	51,422	51,419	51,290	51,363	51,114	51,214	51,169	51,114	51,101	50,999	51,050

GUAM POWER AUTHORITY
ACCRUED REVENUE
MAY 2018

RATE	NUMBER OF CUSTOMERS	KWH SALES	TOTAL REVENUE AMOUNT	TOTAL REVENUE C/KWH	BASE RATE REVENUE C/KWH	BASE RATE REVENUE AMOUNT	AVERAGE PER CUSTOMER KWH	AVERAGE PER CUSTOMER REVENUE	NON-FUEL C/KWH	NON-FUEL AMOUNT	FUEL C/KWH	FUEL AMOUNT
Month									$ 14.7266			
R Residential	44,086	44,782,019	$ 11,371,498	$ 25.39	$ 25.39	$ 11,371,498	1,016	$ 257.94	$ 9.6207	$ 4,308,342	$ 15.7723	$ 7,063,156
G Small Gen. Non Demand	4,172	7,216,684	$ 2,127,563	$ 29.48	$ 29.48	$ 2,127,563	1,730	$ 509.96	$ 13.7053	$ 989,072	$ 15.7758	$ 1,138,492
J Small Gen. Demand	988	16,316,998	$ 4,513,787	$ 27.66	$ 27.66	$ 4,513,787	16,515	$ 4,568.61	$ 11.9560	$ 1,950,862	$ 15.7071	$ 2,562,926
P Large General	119	26,377,222	$ 6,798,955	$ 25.78	$ 25.78	$ 6,798,955	221,657	$ 57,134.08	$ 10.3537	$ 2,731,023	$ 15.4221	$ 4,067,932
I Independent Power Producer	2	26,295	$ 7,068	$ 26.88	$ 26.88	$ 7,068	13,148	$ 3,533.84	$ 11.9682	$ 3,147	$ 14.9098	$ 3,921
H Private St. Lights	533	34,126	$ 26,776	$ 78.46	$ 78.46	$ 26,776	64	$ 50.24	$ 63.0365	$ 21,512	$ 15.4242	$ 5,264
Sub-Total	49,900	94,753,344	$ 24,845,648	$ 26.22	$ 26.22	$ 24,845,648	1,899	$ 497.91	$ 26.0741	$ 10,003,958	$ 15.6635	$ 14,841,690
Government Service:												
S Small Non Demand	691	1,224,286	$ 372,707	$ 30.44	$ 30.44	$ 372,707	1,772	$ 539.37	$ 15.0180	$ 183,864	$ 15.4248	$ 188,843
K Small Demand	350	8,098,401	$ 2,323,025	$ 28.68	$ 28.68	$ 2,323,025	23,138	$ 6,637.21	$ 13.2608	$ 1,073,911	$ 15.4242	$ 1,249,114
L Large	47	6,622,597	$ 1,840,797	$ 27.80	$ 27.80	$ 1,840,797	140,906	$ 39,165.90	$ 12.5484	$ 831,027	$ 15.2473	$ 1,009,770
F Street Lighting (Agencies)	526	761,901	$ 477,272	$ 62.64	$ 62.64	$ 477,272	1,448	$ 907.36	$ 47.2181	$ 359,755	$ 15.4242	$ 117,517
Sub-Total	1,614	16,707,185	$ 5,013,801	$ 30.01	$ 30.01	$ 5,013,801	10,351	$ 3,106.44	$ 29.8626	$ 2,448,557	$ 15.3541	$ 2,565,244
	51,514	111,460,529	$ 29,859,448	$ 56.23	$ 56.23	$ 29,859,448	2,164	$ 579.64	$ 11.1721	$ 12,452,514	$ 15.6171	$ 17,406,934
U.S. Navy	1	26,624,376	$ 5,005,555	$ 18.80	$ 18.80	$ 5,005,555			$ 5.8553	$ 1,558,948	$ 12.9453	$ 3,446,607
TOTAL	51,515	138,084,906	$ 34,865,003	$ 25.25	$ 25.25	$ 34,865,003	2,680	$ 676.79	$ 10.1470	$ 14,011,462	$ 15.1020	$ 20,853,541
Eight Months Ended May 2018												
R Residential	44,013	334,973,180	$ 77,648,495	$ 23.18	$ 23.18	$ 77,648,495	7,611	$ 1,764.24	$ 9.6264	$ 32,245,704	$ 13.5542	$ 45,402,791
G Small Gen. Non Demand	4,150	54,969,964	$ 14,978,149	$ 27.25	$ 27.25	$ 14,978,149	13,247	$ 3,609.41	$ 13.6864	$ 7,523,396	$ 13.5615	$ 7,454,753
J Small Gen. Demand	985	124,781,697	$ 31,836,542	$ 25.51	$ 25.51	$ 31,836,542	126,682	$ 32,321.36	$ 11.9962	$ 14,969,052	$ 13.5176	$ 16,867,490
P Large General	119	208,467,322	$ 49,276,449	$ 23.64	$ 23.64	$ 49,276,449	1,759,218	$ 415,835.02	$ 10.3509	$ 21,578,149	$ 13.2866	$ 27,698,300
I Independent Power Producer	2	364,430	$ 84,575	$ 23.21	$ 23.21	$ 84,575	153,444	$ 35,610.40	$ 10.9135	$ 39,772	$ 12.2939	$ 44,803
H Private St. Lights	530	263,236	$ 202,614	$ 76.97	$ 76.97	$ 202,614	497	$ 382.65	$ 63.6841	$ 167,639	$ 13.2862	$ 34,974
Sub-Total	49,798	723,819,828	$ 174,026,823	$ 24.04	$ 24.04	$ 174,026,823	14,535	$ 3,494.68	$ 10.5722	$ 76,523,713	$ 13.4706	$ 97,503,110
Government Service:												
S Small Non Demand	684	9,745,582	$ 2,757,215	$ 28.29	$ 28.29	$ 2,757,215	14,240	$ 4,028.81	$ 15.0014	$ 1,461,976	$ 13.2905	$ 1,295,239
K Small Demand	351	63,634,757	$ 16,981,217	$ 26.69	$ 26.69	$ 16,981,217	181,425	$ 48,414.02	$ 13.3814	$ 8,515,236	$ 13.3040	$ 8,465,981
L Large	47	50,993,697	$ 13,161,573	$ 25.81	$ 25.81	$ 13,161,573	1,087,866	$ 280,780.22	$ 12.6643	$ 6,458,002	$ 13.1459	$ 6,703,571
F Street Lighting (Agencies)	433	5,770,092	$ 3,535,184	$ 61.27	$ 61.27	$ 3,535,184	13,337	$ 8,171.47	$ 47.9314	$ 2,765,683	$ 13.3360	$ 769,500
Sub-Total	1,515	130,144,128	$ 36,435,189	$ 28.00	$ 28.00	$ 36,435,189	85,925	$ 24,055.58	$ 14.7536	$ 19,200,897	$ 13.2425	$ 17,234,291
U.S. Navy	1	208,396,216	$ 38,769,075	$ 18.60	$ 18.60	$ 38,769,075			$ 6.1825	$ 12,884,194	$ 12.4210	$ 25,884,881
TOTAL	51,313	1,062,360,172	$ 249,231,087	$ 23.46	$ 23.46	$ 249,231,087	20,703	$ 4,857.05	$ 10.2234	$ 108,608,805	$ 13.2368	$ 140,622,282
Twelve Months Ended May 2018												
R Residential	43,986	511,692,832	$ 114,464,890	$ 22.37	$ 22.37	$ 114,464,890	11,633	$ 2,602.32	$ 9.6020	$ 49,132,827	$ 12.7678	$ 65,332,063
G Small Gen. Non Demand	4,145	83,973,560	$ 22,165,569	$ 26.40	$ 26.40	$ 22,165,569	20,261	$ 5,348.08	$ 13.6203	$ 11,437,421	$ 12.7756	$ 10,728,148
J Small Gen. Demand	984	189,472,188	$ 46,724,824	$ 24.66	$ 24.66	$ 46,724,824	192,472	$ 47,464.48	$ 11.9153	$ 22,576,109	$ 12.7453	$ 24,148,715
P Large General	118	314,456,097	$ 71,981,386	$ 22.89	$ 22.89	$ 71,981,386	2,674,325	$ 612,173.38	$ 10.3389	$ 32,511,171	$ 12.5519	$ 39,470,215
I Independent Power Producer	3	633,016	$ 152,882	$ 24.15	$ 24.15	$ 152,882	245,038	$ 59,180.08	$ 11.8279	$ 253,004	$ 12.3234	$ 78,009
H Private St. Lights	529	444,702	$ 303,495	$ 68.25	$ 68.25	$ 303,495	841	$ 574.26	$ 56.8929	$ 74,874	$ 11.3539	$ 50,491
Sub-Total	49,763	1,100,672,395	$ 255,793,046	$ 23.24	$ 23.24	$ 255,793,046	22,118	$ 5,140.19	$ 10.5377	$ 115,985,405	$ 12.7020	$ 139,807,642
Government Service:												
S Small Non Demand	682	14,644,779	$ 4,038,785	$ 27.58	$ 27.58	$ 4,038,785	21,476	$ 5,922.70	$ 15.0043	$ 2,197,345	$ 12.5740	$ 1,841,440
K Small Demand	351	95,676,806	$ 24,877,380	$ 26.00	$ 26.00	$ 24,877,380	272,648	$ 70,892.56	$ 13.4199	$ 12,839,742	$ 12.5816	$ 12,037,638
L Large	46	76,271,161	$ 19,127,838	$ 25.08	$ 25.08	$ 19,127,838	1,649,106	$ 413,574.88	$ 12.6373	$ 9,638,621	$ 12.4414	$ 9,489,217
F Street Lighting (Agencies)	387	8,827,010	$ 5,357,984	$ 60.70	$ 60.70	$ 5,357,984	22,784	$ 13,830.03	$ 48.1184	$ 4,247,412	$ 12.5815	$ 1,110,572
Sub-Total	1,467	195,419,757	$ 53,401,987	$ 27.33	$ 27.33	$ 53,401,987	133,256	$ 36,414.58	$ 14.8005	$ 28,923,120	$ 12.5263	$ 24,478,867
	51,230	1,296,092,152	$ 309,195,033	$ 23.86	$ 23.86	$ 309,195,033	25,300	$ 41,554.77	$ 11.1804	$ 144,908,525	$ 12.6755	$ 164,286,509
U.S. Navy	1	315,061,806	$ 58,903,953	$ 18.70	$ 18.70	$ 58,903,953			$ 6.2501	$ 19,691,526	$ 12.4459	$ 39,212,427
TOTAL	51,231	1,611,153,958	$ 368,098,985	$ 22.85	$ 22.85	$ 368,098,985	31,449	$ 7,185.11	$ 10.2163	$ 164,600,051	$ 12.6306	$ 203,498,936

GPA-318 **ENERGY ACCOUNT** **FOR INTERNAL USE ONLY**

318May18 **FY 2018 Versus FY 2017**

	May 2018		May 2017		Y T D 2018		Y T D 2017		MOVING TWELVE MONTHS	
Gross Generation										
Number of days in Period	**31**		**31**		**212**		**212**		**365**	
Peak demand	**249**		**256**		**254**		**256**		**261**	
Date	**05/14/18**		**05/23/17**		**10/30/17**		**05/23/17**		**08/01/17**	
	KWH	**% change**	**KWH**	**% change**	**KWH**	**% change**	**KWH**	**% change**	**KWH**	**% change**
Energy Account:										
Kilowatt hours GPA:										
Cabras 1 & 2	56,512,000		67,382,000		453,754,000		524,689,000		624,058,000	
Cabras No. 3	0		0		0		0		0	
Cabras No. 4	0		0		0		0		0	
MEC (ENRON) Piti 8 (IPP)	27,409,700		18,030,100		212,560,900		216,610,300		315,584,300	
MEC (ENRON) Piti 9 (IPP)	29,215,300		21,998,400		222,460,200		200,694,900		329,827,600	
TEMES Piti 7 (IPP)	2,215,440		4,081,245		16,148,831		11,645,122		51,485,077	
Tanguisson 2	0		0		0		0		0	
Tanguisson 1	0		0		0		0		0	
Diesels/CT's & Others:							0			
MDI 10MW	0		0		946,580		2,244,937		959,270	
NRG Solar Dandan	4,537,268		3,889,309		32,346,595		28,438,891		47,098,506	
Dededo CT #1	543,500		415,410		5,696,850		415,410		12,404,740	
Dededo CT #2	713,680		524,580		4,568,900		1,148,032		9,253,460	
Macheche CT	6,000,136		7,113,638		36,364,273		26,138,368		65,793,462	
Yigo CT (Leased)	5,203,060		4,358,727		28,050,249		21,240,384		48,185,812	
Tenjo	3,061,560		5,320,820		30,371,570		24,557,140		51,271,910	
Talofofo 10 MW	1,125,490		2,391,400		10,527,260		9,284,230		20,014,420	
Aggreko	15,031,436		21,925,167		109,724,453		99,110,537		184,060,456	
Wind Turbine*	9,594		43,325		293,593		334,289		346,499	
Orote	0		0		0		0		0	
Marbo	0		0		0		0		0	
	151,578,165		**157,474,122**		**1,163,814,253**		**1,166,551,539**		**1,760,343,511**	
Ratio to last year		96.26		103.03		99.77		**103.10**		**100.25**
Station use	5,209,578		5,775,757		42,597,775		46,092,445		62,400,326	
Ratio to Gross generation		3.44		3.67		3.66		3.95		**3.54**
Net send out	146,368,586		151,698,365		1,121,216,478		1,120,459,094		1,697,943,185	
Ratio to last year		96.49		103.26		100.07		**103.01**		**100.55**
KWH deliveries:										
Sales to Navy (@34.5kv)	**26,624,376**		**27,710,121**		**208,396,216**		**211,920,313**		**315,061,806**	
Ratio to last year		96.08		100.02		98.34		**100.06**		**99.01**
GPA-metered	**119,744,210**		**123,988,244**		**912,820,262**		**908,538,781**		**1,382,881,379**	
Ratio to last year		96.58		104.01		100.47		**103.72**		**100.91**
Power factor adj.	0		0		0		0		0	
Adjusted	119,744,210		123,988,244		912,820,262		908,538,781		1,382,881,379	
GPA KWH Accountability:										
Sales to civilian customers-										
accrual basis	**111,460,529**		**115,302,789**		**853,963,955**		**849,378,915**		**1,296,092,152**	
Ratio to last year		96.67		103.61		100.54		**103.59**		**100.81**
GPA use-KWH	369,108		297,622		2,557,628		2,066,802		3,635,064	
Unaccounted For	7,914,573		8,387,833		56,298,679		57,093,064		83,154,162	
Ratio to deliveries		6.61		6.77		6.17		6.28		6.01
Ratio to Gross Generation		5.22		5.33		4.84		4.89		4.72
Ratio to Net Send Out		5.41		5.53		5.02		5.10		4.90

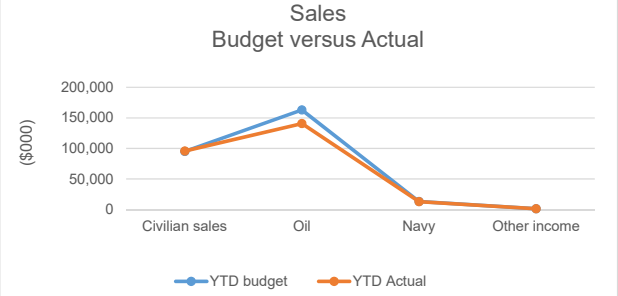
GPA-317May18

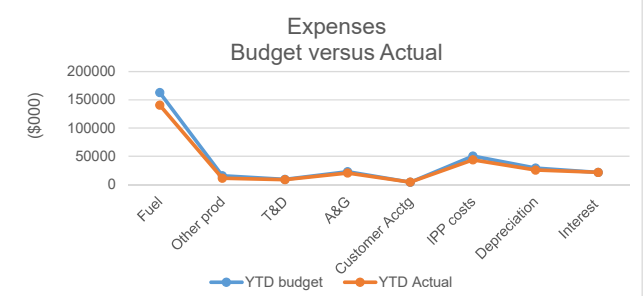
Guam Power Authority
Fuel Consumption
FY 2018

Description	May 2018 BARRELS	May 2018 AMOUNT	YEAR-TO-DATE BARRELS	YEAR-TO-DATE AMOUNT	MOVING 12 MONTHS BARREL S	MOVING 12 MONTHS AMOUNT
FUEL FURNISHED:						
NAVY:						
Diesel	0	0	0	0	0	0
Low Sulfur	0	0	0	0	0	0
	0	**0**	**0**	**0**	**0**	**0**
GPA:						
RFO	109,749	$7,176,017	1,175,114	$ 73,378,177	1,524,795	$ 93,194,042
Diesel	69,394	$6,294,987	486,012	$ 41,184,260	901,435	$ 71,197,272
Low Sulfur	61,202	$3,618,024	159,632	$ 9,593,911	385,531	$ 23,389,878
Deferred Fuel Costs	0	$2,362,849	0	$ 6,108,207	0	$ (1,556,198)
Fuel Adjustments	0	$2,468		$ (18,514)	0	$ (221,894)
Fuel Handling Costs	0	$1,399,197	0	$ 10,376,242	0	$ 17,495,835
	240,345	**$20,853,541**	**1,820,759**	**$ 140,622,283**	**2,811,761**	**$ 203,498,935**
IWPS:						
GPA RFO	109,749	$7,176,017	1,175,114	$ 73,378,177	1,524,795	$ 93,194,042
Diesel	69,394	$6,294,987	486,012	$ 41,184,260	901,435	$ 71,197,272
Low Sulfur	61,202	$3,618,024	159,632	$ 9,593,911	385,531	$ 23,389,878
Deferred Fuel Costs	0	$2,362,849	0	$ 6,108,207	0	$ (1,556,198)
Fuel Variance	0	$2,468	0	$ (18,514)		$ (221,894)
Fuel Handling Costs	0	$1,399,197	0	$ 10,376,242	0	$ 17,495,835
	240,345	**$20,853,541**	**1,820,759**	**$ 140,622,283**	**2,811,761**	**$ 203,498,935**
AVERAGE COST/Bbl.						
GPA RFO		**$65.39**		**$62.44**		**$61.12**
Diesel		**$90.71**		**$84.74**		**$78.98**
Low Sulfur		**$59.12**		**$60.10**		**$60.67**
AS BURNED						
Cabras 1 & 2						
RFO	59,123	$ 3,847,117	655,550	$ 40,883,467	874,503	$ 53,284,646
Low Sulfur	36,553	$ 2,160,882	93,991	$ 5,649,549	169,441	$ 10,234,224
Diesel	56	$ 4,985	1,265	$ 96,381	2,625	$ 186,061
	95,732	$ 6,012,983	750,806	$ 46,629,397	1,046,569	$ 63,704,931
Cabras 3 & 4						
RFO	0	$ -	0	$ -	0	$ -
Low Sulfur	0	$ -	0	$ -	0	$ -
Diesel	0	$ -	0	$ -	0	$ -
	0	$ -	0	$ -	0	$ -
MEC (Piti Units 8&9)						
RFO	50,625	$ 3,328,900	519,563	$ 32,494,710	650,292	$ 39,909,397
Low Sulfur	24,649	$ 1,457,142	65,641	$ 3,944,363	216,090	$ 13,155,654
Diesel	0	$ -	38	$ 2,127	38	$ 2,127
	75,274	$ 4,786,042	585,242	$ 36,441,199	866,420	$ 53,067,178
Diesel & CT's - GPA:						
MDI Dsl	0	$ -	1,521	$ 105,771	1,541	$ 107,108
Macheche CT	12,859	$ 1,172,829	78,425	$ 6,611,701	141,824	$ 11,226,092
Yigo CT	11,247	$ 1,019,668	58,479	$ 4,977,590	99,128	$ 7,911,205
Talofofo 10 MW	1,962	$ 168,452	18,123	$ 1,554,885	34,655	$ 2,745,408
Aggreko	27,287	$ 2,434,927	201,736	$ 16,960,745	336,126	$ 26,575,131
Tenjo	6,569	$ 626,374	53,760	$ 4,739,432	90,158	$ 7,404,020
TEMES (IPP)	5,813	$ 525,928	42,011	$ 3,473,865	130,403	$ 9,881,328
GWA Generators	13	$ 1,518	325	$ 38,167	679	$ 79,915
	69,338	$ 6,290,002	484,710	$ 41,085,752	898,772	$ 71,009,084
Deferred Fuel Costs	0	$ 2,362,849		$ 6,108,207		$ (1,556,198)
Adjustment		$ 2,468		$ (18,514)		$ (221,894)
Fuel Handling Costs	0	$ 1,399,197		$ 10,376,242		$ 17,495,835
TOTAL	**240,345**	**$ 20,853,541**	**1,820,759**	**$ 140,622,283**	**2,811,761**	**$ 203,498,935**

Statement of operations
Comparison-Budget versus Actual
For the month and year to date ended May 31, 2018

	Budget	Actual May-18	Variance	YTD Budget	YTD Actual	Variance
KwH Sales-Civilian	115,412	111,461	3,951	849,871	853,964	-4,093
Non-fuel yield	$ 0.105526	$ 0.111725	$ (0.006199)	$ 0.111874	$ 0.112096	$ (0.000222)
KwH Sales-Navy	27,544	26,624	920	210,558	208,396	2,162
Non-fuel yield	$ 0.061774	$ 0.058556	$ 0.003218	$ 0.061774	$ 0.061825	$ (0.000051)
Operating revenue						
Civilian sales	$ 12,867	$ 12,453	$ 414	$ 95,079	$ 95,726	$ (647)
Oil	21,963	20,854	1,109	162,916	140,622	22,294
Navy	1,702	1,559	143	13,007	12,884	123
Other income	169	174	(5)	1,353	1,257	97
	36,700	35,040	1,660	272,355	250,489	21,866
Bad debts expense	87	87	0	693	693	0
Total operating revenues	$ 36,613	$ 34,953	$ 1,660	$ 271,662	$ 249,796	$ 21,866
Operating expenses:						
Production fuel	$ 21,963	$ 20,854	$ 1,109	$ 162,916	$ 140,622	$ 22,294
O & M expenses:						
Other production	2,253	1,494	758	15,446	11,044	4,402
Transmission distribution	1,026	1,085	(59)	9,058	8,635	424
Administrative expense	2,794	2,848	(53)	22,557	20,392	2,165
Customer accounting	336	491	(155)	3,326	3,479	(153)
	6,409	5,918	491	50,387	43,549	6,838
IPP costs	1,383	1,436	(53)	11,822	11,970	(149)
Depreciation	3,635	2,948	687	29,079	25,580	3,499
	$ 33,390	$ 31,156	$ 2,234	$ 254,204	$ 221,722	$ 32,482
Operating income	$ 3,224	$ 3,798	$ (574)	$ 17,458	$ 28,074	$ (10,616)
Other revenue (expenses):						
Investment income	99	374	(275)	789	1,688	(898)
Interest expense	(2,654)	(2,606)	(48)	(21,241)	(21,460)	219
AFUDC	61	191	(130)	487	1,180	(693)
Bond issuance costs/Other expenses	135	(231)	366	1,077	(2,505)	3,582
Net income before capital contribution	864	1,525	(661)	(1,430)	6,976	(8,406)
Grants from the U.S. Government	-	8	(8)	-	103	(103)
Increase (decrease) in net assets	$ 864	$ 1,532	$ (669)	$ (1,430)	$ 7,079	$ (8,509)





Guam Power Authority
Debt service coverage
May 31, 2018

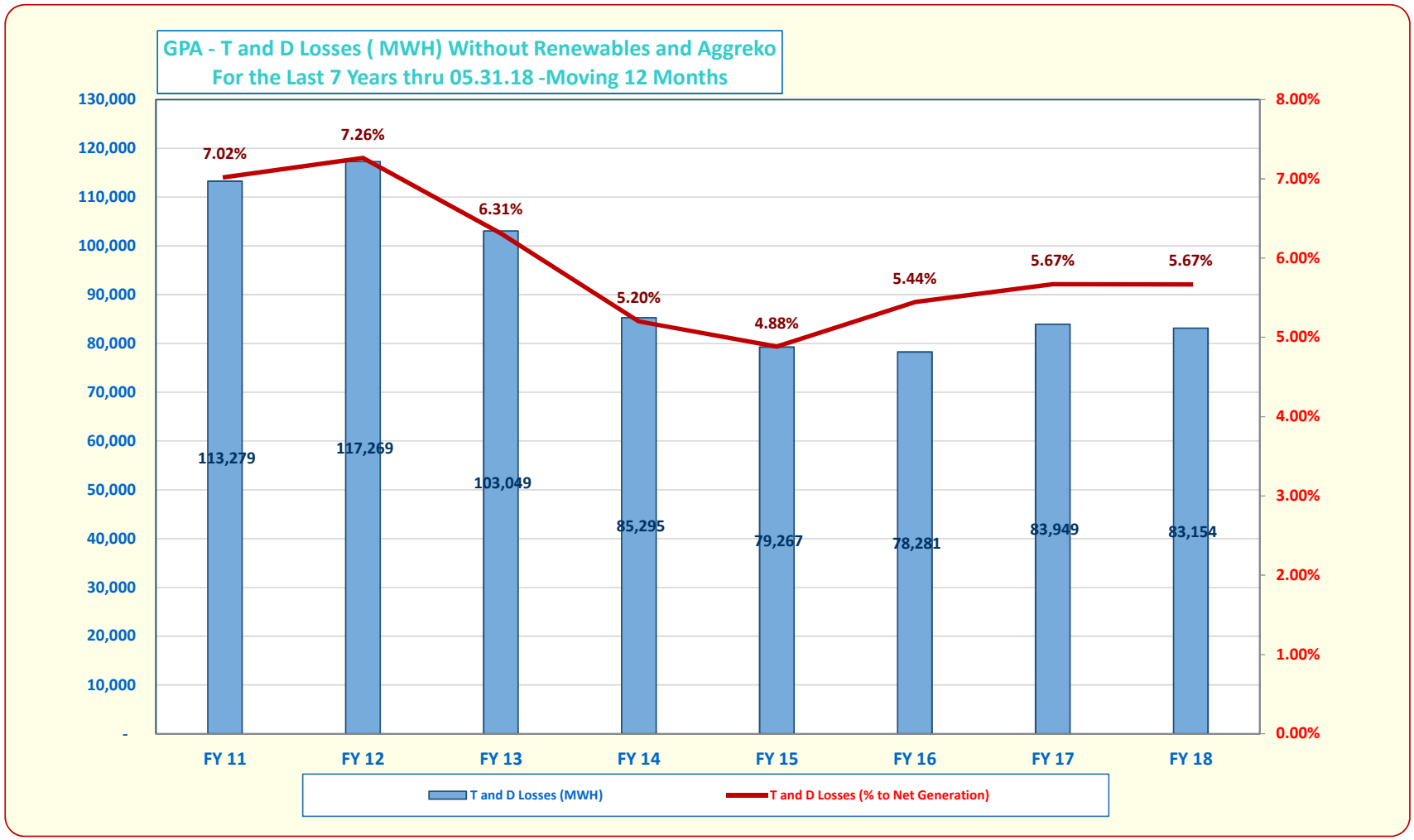
	2014	2015	Restated 2016	2017	YTD 2018
Funds Available for Debt Service					
Earnings from Operations	$40,895	$48,758	$37,981	$36,522	$28,073
Interest Income	$333	$368	$1,227	($32)	446
Depreciation Expense	36,989	41,766	44,240	44,292	25,580
Balance Available for Debt Service	$ 78,217	$ 90,892	$ 83,448	$ 80,782	$ 54,100
IPP - Capital Costs					
Principal	$13,064	$18,144	$14,819	$21,263	$15,681
Interest	10,020	8,478	5,970	5,137	2,108
Total IPP Payments	$ 23,084	$ 26,622	$ 20,789	$ 26,400	$ 17,789
Bond Debt Service					
Principal (1993 & 1999 Revenue Bond)	$0	$0	$0	$0	$0
Interest (1993 & 1999 Revenue Bond)	0	0	0	0	0
Principal and Interest (2010 Subordinate Bond)	15,193	9,605	0	0	0
Principal and Interest (2010 Senior TE Bond)	7,999	7,999	7,999	7,999	2,000
Principal and Interest (2012 Senior TE Bond)	17,455	17,096	17,098	17,449	11,391
Principal and Interest (2014 Senior TE Bond)		0	10	5,084	3,389
Principal and Interest (2017 Senior TE Bond)					3,370
Total	$ 40,647	$ 34,700	$ 25,107	$ 30,532	$ 20,150
Debt Service Coverage (DSC) Calculation					
Existing DSC Methodology (Senior)	2.17 x	2.56 x	2.50 x	1.78 x	1.80 x
Existing DSC Methodology (Senior+Subordinate)	1.36 x	1.85 x	2.50 x	1.78 x	1.80 x
Bond Covenant DSC	1.92 x	2.62 x	3.32 x	2.65 x	2.68 x
Debt Service Coverage Requirements					
Existing Ratemaking DSC Target	1.75 x	1.75 x	1.75 x	1.75 x	1.75 x
Minimum Bond Covenant Requirement (Senior Bond)	1.30 x	1.30 x	1.30 x	1.30 x	1.30 x
Minimum Bond Covenant Requirement (Subordinate Bond	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x

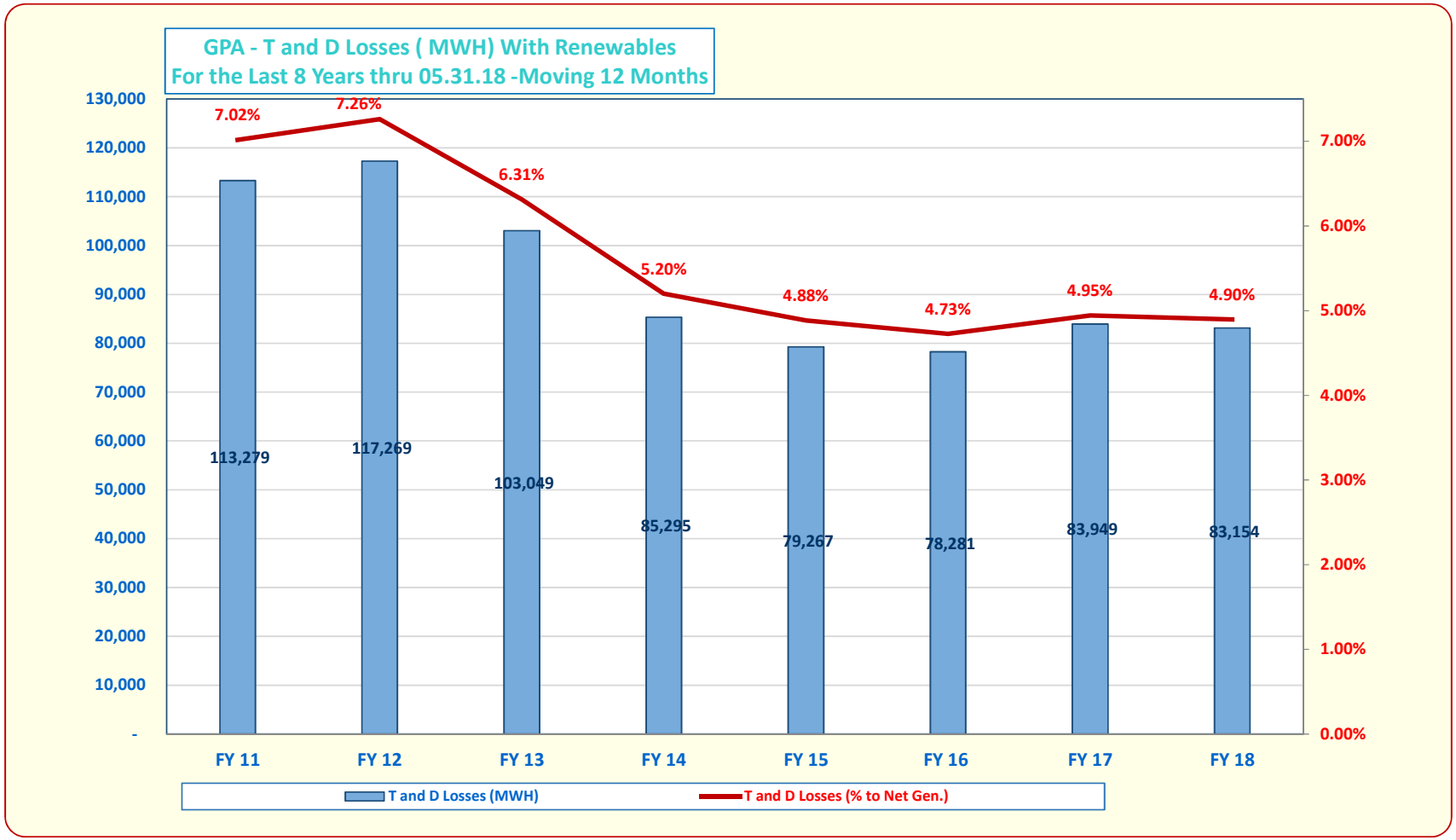
Notes:
(1) Source: Guam Power Authority, 2014 - 2017 Audited Financial Statements
(2) Interest income is net of interest earnings in the Construction Fund and the amortization of deferred credit.
(3) Existing DSC Methodology (Rating Agency Method):
(Operating Earnings + Depreciation Expense - IPP Principal & Interest Payments)/
(Senior and Subordinate Bond Principal & Interest Payments)
(4) Bond Covenant DSC Methodology: (Operating Earnings + Depreciation Expense)/
(Senior and Subordinate Bond Principal & Interest Payments)

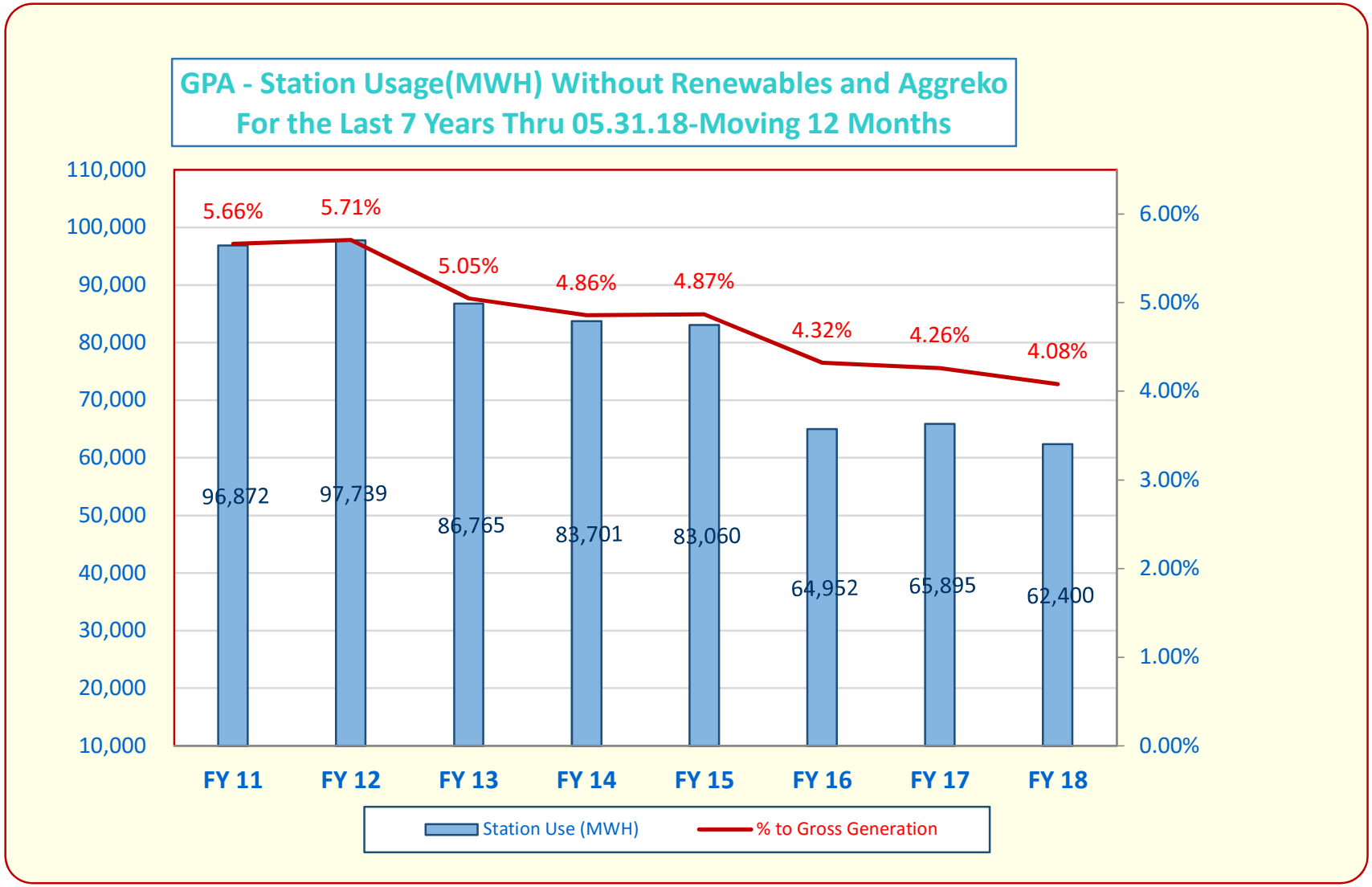
REVENUES-ACTUAL VS PROJECTIONS

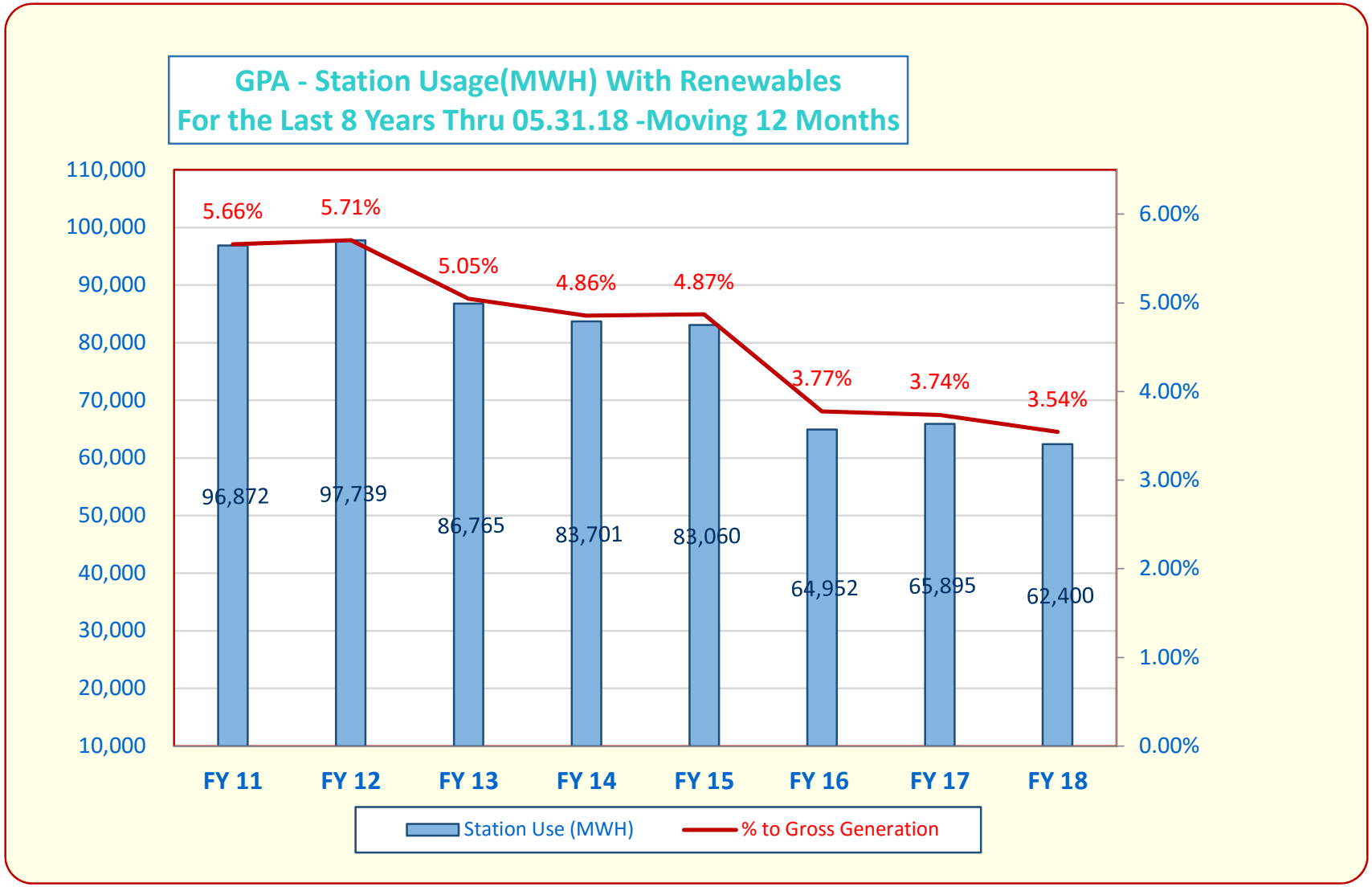
	MONTHLY - MAY 2018				YTD THRU 05/31/2018			
	PROJECTIONS	ACTUAL	VARIANCE	% VARIANCE	PROJECTIONS	ACTUAL	VARIANCE	% VARIANCE
KWH								
Residential	47,031,422	44,782,019	(2,249,403)	-4.78%	329,127,934	334,973,180	5,845,247	1.78%
Small General-Non-Demand	7,858,347	7,216,684	(641,664)	-8.17%	56,175,418	54,969,964	(1,205,454)	-2.15%
Small General-Demand	16,312,028	16,316,998	4,970	0.03%	125,106,867	124,781,697	(325,170)	-0.26%
Large	27,228,940	26,377,222	(851,719)	-3.13%	210,641,309	208,467,322	(2,173,987)	-1.03%
Independent Power Producers	34,061	26,295	(7,765)	-22.80%	263,490	364,430	100,940	38.31%
Private St. Lites	53,382	34,126	(19,255)	-36.07%	441,987	263,236	(178,751)	-40.44%
Sub-total	**98,518,180**	**94,753,344**	**(3,764,836)**	**-3.82%**	**721,757,004**	**723,819,828**	**2,062,824**	**0.29%**
Government								
Small_Non Demand	1,190,653	1,224,286	33,633	2.82%	8,784,457	9,745,582	961,125	10.94%
Small-Demand	8,568,859	8,098,401	(470,458)	-5.49%	64,273,134	63,634,757	(638,377)	-0.99%
Large	6,272,612	6,622,597	349,985	5.58%	48,465,394	50,993,697	2,528,302	5.22%
Public St. Lites	861,472	761,901	(99,571)	-11.56%	6,591,989	5,770,092	(821,897)	-12.47%
Sub-total	**16,893,596**	**16,707,185**	**(186,410)**	**-1.10%**	**128,114,975**	**130,144,128**	**2,029,153**	**1.58%**
Total-Civilian	**115,411,776**	**111,460,529**	**(3,951,246)**	**-3.42%**	**849,871,979**	**853,963,956**	**4,091,977**	**0.48%**
USN	27,544,388	26,624,376	(920,012)	-3.34%	210,558,477	208,396,216	(2,162,261)	-1.03%
Grand Total	**142,956,163**	**138,084,906**	**(4,871,258)**	**-3.41%**	**1,060,430,456**	**1,062,360,172**	**1,929,716**	**0.18%**
					-	-		
Non-Oil Yield								
Residential	0.096203	0.096207	0.000004	0.00%	0.096203	0.096264	0.000060	0.06%
Small General-Non-Demand	0.136364	0.137053	0.000689	0.51%	0.136364	0.136864	0.000500	0.37%
Small General-Demand	0.119423	0.119560	0.000137	0.11%	0.119423	0.119962	0.000539	0.45%
Large	0.103705	0.103537	(0.000167)	-0.16%	0.103705	0.103509	(0.000196)	-0.19%
Independent Power Producers	0.117983	0.119682	0.001699	0.00%	0.117983	0.109135	(0.008848)	0.00%
Private St. Lites	0.454278	0.630365	0.176087	38.76%	0.454278	0.636841	0.182563	40.19%
Sub-total	**0.105526**	**0.105579**	**0.000053**	**0.05%**	**0.105770**	**0.105722**	**(0.000048)**	**-0.05%**
Government					-			
Small_Non Demand	0.152255	0.150180	(0.002074)	-1.36%	0.152255	0.150014	(0.002240)	-1.47%
Small-Demand	0.135082	0.132608	(0.002474)	-1.83%	0.135082	0.133814	(0.001268)	-0.94%
Large	0.128102	0.125484	(0.002618)	-2.04%	0.128102	0.126643	(0.001459)	-1.14%
Public St. Lites	0.380746	0.472181	0.091434	24.01%	0.380746	0.479314	0.098567	25.89%
Sub-total	**0.146228**	**0.146557**	**0.000329**	**0.23%**	**0.146259**	**0.147536**	**0.001276**	**0.87%**
Total-Civilian	**0.111484**	**0.111721**	**0.000237**	**0.21%**	**0.111874**	**0.112094**	**0.000220**	**0.20%**
USN	0.061774	0.058553	(0.003221)	-5.21%	0.061774	0.061825	0.000052	0.08%
Grand Total	**0.101906**	**0.101470**	**(0.000436)**	**-0.43%**	**0.101926**	**0.102234**	**0.000307**	**0.30%**
Non-Oil Revenues								
Residential	4,524,582	4,308,342	(216,241)	-4.78%	31,663,223	32,245,704	582,482	1.84%
Small General-Non-Demand	1,071,598	989,072	(82,526)	-7.70%	7,660,319	7,523,396	(136,923)	-1.79%
Small General-Demand	1,948,034	1,950,862	2,828	0.15%	14,940,655	14,969,052	28,397	0.19%
Large	2,823,767	2,731,023	(92,744)	-3.28%	21,844,480	21,578,149	(266,331)	-1.22%
Independent Power Producers	4,019	3,147	(871)	-21.69%	31,087	39,772	8,685	27.94%
Private St. Lites	24,250	21,512	(2,738)	-11.29%	200,785	167,639	(33,146)	-16.51%
Sub-total	**10,396,249**	**10,003,958**	**(392,292)**	**-3.77%**	**76,340,549**	**76,523,713**	**183,164**	**0.24%**
Government								
Small_Non Demand	181,282	183,864	2,581	1.42%	1,337,473	1,461,976	124,503	9.31%
Small-Demand	1,157,497	1,073,911	(83,586)	-7.22%	8,682,130	8,515,236	(166,894)	-1.92%
Large	803,534	831,027	27,493	3.42%	6,208,516	6,458,002	249,486	4.02%
Public St. Lites	328,002	359,755	31,753	9.68%	2,509,875	2,765,683	255,808	10.19%
Sub-total	**2,470,316**	**2,448,557**	**(21,759)**	**-0.88%**	**18,737,995**	**19,200,897**	**462,903**	**2.47%**
Total-Civilian	**12,866,565**	**12,452,514**	**(414,051)**	**-3.22%**	**95,078,543**	**95,724,611**	**646,067**	**0.68%**
USN	1,701,526	1,558,948	(142,578)	-8.38%	13,007,031	12,884,194	(122,837)	-0.94%
Grand Total	**14,568,091**	**14,011,462**	**(556,629)**	**-3.82%**	**108,085,574**	**108,608,805**	**523,230**	**0.48%**
% of Total Revenues	39.88%	40.19%			39.88%	43.58%		
Oil Revenues								
Residential	7,225,544	7,063,156	(162,388)	-2.25%	50,564,670	45,402,791	(5,161,879)	-10.21%
Small General-Non-Demand	1,207,296	1,138,492	(68,804)	-5.70%	8,630,357	7,454,753	(1,175,604)	-13.62%
Small General-Demand	2,506,054	2,562,926	56,872	2.27%	19,220,451	16,867,490	(2,352,962)	-12.24%
Large	4,183,244	4,067,932	(115,312)	-2.76%	32,361,301	27,698,300	(4,663,001)	-14.41%
Independent Power Producers	5,233	3,921	(1,312)	-25.08%	40,481	44,803	4,322	10.68%
Private St. Lites	8,201	5,264	(2,937)	-35.82%	67,904	34,974	(32,929)	-48.49%
Sub-total	**15,135,571**	**14,841,690**	**(293,881)**	**-1.94%**	**110,885,163**	**97,503,110**	**(13,382,053)**	**-12.07%**
Government								
Small_Non Demand	182,923	188,843	5,921	3.24%	1,349,576	1,295,239	(54,337)	-4.03%
Small-Demand	1,316,453	1,249,114	(67,340)	-5.12%	9,874,427	8,465,981	(1,408,446)	-14.26%
Large	963,676	1,009,770	46,095	4.78%	7,445,848	6,703,571	(742,277)	-9.97%
Public St. Lites	132,350	117,517	(14,833)	-11.21%	1,012,742	769,500	(243,242)	-24.02%
Sub-total	**2,595,401**	**2,565,244**	**(30,157)**	**-1.16%**	**19,682,594**	**17,234,291**	**(2,448,303)**	**-12.44%**
Total-Civilian	**17,730,973**	**17,406,934**	**(324,038)**	**-1.83%**	**130,567,757**	**114,737,401**	**(15,830,356)**	**-12.12%**
USN	4,231,707	3,446,607	(785,100)	-18.55%	32,348,576	25,884,881	(6,463,695)	-19.98%
Grand Total	**21,962,679**	**20,853,541**	**(1,109,138)**	**-5.05%**	**162,916,333**	**140,622,282**	**(22,294,051)**	**-13.68%**
% of Total Revenues	60.12%	59.81%			60.12%	56.42%		
Grand Total								
Residential	11,750,126	11,371,498	(378,628)	-3.22%	82,227,893	77,648,495	(4,579,398)	-5.57%
Small General-Non-Demand	2,278,893	2,127,563	(151,330)	-6.64%	16,290,675	14,978,149	(1,312,526)	-8.06%
Small General-Demand	4,454,087	4,513,787	59,700	1.34%	34,161,106	31,836,542	(2,324,564)	-6.80%
Large	7,007,011	6,798,955	(208,056)	-2.97%	54,205,782	49,276,449	(4,929,332)	-9.09%
Independent Power Producers	9,251	7,068	(2,184)	-23.60%	71,568	84,575	13,007	18.17%
Private St. Lites	32,451	26,776	(5,676)	-17.49%	268,689	202,614	(66,075)	-24.59%
Sub-total	**25,531,821**	**24,845,648**	**(686,173)**	**-2.69%**	**187,225,712**	**174,026,823**	**(13,198,889)**	**-7.05%**
Government					-			
Small_Non Demand	364,205	372,707	8,502	2.33%	2,687,049	2,757,215	70,166	2.61%
Small-Demand	2,473,950	2,323,025	(150,926)	-6.10%	18,556,558	16,981,217	(1,575,341)	-8.49%
Large	1,767,210	1,840,797	73,587	4.16%	13,654,364	13,161,573	(492,791)	-3.61%
Public St. Lites	460,352	477,272	16,920	3.68%	3,522,617	3,535,184	12,566	0.36%
Sub-total	**5,065,717**	**5,013,801**	**(51,916)**	**-1.02%**	**38,420,588**	**36,435,189**	**(1,985,400)**	**-5.17%**
Total-Civilian	**30,597,538**	**29,859,448**	**(738,089)**	**-2.41%**	**225,646,301**	**210,462,012**	**(15,184,289)**	**-6.73%**
USN	5,933,233	5,005,555	(927,678)	-15.64%	45,355,607	38,769,075	(6,586,532)	-14.52%
Grand Total	**36,530,770**	**34,865,003**	**(1,665,767)**	**-4.56%**	**271,001,907**	**249,231,087**	**(21,770,821)**	**-8.03%**
	-	-	-					

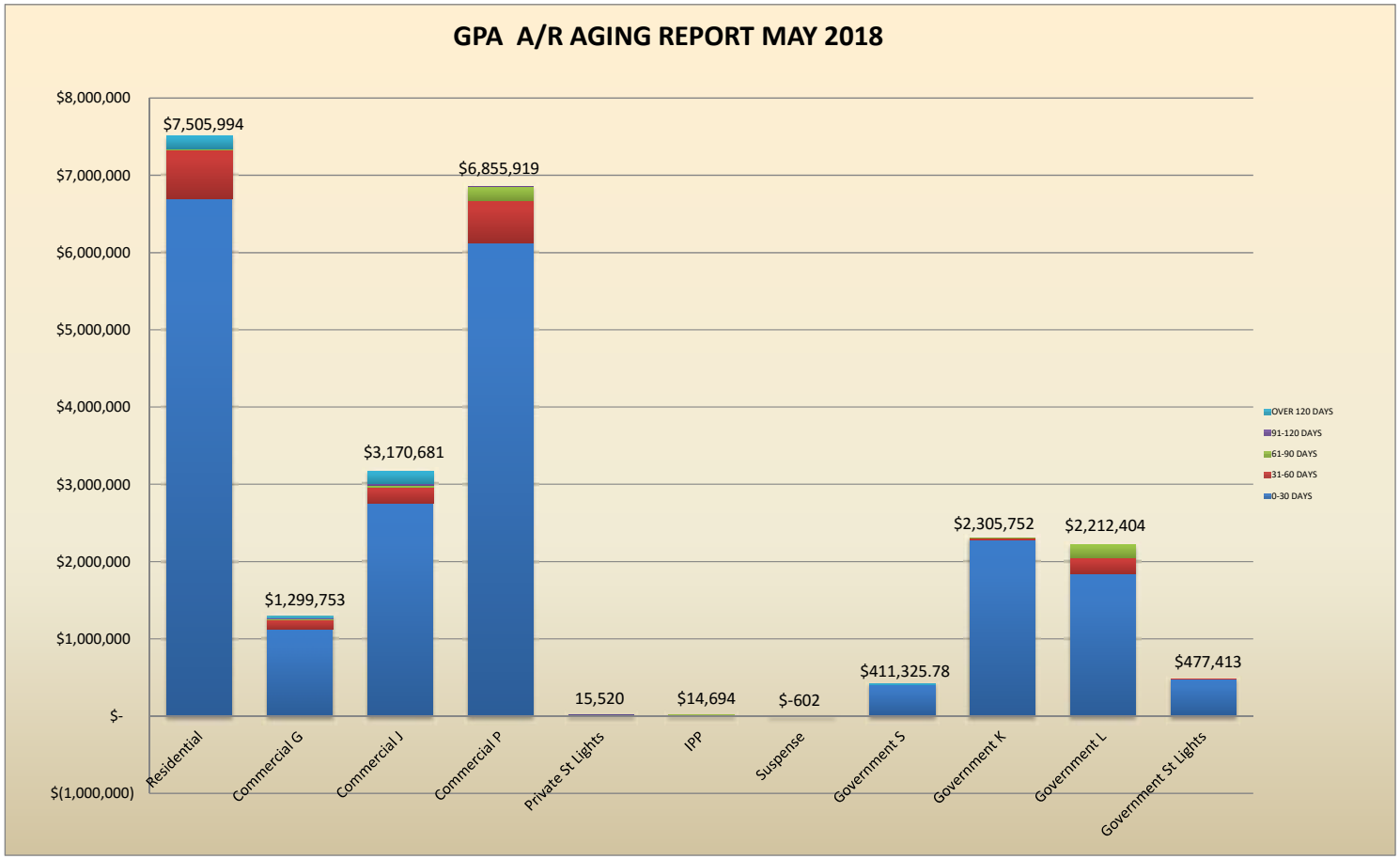
	YTD REVENUES - CURRENT YEAR VS PRIOR YEAR				MTD REVENUES - CURRENT YEAR VS PRIOR YEAR			
	ACTUALS - 8 MONTHS ENDED MAY 31				ACTUALS - MONTH ENDED MAY 31			
	2018	2017	VARIANCE	% VARIANCE	2018	2017	VARIANCE	% VARIANCE
KWH								
Residential	334,973,180	329,615,950	5,357,231	1.63%	44,782,019	46,940,445	(2,158,426)	-4.60%
Small General-Non-Demand	54,969,964	54,896,104	73,860	0.13%	7,216,684	7,375,238	(158,555)	-2.15%
Small General-Demand	124,781,697	125,360,434	(578,737)	-0.46%	16,316,998	16,415,592	(98,594)	-0.60%
Large	208,467,322	208,584,455	(117,134)	-0.06%	26,377,222	27,209,329	(832,107)	-3.06%
Independent Power Producers	364,430	693,237	(328,807)	-47.43%	26,295	97,039	(70,744)	-72.90%
Private St. Lites	263,236	310,941	(47,705)	-15.34%	34,126	31,956	2,170	6.79%
Sub-total	**723,819,828**	**719,461,121**	**4,358,707**	**0.61%**	**94,753,344**	**98,069,599**	**(3,316,255)**	**-3.38%**
Government								
Small_Non Demand	9,745,582	9,003,049	742,534	8.25%	1,224,286	1,242,514	(18,228)	-1.47%
Small-Demand	63,634,757	64,836,552	(1,201,795)	-1.85%	8,098,401	8,507,100	(408,699)	-4.80%
Large	50,993,697	49,620,504	1,373,192	2.77%	6,622,597	6,712,069	(89,472)	-1.33%
Public St. Lites	5,770,092	6,457,688	(687,596)	-10.65%	761,901	771,506	(9,605)	-1.24%
Sub-total	**130,144,128**	**129,917,794**	**226,334**	**0.17%**	**16,707,185**	**17,233,190**	**(526,004)**	**-3.05%**
Total-Civilian	**853,963,956**	**849,378,915**	**4,585,042**	**0.54%**	**111,460,529**	**115,302,789**	**(3,842,260)**	**-3.33%**
USN	208,396,216	211,920,311	(3,524,096)	-1.66%	26,624,376	27,710,121	(1,085,745)	-3.92%
Grand Total	**1,062,360,172**	**1,061,299,226**	**1,060,946**	**0.10%**	**138,084,906**	**143,012,910**	**(4,928,004)**	**-3.45%**
Non-Oil Yield								
Residential	0.096264	0.096608	-0.000344	-0.36%	0.096207	0.096578	-0.000371	-0.38%
Small General-Non-Demand	0.136864	0.137227	-0.000363	-0.26%	0.137053	0.136644	0.000410	0.30%
Small General-Demand	0.119962	0.120185	-0.000223	-0.19%	0.119560	0.128198	-0.008638	-6.74%
Large	0.103509	0.102988	0.000520	0.51%	0.103537	0.102108	0.001429	1.40%
Independent Power Producers	0.000000	0.111000	-0.111000	-100.00%	0.119682	0.108680	0.011003	10.12%
Private St. Lites	0.636841	0.568268	0.068573	12.07%	0.630365	0.659493	-0.029128	-4.42%
Sub-total	**0.105722**	**0.105883**	**-0.000161**	**-0.15%**	**0.105579**	**0.106613**	**-0.001034**	**-0.97%**
Government								
Small_Non Demand	0.150014	0.152063	-0.002048	-1.35%	0.150180	0.147515	0.002665	1.81%
Small-Demand	0.133814	0.134632	-0.000818	-0.61%	0.132608	0.128356	0.004252	3.31%
Large	0.126643	0.126254	0.000389	0.31%	0.125484	0.130406	-0.004923	-3.77%
Public St. Lites	0.479314	0.464675	0.014639	3.15%	0.472181	0.464488	0.007692	1.66%
Sub-total	**0.147536**	**0.149045**	**-0.001510**	**-1.01%**	**0.146557**	**0.145584**	**0.000973**	**0.67%**
Total-Civilian	**0.112094**	**0.112485**	**-0.000390**	**-0.35%**	**0.111721**	**0.112438**	**-0.000717**	**-0.64%**
USN	0.061825	0.061891	-0.000066	-0.11%	0.058553	0.059652	-0.001099	-1.84%
Grand Total	**0.102234**	**0.102382**	**-0.000149**	**-0.15%**	**0.101470**	**0.102210**	**-0.000740**	**-0.72%**
Non-Oil Revenues								
Residential	32,245,704	31,843,381	402,323	1.26%	4,308,342	4,533,398	(225,057)	-4.96%
Small General-Non-Demand	7,523,396	7,533,209	(9,813)	-0.13%	989,072	1,007,781	(18,709)	-1.86%
Small General-Demand	14,969,052	15,066,432	(97,380)	-0.65%	1,950,862	2,104,448	(153,586)	-7.30%
Large	21,578,149	21,481,790	96,359	0.45%	2,731,023	2,778,283	(47,259)	-1.70%
Independent Power Producers	39,772	76,949	(37,177)	-48.31%	3,147	10,546	(7,399)	-70.16%
Private St. Lites	167,639	176,698	(9,059)	-5.13%	21,512	21,075	437	2.07%
Sub-total	**76,523,713**	**76,178,460**	**345,253**	**0.45%**	**10,003,958**	**10,455,531**	**(451,573)**	**-4.32%**
Government								
Small_Non Demand	1,461,976	1,369,027	92,949	6.79%	183,864	183,289	574	0.31%
Small-Demand	8,515,236	8,729,097	(213,861)	-2.45%	1,073,911	1,091,936	(18,025)	-1.65%
Large	6,458,002	6,264,794	193,207	3.08%	831,027	875,295	(44,268)	-5.06%
Public St. Lites	2,765,683	3,000,726	(235,042)	-7.83%	359,755	358,356	1,399	0.39%
Sub-total	**19,200,897**	**19,363,645**	**(162,747)**	**-0.84%**	**2,448,557**	**2,508,875**	**(60,319)**	**-2.40%**
Total-Civilian	**95,724,611**	**95,542,104**	**182,506**	**0.19%**	**12,452,514**	**12,964,406**	**(511,892)**	**-3.95%**
USN	12,884,194	13,116,056	(231,862)	-1.77%	1,558,948	1,652,973	(94,025)	-5.69%
Grand Total	**108,608,805**	**108,658,160**	**(49,356)**	**-0.05%**	**14,011,462**	**14,617,379**	**(605,917)**	**-4.15%**
% of Total Revenues								
Oil Revenues								
Residential	45,402,791	31,942,202	13,460,589	42.14%	7,063,156	4,931,141	2,132,016	43.24%
Small General-Non-Demand	7,454,753	5,320,102	2,134,650	40.12%	1,138,492	774,776	363,716	46.94%
Small General-Demand	16,867,490	12,114,803	4,752,687	39.23%	2,562,926	1,723,760	839,166	48.68%
Large	27,698,300	19,991,333	7,706,967	38.55%	4,067,932	2,843,514	1,224,418	43.06%
Independent Power Producers	44,803	65,775	(20,972)	-31.88%	3,921	9,840	(5,919)	-60.16%
Private St. Lites	34,974	29,377	5,597	19.05%	5,264	3,357	1,907	56.80%
Sub-total	**97,503,110**	**69,463,592**	**28,039,518**	**40.37%**	**14,841,690**	**10,286,388**	**4,555,302**	**44.28%**
Government								
Small_Non Demand	1,295,239	862,412	432,828	50.19%	188,843	130,527	58,316	44.68%
Small-Demand	8,465,981	6,204,818	2,261,163	36.44%	1,249,114	893,679	355,434	39.77%
Large	6,703,571	4,748,306	1,955,266	41.18%	1,009,770	696,906	312,864	44.89%
Public St. Lites	769,500	615,169	154,331	25.09%	117,517	81,048	36,470	45.00%
Sub-total	**17,234,291**	**12,430,705**	**4,803,587**	**38.64%**	**2,565,244**	**1,802,160**	**763,084**	**42.34%**
Total-Civilian	**114,737,401**	**81,894,297**	**32,843,105**	**40.10%**	**17,406,934**	**12,088,548**	**5,318,386**	**44.00%**
USN	25,884,881	21,653,700	4,231,181	19.54%	3,446,607	3,507,292	(60,686)	-1.73%
Grand Total	**140,622,282**	**103,547,997**	**37,074,286**	**35.80%**	**20,853,541**	**15,595,841**	**5,257,700**	**33.71%**
% of Total Revenues								
Grand Total								
Residential	77,648,495	63,785,583	13,862,912	21.73%	11,371,498	9,464,539	1,906,959	20.15%
Small General-Non-Demand	14,978,149	12,853,312	2,124,837	16.53%	2,127,563	1,782,557	345,006	19.35%
Small General-Demand	31,836,542	27,181,234	4,655,307	17.13%	4,513,787	3,828,208	685,580	17.91%
Large	49,276,449	41,473,123	7,803,326	18.82%	6,798,955	5,621,797	1,177,158	20.94%
Independent Power Producers	84,575	142,724	(58,149)	-40.74%	7,068	20,386	(13,318)	-65.33%
Private St. Lites	202,614	206,075	(3,462)	-1.68%	26,776	24,432	2,344	9.59%
Sub-total	**174,026,823**	**145,642,052**	**28,384,771**	**19.49%**	**24,845,648**	**20,741,919**	**4,103,728**	**19.78%**
Government								
Small_Non Demand	2,757,215	2,231,439	525,777	23.56%	372,707	313,817	58,890	18.77%
Small-Demand	16,981,217	14,933,916	2,047,301	13.71%	2,323,025	1,985,615	337,409	16.99%
Large	13,161,573	11,013,100	2,148,473	19.51%	1,840,797	1,572,201	268,597	17.08%
Public St. Lites	3,535,184	3,615,895	(80,711)	-2.23%	477,272	439,403	37,869	8.62%
Sub-total	**36,435,189**	**31,794,349**	**4,640,839**	**14.60%**	**5,013,801**	**4,311,035**	**702,765**	**16.30%**
Total-Civilian	**210,462,012**	**177,436,401**	**33,025,611**	**18.61%**	**29,859,448**	**25,052,955**	**4,806,494**	**19.19%**
USN	38,769,075	34,769,756	3,999,319	11.50%	5,005,555	5,160,265	(154,711)	-3.00%
Grand Total	**249,231,087**	**212,206,157**	**37,024,930**	**17.45%**	**34,865,003**	**30,213,220**	**4,651,783**	**15.40%**


GPA - T and D Losses (MWH) Without Renewables and Aggreko
For the Last 7 Years thru 05.31.18 -Moving 12 Months
130,000
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
8.00%
7.00%
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
7.02%
7.26%
6.31%
5.20%
4.88%
5.44%
5.67%
5.67%
113,279
117,269
103,049
85,295
79,267
78,281
83,949
83,154
FY 11
FY 12
FY 13
FY 14
FY 15
FY 16
FY 17
FY 18
T and D Losses (MWH)
T and D Losses (% to Net Generation)


GPA - T and D Losses (MWH) With Renewables
For the Last 8 Years thru 05.31.18 -Moving 12 Months
130,000
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
7.00%
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
7.02%
7.26%
6.31%
5.20%
4.88%
4.73%
4.95%
4.90%
113,279
117,269
103,049
85,295
79,267
78,281
83,949
83,154
FY 11
FY 12
FY 13
FY 14
FY 15
FY 16
FY 17
FY 18
T and D Losses (MWH)
T and D Losses (% to Net Gen.)


GPA - Station Usage(MWH) Without Renewables and Aggreko
For the Last 7 Years Thru 05.31.18-Moving 12 Months
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
5.66%
5.71%
5.05%
4.86%
4.87%
4.32%
4.26%
4.08%
96,872
97,739
86,765
83,701
83,060
64,952
65,895
62,400
FY 11
FY 12
FY 13
FY 14
FY 15
FY 16
FY 17
FY 18
Station Use (MWH)
% to Gross Generation


GPA - Station Usage(MWH) With Renewables
For the Last 8 Years Thru 05.31.18 -Moving 12 Months
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
5.66%
5.71%
5.05%
4.86%
4.87%
3.77%
3.74%
3.54%
96,872
97,739
86,765
83,701
83,060
64,952
65,895
62,400
FY 11
FY 12
FY 13
FY 14
FY 15
FY 16
FY 17
FY 18
Station Use (MWH)
% to Gross Generation


GPA A/R AGING REPORT MAY 2018
$8,000,000
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
$(1,000,000)
$7,505,994
$1,299,753
$3,170,681
$6,855,919
15,520
$14,694
$-602
$411,325.78
$2,305,752
$2,212,404
$477,413
Residential
Commercial G
Commercial J
Commercial P
Private St Lights
IPP
Suspense
Government S
Government K
Government L
Government St Lights
OVER 120 DAYS
91-120 DAYS
61-90 DAYS
31-60 DAYS
0-30 DAYS

GUAM POWER AUTHORITY

GOVERNMENT ACCOUNTS RECEIVABLE

BILLING UP TO 06/30/2018 and Payment Applied as of 07/23/2018

Current (06/18 Billing due 07/31/18
30 days Arrears (05/18 due 06/15/18)
60 days and over Arrears (04/18 billing due 05/15/18)

CC&B ACCT NUMBER	DEPARTMENT	BALANCE 5/31/2018	CANCEL/REBILL/ SPEC CHARGE 6/30/2018	BILLING 6/30/2018	PAYMENT 7/23/2018	BALANCE 7/23/2018	
	Line Agencies						
0237100000	Dept. of Corrections	$ 85,531.34		$ 81,163.13	$ (166,694.47)	$ -	
0437100000	Dept. of Parks & Rec.	$ 23,927.08	$ 79.83	$ 26,175.52	$ (36,674.38)	$ 13,508.05	
0537100000	Guam Fire Department	$ 17,759.42		$ 17,369.62	$ (35,129.04)	$ -	
6995000000	DOA Supply Mgmt	$ 1,603.17		$ 1,224.12	$ (2,827.29)	$ -	
7895000000	Dept. of Administration	$ 3,852.38		$ 3,746.35	$ (7,598.73)	$ -	
1337100000	Nieves Flores Library	$ 11,093.61		$ 10,366.73	$ (21,460.34)	$ -	
2206200000	General Services Agency	$ 264.93		$ 267.48	$ (532.41)	$ -	
2237100000	DOA-Data Processing	$ 8,942.41		$ 8,659.23	$ (17,601.64)	$ -	
2337100000	Dept. of PH&SS	$ 76,465.42		$ 72,522.35	$ (100,105.17)	$ 48,882.60	
3237100000	Dept. of Education	$ 1,271,384.23		$ 893,951.41	$ (1,271,384.23)	$ 893,951.41	
3337100000	Guam Police Department	$ 40,301.25		$ 42,386.17	$ (82,687.42)	$ -	
3569100000	Dept of Youth Affairs (Federal)	$ 968.31		$ 971.68	$ (1,939.99)	$ -	
4437100000	Dept. of Youth Affair* (Local)	$ 12,143.86		$ 11,310.87	$ (23,454.73)	$ -	
4737100000	Guam Environmental Protect	$ 7,151.97		$ 6,689.68	$ (13,841.65)	$ -	
5437100000	Mental Health/Subst.	$ 48,544.15		$ 46,016.37	$ (94,560.52)	$ -	
7200300000	Veteran Affairs	$ 1,002.79		$ 1,004.22	$ (2,007.01)	$ -	
7437100000	Civil Defense (Military Affairs)	$ 11,994.85		$ 10,896.78	$ (22,891.63)	$ -	
7463300000	Pacific Energy Resource Center	$ 792.23		$ 744.46	$ (1,536.69)	$ -	
8137100000	Dept. of Agriculture	$ 10,493.12		$ 9,768.47	$ (20,261.59)	$ -	
8337100000	DPW-FAC Adm Account	$ 26,180.77		$ 26,199.75	$ (52,380.52)	$ -	
8437100000	Guam Visitors Bureau	$ 4,544.51		$ 4,324.34	$ (8,868.85)	$ -	
8446300000	Yona Senior Citizen Center	$ 1,066.65		$ 986.93	$ (2,053.58)	$ -	
9437100000	Dept of Chamorro Affairs/Chamorro Village	$ 4,574.84		$ 4,221.99	$ (4,574.84)	$ 4,221.99	
5247210000	Mayors Council	$ 2,425.01		$ 2,204.47	$ (4,629.48)	$ -	
6293410000	Office of the Governor	$ 25,477.17		$ 23,482.55	$ (48,959.72)	$ -	
8555858369	Dept of Chamorro Affairs (Guam Museum)	$ 24,417.22		$ 21,891.77	$ (46,308.99)	$ -	
	Sub Total	**$ 1,722,902.69**	**$ 79.83**	**$ 1,328,546.44**	**$ (2,090,964.91)**	**$ 960,564.05**	
	MAYORS						
0637100000	Santa Rita Mayor	$ 4,178.66	$ 198.26	$ 3,734.90	$ (8,111.82)	$ -	
0737100000	Ordot/Chalan Pago Mayor	$ 2,022.76		$ 1,669.23	$ (3,691.99)	$ -	
1537100000	Hagatna Mayor	$ 1,596.56		$ 1,462.68	$ (3,059.24)	$ -	
1637100000	Piti Mayor	$ 1,287.74		$ 1,397.17	$ (2,684.91)	$ -	
1737100000	Mongmong/Toto/Maite Mayor	$ 1,139.73		$ 1,177.04	$ (2,316.77)	$ -	
2637100000	Asan/Maina/Adelup Mayor	$ 971.02	$ 25.00	$ 986.62	$ (1,982.64)	$ -	
2737100000	Sinajana Mayor	$ 4,922.90		$ 5,111.83	$ (10,034.73)	$ -	
3637100000	Dededo Mayor	$ 7,045.08		$ 6,691.56	$ (13,736.64)	$ -	
4637100000	Yigo Mayor	$ 3,872.84		$ 3,579.19	$ (7,452.03)	$ -	
5637100000	Umatac Mayor	$ 1,872.45		$ 1,197.26	$ (3,069.71)	$ -	
6537100000	Agana Hts. Mayor	$ 6,103.46	$ (655.71)	$ 7,998.20	$ (13,445.95)	$ -	
6637100000	Merizo Mayor	$ 997.25		$ 1,194.05	$ (2,191.30)	$ -	
6737100000	Barrigada Mayors Office	$ 2,253.24		$ 2,065.05	$ (4,318.29)	$ -	
7537100000	Agat Mayor	$ 3,048.23	$ 468.61	$ 2,195.81	$ (5,746.65)	$ (34.00)	
7637100000	Inarajan Mayor	$ 2,549.23		$ 2,030.85	$ (4,580.08)	$ -	
8537100000	Tamuning Mayor	$ 6,165.41		$ 5,792.57	$ (11,957.98)	$ -	
8637100000	Talofofo Mayor	$ 8,189.54		$ 2,356.97	$ (10,546.51)	$ -	
9537100000	Mangilao Mayor	$ 4,753.50		$ 4,677.92	$ (9,431.42)	$ -	
9637100000	Yona Mayor	$ 981.64		$ 832.41	$ (1,814.05)	$ -	
	Sub Total	**$ 63,951.24**	**$ 36.16**	**$ 56,151.31**	**$ (120,172.71)**	**$ (34.00)**	
	DPW ACCOUNTS						
4337100000	DPW-Village St. Lights	$ 326,984.01	$ (30,673.55)	$ 424,876.20	$ (721,186.66)	$ -	
5337100000	DPW- Primary St. Lights	$ 81,414.79	$ (280.90)	$ 92,728.72	$ (173,862.61)	$ -	
6337100000	DPW-Sec/Coll St. Lights	$ 26,212.87		$ 26,467.31	$ (52,680.18)	$ -	
7337100000	DPW-Signal Lights	$ 10,729.13	$ (67.08)	$ 10,227.14	$ (20,889.19)	$ -	
	Sub Total	**$ 445,340.80**	**$ (31,021.53)**	**$ 554,299.37**	**$ (968,618.64)**	**$ -**	
	(B) AUTONOMOUS/PUBLIC CORP						
1437100000	Retirement Fund	$ 4,609.62		$ 5,099.93	$ (9,709.55)	$ -	
1915500000	Guam Housing Corp Rental Division	$ 2,091.48	$ 79.93	$ 1,473.82	$ (1,537.47)	$ 2,107.76	1
2437100000	University of Guam	$ 200,367.26		$ 184,158.69	$ (384,525.95)	$ -	
4237100000	Guam Airport Authority	$ 542,326.86	$ (25.00)	$ 519,079.36	$ (1,061,381.22)	$ -	
5357510000	University of Guam (NET METERED)	$ 85,759.38		$ 76,371.49	$ (162,130.87)	$ -	
6237100000	G H U R A	$ 14,957.05	$ 19.02	$ 26,033.46	$ (26,973.08)	$ 14,036.45	
6437100000	Guam Community College	$ 51,781.41		$ 48,020.75	$ (99,802.16)	$ -	
7237100000	Guam Memorial Hospital	$ 537,009.07	$ 2,742.94	$ 161,652.82	$ (171,283.99)	$ 530,120.84	2

9137100000	Port Authority of Guam	$ 105,215.30		$ 93,329.98	$ (198,545.28)	$ -	
9157510000	Guam Community College (NET METERED)	$ 40,612.72		$ 38,401.21	$ (79,013.93)	$ -	
9173210000	Guam Solid Waste Authority	$ 6,300.25		$ 6,023.69	$ (12,323.94)	$ -	
9337100000	Guam Waterworks Authority	$ 1,298,329.85	$ 150.00	$ 1,242,598.95	$ (1,298,479.85)	$ 1,242,598.95	
8237100000	GPA	$ -				$ -	
	Sub Total	**$ 2,889,360.25**	**$ 2,966.89**	**$ 2,402,244.15**	**$ (3,505,707.29)**	**$ 1,788,864.00**	
	(C) OTHERS						
0337100000	Guam Legislature	$ 183.89		$ 222.89	$ (406.78)	$ -	
9503154359	Guam Legislature (NET METER)	$ 7,321.73		$ 7,077.49	$ (14,399.22)	$ -	
1237100000	Superior Court of Guam	$ 80,328.61		$ 72,140.79	$ (80,328.61)	$ 72,140.79	
2537100000	Agana (Guam) Post Office	$ 6,611.07		$ 6,093.38	$ (12,704.45)	$ -	
2570200000	Customs & Quarantine Agency	$ 1,011.11		$ 925.40	$ (1,936.51)	$ -	
3537100000	U.S. Post Office	$ 47,226.10		$ 44,110.02	$ (91,336.12)	$ -	
5537100000	Dept. of Military Affairs	$ 75,538.61		$ 76,414.35	$ (151,952.96)	$ -	
3209463043	Dept. of Military Affairs	$ 17,220.71		$ 16,501.13	$ (33,721.84)	$ -	
5737100000	KGTF	$ 7,020.80		$ 6,438.99	$ (13,459.79)	$ -	
7281000000	Tamuning Post Office	$ 5,280.86		$ 4,957.04	$ (10,237.90)	$ -	
	Sub Total	**$ 247,743.49**	**$ -**	**$ 234,881.48**	**$ (410,484.18)**	**$ 72,140.79**	
	GRAND TOTAL	**$ 5,369,298.47**	**$ (27,938.65)**	**$ 4,576,122.75**	**$ (7,095,947.73)**	**$ 2,821,534.84**	

GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUAHAN
P.O.BOX 2977 • AGANA, GUAM U.S.A. 96932-2977

Issues for Decision

Resolution No. GPA 2018-14 & GWA 38-FY2018:

Relative to CCU CYBERSECURITY POLICIES AND PROCEDURES

What is the project's objective and is it necessary and urgent?

The CCU instituted the Cybersecurity Committee in 2017 to serve as the advisory and oversight group regarding information technology, infrastructure, and cybersecurity. The committee's responsibilities include the Guam Power Authority and Guam Waterworks Authority (GPWA) information technology systems, which includes policies, controls, risk mitigation, and infrastructure asset protection. A network security assessment recommended that GPWA develop common objectives and controls by establishing common policies, procedures, and business processes to manage risks.

The Cybersecurity initiative resulted in the formation of guidelines to ensure consistency and adequate protection and safeguards to GPWA systems, and resulted in the Password Creation and Protection Policy, the Computer, Software, License, E-mail, Internet, and Standard of Conduct policy, and the Network and Data System Access Policy.

Where is it located or covers?

This will cover all GPWA infrastructure, assets and information technology systems.

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

GPA RESOLUTION NO. 2018-14
GWA RESOLUTION NO. 38-FY2018

CCU CYBERSECURITY POLICIES AND PROCEDURES

WHEREAS, the CCU instituted the Cybersecurity Committee in 2017 to serve as the advisory and oversight group regarding information technology, infrastructure, and cybersecurity. The committee's responsibilities include the Guam Power Authority and Guam Waterworks Authority (GPWA) information technology systems, which includes policies, controls, risk mitigation, and infrastructure asset protection; and

WHEREAS, a network security assessment recommended that GPWA develop common objectives and controls by establishing common policies, procedures, and business processes to manage risks; and

WHEREAS, the Cybersecurity initiative resulted in the formation of guidelines to ensure consistency and adequate protection and safeguards to GPWA systems, and resulted in the Password Creation and Protection Policy, the Computer, Software, License, E-mail, Internet, and Standard of Conduct policy, and the Network and Data System Access Policy.

NOW THEREFORE, BE IT RESOLVED, by the Consolidated Commission on Utilities, as follows:

1. The Guam Power Authority and Guam Waterworks Authority General Managers are hereby authorized to implement and update the Cybersecurity policies for GPWA as required.

RESOLVED, that the Chairman of the Commission certifies and the Secretary of the Commission attests the adoption of this Resolution.

DULY and REGULARLY ADOPTED this 24th day of July,2018.

Certified by: **Attested by:**

JOSEPH T. DUENAS
CHAIRMAN

J. GEORGE BAMBA
SECRETARY

I, J. GEORGE BAMBA, Secretary for the Consolidated Commission on Utilities do hereby certify that the foregoing is a full, true, and correct copy of the resolution duly adopted at a regular meeting of the members of Guam's Consolidated Commission on Utilities, duly and legally held at a place properly noticed and advertised at which meeting a quorum was present and the members who were present voted as follows:

Ayes: _____

Nays: _____

Absent: _____

Abstain: _____

New Power Plant Technical Bid Documents

John M. Benavente, P.E.
General Manager
July 24, 2018


VIEW FROM GUAM REGIONAL MEDICAL CENTER

IFB documents key points

- Technology Neutral
  - Allows Combined Cycle, Reciprocating Engines, renewable and any type of flexible generation
- Size range 120-180 MW
- Property Site Purchased by GPA; Site to be a Portion of 60 Acres
- IPP BOT model 25 years – with additional 5 year option (30 years total)
- Four months bid development time allowed for the selected seven (7) prequalified proponents

Risks

- Procurement and Contracting delays
  - Approval of IFB documents
  - Amendments to documents
  - Approval of Contract
- Insufficient number of Independent Power Producer (IPP) bids
  - Withdrawal
  - Non responsive or non compliant
- IFB protests
- Complex proposals with varied options
- EPA Consent decree deadline unknown

Risks - continued

- Permitting delays
- Lack of Skilled Workers results in construction delays
- Unknown property issues
  - Sinkholes – poor geotechnical
  - Endangered species found
  - Cultural artifacts found
- Easements for pipeline and transmission line rights of way
- System studies and upgrades may be required

Technical Proposal Requirements

- 120-180 MW Plant Capacity
- Dual fuel capable with ULSD initially; Natural Gas Burning Capability
- Fully dispatchable as Base Load, Intermediate Load, and Frequent Startup and Shutdown Capable
- Project Company will complete a Grid Study to show Technology Proposed meet Reliability Requirement:
  - Steady state and dynamics modeling using Positive Sequence Load Flow (PSLF) software
- Meet GPA Reliability Standards; Plant works well with PV Renewables
- Synchronous condenser requirement for Grid Stability
- Transient response
  - 5% within 1 second. 10% within 2 seconds
  - 25 MW per minute regulation

Technical Proposal Requirements - continued

- Capable of providing the full Dependable Capacity at any given time regardless of the weather conditions.
- The loss of a single generating unit should not cause loss of Load
- GPA will provide rights of way for the ULSD/Natural Gas pipeline and the 115 KV transmission interconnection from the GPA property plant site to the Harmon substation
- Project Company responsible for all permitting including construction, environmental, etc.

Technical Proposal Requirements - continued

- High Voltage transmission line and pipelines transferred to GPA after Commissioning Operating Date (COD)
- Provisions for an optional partial commissioning should plant capacity needed earlier
- Natural gas pipeline installed into same right of way as ULSD pipeline
  - Pipeline protection while not in use
  - Natural gas pipeline complies with FERC requirements
- Noise level at the site boundary shall not exceed 45 dB(A)
- Utilize GWA grey water for makeup – if cooling tower is required

Technical Proposal Requirements - continued

- Discharge to GWA or into a Zero Liquid Discharge system
- Potable water supplied from GWA
- Sea water use for makeup or any other purpose not allowed
- Architectural requirements
  - Building designs approved by GPA
  - Style, colors and finishes compatible with Guam's island heritage
  - Exterior colors and finishes blend in with surrounding
  - Low-rise buildings unless taller required for equipment enclosure
- Aesthetic Buffer zone around plant
- Utilize only part of provided property (~25 acres for plant)
- 30-day on-site fuel storage
- Transfer facility for loading and unloading fuel delivery trucks (for resiliency)
- 7-day on-site water storage

Technical Proposal Requirements - continued

- Proponent proposal requirement
  - One original and five copies
  - Complete Section D Forms
  - Provide separate technical and commercial proposals in two separate envelopes
  - Proposal security required
    - GPA required **$3M** bid bond
  - Maximum debt to equity ratio of 80% to 20%
  - Equity required by lead developer at least 35% of the total equity
  - Responsive test Section B Appendix A

Technical Proposal Requirements - continued

- Successful proponent requirements
  - GPA employee hiring opportunity to address positions that will be impacted by the retirement of Cabras 1&2
  - Construction security of $50M at financial closing; released 3 months after COD – Section B 7.3 and ECA Section 9.6
  - **Transfer Security of approximately $ 6.3M** – to replace Operational Security and released 1 year after transfer
  - **Liquidated damages**
    - Delay in achieving COD
    - Failure to meet Contracted Capacity and Performance Guarantees
    - Excessive outages
    - Failure to meet guaranteed renewable generation – in case of a hybrid plant

Technical Proposal Requirements - continued

- Successful proponent requirements
  - OSHA safety compliance
  - Monthly reports
  - Schedule updates
  - Progress meetings
  - Reliability test 7 days with 72 hours at maximum dependable capacity and other tests for performance guarantees
  - Annual dependable capacity and performance test
  - Maintenance and testing prior to transfer at the end of the Term.

Evaluation

- Technical compliance
  - Meets of Exceeds Technical Specification Requirements
  - Meets or exceeds GPA minimum reliability requirements
  - Passes reserve evaluation utilizing PICES software to insure the PUC approve 1 day in 4.5 years reliability criteria is met
- Price proposal
  - Opened only for bidders who passed technical compliance above
  - Cost evaluation of the following factors:
    - Capacity Fee
    - Fixed O&M
    - Variable O&M
    - Fuel Efficiency
    - Reserve Requirement
  - Lowest Net Present Value Cost is the Lowest Bidder

Next Steps:

- CCU approval IFB documents Tuesday 7/24/18
- All revisions of IFB documents finalized by Tuesday 7/31/18
- Petition PUC approval of IFB documents on 8/03/18
- Request PUC approval to issue CCU approved documents to IPP, subject to any subsequent changes ordered by the PUC. Amendments to bid during the bid period is not unusual. Approval will help improve bid schedule. Plant COD appears to be now between June 2022 to September 2022. Original target date was December 2021.

Revised Schedule:

No.	Activity	Duration (Days)	Cumulative Duration (Days)	Expected Completion	Best Case Completion
1	**CCU work session**			7/17/2018	
2	**CCU Meeting**			7/24/2018	
3	**PUC Meeting**			8/30/2018	
4	IFB Issued to Potential Bidders			9/10/2018	7/31/2018
5	Pre-Bid Meeting with Bidders	30	30	10/10/2018	8/31/2018
6	Bid Date - Proposals (Envelopes I and II) submitted to GPA. Envelope I Public Opening	82	112	12/31/2018	11/26/2018
7	Complete Evaluation of Envelope I; Invite Responsive Bidders to Envelope II Opening	44	156	2/13/2019	1/14/2019
8	Conduct Envelope II Public Bid Opening Meeting	1	157	2/14/2019	1/15/2019
9	Complete Evaluation of Envelope II; Invite the First-Ranked Bidder to Clarification Meeting	46	203	4/1/2019	2/26/2019
10	Conduct Clarification Meeting(s) with First-Ranked Bidder and other top-ranked Bidders as required and selection of the Selected Bidder.	35	238	5/20/2018	3/28/2019
11	Complete Negotiations of ECA with the Selected Bidder.	57	295	7/30/2019	5/24/2019
12	**GPA Rate Impact Study**		295	7/30/2019	5/31/2019
13	**CCU Work session**		295	8/8/2019	
14	**CCU Meeting**		295	8/27/2019	6/4/2019
15	**PUC Meeting**		323	9/24/2019	6/27/2019
16	Obtain CCU and PUC approval		379	9/24/2019	6/27/2019
17	Sign the ECA with the Selected Bidder.	1	380	9/25/2019	6/28/2019
18	IPP achieves financial close and starts construction.	180	560	3/23/2020	12/28/2019
19	Phase 1 Commercial Operation Date	600	1,160	11/13/2021	8/19/2021
20	Phase 2 Commercial Operation Date	300	1,460	9/9/2022	6/15/2022

GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUAHAN
P.O.BOX 2977 • AGANA, GUAM U.S.A. 96932-2977

Issues for Decision

Resolution No. 2018-15:

RELATIVE TO AUTHORIZING THE MANAGEMENT OF THE GUAM POWER AUTHORITY (GPA) TO PETITION THE PUBLIC UTILITES COMMISSION FOR THE APPROVAL OF THE MULTI-STEP BID BOT SPECIFICATION FOR NEW 120-180MW GENERATION CAPACITY

What is the project's objective? Is it necessary and urgent?

Multi-Step Bid GPA-034-18 is for a Build, Own/Operate and Transfer (BOT) contract for 120-180MW New Generation Capacity. GPA was provided conditional approval by the PUC in November 2017 to initiate the solicitation to establish a qualified bidders list through Docket 18-02. The technical specifications are required and require PUC approval when completed. GPA has completed these technical specifications and seeks approval to continue with the bid for new capacity. GPA shall obtain CCU approval of the final contract upon completion of the bid.

Where is the location?
Harmon

How much will it cost?
New Power Plant construction is estimated up to $400M. The BOT would recover costs over a 25-30 year term

When will it be completed?
Complete plant by September 2022.

What is its funding source?
Insurance Proceeds (Cabras 3&4) and Revenue Generated Funds

The RFP/BID responses:

GPA has completed Step 1 of this three-step multi-step bid. A qualified bidders list has been selected and will be provided the technical bid specifications upon PUC approval.

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

RESOLUTION NO. 2018-015

AUTHORIZING THE MANAGEMENT OF THE GUAM POWER AUTHORITY (GPA) TO PETITION THE PUBLIC UTILITES COMMISSION FOR THE APPROVAL OF THE MULTI-STEP BID BOT SPECIFICATION FOR NEW 120-180MW GENERATION CAPACITY

WHEREAS, on November 30, 2017, the PUC approved (Docket 18-02) a multi-step procurement process and authorized GPA to issue the Request for Qualifications for the 120-180MW new power plant; and

WHEREAS, on January 16, 2018 GPA issued Multi-Step Bid GPA-034-18 for Build, Own/Operate & Transfer Contract for 120-180MW of New Generation Capacity; and

WHEREAS, in June 2018, GPA selected seven (7) firms to establish a Qualified Bidders list that will participate in the next phases of the multi-step bid which includes the development and submittal of a technical proposal and a price proposal; and

WHEREAS, GPA has completed the technical specification documents for of the 120-180MW New Generation Capacity bid which address the following:

- Build, Own/Operate and Transfer (BOT) contract
- Specifications for 120MW – 180MW flexible generation to meet renewable integration requirements
- Specifications for dual firing units for ultra-low sulfur diesel and natural gas
- Architectural requirements and GPA involvement during design process
- Federal and Local Environmental and Safety requirements
- GPA Employee Hiring Opportunity
- Bond & Security Requirements during bid and construction periods
- PUC approval 1 day in 4.5 years reliability criteria
- GPA minimum reliability requirements
- Lowest present value cost as basis for award
- Draft contract; and

WHEREAS, PUC Docket 18-02 requires GPA to submit and obtain approval of the technical bid documents from PUC; and

NOW THEREFORE, BE IT RESOLVED, by the Consolidated Commission on Utilities, subject to the review and approval of the Public Utilities Commission, as follows:

1. The Technical Bid documents for Multi-Step Bid GPA-034-18 for the Build, Own/Operate & Transfer (BOT) Contract for 120-180MW of New Generation Capacity is hereby approved.
2. GPA shall obtain CCU approval of the final contract upon completion of the bid.

RESOLVED, that the Chairman of the Commission certifies and the Secretary of the Commission attests the adoption of this Resolution.

DULY and REGULARLY ADOPTED this 24th day of July, 2018.

Certified by: **Attested by:**

JOSEPH T. DUENAS	**J. GEORGE BAMBA**
CHAIRMAN	**SECRETARY**

I, J. GEORGE BAMBA, Secretary for the Consolidated Commission on Utilities do hereby certify that the foregoing is a full, true, and correct copy of the resolution duly adopted at a regular meeting of the members of Guam's Consolidated Commission on Utilities, duly and legally held at a place properly noticed and advertised at which meeting a quorum was present and the members who were present voted as follows:

Ayes: _____

Nays: _____

Absent: _____

Abstain: _____

INVITATION FOR BID

FOR DEVELOPMENT OF A 120-180 MW POWER PLANT IN GUAM ON A BUILD, OPERATE, TRANSFER (BOT) BASIS

Tender No. GPA-XXX-XXX

Section A

Information for Bidders

JULY 2018



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Transfer

1 General

1.1 Introduction

Guam, the largest island in Micronesia and an unincorporated and organized territory of the United States, is located in the Pacific Ocean about three-fourths of the way from Hawaii to the Philippines. Surrounded by coral reef, Guam sits on the edge of the Mariana Trench and its Challenger Deep, the deepest known place on earth. Guam has a tropical marine climate that is warm and humid with little seasonal temperature variation. The dry season runs from December to June, and the rainy season runs from July to November.

The Guam Power Authority (GPA) is a public corporation and an enterprise fund of the Government of Guam responsible for the territory's electricity supply. GPA was established in 1968 by means of The Guam Power Authority Act of 1968, [under which] Guam Code 12 Chapter 8 sets forth the legal definitions, empowerments and limitations for GPA. The Consolidated Commission on Utilities (CCU), a five-member elected board of directors, administers GPA and the Guam Public Utilities Commission (Guam PUC) regulates GPA.

GPA is a full service electric utility, which generates, transmits, and distributes electric energy from its various power generation resources to individual customers. Table 1.1 presents a summary of Guam generating resources as of the end of 2013.

Table 1.1: Guam Generating Resources

Name	Technology	Fuel	Net Capacity, MW	Year Installed	Ownership	Expiration of ECA	Planned for Retirement after Addition of the Project
Cabras 1	Boiler/STG	HS/LS RFO	62.5	1974	GPA (operated by TEMES)		62.5
Cabras 2	Boiler/STG	HS/LS RFO	59.2	1975	GPA (operated by TEMES)		59.2
Cabras 3	SSR	HS/LS RFO	37.7	1996	GPA (operated by KEW)		37.7
Cabras 4	SSR	HS/LS RFO	37.7	1996	GPA (operated by KEW)		37.7
Dededo CT 1	CTG	ULSD	22.0	1992	GPA		22
Dededo CT 2	CTG	ULSD	22.0	1994	GPA		22
Dededo Recip 1-4	MSR	ULSD	9.8	1972	GPA		9.8
Macheche CT	CTG	ULSD	19.0	1993	GPA		
Marbo CT	CTG	ULSD	16.0	1993	GPA		16

Name	Technology	Fuel	Net Capacity, MW	Year Installed	Ownership	Expiration of ECA	Planned for Retirement after Addition of the Project
Manenggon Recip 1 & 2	MSR	ULSD	10.4	1993	GPA		
Piti 7	CTG	ULSD	39.3	1997	TEMES/IPP	2017	
Piti 8	SSR	HS/LS RFO	43.2	1999	MEC/IPP	2019	
Piti 9	SSR	HS/LS RFO	43.2	1999	MEC/IPP	2019	
Talofofo Recip 1 & 2	MSR	ULSD	8.6	1994	GPA		
Tanguisson 1	Boiler/STG	HS RFO	24.8	1976	Pruvient/IPP	2017	24.8
Tanguisson 2	Boiler/STG	HS RFO	24.8	1976	Pruvient/IPP	2017	24.8
Tenjo Recip 1-6	MSR	ULSD	25.9	1994	GPA		
Yigo CT	CTG	ULSD	19.0	1993	GPA		
Total:			**525.1**				**316.5**

Source: GPA IRP 2013

As can be seen from the above table, as of 2013 GPA had installed net generating capacity of 525 MW, not considering renewables. Prior to 2015 GPA officially deactivated Dededo CT 1&2, Marbo CT, Dededo Recip 1-4 (Dededo Diesel Plant) and Tanguissan 1&2 primarily due to the adequacy of existing generation and the high operation and maintenance costs of these units. In 2015, a fire destroyed the Unit 3 and 4 slow speed diesels at the Cabras power plant. To mitigate the loss of the Unit 3 and 4 capacity, GPA entered into a lease agreement with Aggreko for a 40 MW high speed diesel plant. GPA also entered into a Performance Management Contract (PMC) for its northern combustion turbine plants and rehabilitated and recommissioned the Dededo CT 1&2 power plant.

The GPA generation system includes two independent power projects (IPPs) with a combined net capacity of 175.3 MW all constructed in the late 1990s. The Energy Conversion Agreement (ECA) for the Piti 7 Unit expired in 2017, and the ECA for Piti 8&9 expires in January 2019.

Most of the power plants owned by GPA are operated and maintained under PMCs including the PMC with TEMES for Cabras Units 1 and 2 steam cycle plant. Prior to the 2015 fire, Korean East-West Power (KEWP) held the PMC for Cabras slow speed Units 3 and 4 (combined net capacity of 75.4 MW; currently not operating). In 2016, GPA signed the PMC with TEMES for GPA's northern combustion turbine units.

The current peak system demand is 266 MW. Based on demand in recent years and the trend going forward, GPA anticipates system peak to be around 283 MW by 2021.

Guam has no fossil energy resources. Nearly all of its electricity is generated using petroleum products shipped in by tanker. GPA's steam cycle and slow speed diesel plants generate electricity using No. 6 residual fuel oil while the gas turbine and medium and high-speed diesel plants generate electricity using Ultra Low Sulfur Diesel (ULSD). Due to its use of residual fuel oil, GPA is in violation of the Environmental Protection Agency (EPA) rules regarding sulfur emissions. To comply with the EPA rules, GPA should either substantially modify most of its existing base load power plants

or develop a new efficient base load facility with better environmental characteristics to replace the older existing power plants.

As part of its energy diversification strategy, GPA is developing renewable power. Guam renewable power sources currently include a 26.5 MW PV solar farm owned by NRG. GPA has approved over 1600 applications for installation of mainly roof top solar panels totaling over 16MW of installed capacity; which shall allow for the sale of power to GPA under "net metering" arrangements. GPA is currently in the process of negotiating renewable energy purchase agreements for 120MW of solar PV systems combined with energy storage for ramp control. GPA is also procuring an additional 40 MW of solar PV on leased lands from the Department of Navy which will require energy storage for shifting energy production to meet GPA's peak demand at night. Guam has a target to generate 25% of the island's electricity from renewables by 2035. GPA is on track to have renewable energy account for 26% of total energy generated by 2020.

1.1.1 Project Rationale and Role in the Guam Electric Sector

The Guam electric sector is undergoing a fundamental transition driven by the need to grow and modernize its generation portfolio while capitalizing on the emergence of generation technologies which are more efficient, flexible, and environmentally friendly. Within the context of this transition, GPA is implementing an expansion plan with the overarching goal of providing its customers with reliable and affordable electricity while exercising environmentally responsible stewardship of Guam's economic and natural resources.

In 2013 GPA issued an Integrated Resource Plan (the "2013 IRP"), which is currently in the process of being updated (the 2013 IRP and its updates referred to herein as the "Expansion Plan"). As part of the Expansion Plan, GPA has decided to procure, on a Build-Own-Transfer ("BOT") basis, the development of a 120-180MW base load fully dispatchable power plant using fossil fuel fired technology, renewable power generation technologies with energy storage, or a hybrid (fossil fuel fired plus renewable technologies) with any fossil fuel components having the capability of operating on both ULSD and natural gas (as more thoroughly defined in Section 2 below, the "Project"). This Project, envisioned to be Guam´s primary source of efficient and flexible baseload supply for the future, is the lynchpin of GPA's Expansion Plan. Because of the variability of technologies allowed and distinct unit sizes, GPA will consider evaluating Proposals that are within plus/minus 10 % of the preferred capacity range.

The principal rationale of the Project is to fulfill GPA's paramount objectives of: (i) increasing and modernizing Guam's generation portfolio to ensure reliable supply, (ii) bringing its generation into compliance with EPA emissions rules (existing and future), and (iii) responsibly unlocking the value of renewable penetration into the market.

The Project has been designed to meet the aforementioned needs by means of the following:

- Modernizing the generation portfolio by replacing many of Guam's older [less efficient/flexible] generation units with new higher performance, lower-emission technology.
- Serving a large portion of baseload demand with efficient technologies that ensure compliance with existing and future EPA emission requirements.
- Increasing the volume of reliable, competitively-priced electricity to serve GPA's growing customer base, including the electric power service requirements for the impending United States Department of Defense build-up and its impact on economic growth.

- Increasing the flexibility of the generation portfolio to enable the responsible installation of low-cost renewable energy and maximize the benefits thereof.
- Eliminating reliability issues (particularly customer outages due to instantaneous generation loss) associated with the increasing age of the Guam generation portfolio and the impact of the Cabras fire.

The PUC, through a series of meetings, hearings, and orders has confirmed its agreement with the rationale and importance of the Project for Guam and, through PUC Order dated October 27, 2016 and the PUC Supplemental Order dated April 27, 2017, has approved and granted all necessary authorizations to GPA to move forward with this Invitation For Bids (IFB) to procure the Project.

1.1.2 Applicability of Certain Requirements of the IFB Document

This IFB allows Bidders to offer different technologies such as fossil fuel fired technologies, renewable technologies with storage, or hybrid technologies provided that the Project can serve as a reliable base load fully dispatchable Facility capable of meeting the functional requirements specified in the IFB documents. Any sections of the IFB documents referencing Fuel or Fuel related concepts and defined terms such as Heat Rate, Guaranteed Heat Rate, Fuel Charge, etc... are only applicable to Proposals based on Facilities that operate on fossil fuel.

1.1.3 Bidder's (Project Company) Scope

The Project will consist of a base load fully dispatchable power generating Facility with capacity of approximately [120-180 MW] (net) at site reference conditions specified in the Functional Technical Specification. The Project may utilize any technology that satisfies the requirement for the Project to be a base load fully dispatchable power generating Facility as well as the functional requirements specified in IFB Section C (Functional Technical Specification). The technology options that could be used for the Project include fossil fuel fired technologies, renewable technologies with storage, and hybrid (fossil fuel fired plus renewable and/or storage) technologies. The fossil fuel fired components of the Project will operate on Ultra Low Sulfur Diesel (ULSD) and potentially LNG-derived natural gas. As a result, the fossil fuel fired components of the Project must be designed to have dual fuel capabilities to burn both ULSD and natural gas. Bidders offering the entire Project or components of the Project based on fossil fuel fired technologies must design the Project facilities to have all the provisions required to burn Natural Gas if or when it becomes available. Bidders' Financial Proposal must quote the incremental Price associated with adding any necessary natural gas equipment and systems in the future. The Bidders will select the power generating technology for the Project, consistent with the requirements of this IFB. For a Project utilizing fossil fuel fired technology, the Project Company will be responsible for construction of a ULSD supply pipeline as part of the Project scope. The pipeline will be constructed in the existing pipeline right of way extending from the GPA Bulk Storage Facility pumping station near the Piti 7 and Pit 8&9 plants to the Project Site (defined in Section 2.1). The Project Company will be responsible for constructing the Project's water supply and wastewater discharge facilities.

The technical scope of the Project is described in more detail in IFB Section C (Functional Technical Specification).

The successful Bidder will be required to form and incorporate a Project Company in Guam in accordance with Guam law and will have to pay all the applicable fees, duties and any other costs applicable to such company. The Fuel for Project's utilizing fossil fuel technology will be

supplied by GPA. The Project Company will enter into an energy conversion agreement with GPA (the "ECA"), and will develop, finance, construct, own, and operate the Facility throughout the Term of the ECA. The Project Company will mobilize project or other financing sufficient to develop and construct the Facility using both equity and debt resources.

1.1.4 GPA Responsibilities

GPA will:

a) Acquire a Site (see definition in Section 2.1) close to GPA's Harmon substation and provide the use of such Site to the Project Company under a Land Lease Agreement ("LLA") for the Term of the ECA;

b) Specify the functional requirements for the Facility (with the assistance of its Project consultant);

c) Conduct a competitive bidding process and ensure that the process follows the requirements of Guam Procurement Law and internationally accepted competitive bidding practices for IPPs;

d) Obtain applicable easements for the Fuel supply lines and Electrical Interconnection Facilities; and

e) Supply Fuel to the Project during the operating period.

1.1.5 Schedule

The expected Phase 1 Commercial Operation Date is 20 months from Notice to Proceed and the expected Phase 2 Commercial Operation Date is 30 months from Notice to Proceed. Natural Gas Commercial Operation Date of the Facility will depend on the timing of development of the LNG infrastructure. Although the IFB will include Phases, GPA will have the option to obligate the Selected Bidder to eliminate the concept of Project phases and to commission the entire Facility at once. In that case, the Phase 1 Commercial Operation Date shall be disregarded and the Phase 2 Commercial Operation Date shall become the commercial operation date for the entire completed Facility.

1.1.6 Model Project Agreements

The model ECA, LLA, and other Projects Agreements attached to this IFB are based on project agreements used for past international private power projects that reached financial close; therefore, any material deviations (including exceptions resulting in shifting of risk allocation between the parties, Price increase and/or change of the Price structure resulting in altering the basis of evaluation) from the model Project Agreements included in the IFB may be a basis for bidder's proposal to be considered non-responsive.

1.2 Bidding and Selection Process

This competitive bid is composed of a multi-step process. Step one, pre-qualification, has been completed and resulted in identification of the qualified Bidders (the "Qualified Bidders"). As part of step two, the Qualified Bidder recipients of this Request for Proposals (IFB), the qualified Bidders, are now invited to submit technical, commercial and financial proposals (Proposal). This IFB

provides the information considered necessary for experienced bidders (or bidder teams) to submit Proposals for the Project.

Based on its evaluation of submitted Proposals, GPA intends to select a first-ranked Bidder. GPA will then negotiate with the first-ranked Bidder to finalize the Project Agreements. It should be stressed that the proposed prices will not be negotiable. Any attempt by the Bidder to adjust the proposed price after bid submittal will be a basis for Bidders' disqualification. In the event negotiations do not succeed with the first-ranked Bidder, negotiations may proceed with the second-ranked Bidder, and the next as may be required. At the conclusion of successful negotiations, the Notice of Award will be issued to, and the Project Agreements will be executed with, the successful Bidder.

Once the last round of the negotiations (the last negotiating meeting resulting in resolving all the outstanding issues) has been completed, the successful Bidder will proceed with (i) finalizing the necessary financial agreements required to achieve Financial Close, (ii) procurement of all Government Authorizations necessary for the Project, and (iii) finalize funding and commence final design and engineering, procurement, and construction. It is expected that the Project Company will work closely with the project lenders during the process of negotiations to ensure that the final version of the Project Agreements negotiated between the Project Company and GPA and other concerned parties will be acceptable to the lenders.

2 Definitions and Interpretation

2.1 Definitions

The following terms are capitalized in the text of the IFB document package. These capitalized terms have been precisely defined to have the meaning as set forth below to enable the reader of this IFB to have the clearest possible understanding of the terms and requirements of the IFB. All other capitalized terms in this document have the meaning as set forth in the ECA or other Project Agreements, as the case may be. Where there are differences in their respective meanings, the definitions in the aforementioned agreements will take precedence.

All units of measurement that are used in this IFB shall conform to the English System of Units unless explicitly stated otherwise.

1. **Actual Renewable Energy Production –** means, for a Project utilizing a hybrid technology consisting of fossil fuel fired and renewable components, the actual amount of renewable energy produced during any given Contract Year as measured by the renewable energy metering device at a point identified in the Bidder's proposal as the guarantee point for delivering the Guaranteed Amount of Renewable Energy.
2. **Availability** – means**:**

$$A \quad \frac{DC \bullet 8760 - \left(\sum SM_{cap} \bullet SMH + \sum FM_{cap} \bullet FMH + \sum EO_{cap} \bullet EOH\right)}{DC \bullet 8760}$$

Where:

A	-	Equivalent annual availability
DC	-	Dependable Capacity of the Facility per the ECA
SM_{cap}	-	capacity reduction and derating[1] during maintenance outage
SMH	-	Scheduled maintenance hours
FM_{cap}	-	capacity reduction and derating during forced outage
FMH	-	forced outage hours
EO_{cap}	-	capacity reduction and derating during scheduled outages
EOH	-	Scheduled outages hours

2 **Bid Date** - The date on which Proposals from the Bidders are due in response to the IFB.

3 **Bidder(s)** - means that firm or group of firms that has submitted a Proposal to develop the Project, by itself, or with other firms forming a partnership, joint venture, corporation, or consortium, in response to the IFB issued by GPA.

4 **Black Start** - means the process of restoring an electric power station to operation without relying on the external transmission network.

5 **British Thermal Unit or Btu** – means the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit.

6 **Capacity Charge** - Has the meaning set forth in Section B, Article 4.3.

7 **Capacity Damages Amount** - The amount, expressed in US$ per MW, used to calculate liquidated damages payable to GPA for outages in excess of allowed outages in a given Contract Year, as explained in Article 9 of the ECA, equal to the product of (i) the Capacity Charge per MW per month prevailing during the relevant Contract Year, except that for Contract Years in which the Capacity Charge is less than $10,000 per MW per Month, such figure shall be $10,000 per MW, (ii) 12 months, and (iii) 1.5.

8 **Combustion Turbine Generator** - means turbine generator sets capable of firing ULSD and Natural Gas and rated not greater than [ ] MW gross.

9 **Commercial Operation Period** - With respect to the Facility, the period of time commencing on the Phase 1 Commercial Operation Date and ending on (but including) the last day of the Term.

10 **Construction Security** – means the security established in accordance with the ECA to secure the Project Company's obligations under the ECA during the construction period.

[1] Derating means capacity reduction due to forced outage or maintenance of any auxiliary equipment

11 **Construction Start Date** - The date on which the Project Company issues a "notice to proceed" to its Construction Contractor.

12 **Contract Year** - A period of twelve consecutive months commencing on each consecutive anniversary of the Phase 1 Commercial Operation Date and ending as of the end of the day preceding the next anniversary of the Phase 1 Commercial Operation Date, except for the first Contract Year which shall start on the Phase 1 Commercial Operation Date.

13 **Contracted Facility Capacity** (Guaranteed Net Output)- The net electric power generating capacity of the Facility guaranteed to be provided to the Delivery Point on a continuous basis, adjusted to Site Reference Conditions, as set forth in Schedule 2 of the ECA and applicable to the Fuel being consumed by the Facility at any given time.

14 "**Contracted Phase 1 Capacity**" - The net electric power generating capacity of Phase 1 guaranteed to be provided to the Delivery Point on a continuous basis, adjusted to Site Reference Conditions as set forth in Schedule 2 and to the Fuel being consumed by the Facility at any given time, if applicable.

15 **Correction Curves –** This definition has the meaning set forth in Section D Envelope II, Form 15, Article 1.5, "Fuel Charge (FC)".

16 **Delivery Point** - The location of connection of the Electrical Interconnection Facilities to the [115] kV bus bar at the Facility's switchyard where GPA receives the Net Energy Output from the Project Company, as to be specified in the ECA, Schedule 3.

17 **Dependable Capacity** - At any given time, the measured amount of net capacity of the Facility, in kW (adjusted to Site Reference Conditions), at the Delivery Point of the Facility as determined by the most recent Dependable Capacity Test

18 **Diesel Engine Generator -** means engines of equal to or greater than 10 MW output at generator terminals but less than [ ] MWs capable of firing ULSD and Natural Gas.

19 **Dollars or USD or US$** - The lawful currency of the United States of America.

20 **Electrical Interconnection Facilities** - All facilities and equipment described in ECA, Schedule 3 in accordance with the GPA grid requirements, including, but not limited to: (i) the Delivery Point; (ii) telemetering (including revenue metering), telecommunication, and technical equipment required to receive signals from the Project Company and transmit such signals to GPA's dispatcher, the Power System Control Center (PSCC),; (iii) the lines and cables and associated equipment; (iv) the switching equipment, (v) the protective devices and safety equipment to be installed between the Delivery Point (exclusive of the metering devices) and the Grid System to enable the Grid System to receive the Net Energy Output from the Facility in accordance with the ECA.

21 **Energy Charge** – This definition has the same meaning as set forth in Section B, Article 7.3.

22 **Energy Conversion Agreement (ECA)** - The document which establishes the power sales and purchases obligations, terms and conditions between the Project Company and the power purchaser, GPA.

23 **Engineer** - The independent consulting engineering firm of international repute jointly selected by the Project Company and GPA to issue such certificates and make such determinations as are required in the Project Agreements, the costs of whose appointment and retention shall be shared equally by the Project Company and GPA.

24 **Levelized Price** - The one price per kWh stated over the term of the ECA, which, on a present value basis, would have the same value as the present value of the prices in the Bidder's Proposal.

25 **Facility** - Electric generation plant to be constructed by the Project Company at a leased site in Guam whether completed or at any stage of development and construction including, without limitation or regard to the level of development, the leased land, buildings, engineering and design documents, all power producing equipment and auxiliary equipment including a Black Start capability**,** Fuel handling and storage infrastructures, water intakes and discharges, water treatment and pumping facilities, solid waste disposal facilities, main and plant transformers, plant switchgear, and all other installations as described in the ECA, Schedule 1.

26 **Financial Close** - The date on which all conditions of the lenders and investors have been met, thereby allowing initial financing disbursements to take place.

27 **Fixed Capacity Charge (FCC)** – This definition has the same meaning as defined in Section B, 7.3.

28 **Fossil Fuel Fired Component** – means, for a hybrid plant, part of the Facility utilizing Diesel Engine Generators or Combustion Turbine Generators.

29 **Fossil Fuel Fired Net Energy** Output – means portion of the Net Energy Output generated by the Fossil Fuel Fired Component and equal, for any time interval, to the Net Energy Output minus Renewable Net Energy Output.

30 **Fuel** - Refers to the fuel used by the Facility, which will be initially ULSD. Natural Gas may be made available for the Facility in the future. All calorific values of the Fuel shall be expressed as the Higher Heating Value (HHV).

31 **Fuel Supplier** –GPA will supply Fuel pursuant to the ECA.

32 **Functional Specifications** - Section C of this IFB that specifies the functional requirements of the Facility.

33 **Million Btu, or MMBtu** - means 10^6 Btus.

34 **GigaWatt Hours (GWh)** - means10^6 kilowatt hours.

35 **Government Authorizations** - All formal permits, licenses, authorizations, consents, decrees, waivers, privileges, approvals, and filings required to be obtained from or provided by any Government institution, entity, or authority for the execution, delivery, and performance of the Project, the ECA, the LLA, Water Supply Agreement and Land Lease Agreement, including without limitation the construction, ownership, maintenance, and operation of the Facility as contemplated by the Project Agreements.

36 GPA – means the Guam Power Authority, an agency of the Government of Guam and Guam's electricity provider.

37 **Grid System** - The transmission facilities through which the Net Energy Output may be transmitted and distributed to users.

38 **Guaranteed Heat Rate (GHR)** - The Heat Rate as measured at the Site Reference Conditions guaranteed by the Project Company for Phase 1 or for Phase 2 at different loads with such loads being expressed as percentage of Dependable Capacity of the Facility.

39 **Guaranteed Net Output** – This definition has the same meaning as that for Contracted Facility Capacity.

40 **Guaranteed Amount of Renewable Energy** – means, for a Project utilizing hybrid technology consisting of fossil fuel fired and renewable components, the amount of energy guaranteed by the Project Company to be generated during each Contract Year by solar or wind power generating equipment installed as part of the Facility and equal to the amount of energy calculated at the end of each Contract Year based on the output of the performance model utilizing PVsyst or Wind software that was submitted by the Bidder with their Proposal and accepted by GPA, adjusted based on actual weather conditions during such Contract Year for factors such as irradiation, wind speed, temperature, and the degradation amount guaranteed by Bidder in its Proposal.

41 **GWA** – The Guam Waterworks Authority, an agency responsible for water supply and wastewater treatment,

42 **"Heat Rate"** expressed in Btu per kWh, means Facility's fuel energy consumption expressed in Btu (higher heating value) required to generate one kWh at the Delivery Point.

43 **IFB** - This Invitation for Bid document with all attachments thereto, and any Addenda as issued by GPA.

44 **Index** (I_o , I_n)- The index used for adjusting the Price. This index is: the US Bureau of Labor Statistics, Current Employment Statistics, transportation and public utilities, average hourly wages of production workers, EES 40000006. The date used will be for the preceding third month.

45 **Initial Dependable Capacity**- means, at the Phase 1 Commercial Operation Date, Phase 2 Commercial Operation Date, or Natural Gas Commercial Operation Date, as the case may be, the maximum capacity that the Facility demonstrated to be capable of delivering at the Delivery Point during the successfully completed Dependable Capacity Test used to establish the Phase 1 Commercial Operation Date, Phase 2 Commercial Operation Date, or Natural Gas Commercial Operation Date and the Contracted Facility Capacity for each Phase and each Fuel.

46 **kW** - Kilowatts.

47 **kWh** - Kilowatt-hours.

48 **Land Lease Agreement (LLA)** – The agreement between GPA and the Project Company which establishes the terms and conditions of GPA's long term lease of the Site to the Project Company.

49 **Lead Bidder** - means the member of a Consortium, who has been duly authorized by the other members of the Consortium to submit the Proposal and act on behalf of the Consortium until selection of the Selected Bidder and takeover of the Project Company.

50 **Major Overhaul** - The repair and reconditioning of the Facility that is conducted on a specified hours basis for Diesel Engines and equivalent operating hours or equivalent starts for Combustion Turbines as defined by the manufacturer(s).

51 **MW** - Megawatts.

52 **MWh** - Megawatt-hours.

53 **Natural Gas**- means natural gas meeting the Fuel quality specifications contained in Section C.

54 **Natural Gas Commercial Operation Date** – that date on which that the standard requirements and the guaranteed values for Natural Gas operation are met for each unit as a whole and such tests and standard requirements are accepted by GPA.

55 **Natural Gas Commercial Operation Period** - With respect to the Facility, the period of time commencing on the Natural Gas Commercial Operation Date and ending on (but including) the last day of the Term.

56 **Natural Gas Commercial Operation Tests** - Tests which demonstrate that the standard requirements and the guaranteed values for operation on Natural Gas are met to achieve the Natural Gas Commercial Operation Date.

57 **Net Energy Output** - The energy output delivered by the Facility and accepted by GPA during a given period of time measured in kWh by the Metering System (adjusted to Site Reference Conditions) at the Delivery Point.

58 **New and Clean** - Combustion Turbine Generator, Diesel Engines Generator. solar PV module, or wind turbine that did not experience performance degradation.

59 **Notice of Award** - A written notification issued by GPA upon reaching an agreement on the draft of the Project Agreements between the parties which confirms that the Selected Bidder can proceed to Financial Close for the Project.

60 "**Notice to Proceed**" means the initial notice to the Construction Contractor to commence engineering, procurement or construction work pursuant to the Construction Contract.

61 **Notification of Selection** - A written notification issued by GPA upon successful completion of the clarification meetings, which confirms that the Bidder has been selected to finalize the Project Agreements.

62 **Non-recourse Financing** - Debt or other financing, the recourse for which shall be solely to the Project Company.

63 **Phase** – means either Phase 1 or Phase 2, or both, as the context indicates.

64 **Phase 1** – means all work as required to put the Simple Cycle Unit in case of a combined cycle Facility or the first [50 to 70 MW] of firm base load capacity in case of other technologies into commercial operation.

65 **Phase 2** – means all work as required to complete the rest of the Facility and put the entire Facility into commercial operation.

66 **Phase 1 Commercial Operation Date** – that date on which the standard requirements and the guaranteed values for operation of Phase 1 are met and accepted by GPA as set forth in the ECA and the Functional Specifications.

67 **Phase 2 Commercial Operation Date** – that date on which the standard requirements and the guaranteed values for operation of the Facility are met and accepted by GPA as set forth in the ECA and the Functional Specifications.

68 **Price -** The price of electricity charged by the Project Company to GPA and calculated in accordance with the formulas in ECA, Schedule 5.

69 **Project** - The development, design, engineering, financing, insurance, procurement, construction, start-up, testing, commissioning, completion, ownership, operation, and maintenance of the Facility and all activities incidental thereto.

70 **Project Agreements** - Collectively, the Energy Conversion Agreement, Land Lease Agreement, and Water Supply Agreement, which are entered into directly among GPA, GWA and the Project Company.

71 **Project Company** - The single purpose company incorporated in Guam for the purpose of owning and operating the Facility, and its permitted successors and assigns.

72 **Proposal** - Bidder's written offer based on the directions, covenants, terms and conditions as contained in the IFB for the development, financing, designing, procurement, building, owning, maintaining, and operating of the Project.

73 **Proposal Security** - The unconditional bank guarantee in the amount of Three Million United States dollars (USD 3,000,000) submitted by a Bidder with its Proposal on the Bid Date to secure that Bidder's and the eventual Selected Bidder's obligations are met during the period between the Bid Date and Financial Close.

74 **Prudent Utility Practices** - Those practices, methods, techniques and standards, as changed from time to time, that are generally accepted internationally for use in electric utility industries (taking into account conditions in Guam), and commonly used in prudent engineering and operation to design, engineer, construct, test, operate, and maintain equipment lawfully, safely, and economically as applicable to power stations of the size, service, and type of this Facility.

75 **Qualified Bidder means** - A Bidder that was found to be qualified to submit a Proposal for the Project as a result of the pre-qualification process.

76 **Renewable Component** – means, for a hybrid plant, part of the Facility utilizing solar or wind power generation technology.

77 **Renewable Component Degradation Guarantee** – means the Bidder's guaranteed rate of degradation for the Renewable Component as provided in Table 15.1 of Section D.

78 **Renewable Net Energy Output** – means portion of the Net Energy Output generated by the Renewable Component.

79 **Required Commercial Operation Date** - With respect to the Phase 1, that date which is 20 months after Notice to Proceed, and with respect to Phase 2, that date which is 30 months after Notice to Proceed, or such later date as may apply in accordance with the provisions of the ECA.

80 **Required Financial Closing Date -** means [xxx], as such date may be extended for up to ninety (90) Days in accordance with Clause 3.5 of the Implementation Agreement.

81 **Request for Qualifications (RFQ)** - means the document issued by GPA prior to issuance of this IFB in specifying Bidder qualification requirements and used to evaluate qualifications of prospective Bidders interested in participating in the Project and develop a list of qualified Bidders.

82 **Responsive Bidder** -means the Bidder whose Envelope I Proposal is found to be responsive to the IFB requirements during the Proposal evaluation process.

83 **Responsiveness Test** – means the evaluation of responsiveness of Bidder's Envelope I Proposal as described in commercial Section B of this IFB.

84 **Selected Bidder** - The Bidder who has been selected under this tendering process (IFB) to develop the Project.

85 **Simple Cycle Unit**- The unit of the Facility formed by combustion turbine(s) or reciprocating engines and the supplementary equipment for generating electric power.

86 **Site** – The land on which the Facility is to be installed (defined by the boundaries [Insert site plot designation or coordinates]), which will be acquired by GPA and made available for lease to Bidders by means of the LLA, provided, however, that the applicable area to be leased shall be limited to the portion of land required for the applicable Facility which shall be no greater than 25 Acres.

87 **Site Reference Conditions** – For the fossil fuel fired components of the Facility, the physical and meteorological conditions at which the Facility would be operating under hypothetical representative circumstances. The Facility's actual outputs will be converted to these conditions in accordance with ECA.

88 **Startup** - The process of starting up a Unit or the Facility until its synchronization with the Grid System.,

89 **Term** - The period from the effective date of the ECA until twenty five (25) years after Phase 1 Commercial Operation Date, unless extended or terminated as pursuant to the ECA.

90 **Third Party Agreements -** means the Construction Agreement, O&M Agreement, and term sheets for financing.

91 **Threshold Capacity** - The net electric power generating capacity that is ninety (90%) percent of the Contracted Facility Capacity.

92 **Time Measurement Units:**

- Hour: A sixty-minute clock hour. One of the 24 hours in a Day.
- Day: A 24-hour period beginning and ending at 12:00 midnight Guam time.
- Month: A calendar month according to the Gregorian calendar.
- Year: A calendar year according to the Gregorian Calendar beginning at midnight December 31 in Guam.

93 **Typical Meteorological Year or TMY** – means a set of relevant meteorological conditions relevant to the performance of wind generation or PV solar generation technology, as the case may be, which is proposed by a Bidder with a Renewable Component and is subject to potential adjustment, verification and/or approval by GPA.

94 **ULSD** - means ultra-low sulfur diesel fuel with maximum sulfur content of 15 ppm suitable for firing by Diesel Engine Generators or Combustion Turbine Generators.

95 **ULSD Commercial Operation Tests** - Tests which demonstrate that the standard requirements and the guaranteed values on ULSD are met to achieve the Commercial Operation Dates.

96 **Unit** – For fossil fuel fired components of a Facility, each individual Diesel Engine Generator or Combustion Turbine Generator with appropriate auxiliaries.

2.2 Interpretation

1 Words in the singular may be interpreted as referring to the plural and vice versa.

2 The word "including" is to be construed as being at all times followed by the words "without limitation", unless the context otherwise requires.

3 Qualifications of Bidders

GPA has evaluated the qualification information submitted by interested parties in response to the RFQ and has determined the Qualified Bidders.

For the purpose of preparation of the Proposal, the Bidder shall follow the formats and requirements of Section D of the IFB.

4 Applicable Law

Bidders should base their Proposals on the Laws of the United States of America and Laws of the Territory of Guam in effect thirty (30) days prior to the Bid Date. Bidders will be protected from Changes in Law which occur after the date that is 30 days prior to the Bid Date. Bidders remain responsible for obtaining their own legal counsel concerning the laws that may affect this Project, or any other matters pertaining to their Proposal.

5 Requirements for the Project

5.1 Financing

a) Arrangement for financing the development and construction of the Facility shall be the sole responsibility of the Selected Bidder. GPA will not be a party to the signing of any document related to financing of the Project apart from the ECA, LLA, consent, conditional assignment, and/or multi-lateral lending documents. Table 10 in Section 10 of this Section A to the IFB provides the assumptions and expectations concerning the schedule under which all parties will complete the Project Agreements, the time within which the Selected Bidder shall complete all the financing arrangements necessary to achieve Financial Close, and finally the time to place the Facility into commercial operation.

b) Financing will typically consist of equity and debt. At least 20% of the total funding, inclusive of contingencies, will be in the form of contributed equity with the remainder being provided through senior and/or subordinated debt. At least 35% of the equity shall be provided by the Lead Bidder. Bidders will provide the Debt Service Coverage Ratio (DSCR) that is implicit in their financial plan for each year of the Term.

5.2 Project Description

The Project will include the following facilities as further described in Section C:

- Complete base load fully dispatchable power generating facility constructed with new materials and equipment, having a net total power generation capacity of [120 to 180 MW] at specified Site Conditions using either fossil fuel fired technology, renewable power generation technologies with energy storage, or a hybrid (fossil fuel fired plus renewable) technologies. As stated above, because of the variability of technologies allowed and distinct unit sizes, GPA will consider evaluating Proposals that are within plus/minus 10% of the preferred capacity range. The fossil fuel fired component of the facility shall be capable of burning ULSD and shall have provisions for burning natural gas in the future. The Project will operate for a term of twenty-five years as a fully dispatchable Facility with Availability of 90% or more. The Bidders may offer any technology meeting the proven technology criteria specified in Section C. The size of the Facility's individual units shall be such that a trip of a single Unit will not result in a loss of the net Facility capacity of more than [ ] MW.
- All required Site support facilities, including, but not limited to, the administration buildings, warehouses, workshops, Fuel delivery and back-up Fuel storage facilities, main and plant transformers, inverters, plant switchgear and metering required, Electrical Interconnection Facilities for connection to GPA's transmission system, and water systems.
- All necessary Site infrastructure including roads, a potable water system, a sanitary sewer system, parking areas, lighting, telecommunications, fire protection system, security access control and security security fencing. Construction of housing for workers will be at the discretion of the Bidder. (Site utilities are addressed in Article 8.)
- All necessary improvements to ensure unimpeded access to the Site which include, but are not limited to, road improvements, bridges, culverts, relocation of utilities, and any other logistical support items that are required to implement the Project.

5.3 Site

The Facility Site shall be located within the parcel of land provided by GPA. The Site is located approximately 80 meters above the mean sea level. Bidders may utilize up to 25 acres of the GPA property for the Facility Site, but may be allowed to use additional area within the GPA property during the construction period. The Site will be leased to the Project Company by GPA under a Land Lease Agreement with a term commensurate with the term of the ECA.

The Bidder will be required to provide an estimate of the area required for the Facility and for construction facilities and provide a layout of the Site showing Bidder's use. The Selected Bidder will have to coordinate the location of electrical and water interconnections, Fuel delivery arrangements and routing with GPA and other concerned parties. The final Facility arrangement will be coordinated with GPA.

5.4 Fuel Supply

GPA will supply Fuel for the the Facility. The fossil fuel fired components of the Facility will be operated initially using ULSD. GPA may decide to make Natural Gas a primary Fuel if and when Natural Gas becomes available after which point ULSD will become the backup Fuel. Fuel supply arrangements are discussed further in Section C.

6 Power System Overview

6.1.1 The Existing Generation and Transmission System in Guam

The existing transmission system in Guam is depicted by the map provided in Attachment A-5. In addition, the IRP (see Attachment A-6) provides detailed information on the power system and power sector planning for Guam. The IRP describes Guam's reference demand forecast, existing generating plants, planned and committed plants, plans for plant decommissioning, and the territory's transmission system.

6.1.2 Dispatch Principles

a) GPA is responsible for dispatching the output of all the plants connected to the Grid System.

b) Dispatching instructions to the Facility will require desired levels of active and reactive power outputs and spinning reserve for the whole Facility. The Project Company will be responsible for determining how to distribute this output among its own generating units.

c) Dispatching to increase or decrease the level of generation of facilities within the Grid System normally occurs on an order-of-merit basis using previously established marginal costing procedures, except under emergency circumstances.

d) The Power System Control Center is scheduled to have the following additional facilities: SCADA, EMS, and optical fiber communication network linking all power plants, grid substations, and major offices of GPA.

e) The Facility operator will be responsible to notify the GPA's Power System Control Center to take the necessary measures when any equipment within the Facility exceeds the technical limits of the associated equipment, as presented in the Bidder's Proposal. This will also include any limits agreed to by the Parties during negotiations.

7 Logistics, Legal, and Labor Information

7.1 Logistics

a) The Project Company shall be responsible for all material and equipment shipments into Guam that need to be imported for the Project. The Bidder shall identify and verify the sufficiency of all existing port facilities and transportation networks, and identify, acknowledge and confirm its ability to comply with all customs requirements, immigration laws, labor laws, taxes, duties, fees, licenses and visa requirements.

b) The Site is located approximately 12 miles from the Port Authority of Guam. Existing roadways connect the Port Authority to the proximity of the Site.

c) Guam does not manufacture any major power plant components. However, building materials and equipment for construction are generally available within Guam.

d) When the local industry and local companies are qualified to supply material or perform the work requirements for the Project, the Bidder is encouraged to prioritize the subcontracting of such procurement and work to local companies.

e) Notwithstanding the information outlined above, the Bidders shall identify any existing or foreseeable obstacles or impediments to the execution of the Project, including but not

limited to, the adequacy of the port facilities, requirements for customs clearance, transportation to the Site, and the availability of skilled and unskilled labor. Bidders must include these costs in their Proposals.

7.2 Permits and Licenses

a) The Bidder shall investigate requirements of all Government Authorizations necessary to implement and operate the Project. The Bidder shall assure itself of the procedures and time frames required to obtain such permits and licenses. It is emphasized that the burden and risk of identifying and obtaining all required permits and licenses rests solely with the Selected Bidder.

b) The Bidder must take into consideration the time required to obtain any necessary Government Authorizations and to submit the necessary documentation to concerned parties and Government agencies in due time. The Bidder must also take into consideration the time required to conduct the studies that are associated with obtaining such Government Authorizations. The Bidder's proposed schedule shall take these aspects into consideration as outlined in Section D.

7.3 Legal Matters

The applicable United States and Guam electricity, foreign investment, work, tax and customs duties laws must be taken into account in implementing this Project. Bidders shall conduct their own investigation to verify the requirements for the Project and the latest amendments to the requirements that apply to the Project. Note that the Bidder's Proposal must be based on the applicable laws of Guam and the United States in effect 30 days prior to the Bid Date.

7.4 Labor Information

a) Labor for construction and operation of the Facility may not be available locally. Bidders are encouraged to consider hiring GPA's O&M personnel currently working at GPA's existing power plants to operate and maintain the Facility; however, Bidders should discuss their plans for hiring any of GPA's employees and coordinate with GPA management so that GPA is given sufficient time to arrange for personnel replacement.

b) Bidders shall be aware of the typical workweek (Monday through Friday) and all holidays and special seasons as are observed in Guam.

c) Bidders' Proposals shall provide a plan for staffing the Project Company as requested in Section D.

8 Site Utilities

The Selected Bidder shall, at its expense, arrange for, enter into contracts as required, develop, and maintain the utilities at the Site necessary to execute and operate the Project, as specified in Section C of this IFB, including but not limited to, the following matters:

8.1 Water

The Bidder will be responsible for arranging water supply for the Project for condenser cooling, cycle makeup, cleaning and other needs, as applicable. The options may include entering into a

Water Supply Agreement with the GWA, using well water, or sea water, subject to obtaining appropriate environmental and other permits. The Project Company shall also construct at its cost and within the Site boundaries raw water storage with sufficient capacity to store enough water to satisfy lenders' requirements for supporting the Facility's continuous operation at the Contracted Facility Capacity in case of temporary raw water supply interruption.

8.2 Sanitary and Sewer Facilities

Sanitary sewer lines are not available at the Site. The Project Company shall provide for adequate sanitary facilities during Facility construction and Facility operation, and it shall comply with applicable U.S. EPA and Guam discharge requirements.

8.3 Telephone:

The Bidder shall be responsible for arranging telephone and related services at the Project Site.

8.4 Construction Power and Back-up Power

The Bidder shall provide all construction power at the Site, either through self-generation or from the existing GPA network. Construction power from the GPA network will be provided at the current applicable electricity rates.

8.5 Power for Facility Start-up.

High Voltage power for Facility start-ups, as needed, will be provided from the GPA substation used for evacuation of power generated by the Project via the Electrical Interconnection Facilities to be constructed by the Project Company. Start-up transformers and related equipment, as required, will be installed by the Project Company as part of the Facility. It is required that the Facility have Black Start capability.

8.6 Power Evacuation

The Project Company will have to construct the Electrical Interconnection Facilities connecting the Facility to the GPA Grid System and transfer those facilities to GPA after the Phase 1 Commercial Operation Date. GPA will own, operate, and maintain these Electrical Interconnection Facilities during the Term of the ECA.

9 Fuel

9.1 ULSD

GPA will supply ULSD for the Project from the GPA-owned and operated central storage facility located near the Cabras power station. The Project Company will be responsible for construction of the ULSD supply pipeline as part of the Project scope. The pipeline will be constructed within the existing pipeline right of way that begins at the Fuel Bulk Storage Facility pumping station near the Cabras Plants and extends to the Tanguisson Plant. After the Phase 1 Commercial Operation Date, ownership of the pipeline will be turned over to GPA, who will own, operate, and maintain the pipeline during the Term of the ECA. ULSD properties are provided in IFB Section C, Functional Technical Specification.

9.1.1 ULSD Storage

GPA intends to convert its bulk storage facility from heavy fuel oil to ULSD. The current storage capacity of the existing central storage facility is 500,000 barrels. It should be noted that this storage facility will be used for the Project as well as for other GPA power plants. The Bidder shall provide additional on-Site ULSD storage with storage capacity sufficient to support thirty (30) days of Facility operation at full load. During the term of the ECA GPA will be allowed to access Bidder's on Site ULSD storage facilities to fuel GPA's tanker trucks at no charge.

9.2 Natural Gas

GPA may develop a LNG receiving facility to supply natural gas to the Project under a separate procurement process to be held in the future. GPA, via the selected LNG provider, will be responsible for development of the LNG delivery, storage and regasification facilities including construction of a gas supply pipeline to deliver natural gas from the LNG terminal to the Project Site. The terminal (interface) point between GPA and the Project will be at the Site boundary. The Project Company shall make all provisions necessary to allow for the construction of the required Natural Gas facilities within the Site. The Project Company shall allocate sufficient space for the Natural Gas backup metering station to be located inside the fence. Gas handling facilities, including filtering, metering, pressure reducing equipment and heaters, will be constructed and operated by the Project Company within the Site boundary. Gas pressure at the interface point is expected to be approximately 60 bars. Natural Gas properties are provided in IFB Section C, Functional Technical Specification.

9.3 Fuel Price

Under the terms of the ECA, GPA will supply Fuel to the Project Company at no cost, provided that the quantity of Fuel consumed by the Project does not exceed the Fuel consumption calculated based on the Guaranteed Heat Rate and actual dispatch. The Project Company will reimburse GPA for the cost of any Fuel consumed in excess of the quantities calculated based on the Guaranteed Heat Rate and actual dispatch. The cost of excess Fuel will be equal to the price of Fuel paid by GPA to their ULSD and/or Natural Gas suppliers (as applicable) plus operating and maintenance expenses associated with receipt, storage, and delivery of the excess quantities of Fuel to the Site.

10 Hybrid Technology Requirements

As part of its Proposal, any Bidder utilizing solar or wind energy as part of a hybrid facility with fossil fuel fired generation will be required to submit a 12 month energy production forecast for a Typical Meteorological Year (TMY) based on a bankable resource assessment and using PVsyst or [WindSim] software as applicable. The TMY will be subject to evaluation, adjustment, and acceptance by GPA. This TMY annual output will constitute an output guarantee for TMY conditions and will be adjusted based on actual weather conditions for each Contract Year to determine compliance with the Guaranteed Amount of Renewable Energy. The adjustment factors will include irradiation, wind speed, ambient temperature, and the degradation amount guaranteed by Bidder in its Proposal.

Subject to its evaluation, potential adjustment, and acceptance, GPA will use the TMY output adjusted by the annual degradation guarantee (included in the Bidder's Proposal) as an input to GPA's Proposal evaluation model. The renewable energy output will be assumed to displace fuel consumption in the Proposal evaluation model. During the Term of the ECA, the Project Company will be responsible for the Fuel costs resulting from any positive difference between the Guaranteed Amount of Renewable Energy and the Actual Renewable Energy Production.

11 Environmental Requirements

The Bidder shall meet all the applicable environmental requirements of the Guam EPA and U.S. EPA and obtain environmental permits required for construction and operation of the Facility. Guam EPA permitting and compliance requirements can be found at the http://epa.guam.gov website. U.S. EPA requirements are specified in the CFR Title 40, Protection of Environment which is available from the website https://www.ecfr.gov/cgi-bin/text-idx?gp=&SID=3fd3e483e9690934bccc0bcc570a96f3&mc=true&tpl=/ecfrbrowse/Title40/40tab_02.tpl. The Bidder shall meet all the applicable environmental requirements and include all associated environmental costs in the proposed Price.

12 GPA Project Schedule

The anticipated development schedule of the Project through Financial Close and the required Project construction and commissioning activities leading to the Commercial Operation Dates are presented in Table Table 12.1 . The durations shown are the maximum expected durations and reduction of such duration is encouraged. Bidder liquidated damage obligations resulting from delays in meeting this schedule are set forth in the ECA.

The Project Company's schedule shall reflect sub-activities in a Critical Path Method (CPM) network format to support the attainment of each of the milestone dates identified below, and shall include details of the Facility construction as outlined in Section D.

Table 12.1: Procurement and Development Milestones

L	Duration	Cumulative Duration	Expected Completion
IFB Issued to Potential Bidders			9/10/2018
Pre-Bid Meeting with Bidders	30	30	10/10/2018
Bid Date - Proposals (Envelopes I and II) submitted to GPA. Envelope I Public Opening	82	112	12/31/2018
Complete Evaluation of Envelope I; Invite Responsive Bidders to Envelope II Opening	44	156	2/13/2019
Conduct Envelope II Public Bid Opening Meeting	1	157	2/14/2019
Complete Evaluation of Envelope II; Invite the First-Ranked Bidder to Clarification Meeting	46	203	4/1/2019
Conduct Clarification Meeting(s) with First-Ranked Bidder and other top-ranked Bidders as required and selection of the Selected Bidder.	49	252	5/20/2019

L	Duration	Cumulative Duration	Expected Completion
Complete Negotiations of ECA with the Selected Bidder.	71	323	7/30/2019
Obtain CCU and PUC approval	56	379	9/24/2019
Sign the ECA with the Selected Bidder.	1	380	9/25/2019
IPP achieves financial close and starts construction.	180	560	3/23/2020
Phase 1 Commercial Operation Date	600	1160	11/13/2021
Phase 2 Commercial Operation Date	300	1460	9/9/2022

13 Project and Third Party Agreements

This IFB includes a draft ECA and LLA and attachments thereto, some of which will be completed subsequently based on this IFB and the Bidder's Proposal.

Upon selection of the Selected Bidder, the draft ECA and LLA will be finalized between the Selected Bidder and GPA. [The Selected Bidder will also negotiate other Project Agreements such as Water Supply Agreement, and other agreements, as applicable.] In the event that Project lenders have comments to the ECA or LLA that are reasonable, essential, and do not constitute material deviations from the drafts included in this IFB, corresponding adjustments shall be considered by GPA during negotiations to be included in the final agreements. Material deviations mean any changes that result in increasing the Price; or limiting the liabilities or responsibilities of the Project Company, or the rights of GPA. Comments which constitute material deviations may render the Proposal to be Non-Responsive and may result in rejection of Bidder's Proposal. The Selected Bidder must subsequently also proceed to prepare the Third Party Agreements.

Appendix A: GPA Integrated Resource Plan 2013

Appendix B: PUC Filing and Revised Integrated Resource Plan

Appendix C: PUC Order from April 27, 2017

Appendix D: GPA Power Network Map

Appendix E: GPA Power Network One Line Diagram

INVITATION FOR BID

FOR DEVELOPMENT OF A 120-180 MW POWER PLANT IN GUAM ON A BUILD, OPERATE, TRANSFER (BOT) BASIS

Tender No. GPA-XXX-XXX

Section B: Instructions to Bidders

JULY 2018



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1 General

1.1 Description of the Evaluation Process

GPA will select the Preferred Bidder for the Project according to the following process. (See Article 7.1 for an overview of the selection process after the evaluation is complete.)

- GPA invited potential Bidders with experience in similar projects and size to submit qualification information by [ ] 2018 and then evaluated the information and determined a list of Qualified Bidders. GPA has made this IFB available only to the Qualified Bidders and now requests technical, commercial and financial Proposals, and final price proposals in response to this IFB.
- Proposals from respondents who submit a Proposal for technology options different from the options allowed under this IFB will not be considered by GPA.
- GPA will use a two-envelope evaluation process to select a Preferred Bidder. Envelope I shall only contain Bidder information and the technical, commercial, and financing aspects of the Proposal, whereas Envelope II shall contain the Bidder's final price proposal.
- GPA will evaluate only Proposals received from Qualified Bidders and will determine the Responsive Bidders based solely on the Envelope I Proposal submittal, using the responsiveness requirements contained in Article 6.4 and Responsiveness Test included in Appendix A herein.
- GPA will only open and evaluate Envelope II Proposals from Qualified and Responsive Bidders. Qualified Bidders found to be non-Responsive will be so notified and their Proposal Securities will be returned.
- GPA will rank the Responsive Bidders based solely on the evaluation of the Envelope II price Proposals, based on the Price evaluation criteria contained in Article 21 herein.

1.2 Cost of Preparing Proposals and Project Agreements

Bidders shall bear all costs associated with the preparation and submission of their Proposals and their tasks and responsibilities for finalization and execution of the agreements comprising the Security Package. GPA will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the evaluation process, or subsequent financeability of the Project, except as provided by the Project Agreements as executed by the parties. GPA will bear the costs of its tasks and responsibilities for proposal evaluation and for finalization and execution of the agreements comprising the Security Package.

Bidders shall be deemed to have carefully examined all the terms, conditions and specifications of this IFB and also to have fully informed themselves as to all the conditions affecting development of the Project. Failure to do so is at Bidder's sole risk, and no claim will be considered at any time for any reimbursement of any expenses incurred as a result of any misunderstanding with regard to the conditions imposed by this IFB.

1.3 SITE INVESTIGATION

- The Bidder is advised to visit and examine the Site and the surrounding areas and obtain or verify all information it deems necessary for the preparation of the Proposal.

- The Bidder shall submit a written request to GPA at least seven (7) calendar days in advance of such inspection of the Site. GPA will grant the Bidder or its agents written permission to enter upon the premises for such purpose. The Bidder or its agents will only be granted permission on the express condition that the Bidder agrees to follow all instructions of GPA and to release and indemnify GPA and its agents from and against all liability in respect thereof and to be responsible for personal injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, costs and expenses however caused, which, but for the exercise of such permission, would not have arisen.
- Failure to investigate the Site or subsurface conditions fully shall not be grounds for the Bidder to subsequently alter its Proposal nor shall it relieve the Bidder from any responsibility for appropriately estimating the difficulty or costs of successfully completing the Project. Furthermore, the Price will not be allowed to be adjusted after the Proposal submission due to any reason whatsoever. A preliminary Site soils investigation study will be prepared and paid for by GPA. A copy of the report will be submitted to each of the Bidders during preparation of the Proposal.

2 Invitation for Bid

2.1 Clarifications and Amendments

2.1.1 Clarifications

Any prospective Bidder desiring an explanation or interpretation of this IFB must make a request in writing to the GPA Procurement Office at the mailing address or the email address listed below, referencing the Invitation for Multi-Step Bid No. GPA-XXX-XX.

ATTENTION: JOHN M. BENAVENTE, P.E.
GENERAL MANAGER
GUAM POWER AUTHORITY
POST OFFICE BOX 2977
HAGATNA, GUAM 96932-2977

ATTENTION: SUPPLY MANAGEMENT ADMINISTRATOR
EMAIL: jpangelinan@gpagwa.com
PHONE: (671) 646-3054/55
FAX: (671) 648-3165.

All inquiries must be received by GPA Procurement no later than 30 days before the deadline for the submission of Proposals. Any oral explanations or instructions given by GPA to prospective Bidders will not be binding. GPA will promptly furnish any information given to a prospective Bidder concerning this IFB to all parties recorded by the Procurement Office as having received the IFB. This information may be provided as an amendment to the IFB if that information is necessary in submitting bids or if the lack of it would be prejudicial to other prospective Bidders. In addition, Bidders may also make this request by writing to the GPA PMC Procurement Office at: jpangelinan@gpagwa.com.

2.1.2 Amendments

- GPA may issue addenda in writing to all Bidders to whom this IFB has been provided at any time prior to the date of opening of Proposals which may delete, modify, or extend any part of this IFB. Any amendment, modification or addendum issued by the GPA, prior to the opening of the qualification submittals of this IFB, for the purpose of changing the intent of the technical or commercial requirements, clarifying the meaning or changing any of the provisions of this IFB, shall be binding to the same extent as if written in the originally issued IFB documents. Any addendum issued will be made available to all Bidders via mail, fax, e-mail or posting to the GPA Website. The Bidders shall acknowledge receipt of the amendment by a signature on one copy, which is to be returned to GPA at the mailing address, email address, or FAX number above. A Bidder's late receipt of any addendum or failure to acknowledge the receipt of any Addendum shall not relieve the Bidder from being bound by such addendum.
- Unless the clarification or amendment to this IFB is in the formal manner described in Articles 2.1.1 and 2.1.2 above, no representation or explanation to Bidders as to the meaning of this IFB or concerning the Project shall be considered valid or binding on GPA. Bidders are

cautioned that no employee of Government of Guam, GPA, GWA, or of their consultants is authorized to explain or interpret this IFB, and that any interpretation or explanation, if not given in writing by GPA, must not be relied upon.

- To afford Bidders sufficient time in which to take a clarification or amendment into account in preparing their Proposals, GPA may, at its discretion, extend the deadline for the submission of Proposals, in accordance with Article 5.2.

3 Preparation of Proposal

3.1 Language of Proposal

The Proposal and all related correspondence and documents shall be written in the English language. Supporting documents and printed literature furnished by a Bidder with the Proposal may be in any other language provided they are accompanied by an appropriate translation of pertinent passages into the English language. Supporting materials which are not translated may not be considered. For the purpose of interpretation and evaluation of the Proposal, the English language translation shall prevail.

3.2 Proposal Structure and Content

3.2.1 General

Proposals shall be prepared by Bidders using the same organization and format that is outlined in this Section and Section D. This format includes the use of a two (2) "Envelope" selection process:

In Envelope I, Bidder information and the technical, commercial and financial proposal will be submitted. Those Qualified Bidders that are deemed responsive to the IFB will have their Envelope II opened and evaluated for final selection.

The contents of each envelope of the Proposal are outlined in Article 3.2.2 below, and the formats of the specific forms used are presented in Section D, entitled "Bidder's Proposal and Supportive Data." Also, see Article 5.1 for instructions on the contents of each volume for "Envelope I" and "Envelope II. Complete information must be provided by each potential Bidder in the Proposal, according to the format set forth in Section D. If necessary, additional sheets may be attached to each response. Failure of a Bidder to submit the complete information as requested by GPA may lead to rejection of their Proposal in its entirety.

3.2.2 Content of Proposal

3.2.2.1 Contents of Envelope I

Form 1 – Proposal Letter

Attachment 1A – Form of Proposal Security Bank Guarantee

Attachment 1B – Proposal Opening Form

Form 2 – Affidavit by the Bidder

Attachment 2A – Certificate from Parent Company

Attachment 2B – Tax Statement

Attachment 2C - Litigation Pending

Form 3 - Bidder's Organization

Attachment 3A - Letter from Team Member

Form 4 - Financial Capability

Attachment 4A - Certificate of Availability of Bank Guarantee

Form 5 – Project Data Sheets

Form 6 – Project Financing Plan

Form 7 - Financial Data in Support of Project

Form 8 - Technical Data and Submittals

Form 9 - Additional Supporting Data

Form 10 - Exceptions to the IFB Documents

Form 11 - Bidder's Project Schedule

Form 12 - Bidder's Staffing Plan

Form 13 – RESERVED

Form 14 – RESERVED

3.2.2.2 Contents of Envelope II:

Bid Price (Section D, Form 15)

Project Schedule:

Table 15.1 Schedule of Commercial Operation Period

Total Power Charges

Table 15.2 Proposed Fixed Capacity Charge

Table 15.3 Fixed Operations & Maintenance Charge

Table 15.4 Variable O&M Cost Charge

Guaranteed Heat Rates

Table 15.5 Phase 1 Guaranteed Heat Rate at Site Reference Conditions on ULSD

Table 15.6 Phase 1 Guaranteed Heat Rate at Site Reference Conditions on Natural Gas

Table 15.7 Phase 2 Guaranteed Heat Rate at Site Reference Conditions on ULSD

Table 15.8 Phase 2 Guaranteed Heat Rate at Site Reference Conditions on Natural Gas

Table 15. 7 Phase 2 Guaranteed Heat Rate Correction Curves for Air Temperature Variations

Supplemental Charge

Table 15.8 Fuel Consumption per Unit Start-ups

Table 15.9 Non-Fuel Supplemental Charge for Start-ups

Bidder's Price

Table 15.10 Bidder's Price (Unofficial Results)

Table 15.11 Bidder's Present Value (PV) & Levelized Price (LP) Calculations

3.2.3 Additional General Instructions

Each Qualified Bidder must submit a Responsive Proposal, which is a Proposal that conforms to all the terms, conditions, and specifications of this IFB without material deviation or reservation, as

described in Article 3.2.3 herein. Failure to comply with this instruction may result in the rejection of the Bidder's Proposal.

Additional instructions for Proposal preparation are:

- Proposal Letter and Proposal Security: The Bidder shall complete the Proposal Letter as required in Section D, Form 1. The Bidder shall also provide the Proposal Security in the form shown in Attachment 1A of that Section, which will provide security for the Proposal from each Bidder.
- Technical Specifications and Data: The Bidder shall submit its proposed technical design that meets the requirements set forth in Section C. The critical elements of the technical specifications which must be specified in the Bidder's Proposal include:

  a) Fully dispatchable net plant output at the Delivery Point of **[120 to 180] MW** at Reference Site Conditions. Due to the variability of technologies allowed and distinct unit sizes, GPA will consider evaluating proposals that are within plus/minus 10% of the preferred capacity range.

  b) The Electrical Interconnection Facilities between the Facility and GPA's **115 kV Harmon substation,** including any necessary modifications/expansion of such GPA substation, shall be designed and constructed by the Project Company in compliance with the technical requirements specified by GPA. The full ownership, custody and control of the Electrical Interconnection Facilities shall be transferred to GPA upon the Phase 1 Commercial Operations Date after which GPA will own, operate and maintain such facilities.

  c) A fully dispatchable plant with target Availability of 90% or more.

  d) For fossil fuel fired components, new and clean dual fuel ULSD and Natural Gas units of similar design that have been in reliable commercial operation for at least three (3) continuous years as of the Bid Date.

  e) The proposed fossil fueled power generating technology shall be capable of operating on ULSD and Natural Gas with the capacity of individual units selected in such a way that a loss of the largest unit would not result in a signficant loss of load.

  f) PV solar modules, if proposed, must be provided by suppliers listed as Tier 1 on Bloomberg's global module supplier list.

  g) In the case of renewable generation and storage components, all equipment shall be new and clean and of a technology and design that have been in reliable commercial operation for at least two (2) continuous years as of the Bid Date.

  h) Compliance with applicable environmental requirements of the Guam EPA and U.S. EPA.

  i) The Facility being able to operate in parallel with other generating sources. A study of the electrical system shall be performed by the Selected Bidder to assure such compatibility.

  j) A communication system that is compatible with GPA's system.

  k) Fault levels that are stated in the technical specifications.

  l) Provisions which are made for SCADA system per GPA's requirement and in accordance with the System Grid Code

m) A Facility that fits well within the Site boundaries and that includes the full scope of work regarding support facilities. (The specific layout and area requirements of the Facility will be coordinated with GPA during negotiations, as described in **Section C**.

n) A plant Site that is at Harmon as specified herein.

o) Design and construction of the ULSD supply pipeline between the Site boundary and the interface point identified by GPA at the GPA's ULSD storage facility[1], of water supply line(s), and of any effluent water discharges to sites beyond the Facility boundary that are coordinated with appropriate Guam entities and authorities and are in compliance with applicable environmental regulations.

p) Design and construction of Fuel storage, handling and treatment facilities within the Site boundaries, as required to support reliable operation of the Facility.

q) Heightened cyber-security requirements due to Guam being a location of a U.S. military base.

- Financial Data: The Bidder is required to submit the financial information as requested in Section D, Form 7, entitled "Financial Data in Support of Project."
- The Bidder must submit a Proposal which meets the codes and standards for design, workmanship, materials and equipment as stated in the Functional Specifications. The Bidder may propose codes and standards from other standard international organizations provided it demonstrates to the satisfaction of GPA that these codes and standards meet or exceed the requirements of the designated codes and standards in the Functional Specifications. The Bidder shall submit all the technical data requested in Section D, Form 8, entitled "Technical Data and Submittals".
- Additional Supporting Data: The Proposal shall address the specific items requested in Section D, Form 9, entitled "Additional Supporting Data".
- Exceptions to the IFB Documents: The Bidder shall address all of its specific exceptions to the IFB technical, commercial, and financial conditions and to the draft Project Agreements in accordance with Section D, Form 10, entitled "Exceptions to the IFB Documents". Exceptions appearing elsewhere in the Bidder's Proposal will not be considered in the evaluation. The Bidder, if selected for negotiations, will not be entitled to the benefit of exceptions not included in Section D, Form 10, if any, or at later stages, including without limitation the negotiation and finalization of the Project Agreements, and the Project execution and implementation.
- The Bidder's Project Schedule: The Proposal shall contain the Bidder's detailed schedule for the development and construction phases of the Project as requested in Section D, Form 11, entitled "Bidder's Project Schedule."
- The Bidder's Project Staffing Plan: The Proposal shall contain the Bidder's tentative detailed manloading charts with resumes of its key personnel and proposed home office and field staffing for the development phase and construction phase of the Project, as requested in Section D, Form 12, entitled "Bidder's Staffing Plan."
- Price: The Bidder shall submit its Price (in Envelope II) in accordance with the instructions of Article 4 herein, and in the format in Section D, Envelope II, Form 15 "Proposed Price".

Additional back-up sheets and calculations may be submitted in Envelope II as necessary to explain the Bidder's Price.

The Bidder must prepare its Proposal by filling in all blank spaces and submitting documents in the formats required by Section D. No changes shall be made in phraseology, and items shall not be added, unless specifically requested. Exceptions are to be listed in Section D, Form 10 as specifically provided for this purpose, and as explained in Article 3.2.3 above.

A Proposal that is illegible or that contains omissions, erasures, alterations, additions, items not called for, or irregularities may be rejected. Exceptions may be made in those cases where it is necessary to correct errors made by the Bidder, in which case, such corrections shall be initialed by the person or persons signing the Proposal.

4 Facility Sizing and Price

4.1 Facility Sizing

The IFB requires the Contracted Facility Capacity to be [120 to 180 MW] as defined in the Functional Specifications, Section C. Because of the variability of technologies allowed and distinct unit sizes, GPA will consider evaluating Proposals that are within plus/minus 10% of the preferred capacity range. Bidders may offer any net Facility capacity within the specified limits. The total amount of the land area of the Facility must meet the requirements of Section C, Article 5.

4.2 Summary of Price Structure

Schedule 5 to the ECA will be based on the information provided in this Article 4.2, Article 4.6, and the Proposal accepted by GPA.

r) The Price charges are stated in three parts for each of Phase 1 and Phase 2 as applicable:

   i) Capacity Charge, consisting of the Fixed Capacity Charge (FCC) plus the Fixed Operations and Maintenance Charge (FOMC);

   ii) Energy Charge, consisting of the Fuel Charge (FC), if any, plus the Variable Operations and Maintenance Charge (VOMC); and

   iii) Supplemental Charges (SC). These include charges not included in Capacity or Energy Charges.

Each of these charges is explained in detail in this Section 4.2. The Capacity Charge and Energy Charge parts of the Price may undergo adjustments as explained in Articles 4.3, 4.4, and 4.6.

4.2.1 GPA Price Payment

4.2.1.1 Payment for Test Energy

Prior to the Phase 1 Commercial Operation Date, GPA shall not pay for energy delivered to GPA during testing and Commissioning.

4.2.1.2 Payment During Operation

Upon meeting the Phase 1 Commercial Operation Date, GPA will pay the Price as defined in Envelope II.

4.2.1.3 Other Payment Information

The Price will be specified for each Contract Year of the Commercial Operation Period except for the Price associated with Phase 1 which shall only be considered for the first Contract Year. All payments shall be made in accordance with the terms defined in the ECA. These terms shall include provisions for the Joint Coordinating Committee to establish the technical and administrative details for invoicing, which will implement the concepts and equations in Articles 4.3 through 4.5 of this Instructions to Bidders.

4.2.1.4 Method of Price Calculation

The Bidder must warrant that the proposed Price submitted per Section D, Form 15 has been calculated in conformance with the previous guidelines, is based on the requirements of the IFB, and includes the following specific items:

4.2.1.5 Costs Included in Price

a) All costs, without exception, required to deliver the specified electric energy, taking into consideration auxiliary loads, the degradation of equipment in output and heat rate, and based on the amount of electrical energy, peak load, ambient conditions, and other operating conditions defined in Section C.

b) The cost of first fill of the on-Site storage for ULSD.

c) The cost of first fill for on-site water storage.

d) The cost of ULSD and Natural Gas used to generate electric energy.

e) The inclusion of all costs and expenses that may be incurred in connection with the development of the Site, including consideration of without limitation, the topography and ground subsurface conditions, potential water and air pollution conditions, surface and subsurface geology, and the nature and quantity of surface and subsurface materials to be encountered, such as chemical contamination or other hazardous material, archaeological or historical artifacts and/or sites, etc[2].

f) Cost, if any, of constructing additional facilities required to start operating on Natural Gas when it becomes available.

g) All applicable insurance costs, taxes, fees, and custom duties.

h) Price whose components are to be adjusted as appropriate, for Indices which will remain in constant, Bid Date values.

i) The use of hedged interest rates since no adjustment to the Price will be made after the Bid Date for variations in interest rates.

j) The use of hedged currency rates during construction with respect to any exposure due to difference in currencies between the Construction Contractor and the Bidder.

k) A Price that complies with and is subject to the terms and conditions contained in the draft Energy Conversion Agreement.

l) All other costs not specifically listed above that have been or may be incurred by the Project Company and have to be recovered via a Price.

m) A Price that is based on a Contract Year (for evaluation as well for ECA purposes), in which the applicable Commercial Operation Date may or may not coincide with a calendar year or fiscal year.

[2] No adjustment to the Price during the Term shall be made for Bidder's incorrect evaluation of soil or subsurface conditions, environmental mitigation measures, or any oversight by Bidder in considering all risks associated with the Facility.

4.2.2 Other Price Requirements

Each Bidder shall provide a proposed Capacity Charge for each year of the Commercial Operation Period, including a Capacity Charge for Phase 1.

The following other items are required to be included in the proposed Price:

a) An equity commitment of at least 20% with a maximum debt to equity ratio of 80% to 20%.

b) Debt Service Coverage Ratios (DSCR) calculated for each year of the Term.

c) A Price that is consistent with Form 7 of Section D, Financial Data in Support of Project, and Form 11 of Section D, Bidder's Project Schedule, Envelope 1.

d) A Price that complies with the specific requirements of the IFB.

4.3 Capacity Charge

Each Bidder shall provide a proposed Capacity Charge for each year of the Commercial Operation Period, including a Capacity Charge for Phase 1.

The Capacity Charge component of the Price will be subdivided into two parts: (1) the Fixed Capacity Charge and (2) the Fixed Operations and Maintenance Charge, for each kW of Dependable Capacity.

The Capacity Charge should reflect, by way of example and not limitation, the Bidder's fixed cost of developing, constructing, financing, and operating the Facility, and it should provide the Bidder with sufficient cash flow to cover such items as the amortization of debt, interest on such debt, fixed Facility operating and maintenance costs, insurance costs, administrative costs, all applicable Facility taxes, and a return on investor equity.

4.3.1 Fixed Capacity Charge

4.3.1.1 General

The FCC shall include, without limitation, all costs of debt service, distribution of dividends and return of investor equity. The FCC should be stated for each period in US$/kW/month as described below. The Bidder shall specify the FCC for each Contract Year (and Phase) of the Commercial Operation Period based on Contracted Capacity (as applicable for each Phase) of the Facility operating on ULSD. For the periods when the Facility operates on Natural Gas, FCC will be adjusted as shown in Equation 4.2 below.

4.3.1.2 FCC Equation

Equations 4.1 and 4.2 set out the application of the FCC as applied to the Dependable Capacity of the Facility.

Equation 4.1: Fixed Capacity Charge on ULSD

Fixed Capacity Charge (US$) = FCC_n x DC_n

Where:

$FCCF_n$ = The FCC (US$/kW/month) for the n-th period of payment proposed at Bid Date

DC_n = Dependable Capacity (kW) in n-th period

Equation 4.2: Fixed Capacity Charge on Natural Gas

Fixed Capacity Charge (US$) = FCC_n x DC_n x $\left(\frac{CC_{ULSD}}{CC_{NG}}\right)$

Where:

$FCCF_n$ = The FCC (US$/kW/month) for the n-th period of payment proposed at Bid Date

DC_n = Dependable Capacity (kW) in n-th period

CC_{ULSD} = Contracted Capacity (for the applicable Phase) on ULSD

CC_{NG} = Contracted Capacity (for the applicable Phase) on Natural Gas

4.3.1.3 Price Restrictions

a) The FCC shall not be adjusted by more than 10% (plus or minus) from any one Contract Year to the next Contract Year, provided, however, that it may be adjusted by up to 20% (plus or minus) from Contract Year 1 to Contract Year 2 (from Phase 1 operation to Phase 2 operation).

b) A ratio of a maximum Fixed Capacity Charge to the minimum FCC over the Term [(excluding Contract Year 1)] shall not exceed 1.50.

4.3.1.4 Commercial Operation Date

Bidders shall propose a Phase 1 Commercial Operation Date and Phase 2 Commercial Operation Date that are no later than their respective Required Commercial Operation Dates specified in Section A of the IFB. No positive consideration will be given to Proposals offering earlier Commercial Operation Dates during Proposal evaluation.

4.3.2 Fixed Operation and Maintenance Charge (FOMC)

Each Bidder shall provide a proposed Fixed Operations and Maintenance Charge for each Phase of the Commercial Operation Period for operation on ULSD. FOMC Payments will be adjusted on a Contract Year basis thereafter to account for inflation. For the periods when the Facility burns Natural Gas, FCC will be further adjusted as shown in Equation 4.4 below.

4.3.2.1 General

FOMC shall include fixed charges related to Facility operation and maintenance as well as the Project Company management. Such costs include, but are not limited to:

- The costs of salaries and labor including directors' incentives (if any), rent or lease of home office and site, office supplies, and equipment, etc.
- The costs of the O&M Contract and/or costs of salaries of personnel to operate and maintain the Facility, tools, etc.
- Insurance costs
- Operating taxes
- Land Lease rent
- Financial costs of operations (other than debt servicing).

4.3.2.2 Fixed Operation and Maintenance Charge (FOMC) Equation

The FOMC shall be adjusted annually for inflation by comparing the Index on the Bid Date to the Index at the time that the adjustments are being made.

Equation 4.3: Fixed O&M Charge on ULSD

Fixed O&M Charge (US$) = $FOMC_n$ x DC_n

Where:

$$FOMC_n = \left(\frac{I_n}{I_o} \times FOMC_e \right)$$

Where,

DC_n	=	Dependable Capacity (kW) in the n-th period.
$FOMC_n$	=	Fixed O&M component defined above for the n-th period of payment (US$/kW/Month)
$FOMC_o$	=	Fixed O&M as of the Bid Date (US$/kW/Month)
I_n , I_0	=	Index prevailing at the n-th period of payment and on Bid Date respectively.

Equation 4.4: Fixed O&M Charge on Natural Gas

Fixed O&M Charge (US$) = FOMCn x DCn x $\left(\frac{CC_{ULSD}}{CC_{NG}}\right)$

Where:

$FOMC_n = \left(\frac{I_n}{I_o} \times FOMC_o\right)$

Where,

DC_n	=	Dependable Capacity (kW) in the n-th period.
$FOMC_n$	=	Fixed O&M component defined above for the n-th period of payment (US$/kW/Month)
$FOMC_{oe}$	=	Fixed O&M component as of the Bid Date (US$/kW/Month)
I_n , I_0	=	Index prevailing at the n-th period of payment and on Bid Date respectively.
CC_{ULSD} =		Contracted Capacity (for the applicable Phase) on ULSD
CC_{NG} = Natural Gas		Contracted Capacity (for the applicable Phase) on

4.4 Energy charge

The Energy Charge component of the Price will be subdivided into three parts and charged for each kWh of Net Energy Output:

- the Variable Operations and Maintenance Charge
- the Fuel Charge (if any)
- the Water Charge

4.4.1 Variable O&M Charge

The Bidder shall provide a proposed VOMC for each Phase to GPA in US$/kWh which shall be applied commencing on the Phase 1 Commercial Operation Date and be payable until the end of the Term on a monthly basis.

The VOMC shall reflect the Bidder's varying costs of operating the Facility net of Fuel. Such expenditures include chemicals, consumables, water, maintenance, etc. Bidders shall not include items that are already included in the FCC or FOMC.

The VOMC shall be adjusted annually for inflation by comparing the Index on the Bid Date to the Index at the time that the adjustments are being made.

The calculation for the Variable O&M Charge will be as follows:

Equation 4.5: Variable O&M Charge

Variable O&M Charge (US$) = $VOMC_n$ x E_n

Where:

$$VOMC_n = \left(\frac{I_n}{I_o} \times VOMC \right)$$

Where:

E_n = Net Energy Output (kWh) in the n-th period.

$VOMC_n$ = Variable O&M component defined above for the n-th period of payment (US$/kWh)

$VOMC_o$ = Escalatable Variable O&M component as of the Bid Date (US$/kWh)

I_n, I_0 = Index, prevailing at n-th period of payment and on Bid Date respectively.

4.4.2 Fuel Charge

The Fuel Charge has two possible components, (1) ULSD Fuel Charge and (2) the Natural Gas Fuel Charge.

4.4.2.1 ULSD Fuel Charge

Guaranteed Heat Rate

The Bidder shall propose a Guaranteed Heat Rate (GHR) for each Phase at Site Reference Conditions (SRC) and various loads (percentages of the Facility Dependable Capacity) as defined in **Section C** of this IFB for using ULSD Fuel. Since the Facility will consist of multiple Units, it is expected that the dispatch requests for reduction of the Facility output will be met by unloading and shutting the Units one by one so that the remaining Units will operate at loads close to 100%. Because of that, the GHR shall not show significant increase within a relatively wide Facility load range. The GHR is not expected to exceed the 100% load GHR by more than 8% at any point between 100% load and 50% load and by more than 17% at any point between 50% load and 25% loads. Additionally, the Bidders shall submit heat rate correction curves to account for changes in ambient temperature, as specified in Section D, Envelope II.

For evaluation purposes, an "all-in" unit cost of ULSD will be used as stated in Section D, Envelope II "Levelized Price".

The Guaranteed Heat Rate shall not be corrected for degradation at any time during the ECA Term. Bidders must therefore account for heat rate degradation when establishing their proposed Guaranteed Heat Rate.

When GPA receives bills for Fuel supply and transportation for the Facility, the Joint Coordinating Committee shall meet to assign the startups, shutdowns, take or pay obligations, and other operational events between the parties in order to allocate monthly fuel costs. Fuel consumption provided by the Bidders in Section D Envelope II tables will be used for calculating fuel consumption for startups and shutdowns. "Hot Start" fuel consumption will be used to calculate not only fuel consumption for this type of startups, but also for calculating fuel consumption during shutdowns. The Project Company shall be responsible for the quantity of ULSD (expressed in

MMBtus) assigned to it for start-ups, shut downs, load limitations and/or Guaranteed Heat Rate compliance.

The total cost of the ULSD for the Project Company shall be as follows:

Equation 4.6: ULSD Fuel Charge

$FC_n = PCFR_n \times FP_n$

Where:

$PCFR_n = TFC_n - GPAF_n - GPAFO_n$

Where:

$GPAF_n$ (in MMBtu) = $\sum_{m\ 1}^{M}$ [GHR_m x ($E_m - E_{ren}$) x Kt_m] x [MMBtu / 10^6Btu] and

Where:

FC_n	=	Fuel Charge in n-th billing period
n	=	Monthly billing period
$GPAF_n$	=	GPA Fuel consumption in n-th billing period
$PCFR_n$	=	Project Company Fuel Responsibility in n-th billing period
TFC_n	=	Total Fuel consumed at the Facility in n-th billing period expressed in MMBtu
$GPAFO_n$	=	GPA Fuel Other is for Fuel consumed for start-ups and shut downs in the n-th billing period which are the responsibility of GPA
FP_n	=	Fuel Price in n-th billing period (US$/MMBtu)
m	=	Dispatch metering interval (30 minutes, typically)
M	=	Total number of intervals (m) during a billing period (n), which will vary from month to month depending on the actual dispatch that period.
GHRm	=	Guaranteed Heat Rate (Btu/kWh) for the applicable Phase, corrected for actual load conditions existing during interval m for the Fossil Fuel Fired Component that are due to GPA's Dispatch Instructions and, for a hybrid Facility, also due to the ambient conditions defining generating capacity of the Renewable Component. For load conditions that are less than per GPA's Dispatch Instructions due to inability of Facility to meet GPA load requirements up to Dependable Capacity, GHRm shall be the Guaranteed Heat Rate for the load per the Dispatch Instructions.
E_m	=	Net Energy Output during the m-th interval (kWh)
E_{ren}	=	Renewable Net Energy Output in the m-th interval (kWh)
Kt_m	=	GHR Correction factor for average ambient temperature during the m-th interval (based on data provided in Section D, Form 15, Table 15.7)

When the Fuel Charge calculated in accordance with Equation 4.6 above results in a positive number, such amount will be deducted from the amount otherwise payable by GPA for the n-th billing period..

4.4.2.2 Natural Gas Fuel Charge (when it becomes available)

Guaranteed Heat Rate

- The Bidder shall propose a Guaranteed Heat Rate (GHR) for each Phase at Site Reference Conditions (SRC) and various loads (percentages of the Facility Dependable Capacity) as defined in Section C of this IFB, using Natural Gas. Additionally, the Bidders shall submit heat rate correction curves to account for changes in ambient temperature, as specified in Section D, Envelope II.
- For evaluation purposes, an "all-in" unit cost of fuel will be used as stated in Section D, Envelope II "Levelized Price Price".
- The Guaranteed Heat Rate shall not be corrected for degradation at any time during the ECA Term. Bidders must therefore account for heat rate degradation when establishing their proposed Guaranteed Heat Rate.
- When GPA receives bills for Fuel supply and transportation for the Facility, the Joint Coordinating Committee shall meet to sassign the startups, shutdowns, take or pay obligations, and other operational events between the parties in order to allocate monthly fuel costs. Fuel consumption provided by the Bidders in Section D Envelope II tables will be used for calculating fuel consumption for startups and shutdowns. "Hot Start" fuel consumption will be used to calculate not only fuel consumption for this type of startups, but also for calculating fuel consumption during shutdowns. The Project Company shall be responsible for the quantity of Fuel (expressed in MMBtus) assigned to it for start-ups, shut downs, load limitations and/or Guaranteed Heat Rate compliance.

The total cost of the Fuel for the Project Company shall be as follows:

Equation 4.7: Natural Gas Fuel Charge

$$FC_n = PCFR_n \times FP_n$$

Where:

$$PCFR_n = TFC_n - GPAF_n - GPAFO_n$$

Where:

$$NF_n \text{ (in MMBtu)} = \sum_{m\ 1}^{M} [GHR_m \times (E_m - E_{ren}) \times Kt_m] \times [MMBtu / 10^6 Btu]$$

Where:

FC_n	=	Fuel Charge in n-th billing period
n	=	Monthly billing period
$GPAF_n$	=	GPA Fuel consumption in n-th billing period, MMBtu
$PCFR_n$	=	Project Company Fuel Responsibility in n-th billing period, MMBtu
TFC_n	=	Total Fuel consumed at the Facility in n-th billing period expressed in MMBtu
$GPAFO_n$	=	GPA Fuel Other is for Fuel consumed for start-ups and shut downs in the n-th billing period which are the responsibility of GPA, MMBtu
FP_n	=	Fuel Price in n-th billing period (Dinar/MMBtu)
m	=	Dispatch metering interval (30 minutes, typically)
M	=	Total number of intervals (m) during a billing period (n), which will vary from month to month depending on the actual dispatch that period.
GHR_m	=	Guaranteed Heat Rate (KJ/kWh) for the applicable Phase, corrected for actual load conditions existing during interval m for the Fossil Fuel Fired Component that are due to GPA's Dispatch Instructions and, for a hybrid Facility, also due to the ambient conditions defining generating capacity of the Renewable Component.. For load conditions that are less than per GPA Dispatch Instructions due to inability of Facility to meet GPA load requirements up to Dependable Capacity, GHR_m shall be the Guaranteed Heat Rate for the load per the Dispatch Instructions.
E_m	=	Net Energy Output by Base Bid Facility during the m-th interval (kWh)
E_{ren}	=	Renewable Net Energy Output in the m-th interval (kWh)
Kt_m	=	GHR Correction factor for Base Bid Facility for average ambient temperature during the m-th interval (based on data provided in Section D, Envelope II, Form 15.

When the Fuel Charge calculated in accordance with Equation 4.6 above results in a positive number, such amount will be deducted from the amount otherwise payable by GPA for the n-th billing period..

4.5 Supplemental charges

Two types of Supplemental Charges (SC) are envisioned. These charges cover the costs of start-ups and shut-downs in excess of [55] starts per Unit per Contract Year, O&M charges for operating of synchronous condenser, and allowable charges resulting from Change in Law. These SC are described below.

4.5.1 Facility Start & Stop Charges

GPA will compensate the Project Company for costs of start-ups in excess of [55] starts per Unit year. Any start-up or shut down due to reasons not attributable to GPA's request shall be to the Project Company's account. Start-ups following Scheduled Outages, Maintenance Outages, and Forced Outages shall not receive any adjustment under SC.

4.5.2 Synchronous Condenser O&M Charges

GPA will compensate the Project Company for costs of operating and maintaining the synchronous condenser based on the fixed hourly rate and VAR production rate specified in the ECA based on the rates proposed by the winning Bidder.

4.5.3 Change in Law Charges

The SC may also include any costs due to Change in Law as specified in Article 17 of the ECA.

4.6 Currencies and Indices Used in Calculation of Price

The Energy Conversion Agreement provides for the calculation of the Capacity Charge and Energy Charge to be made in U.S. Dollars.

As provided in Article 4.3 above, certain components of the Price will be adjusted during the Term for increases or decreases in costs due to escalation or de-escalation of prices (generally referred to as inflation or deflation) by Index.

4.7 Proposal Validity

All Proposals shall remain valid and open for acceptance by GPA for a period of twelve (12) months from the date of submission of the Proposals. Any Proposal offering less than the stipulated Proposal validity of twelve (12) months shall be rejected.

Prior to expiration of the original Proposal validity period, GPA may request of any of the top three ranked Bidders two (2) extensions in the period of validity not to exceed a specified period of up to two (2) months each, for a total maximum extension of four (4) months from the original Proposal validity expiry date. The request and the responses for any extensions to the original validity date shall be made in writing. The Bidders may NOT refuse the request. The Bidders will not be permitted to modify their Proposals, and will be required to extend the validity of their Proposal Security accordingly, such that the Proposal Security shall remain in effect for one month beyond the end of each extension period. The provisions of Article 4.8 below regarding release and forfeiture of Proposal Security shall continue to apply during the extended period of Proposal validity.

The Proposal validity for the bidder selected as a Selected Bidder shall be extended until Financial Close is achieved.

4.8 Proposal Security

1 Each Bidder shall furnish, as part of the submission of its Proposal, one Proposal Security in the amount of [**Three Million United States Dollars (USD 3,000,000)** This Proposal Security will be provided with the Proposal, as specified in Article 3.2.2.1.

2 The Proposal Security shall be in the form of a Bank Guarantee issued by a bank acceptable to GPA. The Bank Guarantee shall be in the form, contained in Section D, Attachment 1a, entitled "Form of Proposal Security Bank Guarantee", or another form acceptable to GPA. The Proposal Security shall be valid for seventeen (17) months from the Bid Date.

3 The Proposal Security shall be forfeited without any notice, demand, or other legal process if any of the following conditions occur:

a) Bidder withdraws its Proposal during the period of Proposal validity;

b) if during the Proposal validity period, it is discovered that there was no form of commitment from an EPC contractor for the Project;

c) if the Bidder deviates from the terms of its Proposal or requests an adjustment of the Price after the clarifications meetings; or

d) in the case of a successful Bidder, it fails within the specified time limits to:

i) Execute the Project Agreements,

ii) Reach Financial Close due to delays caused by the inaction of, or fault of the Bidder including abandonment or failure to diligently pursue development, permitting, and financing, or

iii) Furnish the required Construction Security.

4 The Proposal Security shall be returned to Bidders if they withdraw their Proposal before the deadline for submission of Proposals. If any Bidder's Proposal is determined to be non-Responsive to the IFB requirements, the Proposal Security will also be returned. All Responsive Bidders' Envelope II Proposals will be evaluated and ranked and the validity of their Proposals will be extended, if necessary, pursuant to Article 7.2.1a). The Proposal Security of all Responsive Bidders will remain in effect and will be returned pursuant to the provisions of Articles 7.1,7.2 and 7.3.

4.9 Pre-Bid Meeting & Questions

The Bidder or his official representative is advised to attend a Pre-Bid Meeting which will be held in Guam **on [October 10, 2018].** GPA will notify the Bidders by separate letter of the time and location of the Pre-Bid Meeting. Each Bidder may send two (or more) representatives, as will be specified in the letter of invitation, based on the capacity of the location selected for the meeting. GPA may also arrange for a visit to the Site for all Bidders in conjunction with the Pre-Bid Meeting.

The purpose of the Pre-Bid Meeting will be to address general questions that the Bidders may have concerning this IFB, the selection process, and the Project. Bidders are therefore requested to submit any questions in writing to reach GPA not later than thirty (30) days after the IFB is issued. Questions that are appropriate for discussion will be addressed during the Pre-Bid Meeting.

After the Pre-Bid Meeting, GPA will prepare and send to all Bidders written responses to all the questions submitted. Furthermore, GPA will provide in writing to all Bidders any additional Project information or modifications of this IFB which result from the Pre-Bid meeting and the questions submitted by Bidders. This information may prompt further questions from Bidders and responses from GPA. The bid period is sufficient to allow for such clarifications. The Bidders are encouraged to submit their questions in lots as early as possible. No questions raised within the 30-day period prior to the Bid Date will be answered by GPA. GPA will provide the final responses to clarification questions no later than two (2) weeks prior to the Bid Date.

4.10 Format and Signing of Proposal

1 The Bidder shall prepare one (1) original in English plus five (5) copies of the documents comprising the Proposal as described in these Instructions to Bidders, Article 3.2. One original of the completed Proposal is to be clearly marked "ORIGINAL OF PROPOSAL," and all other

completed copies are to be clearly marked "COPY OF PROPOSAL." In the event of any discrepancy between the original and any copy, the original shall prevail.

2 If the Proposal consists of more than one volume, the Bidder must clearly number the volumes constituting "the Proposal" and provide an indexed table of contents for each volume.

3 The Proposal shall be typed or written in indelible ink, each sheet shall be stamped and initialed by a person or persons duly authorized to sign for the Bidder, and the Proposal Letter shall be signed by a person or persons duly authorized to bind the Bidder to the Proposal. All pages of the Proposal where entries or amendments have been made shall be initialed by the person or persons signing the Proposal.

4 The complete Proposal as outlined in Article 3.2 shall be without alterations, interlineations, or erasures, except as necessary to accord with instructions issued by GPA or to correct errors made by Bidder. All such corrections shall be initialed by the person or persons signing the Proposal.

5 Bidders may form a joint venture or consortium for the purpose of submitting a Proposal. If they elect to do so, they must comply with the following requirements:

a) One of the partners shall be nominated as the Lead Bidder. This authorization shall be evidenced by submitting a power of attorney, effective for the duration of the Proposal validity, signed by legally authorized signatories of all the partners;

b) The Lead Bidder shall be authorized to receive instructions for and on behalf of any and all partners of the joint venture or consortium, shall submit the Proposal Security on behalf of the joint venture or consortium, and shall be authorized to execute the Project Agreements on behalf of the Project Company; and

c) A copy of the agreement entered into by the joint venture or consortium partners shall be submitted with the Proposal.

6 No partner may participate in the submission of more than one Proposal. No joint ventures or consortia, nor any changes to joint ventures or consortia will be permitted without the prior approval of GPA.

5 Submission of Proposals

5.1 Sealing and Marking of Proposal

5.1.1 Envelope Submittal

Proposals consisting of one (1) original plus five (5) copies must be submitted to GPA in sealed envelopes or boxes pursuant to the deadline specified in this Article 5.2 below.

5.1.2 Envelope Packaging

5.1.2.1 Envelope I

The required Forms for Envelope I, as set forth in Article 3.2.2.1 of this Section B, may be organized in multiple standard binders which must be clearly labeled with the particular Form(s) included in the binder. Envelope I binders may be packaged into one or more boxes which must be labeled as defined in this Section 5. Bidders are required to submit:

a) one (1) original plus six (6) copies plus one electronic copy on flash drive to GPA at:

JOHN M. BENAVENTE, P.E.
GENERAL MANAGER
GUAM POWER AUTHORITY
POST OFFICE BOX 2977
HAGATNA, GUAM 96932-2977

ATTENTION: SUPPLY MANAGEMENT ADMINISTRATOR
EMAIL: jpangelinan@gpagwa.com
PHONE: (671) 646-3054/55
FAX: (671) 648-3165

5.1.2.2 Envelope II

The required Forms for Envelope II, as defined in Article 3.2.2.2 of this Section B, must be organized in a single standard binder which must be clearly labeled with the particular Form(s) included in the binder. The Envelope II binder must be packaged into a **single box** which must be labeled as defined in this Section 5 . Bidder's are required to submit:

a) one (1) original plus three (3) copies to GPA at:

JOHN M. BENAVENTE, P.E.
GENERAL MANAGER
GUAM POWER AUTHORITY
POST OFFICE BOX 2977
HAGATNA, GUAM 96932-2977

ATTENTION: SUPPLY MANAGEMENT ADMINISTRATOR
EMAIL: jpangelinan@gpagwa.com
PHONE: (671) 646-3054/55
FAX: (671) 648-3165

5.1.3 Labeling

The boxes containing the Proposals must be also labeled addressed as follows:

b) The box must indicate the name and address of the Bidder to enable the Proposal to be returned unopened in case it is declared late or otherwise unacceptable.

c) Each box shall be sealed.

Below the address given in Article 5.1.2 above, the following must be written in bold letters:

GUAM INDEPENDENT POWER PROJECT
"120 - 180 MW POWER STATION"
"DO NOT OPEN UNTIL 1200 HOURS, [INSERT BID DATE]"
"ENVELOPE [INSERT ENVELOPE NUMBER]"
"DO NOT OPEN WITH ENVELOPE I" (for Envelope II only)

If the box is not sealed and marked as instructed above, GPA will assume no responsibility for the misplacement or premature opening of the Proposal submitted.

5.2 Deadline for Submission of Proposal

1 All Proposals must be received at GPA's offices prior to 1200 hours local time in Guam on [INSERT THE BID DATE]. Proposal submission must be made by either of the following methods:

a) Hand-delivery of the one (1) original plus four (4) copies to GPA at the address given in the Article 5.1.2 of this Instructions to Bidders.

b) By prepaid, registered, or certified mail or by overnight courier to GPA at the address given in Article 5.1.2 of this Instructions to Bidders.

2 Proposals submitted by facsimile, electronic mail, telex, or telegram will not be accepted.

3 GPA may, at its discretion, extend the deadlines for submission of Proposals by issuing amendments in accordance with these Instructions to Bidders, Article 2.1.

5.3 Late Proposals

Any Proposal received after the specified date and time for the submission of Proposals will be rejected no matter what the reason of delay may be and will be returned unopened. It is the sole responsibility of Bidders to comply with Article 5.2 above.

5.4 Modifications and Withdrawal of Proposal

1 Bidder may modify or withdraw its Proposal after Proposal submission, provided that the modification or notice of withdrawal is received in writing by GPA prior to the prescribed deadline for submission of Proposals.

2 Bidder's modification or notice of withdrawal shall be prepared, sealed, marked and delivered in accordance with the provisions of these Instructions to Bidders, Article 5.1 for the submission of Proposals, with envelopes additionally marked "MODIFICATION" or "WITHDRAWAL" as appropriate.

3 Subject to Article 20 of these Instructions to Bidders, no Proposal may be modified subsequent to the deadline for submission of Proposals.

4 Withdrawal of a Proposal during the interval between the deadline for submission of Proposals and the expiration of the period of Proposal validity specified by Bidder in the Proposal Letter will result in the forfeiture of the Proposal Security pursuant to Article 10 of these Instructions to Bidders.

6 Proposal Opening and Evaluation

6.1 Proposal Opening

1 GPA will open the Envelope I Proposals, including submissions made pursuant to these Instructions to Bidders, Articles 5.1 to 5.4 in open session in Guam on the time and date specified in Volume 1 of the IFB. The Bidders' representatives who are present at that session shall sign a register as evidence of their attendance.

2 Proposals for which a notice of withdrawal has been submitted pursuant to Article 5.4 of these Instructions to Bidders , will not be opened.

3 At the Envelope I Proposal opening, GPA will examine Proposals to determine whether the requisite Proposal Securities have been furnished in accordance to Form 1 Attachment 1A and whether the documents have been properly signed. GPA will then read the information provided in the Section D, Form 1, Attachment 1b "Proposal Opening Form."

4 There will be no public opening of the other contents of Envelope I.

5 GPA will secure unopened the Envelope II Proposals, including submissions made pursuant to these Instructions to Bidders, Articles 5.1 to 5.4, until opening of Envelope II in open session, at the time and date specified by GPA. GPA will give at least one week notice to Bidders of the Envelope II Proposal opening session.

6 At the Envelope II Proposal opening session, GPA will announce the levelized Price for each qualified and responsive Bidder. The Bidders' representatives who are present at that session shall sign a register as evidence of their attendance.

6.2 Confidentiality

1 After opening of Proposals, information relating to the examination, clarification, evaluation, and comparison of Proposals and recommendations concerning the award of the Project shall not be disclosed to Bidders or other persons not officially concerned with such process.

2 Any effort by a Bidder to influence GPA, any representative of the Government of Guam or the Government of the United States of America, or the Consultant in the process of examination, clarification, evaluation, and comparison of Proposals, or in decisions concerning award of the Project, shall result in the rejection of Bidder's Proposal.

3 GPA will return neither the original nor the copies of any Proposal submitted by a Bidder, other than late Proposals per Article 5.3.

6.3 Clarification of Proposals

During the examination, evaluation, and comparison of Proposals, GPA may, at its discretion, ask the Bidders for clarification of their Proposals. Request for clarifications and responses shall be in writing, and no change in the Price or substance of the Proposal shall be sought, offered, or permitted.

6.4 Evaluation of Proposals

1 The evaluation of Proposals from Qualified Bidders will take place as follows. The first stage, Determination of Responsiveness, considers only Envelope I of the Proposals, and the evaluation results in a determination of the Responsive Bidders. During this stage of the evaluation, Envelope II of the Proposals remains unopened and secured by GPA. The second stage considers only Envelope II of the Proposals, and it determines the final ranking of the Responsive Bidders using their Levelized Price as the final determining factor.

2 The purpose of the first stage of evaluation is for GPA to determine whether each Proposal is substantially Responsive to the requirements of this IFB based on a review of the information provided in Envelope I of the Bidder's Proposal in accordance with the Responsiveness Test as contained in Appendix A of this Section.

3 The purpose of the second stage of evaluation is for GPA to determine the lowest Price offered by the Bidders. Only the Prices (Envelope II) of those Qualified Bidders whose Envelope I submissions are deemed to be substantially Responsive will be considered in the second stage of evaluation.

6.4.1 Determination of Responsiveness:

a) A substantially Responsive Proposal (Envelope I) is one which provides the requested Bidder information, and conforms to the commercial terms and conditions, and the technical specifications of this IFB without material deviation or reservation. **The Bidder shall fill out the Responsiveness Test Form (Appendix A) and submit with the Proposal.** Should the Bidder information provided in Envelope I deviate materially from the qualification information provided in response to the Request for Qualifications document and upon which GPA based its qualification of the Qualified Bidders, GPA may in its sole discretion determine such Bidder is no longer qualified. Further, to the extent a Qualified Bidder changes the membership of its consortium that was determined to be a Qualified Bidder, GPA reserves the right to approve or reject such changes. Regarding the commercial terms and conditions, and the technical specifications, a material deviation or reservation is one which affects in any substantial way the scope, quality, or performance of the Project, or which limits in a substantial way, inconsistent with these IFB documents, GPA's rights, or the Bidder's obligations under the Project Agreements, and the rectification of which deviation or reservation would affect unfairly the competitive position of other Bidders presenting substantially Responsive Proposals.

b) If a Proposal is not substantially Responsive to the requirements of this IFB, it will be rejected. Such determination is solely at GPA's discretion.

i) GPA will reject all Proposals which do not meet the following terms and conditions of the IFB document:

- Bidder organization meets IFB criteria (Responsiveness Test, Item 2.0)
- Acceptable Proposal Security (Responsiveness Test, Item 3.0)

- Complete and acceptable Financial Plan (Responsiveness Test, Item 4.0)
- No material modifications requested to the Draft Project Agreements (Responsiveness Test, Item 9.0). Material modifications include without limitation any changes that result in increasing the price; or limiting the liabilities or responsibilities of the Bidder.
- Complete and acceptable Plant Design (Responsiveness Test, Item 5.0) and Section B, Article 3.2.3.
- Complete Project Schedule with date-certain Phase 1 and Phase 2 Commercial Operation Dates which occur no later than the respective Required Commercial Operation Dates (Responsiveness Test, Item 5.0).

ii) GPA will review and evaluate for completeness, level of commitment, and soundness of approach all of the remaining items listed in the Responsiveness Test and in Section B, Article 3.2. If necessary, GPA will request written Clarification to any of the items listed in the Responsiveness Test during its Envelope I evaluation.

c) Once the Envelope I Proposals have been evaluated, Bidders will be notified promptly by GPA whether or not their Envelope I Proposals have been determined to be substantially Responsive. Bidders of Proposals determined to be Responsive will be invited by GPA to the opening of Envelope II Proposals as specified in Article 6.1.

6.4.2 Evaluation of Envelope II:

a) GPA will open, evaluate, and rank only those Envelope II Proposals from Qualified Bidders determined to be Responsive to the requirements of the IFB in accordance with this Article 6.4, Par. 4.

b) Calculation of the Levelized Price (LP) and Correction of Errors: The LP shall be calculated by GPA in accordance with the example in Section D, Forms 15 and the Price data presented in the tables by Bidders in Section D, Envelope II, Forms 15. The Proposals will also be checked for any arithmetic errors in computation and summation. The Bidders will be informed in writing of any arithmetic adjustments made, should GPA wish to consider that Proposal further.

c) GPA will evaluate and validate the LP scores and rank them from the lowest amount to the highest amount. The lowest LP score supported by the required financial data shall be deemed the best. Those Envelope II Proposals not complying substantially with the instructions for Form 15 will be deemed non-Responsive and will not be ranked.

d) In the unlikely event that the LP scores of two or more Bidderss are equal or very close, GPA will invite these Bidders to provide further clarifications in writing, before selecting the first-ranked Bidder.

7 Selection

7.1 Selection and Award Cycle

1 Subject to Paragraph 2 below, GPA will invite that Qualified Bidder whose Proposal has been determined to be substantially Responsive to the IFB; and who is ranked first pursuant to Article 6.4.2 of these Instructions to Bidders to finalize the Project Agreements.

2 Bidders are advised that the following cycle of events has been established by GPA for the selection of the successful Selected Bidder and implementation of the Project:

- A clarification meeting will be held with the first-ranked Bidder to clarify any inconsistencies in the Bidder's Proposal. (See Article 7.2.1). If unable to reach agreement with the first-ranked Bidder, and if GPA deems it necessary, GPA may invite the second-ranked Bidder to a clarification meeting. (This process may continue sequentially with subsequently ranked Bidders.)
- Upon completing a successful clarification meeting(s), GPA will issue a "Notification of Selection" to that Bidder and inform the other Bidders of their status.
- GPA will invite the first-ranked Bidder to negotiation meetings to finalize the Project Agreements. (See these Instructions to Bidders, Article 7.2.2). In the event that the Project Agreements cannot be finalized, the second-ranked Bidder will be invited to begin negotiations.
- Upon completion of the Envelope II evaluation, a successful clarification meeting, and ranking of the Bidders, GPA will return the Proposal Security to all Bidders ranked lower than third.
- The top ranked Bidder shall provide comments on Project Agreements from the Lenders during the first round of negotiations. Reasonable comments from Lenders will, as applicable, be included in the Project Agreements, provided such comments do not result in material deviations from the draft Project Agreements included in the IFB. Material deviations include without limitation any changes that result in increasing the Price; or limiting the liabilities or responsibilities of the Project Company, or the rights of GPA.
- Upon resolution of the comments and reaching an agreement on the draft Project Agreements, a "Notice of Award" will be given by GPA to the successful Bidder. Upon acceptance of the award and extension of its Proposal Security as may be required to ensure such Proposal Security remains in effect until the Construction Security is provided, the successful Bidder will become the Selected Bidder.
- The Selected Bidder will proceed with Financial Close activities including completion of Project development and permitting, and GPA will proceed to obtain **authorization from the PUC to sign the project documents and agreements, including the direct agreements between the Project Company and the concerned Guam entities**.
- The Selected Bidder shall provide a draft of Third Party Agreements (limited to the Construction Agreement, O&M Agreement, and Term Sheets for financing).
- Upon Financial Close, all Proposal Securities that have still been retained by GPA will be returned to Bidders, except to the Selected Bidder. Upon Financial Close, the Selected Bidder will be required to provide the necessary Construction Security in accordance with the Instructions to Bidders, in Article 7.3, after which its Proposal Security will be returned by GPA to the Selected Bidder.

3 **If over the long-term the Selected Bidder cannot achieve Financial Close** by the Required Financial Closing Date under the ECA, GPA may elect to invite the second-ranked Bidder to participate as the Selected Bidder to negotiate the final terms of the Project. If subsequently negotiations for whatever reason are not successful with the second-ranker Bidder, then negotiations will be conducted with the third-ranked Bidder, as necessary. GPA has right to continue down the ranking as necessary and negotiate with successive Bidders, however, once negotiations with a Bidder have been terminated by GPA, all that Bidders LP scores will be deleted from the official ranking.

4 Notwithstanding the above, GPA reserves the right to accept or reject any Proposal, to waive minor informalities in any of the Proposals received, and to annul the IFB process and subsequently reject all Proposals at any time prior to the final award of the Project. GPA may do this without thereby incurring any liability to the affected Bidders or any obligation to inform the affected Bidders of the grounds for GPA's action.

7.2 Clarifications and Finalization

7.2.1 Clarification Meeting(s):

a) Within the period indicated in Section A, Table 11.1, GPA will notify the successful first-ranked Bidder that its Proposal has been accepted for clarification and finalization. The first-ranked Bidder will also be advised of the date, time and place at which detailed clarification meeting(s) will be held between GPA and the Bidder. GPA may request that all the Responsive Bidders extend their Proposal validity in accordance with these Instructions to Bidders, outlined in Article4.7. The second and third-ranked Bidders will remain on standby, ready to begin clarification meetings should the first-ranked Bidder not meet the IFB obligations, execute the Project Agreements, and post the Construction Security. GPA will notify all non-Responsive Bidders, and those Responsive Bidders ranked lower than third, of their status and discharge or return their Proposal Securities in accordance with Article 4.8.

b) At the first clarification meeting, GPA will confirm the terms of the first-ranked Bidder's Proposal and the overall scope of work for the Project. GPA may also seek clarification of any terms which are unclear, and additional clarification meetings may be held as necessary. GPA may proceed to the second-ranked Bidder if:

i) It decides, in its sole discretion, that the negotiations of the Project Agreements will not be completed within the time frame indicated;

ii) It discovers that the first-ranked Bidder has made a material misrepresentation;

iii) The first-ranked Bidder deviates from the terms of its Proposal; or

iv) The first-ranked Bidder fails to provide or maintain security as required.

7.2.2 Negotiation Meetings:

a) At the conclusion of the clarification meeting(s) and issuance of the Notification of Selection, GPA will invite the first-ranked Bidder to participate in negotiation meetings to finalize the Project Agreements. GPA and Bidder will intend to limit clarifications and discussions of the Project Agreements to those issues that are truly essential for the final Project financing. The results of each negotiation meeting will be documented in the meeting minutes signed by the negotiating parties to be later incorporated in the Project Agreements. The Project Agreements are expected to be executed within the period

indicated in Section A, Table 11.1. If finalization and execution of the Project Agreements are not completed within this time period, GPA may elect to begin the clarification and negotiation process with the next highest ranked Bidder.

b) Upon achieving Financial Close and the Selected Bidder's furnishing of Construction Security in accordance with the provisions of these Instructions to Bidders, Article 7.3, GPA will promptly inform the remaining highest ranked Bidders that their Proposals have been unsuccessful and discharge or return their Proposal Securities.

7.3 Construction Security and Operational Security Requirements

1 At Financial Close, the Project Company shall furnish to GPA the "Construction Security Deposit" in the amount of **[fifty million United States Dollars (US$ 50,000,000)** in accordance with Article 9.6 of the ECA. After providing this Construction Security Deposit, the Proposal Security will be returned to the Selected Bidder. The "Construction Security Deposit" shall terminate 12 months after Phase 2 Commercial Operation Date.

2 If GPA determines that the successful Bidder has made any false representation, has failed to comply with the requirements of these Instructions to Bidders, has failed to achieve Financial Close on schedule, or has breached the provisions of any Project Agreements before the Construction Security Deposit is posted, GPA shall be entitled to annul the award and to retain or draw upon the Proposal Security and any interest accumulated thereon.

7.4 Bidder's Responsibilities

The Bidder is expected to carefully examine all instructions, conditions, forms, terms, specifications, Addenda, and drawings in the IFB. It is also responsible for acquainting itself with all conditions which might in any way affect the cost or the performance of the Project. Failure to do so, and/or failure to comply with the requirements of Proposal submission, will be at Bidder's own risk, and no relief will be given for errors or omissions by Bidder.

Appendix A: Responsiveness Test

This Appendix A is the procedure to determine responsiveness of Proposals pursuant to Section B, Article 6.4 and will be used by GPA for that purpose.

Table A.1: Responsiveness Test

No	Parameter	IFB Section D Form	YES	NO	Bidder Proposal Reference
ENVELOPE I					
1.1	Proposal Letter	Form 1			
1.1a	Proposal Security	Attachment 1A			
1.2	Affidavit by the Bidder	Form 2			
1.3	Bidder's Organization	Form 3			
1.4	Financial Capability	Form 4			
1.5	Project Data Sheets	Form 5			
1.6	Project Financing Plan	Form 6			
1.7	Financial Data in Support of Project	Form 7			
1.8	Technical Data and Submittals	Form 8			
1.9	Additional Supportive Data	Form 9			
1.10	Exceptions to IFB Documents	Form 10			
1.11	Bidder's Project Schedule	Form 11			
1.12	Bidder's Staffing Plan	Form 12			
ENVELOPE II					
1.13	Proposed Price	Forms 15			**DO NOT OPEN**
2.0	BIDDER DATA				
2.1	Organization has been Qualified				
2.2	Lead Bidder is identified and meets requirements to provide at least 35% of equity?				

No	Parameter	IFB Section D Form	YES	NO	Bidder Proposal Reference
2.3	Members of consortia or joint ventures have executed document nominating Lead Bidder and the key person(s) authorized to execute documents on behalf of the Bidder?				
3.0	Is the Proposal Security acceptable? (No material change in the form provided in IFB, conforms to validity date required and the amount of security, from an acceptable bank))				
4.0	FINANCIAL DATA				
4.1	Has financial data been submitted which verifies Facility financiability?				
4.2	There is evidence of positive financial commitments or underwritings[3] from reputable financing institution provided				
4.3	The financing structure meets 80:20 debt: equity ratio				
4.4	The Minimum Debt Service coverage ratio is at least 1.20 for all applicable years of the Term				
4.5	There is a representation of adequate interest rate protection (hedging) Form 7B-7				
5.0	TECHNICAL DATA				
5.1	Has technical data been submitted which demonstrates compliance with the Functional Specifications?				
5.2	The proposed Contracted Facility Capacity at the Phase 2 Commercial				

[3] In principle, non-binding letters of commitment from reputable lenders or underwriters will be accepted as evidence of a financial commitment at this stage of the procurement process.

No	Parameter	IFB Section D Form	YES	NO	Bidder Proposal Reference
	Operation Date is between 120-180 MW plus/minus 10% net and the Contracted Phase 1 Capacity at the Phase 1 Commercial Operation Date is no lower than [ ]% of the Contracted Facility Capacity?				
5.3	There is confirmation that degradation of capacity is included in the Guaranteed Heat Rate, Contracted Phase 1 Capacity, and Contracted Facility Capacity in the Proposal.				
5.4	Preliminary designs and descriptions are provided.				
5.5	Experience references for major Facility components are provided.				
5.6	There is confirmation that environmental standards will be met.				
5.7	Any exceptions taken are acceptable.				
5.8	Safety standards are met.				
5.9	The scope is complete.				
5.10	The Site interfaces are properly defined.				
5.11	Evidence is provided showing major Facility components are well proven equipment.				
5.12	Bidder has stated that the Facility will be designed to provide a 30-year operating life and has provided satisfactory details as to how this will be achieved.				
5.13	Bidder's design provides at least 30 days of ULSD storage capacity for the Facility.				
6.0	ADDITIONAL DATA				
6.1	Proposal includes an insurance plan for the Facility.				
6.2	Bidder has proposed contractor with sufficient experience. Or, alternately, Bidder has provided commitment to				

No	Parameter	IFB Section D Form	YES	NO	Bidder Proposal Reference
	engage a construction contractor with acceptable qualifications.				
6.3	Bidder has provided sufficient qualifications for an O&M Contract or for self-operation.				
6.4	Bidder has named an internationally known financial advisor or arranger.				
6.5	Bidder has named an internationally known legal advisor.				
6.6	Any assumptions made by Bidder in preparation of the Proposal are acceptable.				
7.0	Bidder has submitted a complete Project Schedule which confirms date certain Commercial Operation Dates for each Phase.				
8.0	Bidder has not taken an exception to the IFB which constitutes a material modification.				
9.0	Bidder has not requested an exception to the draft Project Agreements which is considered material in nature.				
10.0	Bidder has proposed key personnel with acceptable experience.				

INVITATION FOR BID

FOR DEVELOPMENT OF A 120-180 MW POWER PLANT IN GUAM ON A BUILD, OPERATE, TRANSFER (BOT) BASIS

Tender No. GPA-XXX-XXX

Section C: Functional Technical Specifications



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Transfer

PREAMBLE

Project Company shall perform or cause to be performed all work and services and provide all materials, equipment, machinery, tools, labor, utilities, chemicals, transportation, administration and incidentals (the "Work") as may be necessary or appropriate to carry out the functions and purposes indicated in this Agreement including the development, financing, construction, and operation of the Facility designed to meet the performance criteria and all other conditions set forth in this Agreement, whether or not such Work is specifically mentioned or indicated in the Functional Specifications or elsewhere in the Agreement.

The Functional Specifications set forth the minimum criteria for efficiency, reliability, operability, maintainability, quality of equipment, materials, and systems. Where the Functional Specifications are different from the applicable industry codes and standards or applicable standards and Laws in effect, as of the [Bid Date], the more stringent shall apply. Where the Functional Specifications describe portions of the Work in general terms, but not in complete detail, it is understood that, subject to Project Company meeting the requirements of the Agreement and the Functional Specifications; (i) Prudent Utility Practices are to prevail, (ii) only new materials and workmanship of the first quality are to be used, and (iii) such Work shall be fit for the intended purpose.

1 DESCRIPTION OF PROJECT

1.1 Project Description

Guam Power Authority (GPA) is seeking an Independent Power Producer (IPP), hereafter referred to as the Project Company, to develop a green-field power generating plant on the island of Guam. The Project Company will operate under an Energy Conversion Agreement (ECA) with GPA for a 25-year period, with an optional five (5) year extension. The plant site will be located near the existing Harmon Substation. The Project shall provide 120-180 MW (net at the Point of Interconnection) of base loaded generation to meet GPA electrical demand. Because of the variability of technologies allowed and unit sizes, GPA will consider evaluating proposals that are within 10 % over or under the preferred range. The project includes a 115 kV substation and transmission lines to the GPA system. The plant is intended to be utilized in various operating conditions that include, but are not limited to: 1) higher output levels serving evening peak load, and 2) lower output levels (down to 20 MW) during periods of lower load and higher variable renewable generation where the plant still needs to be able to supply adequate system support and short circuit MVA levels. Synchronous condenser capability is required to provide adequate short circuit MVA levels during lower real power output operating conditions. Synchronous condenser capability is required to provide adequate inertia to maintain short circuit MVA levels during lower real power output operating conditions and to provide reactive power to the system as required. The facility shall be capable of providing the full Dependable Capacity at any given time regardless of the weather conditions. The facility shall be capable of withstanding and to continue operating during all naturally occurring events. The generation technology is to be determined by the Project Company Bidder and may include fossil fuel fired technologies, renewable technologies with storage, or a hybrid between fossil fuel fired and renewable technologies. fuel fired technology components of the Project will be required to be dual fuel

capable, utilizing Ultra Low Sulfur Diesel (ULSD) and natural gas. The natural gas will be delivered to Guam as Liquefied Natural Gas (LNG), and will be regasified prior to pipeline delivery to the facility. The Project Company shall be fully responsible for the financing of the Project, and the design, supply, delivery, erection, commissioning, operation, and maintenance of the complete Facility for the agreed Term. Particulars of the plant performance requirements are given elsewhere in this specification. The Project Company shall coordinate plans and activities with GPA during the design, construction, commissioning, and operation of the Project. GPA is interested in bringing additional power generating capacity on line as early as possible. Where practical this includes partial commissioning of the new generating units. Project Company shall provide their plans for partial commissioning.

1.2 Scope of Supply

The Project Company shall provide a complete Facility of 120 MW to 180 net MW Contracted Facility Capacity (Because of the variability of technologies allowed and unit sizes, GPA will consider evaluating proposals that are within 10 % over the preferred range) with all support facilities required for commercial operation. The scope of the Project shall include, but not be limited to the following:

1.2.1 Engineering

The Project Company shall be responsible for the complete engineering and design services for the procurement, construction, and commissioning of the new generation Facility. The Project Company shall provide survey, geotechnical investigation, engineering, design, drawings, specifications and datasheets, databases, construction specifications, commissioning, testing, and operation and maintenance (O&M) procedures, and equipment information that describes all components of the new generation facility and related infrastructure.

1.2.2 Procurement

The Project Company shall be responsible for all aspects of the procurement of equipment, materials, labor, and services for the new fuel supply and plant. Procurement service will include, but not be limited to, purchasing, subcontracting, expediting, inspections, shipping and field services. The Project Company shall comply with Guam Procurement Law to ensure that the Project reflects positively on GPA, the Project Company, contractors and suppliers.

1.2.3 Construction

The Project Company shall be responsible for complete construction of the Facility, including substation, transmission line and interconnections to the Grid System, fuel supply infrastructure if proposing fuel fired plant and water supply infrastructure. The Project Company shall develop a construction plan detailing construction procedure, site safety, site security, subcontractor administration, and start-up and commissioning procedures. The construction plan shall address any interfaces required as defined in this IFB document, including water, sewage, site access, site runoff, and emergency response. The Project Company shall submit the Construction Plan for review and comment no later than three (3) months prior to commencement of construction. The Project Company may use part of the property outside the plant footprint (estimated at 25 acres) during construction if the existing vegetation barrier around plant is not damaged.

1.2.4 Operation and Maintenance

The Project Company shall be responsible for operation and maintenance of the Facility during the Term of the Project.

1.2.5 Detailed Project Scope

A. Scope of Services

The Project Company Services for the project will comprise, but not necessarily be limited to the following:

- Design and procurement
- Construction testing and pre-commissioning
- Commissioning and functional testing
- Performance Tests and Reliability Tests
- Operation and maintenance of the Facility during the Term of the Project
- Other services as specified or necessary to complete the Project
- Temporary construction works and facilities
- Provision of documentation
- Operators' living quarters and facilities, if required

B. Scope of Supply for Fossil Fuel Fired Component

Facility Fossil fuel fired components will comprise but not necessarily be limited to the following:

- Multiple Reciprocating Engine Generators or multiple Combustion Turbine Generators which will be designed, supplied, constructed, and operated in such a manner that the maximum net power output of the Facility lost during an outage of a single Unit would not cause system frequency upsets outside the acceptable range defined in GPA Grid and Reliability standards, and which will be capable of operating on ULSD and Natural Gas
- Steam turbine(s) for the case where the Project Company offers combined cycle technology
- Synchronous Condenser or capability to operate generators in Synchronous Condenser mode must be provided to facilitate Short Circuit MVA requirements and provide system reactive power.
- Raw water system
- Service water system
- Water and waste water treatment plants closed loop water cooling system, as required
- ULSD Fuel on-site system including storage and conditioning plant

- ULSD supply system including modifications to the GPA bulk storage facilities and constructing of USLD underground pipeline to the Site
- On-site Natural Gas system including LNG metering, compression, and natural gas supply line to the Site's regulation and metering
- Auxiliary steam boiler with all auxiliary equipment, as required
- Generator step-up, startup, station, and auxiliary power transformers; and associated protection and control equipment as required
- Generator circuit breakers and/or MV metalclad switchgear as required
- Station electrical distribution system
- DC equipment, batteries, and UPS systems
- Power, control and instrument cabling
- Earthing (grounding) and lightning protection
- Emergency generator plant (for auxiliaries, etc.), if required
- Black start diesel-generator
- Emergency lighting system
- Cathodic protection, as required
- Lighting and small power services
- Compressed air system
- Cranes and lifting gear
- Maintenance tools and equipment for workshops, stores, and laboratories
- Fire detection and protection system
- Firefighting systems
- Chemical storage tanks
- Chemical feed systems, if needed
- Water storage tanks (e.g. raw water, dedicated fire water, service water, potable water, etc.) as required. There shall be 7 days of water storage for cycle makeup and cooling tower makeup if cooling tower is required.
- Main metering systems for fuel, electrical energy export, and electrical energy import
- Backup metering systems for fuel, electrical energy export, and electrical energy import
- Control system for combustion turbine and steam turbine generator units
- Local control equipment for auxiliary plants
- Plant control system
- Security provisions compliant with NERC CIPS and US Navy

- Telecommunication systems within Facility, connection to public network, and connection to GPA private telecommunication networks [GPA to confirm]
- Load dispatch control interface facilities
- Foundations for all plant and buildings
- Civil and structural and building works associated with the plant buildings including, but not limited to:
- Main structures to house any Reciprocating Engine Generators and Combustion Turbine Generators, Steam Turbine Generators, Heat Recovery Steam Generators as required
- Control room, electrical room, administration building
- Fire protection pump house
- Maintenance workshop and stores
- Gatehouse and security building
- Potable water system and other building services
- Other structures as required for proper operation of the Facility
- HVAC facilities
- Site lighting
- Site access road from main highway
- Provisions for optional Natural Gas pressure reduction, metering or compression and treatment station, as required
- All necessary external works including roads, fencing, gates, sewers and drainage within the power plant
- Spare parts required for commissioning, operation, and maintenance
- Special tools and maintenance equipment
- Remote terminal unit (RTU), Substation Control System (SCS) connections, communication protocols, marshalling kiosks, automatic generation control (AGC), etc.
- Switchyard
- Electrical Interconnection Facilities between the Facility and the GPA Harmon substation
- Expansion/modification to the GPA Harmon substation
- Consumables throughout the specified operating period; excluding ULSD and natural gas.

The Project Company shall be deemed to have included in his Proposal any additional plant and equipment necessary to meet the Facility design, performance, operation, and environmental

criteria, but which are not specifically identified above, and to form a complete power plant which is fit in all respects for its intended purpose and use.

C. Scope of Supply for Renewable Generation

The Facility will comprise, but not necessarily be limited to the following:

- Photovoltaic
- Concentrating Photovoltaic
- Onshore Wind Turbines
- Offshore Wind Turbines
- Wave Generation
- Tidal Generation
- Hydroelectric
- Generator step-up; startup, station, and auxiliary power transformers; and associated protection and control equipment as required
- Generator circuit breakers and/or MV metalclad switchgear as required
- Station electrical distribution system
- DC equipment, batteries, and UPS systems
- Power, control and instrument cabling
- Earthing (grounding) and lightning protection
- Emergency generator plant (for auxiliaries, etc.), if required
- Cathodic protection, as required
- Lighting and small power services
- Maintenance tools and equipment for workshops, stores, and laboratories
- Fire detection and protection system
- Main metering systems for fuel, electrical energy export, and electrical energy import
- Backup metering systems for fuel, electrical energy export, and electrical energy import
- Control system for renewable technology
- Plant control system
- Security provisions compliant with NERC CIPS and US Navy
- Telecommunication systems within Facility, connection to public network, and connection to GPA private telecommunication networks [GPA to confirm]
- Load dispatch control interface facilities
- Foundations for all plant and buildings

- Civil and structural and building works associated with the plant buildings including, but not limited to:
- Main structures to house any centralized generation
- Control room, electrical room, administration building
- Fire protection pump house
- Maintenance workshop and stores
- Gatehouse and security building
- Potable water system and other building services
- Other structures as required for proper operation of the Facility
- HVAC facilities
- Site lighting
- Site access road from main highway
- All necessary external works including roads, fencing, gates, sewers and drainage within the power plant
- Spare parts required for commissioning, operation, and maintenance
- Special tools and maintenance equipment
- Remote terminal unit (RTU), Substation Control System (SCS) connections, communication protocols, marshalling kiosks, automatic generation control (AGC), etc.
- Switchyard
- Electrical Interconnection Facilities between the Facility and the GPA substations
- Expansion/modification to the GPA substation
- Consumables throughout the specified operating period

1.2.6 Rights-of-Way

Obtainment of rights-of-way for the ULSD pipeline and the 115 KV transmission interconnection from the GPA procured property identified in Section 5.0 Site Data to the Harmon substation for the Project will be the provided by GPA. Project Company will provide other rights of way. Project Company will be responsible for rights of way from any locations other than the GPA property identified in Section 5.0 Site Data to the Harmon substation.

1.2.7 ULSD Supply Infrastructure

The design, construction, and commissioning of the ULSD supply infrastructure, including, bulk storage at the plant, fuel truck loading and unloading facilities, new pipeline to the plant and

modifications to existing pumps at the Peterra Pump Station is the responsibility of the Bidder and will be included in the scope for any Facility which has a fossil fuel fired component. Ownership of the bulk storage, the plant site fuel truck loading facilities and the pipeline will be transferred to GPA after Commercial Operation Date.

There is an existing Bulk Fuel Storage Facility (Peterra Facility) near the Piti and Cabras plants and an existing 8-inch RFO pipeline from the Peterra Pump Station to the Tanguisson plant site. Any new equipment required, including storage tanks, pumps, and booster pumps shall be the responsibility of the Project Company. The new pipeline will utilize the existing fuel oil pipeline right of way to the greatest extent possible.

1.2.8 Natural Gas Supply Infrastructure

If natural gas is one of the fuel systems provided, the design, construction, and commissioning of the natural gas supply infrastructure beginning at an LNG receipt and storage facility at Peterra, including, regasification, compression (if required), new pipeline to the plant, and final regulation and metering will be included in the scope of this Project, and is the responsibility of the Project Company. Construction and ownership of the LNG receipt and storage at Peterra is by Others.

The new pipeline will utilize the existing fuel oil pipeline right of way to the greatest extent possible.

1.2.9 Environmental Permitting

The Project Company shall be responsible for all environmental permitting required for the construction, ownership and operation of the Facility with associated infrastructure and terminal facilities, including the Air Permit. The Project shall meet all applicable local, state, and federal environmental regulations and permit conditions. The permits that will be required include the following:

A. Clean Water Act Sections 401, 402 and 404

B. Section 7 of the Endangered Species Act and Marine Mammal Protection Act (MMPA)

C. Section 106 of the National Historic Preservation Act

D. Federal Coastal Zone Management Act (CZMA)

E. Seashore Clearance Permit

F. GLUC Wetlands Permit, if applicable

G. GEPA Environmental Land Use

H. Air Pollution Source Construction Permit and Major Air Pollution Source Operating Permit

I. For ULSD or natural gas, a FERC certificate would not be required, but the field studies and resource reports will be required as well as Risk Management Plan (RMP) for regasification

1.2.10 Grid Study

The Project Company is responsible for completing a grid study that will evaluate the impact of the new generating plant on the existing Grid System. Information on the existing island Grid System necessary for completing this study will be supplied by GPA to the successful Project Company.

The Bidder shall provide full steady state and dynamics modeling information of the plant in GE's PSLF Rev. 21.03 software fully compatible format. (Also ref. sub-section 8.5 of Section D). The modeling information shall include all components up to the Point of Interconnection with the GPA system. This shall include, but not necessarily limited to, modeling of generator(s), excitation system(s), governor(s), generation step-up transformer(s) (GSU), and any transmission lines. The tap settings on the GSUs shall reflect the expected settings. Any other components deemed relevant for any analysis that could be performed by GE's PSLF tool, should also be modeled. For the dynamics modeling: User models are only permitted if deemed necessary for model performance. Any need for user models to be employed shall be thoroughly justified with a technical report demonstrating and explaining what is otherwise missed. Differences in characteristics of the plant based on the different fuel sources it can operate on shall be addressed in the modeling information, and may require more than one set of PSLF models. Models shall explicitly model station service as it is proposed to be served. Documentation shall be provided with background on the modeling, including of real and reactive station service shall be set for different operating points as all permutations of units online, and as needed real and reactive power output.

As built modeling information as described above shall be supplied prior to commercial operation. At any time during the life of the plant, shall modeling information be updated and submitted to GPA as components of the plant is changed, replaced, or controls are tuned.

1.3 Terminal Points

1.3.1 Fuel

A. ULSD

If ULSD is selected by Project Company as a fuel source, the Project Company is responsible for the design and construction of ULSD supply infrastructure including any modifications at the Peterra Bulk Fuel Storage Facility and the new pipeline that will be built to transport ULSD from the Peterra Facility to the plant site. [The interface point for design and construction will be at the outlet flange of the isolation valve installed in the existing ULSD pipeline supplying USLD from the port to the bulk storage facilities at the plant site.] The Project Company shall provide fuel storage at the power generating plant site for a minimum of 30 days of plant operation at expected capacity factors. The Project Company will provide fuel transfer facility at the plant site for loading trucks to transport fuel oil to other GPA plants.

B. Natural Gas

The Project Company shall design the plant for future natural gas operation. If natural gas is selected by Project Company as a fuel source, the Project Company is responsible for the design and construction of natural gas supply infrastructure beginning at LNG

regasification and compression and Peterra, and the new pipeline that will be built to transport natural gas from the Peterra location to the plant site. The interface point for design and construction will be a supply flange from bulk LNG storage at the Peterra location. The Project Company shall provide natural gas throughput and pressure suitable to support the peak Facility demands noted herein.

1.3.2 Substation / Interconnection

The Project Company is responsible for the design and construction of the Electrical Interconnection Facilities. See Sections 3.6 and 3.7 for more detailed information on the requirements of the interconnection. The terminal point for design and construction included in Project Company's scope will be at the interface between the existing GPA Harmon substation and Electrical Interconnection Facilities also known as the Point of Interconnection (POI). The Electrical Interconnection Facilities will be transferred to GPA after Commercial Operation Date.

1.3.3 Water Supply

Water supply to the Facility will be the responsibility of the Project Company. It is preferred that the raw water for cycle makeup, as well as for potable water will be supplied from Guam Water Authority.

Guam Water Authority (GWA) will supply grey water to the plant from the nearby Northern District Wastewater Treatment Plant (NDWWTP) to be used for cycle cooling water system if required. Available quantity and analysis of the grey water is included in Appendix A. The Project Company shall be responsible for determining the water treatment requirements for the water sources. The grey water supply interface point will be at NFWWTP. The precise location of the terminal point will be determined by the Selected Project Company at the detailed design stage.

There will be no sea water makeup utilized.

1.3.4 Wastewater Discharge

Wastewater discharge will be the responsibility of the Project Company. The Project Company will need to determine wastewater pretreatment quality to meet the requirements of GWA. Sanitary sewer may potentially be discharged to the GWA treatment facility. The Project Company shall be responsible for the wastewater discharge permitting, and any contractual agreements with GWA.

2 DESIGN PHILOSOPHY AND PRINCIPLES

2.1 Design Requirements

2.1.1 Engineering

A. General

1. The plant design life shall be thirty (30) years with normal required maintenance. The plant shall be designed for construction and operational safety, as well as ease of maintenance and accessibility. Reliability, availability, and maintainability are prime objectives of this facility.

2. The equipment shall be designed for base load operation with potential frequent and rapid load changes. The Facility will be a primary power source for Guam; therefore, there shall be no single contingency (single mode failure) that could cause a sustained outage or partial outage for the Grid System.

3. Design for the Project shall contain Prudent Utility Practice margins with new components and systems such that the ability of the units to operate continuously shall not be compromised due to normal wear and deterioration of equipment.

4. All construction documents must be stamped by a licensed Professional Engineer registered by the Territory of Guam, in the appropriate discipline, in accordance with Territory of Guam Rules and Regulations.

5. The Facility shall be designed and constructed in accordance with all applicable Federal, Territory of Guam, and local codes and standards including the most applicable sections of the codes, standards and regulations of the following organizations or their acceptable equivalent European, Japanese and South Korean standards. If European, Japanese, or South Korean standards are proposed the Project Company must demonstrate equivalency. Only one set of standards shall be applied throughout the Facility This list of organizations is not complete, and does not relieve the Project Company from complying with any other requirements and regulations applicable to this Project. The effective dates of the Codes and Standards of these organizations shall be the most recent edition plus any revisions and supplements prior to the Contract date.

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
AFBMA	Anti-Frictio Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
API	American Petroleum Institute
ARI	Air-Conditioning and Refrigeration Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers

ASNT	American Society for Nondestructive Testing
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CFR	Code of Federal Regulations
CMAA	Crane Manufacturers Association of America
CRSI	Concrete Reinforcing Steel Institute
EIA	Electronic Industry Association
EJMA	Expansion Joint Manufacturing Association
EPA	Environmental Protection Agency
HEI	Heat Exchange Institute
ICC	International Code Council
IEEE	Institute of Electrical and Electronics Engineers
ISA	International Society for Automation
MBMA	Metal Building Manufacturers Association
MSS	Manufacturers Standardization Society of Valves and Fittings Industry
NAAMM	National Association of Architectural Metals Manufacturers
NACE	National Association of Corrosion Engineers
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PCI	Pre-stressed Concrete Institute
PFI	Pipe Fabrication Institute
SAMA	Scientific Apparatus Makers Association
SFC	State Fire Code
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
SSPC	Steel Structures Painting Council
TEMA	Tubular Exchanger Manufacturer Association
UL	Underwriters Laboratory

B. Drawings and Design Model

C. A complete set of Issue for Construction (IFC) design and vendor shop drawings shall be submitted to GPA at the Commercial Operation Date, in CAD and PDF format. All drawings shall be in English language and units, or a combination of Metric / English units if the drawing initially only has Metric Units. A 3D computer model of the Facility shall be submitted in addition to the drawings. The 3D model shall be in (?) format.

D. Documentation and Manuals

1. Operations and maintenance manuals, presented in clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information, shall be submitted for all equipment. Details shall be identified by reference to sheet and detail shown on Drawings. Manuals shall be written in English. All manuals shall clearly delineate the make, model and options of each piece of equipment or material included in the project.

2. Operations and maintenance manuals shall be submitted to GPA in PDF format at the Commercial Operation date. Operation and maintenance manuals for new equipment purchased after the Commercial Operation date shall also be provided to GPA at the time of purchase.

3. The Project Company shall arrange for all plant Operating and Maintenance Instructions to be kept fully maintained and updated throughout the Term of the Project and be transferred to GPA at the end of the Term of the Project.

E. Specifications

1. The Project Company shall be responsible for development of all procurement, construction, installation, start-up, and commissioning specifications required for construction of the plant. Project Company shall be responsible for developing a QA/QC and testing/commissioning plan approved by GPA. At a minimum the plan must conform to applicable NETA requirements for new facilities and comply with GPAMOD 0025, 0026, 0027. The Project Company shall provide a PDF copy of all the conformed specifications to GPA at the Commercial Operation Date.

F. Tagging System

1. The plant shall utilize a tagging system to be determined by the Project Company. The tagging system shall include all equipment, enclosures, cables, pipes, instruments, control devices, valves, and other equipment. All equipment in the plant shall be identified with a stainless-steel tag permanently affixed to the equipment and in a location that is easily accessible to plant personnel.

G. As-Built Drawings

1. Record As-Built Drawings, in PDF format, shall be provided to GPA at Commercial Operation Date. Throughout the life of the plant, the Project Company shall update the As-Built drawings in electronic format, to reflect any plant modifications. These updated drawings will be transferred to GPA as the modifications are made, and at the end of the Term of the Project.

2.2 Performance Requirements for Fossil Fired Plants

2.2.1 Capacity

A. The plant net capacity is the net electric output. measured at the Delivery Point / Point of Interconnection. The Contracted Facility Capacity shall be within the range of 120-180 (net) MW, at Site Reference Conditions specified in Section 5.5 of this Specification. Because of the variability of technologies allowed and unit sizes, GPA will consider evaluating proposals that are within 10 % over the preferred range.

B. The Project Company shall also provide the expected generation net output for all combinations of units online, while in compliance with permitted emissions guarantees.

C. The plant shall be capable of providing a minimum level of 700 MVA of Short Circuit energy at the 115 kV POI when operating at 20 MW or higher real power output. This may require either dedicated synchronous condensers, or some of the generating units not producing real power in such a scenario to be able to operate as synchronous condensers or the provision of a separate energy storage system.

D. The plant is expected to provide inertia for the GPA system primarily through the inertia of the plant generators. As such, the generators are expected to be oversized relative to the capacity of the units to provide increased inertia. The generators MVA rating must be sized a minimum of 140% of the real power capacity of the prime mover

2.2.2 Fossil Fuel Heat Rate

A. The fossil fuel plant net Heat Rate (Btu/kW-hr) is the heat input (Btu/hr) to the plant, divided by the plant net capacity (kW – net). The heat input is the higher heating value of fuel (Btu/lb) multiplied by the fuel flow rate (lb/hr). The plant will be evaluated based upon its the least cost of operation to the GPA system. The target efficiency for the facility at base load is 50% or greater. The Project will be evaluated by its estimated cost of generation over the life of the plant (see IFB Sections B and D for details on evaluation methodology). The Project Company shall submit the Guaranteed Heat Rates at different loads as requested in Section D, Form 15.

2.2.3 Start Up Duration

A. The start-up duration is defined as the time for each unit to reach its full net capacity from initiation of start-up sequence. The Project Company shall provide a startup duration, including from hot and cold conditions. Project Company's offering combined cycle plants shall provide startup times for the simple cycle unit as well as for individual steam generators associated with each combustion Turbine Generators.

2.2.4 Transient Response

A. The governor transient response shall be fast enough such that following a frequency disturbance a change of at least 5% of a single unit's capability shall be achievable

within 1 second, and at least 10% of single units capability shall be achievable within 2 seconds following the disturbance.

2.2.5 Regulation Performance

A. The plant shall be capable of performing regulation required for renewable projects on the GPA system. The plant shall be capable of providing regulation of at least 25 MW/minute, up- and down-ramp, with equivalent of 66% of the plant real power capacity online. It shall be clearly stated what the achievable ramp rate is for all valid combinations of generating units online.

2.2.6 Availability and Reliability

The Facility shall be designed to achieve the levels of availability and reliability normally expected for similar modern plants of the technology considered.

It is expected that the Facility will operate based on economic dispatch, with an average annual Equivalent Availability Factor during the plant lifetime of no less than 90%.

The Equivalent Availability Factor Formula is defined in accordance with ANSI/IEEE Standard 762-1987, Appendix C, Equation C-7 as follows:

$$EAF + POF + UOF + UDF + SDF = 100$$

where

EAF = equivalent availability factor
POF = planned outage factor
UOF = unplanned outage factor
UDF = unit derating factor
SDF = seasonal derating factor

Equation C-2

The equation shows that there are recognized sources of energy loss due to planned outages (full), unplanned outages (full), Unit deratings, and seasonal deratings. Each energy loss is represented by a separate index, POF, UOF, UDF, and SDF respectively. These indices are defined in such a way as to be additive. Therefore, the total per Unit energy loss is the sum of the four indices, and the remaining per Unit energy not lost is called equivalent availability factor (EAF).

See also the draft ECA Article 9.3, for the approach to liquidated damages to be charged because of "excessive outages" (those beyond the allowable number of outage hours per year for forced, maintenance, and scheduled outages).

2.2.7 Emissions

A. The Project Company is responsible for meeting the environmental permitting requirements.

2.2.8 Noise

A. Noise level at the site boundary shall not exceed45 dB(A), measured in the horizontal plane and at an elevation of 5 feet (1.5 meters) from grade with all equipment running at full capacity.

B. Noise level of operating equipment inside the plant boundary shall not exceed 85 dB(A) when measured 3 ft (1 meter) in the horizontal plane and at an elevation of 5 ft (1.5 meters) from grade, in accordance with ANSI S1.13.

C. Noise level of any equipment shall not exceed 115 dB(A) measured from a distance of 3 ft (1 meter). Equipment with noise level greater than 85 dB(A) shall have a separate noise enclosure, or meet OSHA hearing protection requirements.

2.2.9 Frequency Response, Short-circuit contribution and Inertia Support

A. The GPA system is expected to markedly increase its renewable energy production during the life of the plant. As such, the plant is expected to provide ancillary services such as regulation and inertia support as well as primary frequency response to system requirements. As such, the minimum operating point, regulation capabilities, short circuit contribution and frequency support will be evaluated as part of the evaluation process as described in other sections. The capabilities of the plant should be clearly stated for all possible unit commitment scenarios.

2.2.10 Performance of Generators w/ Synchronous Condenser Mode when operating as Synchronous Condensers.

A. The Bidder shall provide data for the time frame to go from a cold / offline condition for a unit to synchronous condenser operation.

B. The Bidder shall provide detailed explanation on how a unit is switched from synchronous condenser mode to generation mode. This should include the timing to switch a unit from synchronous condenser mode to minimum real power output, and to maximum real power output. The description shall clearly detail times where no real and / or reactive power is available from the unit in transition.

2.3 General Requirements

2.3.1 Procurement Requirements

A. Approved Suppliers

1. Provided equipment and technology must be of proven design which mean that the power generation equipment and technologies specified must have engaged

in reliable commercial operation for at least three (3) continuous years at three different sites.

2. Equipment and materials shall be new and conform to a recognized standard such as ASTM. Reference Section 3.0, Particular Technical Requirements, for more detail pertaining to specific equipment, materials, and applicable codes.

2.3.2 Construction Requirements

A. General

1. The Project Company shall be responsible for all construction work on the Project. The construction, erection, and commissioning services shall include all material, labor, supervision, technical advisory services required to make the plant ready for commercial operation. The Project Company shall provide, install, and maintain temporary site facilities for use during construction, including temporary construction offices, trailers, utilities, and power during construction.

B. Safety

1. The Project Company shall establish safety regulations in conformance with OSHA, and adhere to those safety regulations at all times.

A key objective for the Project is to construct safely, with a goal of zero OSHA recordable events throughout construction and start-up activities.

3 PARTICULAR TECHNICAL REQUIREMENTS

3.1 Mechanical Plant and Systems Requirements

3.1.1 Applicable Codes and Standards

A. The design and specification of all mechanical work related to the Project shall be in accordance with all applicable laws and regulations of the federal and state governments and with the applicable local codes and ordinances. The mechanical design shall be in accordance with the International Mechanical Code (IMC), the International Plumbing Code (IPC), and the International Fire Code (IFC).

B. The codes and industry standards used for design, fabrication, and construction will be the codes and industry standards, including all addenda, in effect as stated in equipment and construction purchase or contract agreements.

C. All mechanical design shall be performed by or done under the supervision of a Professional Engineer registered in Guam.

D. The following are a list of relevant mechanical codes and standards that shall be followed in the design of the plant. Project Company may design to acceptable equivalent European, Japanese and Korean standards. The Project Company must demonstrate equivalency. Only one set of standards shall be utilized throughout the Facility.

ASME	American Society of Mechanical Engineers (ASME)
ASME	Section I Rules for Construction of Power Boilers
ASME	Section V Nondestructive Examination of the ASME Boiler and Pressure Vessel Code
ASME	Section VIII Division 1 Pressure Vessels of the ASME Boiler and Pressure Vessel Code
ASME	Section IX Welding and Brazing Qualifications of the ASME Boiler and Pressure Vessel Code
ASME	B16.1 Cast Iron Pipe Flanges and Flanged Fittings
ASME	B16.3 Malleable Iron Treaded Fittings
ASME	B16.5 Pipe Flanges and Flanged Fittings
ASME	B16.9 Factory Made Wrought Steel Butt Welding Fittings
ASME	B16.11 Forged Fittings, Socket Welding and Threaded
ASME	B16.15 Cast Bronze Threaded Fittings Classes 125 and 250
ASME	B16.20 Metallic Gaskets for Pipe Flanges
ASME	B16.21 Non-Metallic Flat Gasket for Pipe Flanges
ASME	B16.22 Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
ASME	B16.24 Cast Copper Alloy Pipe Flanges and Flanged Fittings
ASME	B16.28 Wrought Steel Butt Welding Short Radius Elbows and Returns
ASME	B16.34 Steel Butt Welding End Valves
ASME	B16.36 Orifice Flanges
ASME	B18.2.2 Square and Hex Nuts Inch Series
ASME	B31.1 Power Piping
AMCA	Air Movement and Control Association
AGMA	American Gear Manufacturers Association
ANSI	American National Standards Institute
ANSI	Z9.2 Fundamentals Governing the Design and Operation of Local Exhaust Systems
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASHRAE	62 Ventilation for Acceptable Air Quality
ASHRAE	Handbook HVAC Applications
ASHRAE	Handbook HVAC Fundamentals
ASHRAE	Handbook HVAC Systems and Equipment
ASHRAE	15 - 2004 Safety Standard for Refrigeration Systems
ASHRAE	52.1 – 1992 Gravimetric and Dust Spot Procedure for Testing Air Cleaning Devices used in General Ventilation for Removing Particulate Matter

ASHRAE 52.2 - 1999 Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency in Particle Size
ASHRAE 70 – 1991 Method of Testing for Rating the Performance of Air Outlets and Inlets
ASHRAE 90.1 Energy Standard for Buildup except Low-Rise Residential Building
ASTM American Society for Testing and Materials
ASTM A53 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc- Coated, Welded and Seamless
ASTM A105 Specification for Carbon Steel Forgings for Piping Applications
ASTM A106 Specification for Seamless Carbon Steel Pipe for High-Temperature Service
ASTM A182 Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service
ASTM A312 Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
ASTM A234 Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
ASTM A403 Specification for Wrought Austenitic Stainless Steel Piping Fittings
ASTM B88 Specification for Seamless Copper Water Tube
ASTM D2657 Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings
ASTM D3035 Specification for Polyethylene (PE) Plastic Pipe Based on Controlled Outside Diameter
ASTM D3261 Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
ASTM D3350 Specification for Polyethylene Plastics Pipe and Fittings Materials
ASTM F714 Specification for Polyethylene (PE) Plastic Pipe Based on Outside Diameter
AWS American Welding Society
AWS D1.1 Structural Welding Code Steel
AWS QC1 Standard for AWS Welding Inspectors
AWWA American Waste Water Association
AWWA C301 Pre-stressed Concrete Pressure Pipe, Steel-Cylinder Type
AWWA C304 Design of Pre-stressed Concrete Cylinder Pipe
AWWA Manual M9 Concrete Pressure Pipe
AWWA C200 Steel Water Pipe 6 in. (150mm) and Larger
AWWA C207 Steel Pipe Flanges for Waterworks Service. Sizes 4 in. Through 144 in. (100 mm through 3,600 mm)
AWWA C208 Dimensions for Fabricated Steel Water Pipe Fittings

AWWA C504 Rubber-Seated Butterfly Valves
CFR Code of Federal Regulations
CFR 29CFR1910 Occupational Safety and Health Standards
CFR 29CFR1926 Safety and Health Regulations for Construction
CFR Volume 40 Part 60 Standard of Performance for New Stationary Sources
CTI Cooling Technology Institute Standards
HEI Heat Exchange Institute Standards
HI Hydraulic Institute Standards
ACGIH American Council of Government Industrial Hygienists
Industrial Ventilation: A Manual of Recommended Practice
MSS SP-61 Pressure Testing of Steel Valves
MSS SP-84 Steel Valves, Socket Welding and Threaded Ends
MSS SP-58 Pipe Hangers and Supports – Materials, Design, Manufacture, Selection, Application, and Installation
MSS SP-97 Integrally Reinforced Forged Branch Outlet Fittings –Socket Welding, Threaded and Butt Welding Ends
MSS SP-127 Bracing for Piping Systems: Seismic – Wind – Dynamic Design, Selection, and Application
NFPA National Fire Protection Association
NFPA 11 Low Medium and High Expansion Foam
NFPA 13 Standard for the Installation of Sprinkler Systems
NFPA 14 Standard for the Installation of Standpipe, Private Hydrant and Hose Systems
NFPA 15 Standard for Water Spray Fixed Systems for Fire Protection
NFPA 16 Standard for the Installation of Foam-Water Sprinkler and Foam- Water Spray Systems
NFPA 20 Standard for the Installation of Stationary Pumps
NFPA 24 Standard for the Installation of Private Fire Service Mains and Their Appurtenances
NFPA 68 Guide for Venting of Deflagrations
NFPA 70 National Electrical Code
NFPA 72 National Fire Alarm Code
NFPA 85 Boiler and Combustion System Hazards Codes
NFPA 90A Standard for Installation of Air Conditioning and Ventilating Systems
NFPA 90B Standard for the Installation of Warm Air Heating and Air Conditioning Systems

NFPA 850 Recommended Practices for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations
SMACNA Sheet Metal and Air Conditioning Contractors National Association
SMACNA Rectangular Industrial Duct Construction
SMACNA Round Industrial Duct Construction
SSPC Society of Protective Coatings
SSPC-PA1 Shop Field and Maintenance Painting of Steel
SSPC-SP3 Power Tool Cleaning
SSPC-SP5/NAC-1 White Metal Blast Cleaning
SSPC-SP6/NACE-3 Commercial Blast Cleaning
UL Underwriters Labs

3.1.2 Plant Piping Systems

A. See Appendix B for piping systems and pipeline for ULSD supply or Natural Gas supply.

B. General Design and Selection Criteria Except as noted in Appendix B: Piping shall be designed in accordance with the requirements of the Code for Pressure Piping, or ASME B31.1 - Power Piping, as applicable.

C. Piping materials shall be in accordance with applicable ASTM and ANSI standards, or equivalent DIN standards. Materials to be incorporated in permanent systems shall be new, unused, and undamaged. Piping materials will generally be in accordance with the following criteria:

D. Material selection shall generally be based on the design temperature and service conditions in accordance with the following:

1. Carbon steel piping materials shall be used for design temperatures less than or equal to 371 °C (700 °F).
2. 1-¼ percent or 2-¼ percent chromium alloy steel piping materials shall be used for design temperatures greater than 371 °C (700 °F). At the client's request field welding of 9 percent chrome shall be avoided where possible.
3. 1-¼ percent or 2-¼ percent chromium alloy steel piping materials shall be used where flashing may occur, including heater drains service. Field welding of 9 percent chrome shall be avoided where possible.
4. Stainless steel piping shall be utilized for high resistance to corrosion, and for piping applications requiring a high degree of cleanliness.
5. Fiberglass reinforced plastic piping materials shall be used only in applications requiring corrosion-resistant materials.
6. Underground circulating water piping shall be pre-stressed concrete embedded cylinder pipe with concrete encased welded steel pipe at locations under buildings. Above ground circulating water piping shall be welded steel.

7. Plastic piping having a high coefficient of thermal expansion shall be used only after a thorough analysis of the piping system thermal expansion parameters.
8. High density polyethylene (HDPE) piping shall be used for underground air service and water service other than circulating water.

3.1.3 Mechanical Installation Requirements

A. Insulation

1. All piping, equipment, or surfaces operating above 140°F near walkways, access points, maintenance areas, or operation areas shall be sufficiently insulated to reduce the surface temperature to 140°F for personnel protection. All piping, equipment, or surfaces where operating temperatures exceed 140°F or where heat conservation is necessary shall be sufficiently insulated to reduce the surface temperature to 140°F. Material containing cold fluids shall receive insulation as required to prevent condensation from forming.

3.1.4 Products

A. Valves

1. Valves shall be provided to control and isolate different systems within the plant. Where possible equipment shall be provided with isolation and bypass valves to allow for equipment maintenance without a plant outage. Valve operators shall include levers, wheels, chain pulley and pneumatic operators as required by the location and service conditions of the valve. Valves shall be arranged for operation from floor level where possible and if required, will have extension spindles, chain operators, or gearing. The location of valves shall be accessible without the use of portable ladders or a man-lift. Hand-actuated valves shall be operable by one person. Valve materials shall be consistent with pipe specifications.
2. The design, fabrication, construction and testing of valves shall conform to the applicable codes and standards in Section 3.2.1.

B. Pumps

1. Pumps shall be designed for ease of maintenance with a removal area for the pump and motor. General service pumps shall be in accordance with the recommendations of the Hydraulic Institute Standards, and shall be suitable for the service and environment for which they are installed.

C. Heat Exchangers

1. Miscellaneous heat exchangers shall be furnished in accordance with:

ASME	Boiler and Pressure Vessel Code, Section VIII
HEI	Heat Exchanger Institute – Standards for Power Plant Heat Exchangers
TEMA	Tubular Exchanger Manufacturers Association
API 661	Air Cooled Heat Exchangers

D. Shop Fabricated Tanks

1. Shop fabricated tanks shall be designed and fabricated in accordance with:

ASME	Boiler and Pressure Vessel Code, Section VIII
AWWA	American Water Works Association

3.1.5 Execution

A. The Project Company shall develop construction specifications for erection, installation, and assembly of mechanical equipment to ensure a high-quality product in accordance with the applicable codes and standards in this Specification. The specifications shall detail equipment assembly, alignment, anchoring, welding procedures, cleaning, erection of piping and equipment, piping system cleaning, piping inspection and testing and acceptable materials.

3.2 Electrical Plant and Systems Requirements

1. Each unit in the Facility shall remain connected to the Grid System from frequency ranges of 57.0 – 63.0 Hz in accordance with GPAPRC-006
2. Voltage range to be withstood by the Facility without disconnecting should be as follows (based on NERC PRC-024-2):

High Voltage Ride-Through Duration		**Low Voltage Ride-Through Duration**	
Voltage (pu)	**Time (sec)**	**Voltage (pu)**	**Time (sec)**
>1.20	Instantaneous	<0.45	0.15
≥1.175	0.20	<0.65	0.30
≥1.15	0.50	<0.75	2.00
≥1.10	1.00	<0.90	3.00
Ref. additional detail as stated in PRC-0024-2 for voltage ride-through.			

3. Communication (SCADA) requirements shall be specified including the communication protocol, type of the carrier, and a list of signals (information, alarms, etc..) to be communicated to the GPA dispatch center.
4. Automatic Generation Control Facility should not include any AGC system other than unit governors. AGC will be performed by GPA AGC system. Plant control system should not change or modify governor set-point or plant output other than through long-term control. If plant control system has control capability of

individual units' real power output, it must include a droop component in the control.

5. Controller ability to mitigate sub-synchronous resonance.
6. Power revenue metering requirements (accuracy class, number of tariffs that can be programmed in the metering system, data logging and storage requirements, software for remote billing requirements, etc.).
7. Information and requirements for the Electrical Interconnection Facilities (voltage level and location of the GPA substation to be used to for power evacuation, one-line diagram and layout of the substation, specifying whether it is single or double circuit).
8. Governor requirements. Unit governors should be droop based governors with a dead band not exceeding 0.025 Hz. Each unit should be controlled by its own governor. Governor set-point should not be altered or changed automatically by plant DCS. Automatic set-point changes should only be made by the GPA SCADA system.

3.2.1 Applicable Codes and Standards

A. Unless noted otherwise, all electrical components, design and construction shall conform to applicable governmental codes, and latest editions of recommended practices and standards of the following organizations: (Project Company may offer acceptable equivalent European, Japanese and Korean standards. The Project Company must demonstrate equivalency.) Only one set of standards shall be applied throughout the Facility.

NFPA 70	National Electrical Code
NFPA 70E	National Electrical Safety Code
NFPA 780	Standard for the Installation of Lightning Protection Systems
IEEE 100	Authoritative Dictionary of Standard Terms
IEEE C37.1	IEEE Standard for SCADA and Automation Systems
IEEE C37.2	Electrical Power System Device Function Numbers, Acronyms, and Contact Designations
IEEE C37.04	IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers
IEEE C37.06	IEEE Standard for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis Preferred Ratings and Related Required Capabilities

IEEE C37.09	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis
IEEE C37.12	IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 Volts)
IEEE C37.17	IEEE Standard for Trip Systems for Low Voltage (1000V and Below) AC and General Purpose (1500V and Below) DC Power Circuit Breakers
IEEE C37.20.1	IEEE Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
IEEE C37.20.2	IEEE Standard for Metal-Clad Switchgear
IEEE C37.20.3	IEEE Standard for Metal-Enclosed Interrupter Switchgear
IEEE C37.20.7	IEEE Guide for Testing Metal-Enclosed Switchgear Rated Up to 38kV for Internal Arcing Faults
IEEE C37.23	IEEE Standard for Metal-Enclosed Bus
IEEE C37.90	IEEE Standard for Relays and Relay Systems Associated with Electric Power Apparatus
IEEE C37.90.1	IEEE Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus
IEEE C37.91	IEEE Guide for Protecting Power Transformers
IEEE C37.102	IEEE Guide for AC Generator Protection
IEEE C37.110	IEEE Guide for the Application of Current Transformers Used for Protective Relaying Purposes
IEEE C50.12	IEEE Standard for Salient-Pole 50 Hz and 60 Hz Synchronous Generators and Generator/Motors for Hydraulic Turbine Applications Rated 5 MVA and Above
IEEE C50.13	IEEE Standard for Cylindrical-Rotor 50 Hz and 60 Hz Synchronous Generators Rated 10 MVA and Above
IEEE C57.12	IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power and Regulating Transformers
IEEE C57.12.01	IEEE Standard General Requirements for Dry-Type distribution and Power Transformers

	Including Those with Solid-Cast and/or resin-encapsulated Windings
IEEE C57.12.10	IEEE Standard Requirements for Liquid-Immersed Power Transformers
IEEE C57.12.70	IEEE Standard for Standard Terminal Markings and Connections for Distribution and Power Transformers
IEEE C57.13	IEEE Standard Requirements for Instrument Transformers
IEEE C57.13.3	IEEE Guide for Grounding of Instrument Transformer Secondary circuits and Cases
IEEE C62.11	IEEE Standard for Metal-Oxide Surge Arrestors for AC Power Circuits (>1 kV)
IEEE C62.22	IEEE Guide for the Application of Metal-Oxide Surge Arrestors for Alternating-Current Systems
IEEE C62.23	IEEE Application Guide for Surge Protection of Electric Generating Plants
IEEE 112	IEEE Standard Test Procedures for Polyphase Induction Motors and Generators
IEEE 141	IEEE Recommended Practice for Electric Power Distribution for Industrial Plants
IEEE 142	IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems
IEEE 242	IEEE Recommended Practice for Protection and Coordination of Industrial and commercial Power Systems
IEEE 386	Standard for Separable Insulated Connector Systems for Power Distribution Systems Rated 2.5 kV through 35 kV
IEEE 399	IEEE Recommended Practice for Industrial and Commercial Power Systems Analysis
IEEE 493	IEEE Recommended Practice for the Design of Reliable Industrial and Commercial Power Systems
IEEE 551	IEEE Recommended Practice for calculating Short-circuit Currents in Industrial and Commercial Power Systems.

IEEE 519	IEEE Recommended Practice and Requirements for Harmonic Control in Electric Power Systems
IEEE 664	IEEE Guide for Generating Station Grounding
IEEE 1547	Standard for Interconnecting Distributed Resources with Electric Power Systems
NEMA MG-1	Motors and Generators
NEMA VE-1	Metal Cable Tray Systems
NEMA VE-2	Cable Tray Installation Standards
NEMA ICS 1	Industrial Control and Systems General Requirements
NEMA ICS 3	Medium Voltage Controllers Rated 2001 to 7200 Volts AC
NEMA WC 74	5-46 kV Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy
UL 44	Thermoset-Insulated Wires and Cables
UL 96	Standard for Lightning Protection Components
UL 96A	Standard for Installation Requirements for Lightning Protection Systems
UL 347	Medium Voltage AC Contactors, Controllers and Control Centers
UL 508	Industrial Control Equipment
UL 508A	Standard for Industrial Control Panels
UL 845	Motor Control Centers
UL 1072	Standard for Medium-Voltage Power Cables
UL 1558	Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear

3.2.2 General Design Requirements

A. Power plant shall have an auxiliary electrical system. The auxiliary electrical system shall be supplied from one or more of the following sources:

1. Generator(s) power bussing
2. Generator(s) breaker switchgear
3. GPA 115 kV transmission grid

B. Power plant auxiliary voltages are as follows:

1. Medium Voltage: 5kV to 15kV, 3 phase

2. Low Voltage: 480V, 3 phase
3. House and convenience power 208/120V, 3 phase

C. Medium voltage system

1. Generator(s)
2. Generator power bussing
3. Step up transformer

D. Generator(s) shall be the source of electric power.

1. Mechanical, rotating generator(s) shall be synchronous type of either cylindrical rotor or salient pole type. Generators shall have the following ratings:

   a. To provide increased inertia and short circuit current, generators should be oversized to compensate for lack of inertia for aero-derivative or reciprocal generation. The unit is expected to provide inertia for the GPA system primarily through the inertia of the plant generators. As such, the generators are expected to be oversized relative to the capacity of the units to provide increased inertia. The generators MVA rating must be sized a minimum of 140% of the real power capacity of the prime mover

   b. Number of phases: 3

   c. Output frequency: 60 Hz

   d. Minimum power factor: 0.80 lagging. The generators full dynamic range should be available at the Point of Interconnection (allowing for offset to reactive losses from generator terminals to the Point of Interconnection), including at full load. Under no circumstances should the dynamic power factor range at the POI be less than +/- 0.85.

   e. Winding pitch: 5/6

2. Non-mechanical generator shall interface with the 115 kV grid through a step up transformer and shall have the following requirements:

   a. Generate a 3-phase voltage and current from DC or other AC single and poly phase sources as part of the power generation process.

   b. Be able to operate through the four power quadrants.

   c. Shall have an efficiency of greater than 95%.

   d. Shall comply with IEEE 1547.

3. Renewable Generation

   a. Photo-Voltaic solar panels

      i. Panel output collector system to be DC

   b. Wind Turbines

   c. Concentrated Solar Thermal

d. As a standalone system or in addition to another generating system, renewable generation must have the following ramp rates while connected to the Guam grid:

i. Maximum ramp rate up: 2.0 MW/hr

ii. Maximum ramp rate down: 2.0 MW/hr

4. Equipment furnished shall be capable of serving maximum rated output of prime movers at rated power factors, under all ambient and cooling conditions, with minimum additional 5% capability.

5. Design generator to withstand bolted 3-phase fault at generator terminals without damage per IEEE C50.12 and C50.13 while operating within rated operating frequency range with an excitation value equivalent to maximum rated terminal voltage at rated lagging power factor.

6. Mechanical generator shall be capable of withstanding overspeed following unit trip under full load or in accordance with GPAPRC-006 without mechanical degradation.

7. Power generation and power handling conductors as part of the generator to be of copper construction.

8. Provide partial discharge monitor and control system complete with corporate license software.

9. Provide surge capacitor and surge arresters.

10. Provide neutral grounding equipment in accordance with neutral grounding method specified.

11. Provide generator excitation system complete with equipment, materials, and accessories.

12. Provide voltage regulator that shall be capable of automatic and manual voltage regulation.

E. DC Power System

1. As part of a proposed generating system, DC power system shall have the following requirements

2. No more than 1500 volts DC nominal.

3. System shall be ungrounded and shall have ground detection capability.

4. System shall have overcurrent and over/undervoltage protection per the standards.

F. Battery Energy Storage

1. Any proposed battery energy storage system shall have an integral Battery Management System (BMS).

2. Submit a battery cell maintenance and disposal plan with bid.

G. Flywheel Energy Storage

1. Flywheel systems must be able to contain flywheel rotor disintegration without affecting any surrounding plant infrastructure components or personnel.

H. Medium Voltage Switchgear

1. Switchgear shall handle the distribution and protection of medium voltage power (5 – 15 kV) for the plant.
2. Switchgear shall be a complete, coordinated factory assembly ready for installation, connection, and designed for operation at site ambient temperatures and elevations.
3. If arc-resistant gear is specified, manufacturer shall provide complete and coordinated arc chute plenum design including supports and vents. This shall include routing of arc chute to vent location as coordinated with Engineer. If arc-resistant gear is not provided, manufacturer shall include arc-flash mitigation such as differential relays in all zones of protection, arc-detection relays in switchgear where hazard rating exceeds Category 2 without such protection.
4. Switchgear assembly shall consist of individual free-standing vertical sections to form a rigid, metal-clad switchgear assembly.
5. Switchgear main bus shall be copper bar, designed to continuously carry specified load current without exceeding temperature rise requirements.
6. Provide uninsulated copper ground bus with momentary rating at least equal to momentary rating of Switchgear.

I. Medium Voltage Motor Control Centers

1. Motor control centers shall control medium voltage motors or similar single loads by across the line starting methods.
2. Medium-voltage motor control center assembly(ies) complete with accessories including, but not limited to:
   a. Control center structure.
   b. Incoming line enclosure.
   c. Main horizontal and insulated vertical bus.
   d. Fused vacuum contactors.
   e. Main breaker or fused switch.
   f. Isolation and load break switches.
   g. Isolated low-voltage compartments.
   h. Protective relays and metering devices.
   i. Communications.
   j. Portable racking and lifting devices capable of transporting contactor outside of compartment.

3. MCC structures shall welded steel frame, formed steel doors and side sheets, flat steel top and rear covers forming metal enclosed, dead front freestanding assembly.
4. Each starter shall include, but not be limited to, isolating switch, medium-voltage fuses, contactor, control power transformer, and low-voltage section.
5. Vertical and horizontal buses are to be of copper construction.

J. Step-up and Auxiliary Transformers

1. Transformers shall be provided to provide appropriate voltages for in plant electrical systems and tying to GPA's electrical distribution system.
2. Transformer shall be capable of withstanding without injury mechanical and thermal stresses resulting from short circuit currents.
3. Transformer core and coils shall have circular cross sections.
4. Transformer coils shall be of copper construction.
5. Provide transformer with manufacturer's standard oil conservation system.
6. Provide bushing type CTs with fully distributed windings for relaying or metering service in quantities, ratios, and ratings as required.
7. Provide metal-oxide station class arresters with voltage ratings as required.
8. Provide tap voltages of +/- 2.5% and +/- 5% on the primary winding. Each tap position shall be fully rated and shall not limit kVA rating of transformer.
9. For ventilated, dry type transformers, silicon-resin, vacuum encapsulation or vacuum pressure impregnated (VPI) process shall apply 4-dip protective shield of silicon resin to coils.

K. Isolated Phase Bus

1. Isolated phase bus can be used to transmit electric power at high ampacities (>= 5000 amps).
2. Isolated phase bus duct system includes, but is not limited to:
    a. Bus and enclosure.
    b. Hardware and components for connections to equipment.
    c. Flexible links for all connections.
    d. Expansion joints.
    e. Vapor barriers and wall penetrations.
    f. All necessary bus support structures
        i. Isolated phase bus shall be of aluminum construction for both the conductors and the outer duct enclosure.
        ii. Design bus duct systems for nominal voltages, BIL, number of poles and rated maximum voltages.

L. Nonsegregated Phase Bus Duct

1. Nonsegregated phase bus can be used to transmit electric power within the plant.
2. Nonsegregated phase bus duct system includes, but is not limited to:
    a. Bus and enclosure.
    b. Hardware and components for connections to equipment.
    c. Flexible links for all connections.
    d. Expansion joints.
    e. T-tap connections.
    f. Vapor barriers and wall penetrations.
    g. All necessary bus support structures.
3. Nonsegregated phase bus bar conductors from high-grade, 98% pure copper bus bars. Connection areas shall be tinned or silver-plated.
4. Design bus duct systems for nominal voltages, BIL, number of poles and rated maximum voltages.

M. Low Voltage System

1. Low Voltage Switchgear
2. Switchgear shall handle the distribution and protection of low voltage power (600V or less) for the plant.
3. Factory wired switchgear assembly consisting of, but not limited to:
    a. Dead-front metal-enclosed compartments containing power buses, neutral bus, ground bus.
    b. Power circuit breakers.
    c. Safety interlocks and auxiliary control devices.
    d. Instrument transformers.
    e. Protective relays.
    f. Metering.
    g. Switches.
4. Switchgear shall be a complete, coordinated factory assembly ready for installation, connection, and designed for operation at site ambient temperatures and elevations.
5. If arc-resistant gear is specified, manufacturer shall provide complete and coordinated arc chute plenum design including supports and vents. This shall include routing of arc chute to vent location as coordinated with Engineer. If arc-resistant gear is not provided, manufacturer shall include arc-flash mitigation

such as differential relays in all zones of protection, arc-detection relays in switchgear where hazard rating exceeds Category 2 without such protection.

6. Entire assembly shall be suitable for 600 volts maximum ac service regardless of operating voltage.
7. Bus system shall have minimum ANSI 4-cycle short-circuit withstand rating.
8. Switchgear main bus and ground bus shall be copper bar, designed to continuously carry specified load current without exceeding temperature rise requirements.

N. Motor Control Centers

1. Motor control centers shall control low voltage motors by across the line starting methods and to distribute low voltage power to other electrical power distribution equipment (switchboards, panelboards, etc.) as well as single loads.
2. Motor control center shall be continuous, coordinated, factory assembly ready for installation, connection, and immediate service designed for operation at site ambient temperatures and elevations.
3. Motor control center may include, but is not limited to:
   a. Horizontal power bus.
   b. Dead-front metal enclosed compartments containing power buses.
   c. Ground bus.
   d. Feeder circuit breakers and combination motor controllers.
   e. Auxiliary and transition compartments.
   f. Auxiliary control devices.
   g. Instrument transformers.
   h. Relays.
   i. Meters.
   j. Control switches.
4. Motor control centers shall be suitable for operation on 3-phase electrical system.
5. Main horizontal bus and vertical bus shall be either tin-plated for corrosive environments or silver-plated at bolted connections. Fabricate from copper. Minimum ampacities shall be as designed at 50°C temperature rise over 40°C ambient in compliance with UL standards.

O. Variable Frequency Drives

1. Variable frequency drives shall be used when the driven load must be controlled over a continuous range of speeds.
2. VFD shall convert incoming fixed frequency 3-phase ac power into variable frequency and voltage for controlling speed of 3-phase ac motor.

3. Motor voltage shall be varied with frequency to maintain desired motor magnetization current suitable for eliminating need for motor derating.
4. VFD shall be sinusoidal PWM type drive with sensor-less torque vector control capability. Control techniques other than PWM, not acceptable.
5. Components:
    a. Full-wave diode rectifier to convert supply ac to fixed dc voltage.
    b. DC link capacitors.
    c. Insulated Gate Bipolar Transistor (IGBT) power section, dual rated for either variable or constant torque applications.
    d. VFD shall be microprocessor-based with LED and LCD display to monitor operating conditions.
    e. Separate control and power terminal boards.
6. VFD installations must meet the requirements of IEEE 519 at the point of common coupling (PCC). The PCC shall be defined as the first motor control center or switchgear bus upstream from the VFD.

P. General Plant Requirements
1. Medium Voltage Power Cable
    a. Cables and accessories shall be in accordance with applicable standards
    b. Medium Voltage power cables shall have copper conductors.
    c. Single and multi-conductor cables shall have shielded conductors.
    d. PVC jacketing not allowed.
2. Low voltage power and control cables
    a. Power and control cables specified are for voltages 600 volts and below.
    b. Instrumentation and thermocouple extension cables specified for voltages of 300 volts or below.
    c. Power, control and instrumentation cables shall have copper conductors.
    d. Power and control cable insulation shall comply with NEC type XHHW-2.
    e. Minimum wire size is:
        i. #14 AWG for control circuits
        ii. #16 AWG for instrumentation circuits
        iii. #12 AWG for power circuits
3. Motors
    a. Electric motors ½ hp and larger shall be 3 phase, squirrel cage induction motors.
    b. Motors shall be in accordance with applicable requirements.

c. Motor windings shall be copper.

d. Motors driven by VFDs shall be VFD compliant.

4. Grounding

a. Ground and bond all plant electrical, mechanical and structural components to the plant grounding system.

b. Provide a ground grid as the main plant grounding system.

c. Grounding and bonding conductors shall be tinned copper.

5. Lightning Protection

a. Provide a Franklin style lightning protection system.

b. Lightning protection conductors and air terminals shall be of aluminum construction.

6. Cathodic Corrosion Protection

a. Provide cathodic protection for the following:

i. Underground steel, stainless steel, copper, or brass piping using galvanic anodes.

ii. Bottoms of pad mounted steel water storage tanks using galvanic anodes.

iii. The fuel and natural gas pipelines from Peterra tank farm to the plant site if fossil fuel is offered.

Q. Plant Control System

1. Provide a control system including process controllers, redundant power supplies, chassis, Input/Output (I/O) modules, communications interface modules, and associated hardware. The control system shall meet all NERC CIPS security requirements.

2. Provide a complete and coordinated control system equipment and software package that safely controls all aspects of power plant operations. The control system shall not automatically control the output of individual units or adjust the unit output of any individual unit under AGC and governor control. DCS shall not provide an interface between the GPA AGC system and the unit governor.

3. Control system shall have both discrete and analog input and output signals management capability as well as interpreting HART (Highway Addressable Remote Transducer) signal protocol.

4. Control system software programming shall have a prioritized alarms management system.
5. Control system shall have human-machine interfaces (HMIs) with dual monitors displaying information in a diagrammatic fashion. One-Line Diagrams and Process and Instrumentation Diagrams (P&IDs) shall be used as a basis for graphical screen layouts.
6. Control system shall be capable of the following communications protocols:
    a. Modbus
    b. Modbus TCP
    c. DNP3
    d. Profibus
    e. Devicenet

R. Dynamic Fault recorder

1. The plant shall include a Tesla 4000 Power System Monitoring Recorder. The recorder shall monitor the voltage and current of each unit, the plant as a whole and each 115 kV transmission line interconnecting to the GPA system. The recorder shall also monitor the breaker status of each unit breaker and each line breaker and fault detection on the 115 kV and generation relays. The generator units shall also monitor the governor set point and any changes made to the governor set-point. All digital or analog inputs shall be accurately reported to the recorder within 8 ms of the actual change.

S. Protective Relaying

1. Plant electrical protective relaying system shall be provided to protect plant personnel and equipment from inadvertent electrical energization.
2. Protective relays shall specifically protect the following equipment:
    a. Generator(s)
    b. Medium voltage switchgear
    c. Low voltage switchgear
    d. Unit auxiliary and step-up transformers
3. Protective relay system shall be designed and set in accordance with the latest Standards. GPA has standardized on utilizing Schweitzer Engineering Laboratories, Inc. protective relays.
4. For electrical equipment not protected by protective relays or trip units, provide thermal-magnetic breakers for overcurrent protection (50/51).
5. All switchgear not designed as arc-resistant gear shall include arc-detection relays and protection.
6. All 115 kV relays shall be SEL type relays.

T. Unit Response Requirements

The unit(s) must meet the GPA Grid and Reliability Standards in Appendix G.

3.2.3 Electrical Installation Requirements

A. Electrical installation shall conform to NFPA 70 and NFPA 70E.

3.2.4 Execution

A. The Project Company shall develop construction specifications for erection, installation, and assembly of electrical equipment to ensure a high-quality product in accordance with the applicable codes and standards in this Specification. The specifications shall detail equipment assembly, alignment, anchoring, welding procedures, erection of equipment, testing and acceptable materials.

3.3 Civil Requirements

3.3.1 Applicable Codes and Standards

A. Unless noted otherwise, all design and construction shall conform to applicable governmental codes, and latest editions of recommended practices and standards of the following organizations:

American Association of State Highway and Transportation(AASHTO)

American Concrete Institute(ACI)

American Concrete Pavement Association(ACPA)

American with Disabilities Act(ADA)

Asphalt Institute AI)

American Institute of Steel Construction(AISC)

American Iron and Steel Institute(AISI)

American National Standards Institute(ANSI)

American Public Works Association(APWA)

American Road and Transportation Builders Association(ARTBA)

American Society for Testing and Materials(ASTM)

American Society of Landscape Architects(ASLA)

American Traffic Safety Services Association(ATSSA)

American Welding Society(AWS)

American Society of Civil Engineers(ASCE)

American Water Works Association(AWWA)

Concrete Reinforcing Steel Institute(CRSI)

Federal Acquisition Regulations (48 CFR Chapter 1)(FAR)

Federal Highway Administration(FHWA)

Federal Land Highways(FHA)

Federal Specifications and Standards(FSS)

Federal Test Method Standard(FTMS)

Institute of Electrical and Electronic Engineers(IEEE)

Institute of Transportation Engineers(ITE)

National Electrical Manufacturer's Association(NEMA)

Portland Cement Association(PCA)

Prestressed Concrete Institute(PCI)

Post Tensioning Institute(PTI)

Occupational Safety and Health Administration(OSHA)

Guam Department of Public Works Standard Plans

Guidebook to Development Requirements on Guam

Environmental Procedures Guide for Transportation Projects on Guam

3.3.2 General Design Requirements

Project Company shall perform site studies it deems necessary for their design. Studies may include but are not necessarily limited to the following:

- Property maps and boundary surveys
- Topographic surveys
- Hydrological data
- Subsurface utility investigation
- GWA water system model
- Cultural resources surveys
- Natural resources surveys
- Geotechnical Investigation

A. Water supply: The plant potable water supply will originate from the GWA public water supply. Cooling water will be drawn from the effluent of the GWA Northern District Wastewater Treatment Plant. Project Company shall treat the water as necessary for service water, fire water, and boiler makeup.

B. Facility shall be designed for an expected service life of 30 years or greater.

3.3.3 Products

A. Construction Documents including but not limited to Drawings and Specifications.

3.3.4 Execution

A. Project Company to prepare construction documents for all civil improvements.

3.4 Structural Requirements

3.4.1 Applicable Codes and Standards

A. Unless noted otherwise, all design and construction shall conform to applicable governmental codes of the Territory of Guam, and latest editions of recommended practices and standards of the following organizations or their European, South Korean, or Japanese equivalent: Only one set of standards shall be applied throughout the Facility.

Aluminum Association(AA)

American Architectural Manufacturers Association(AAMA)

American Concrete Institute(ACI)

American Institute of Steel Construction(AISC)

American Iron and Steel Institute(AISI)

American National Standards Institute(ANSI)

American Society for Testing and Materials(ASTM)

American Welding Society(AWS)

American Society of Civil Engineers(ASCE)

APA – Engineered Wood Association

American Society of Safety Engineers(ASSE)

American Wood Council(AWC)

American Wood Protection Association(AWPA)

Concrete Reinforcing Steel Institute(CRSI)

International Code Council(ICC)

Society for Protective Coatings(SSPC)

National Concrete Masonry Association(NCMA)

National Association for Corrosion Engineers(NACE)

National Assoc. of Arch. Metals Manufacturers(NAAMM)

Occupational Safety and Health Administration(OSHA)

Pre-stressed Concrete Institute(PCI)

Post Tensioning Institute(PTI)

Steel Deck Institute(SDI)

The Masonry Society(TMS)

Wire Reinforcement Institute(WRI)

3.4.2 General Design Requirements

A. The construction documents shall contain all information required by the applicable codes and standards.

B. All structures, equipment, tanks, piping and pipe supports, cable tray, conduit, and supports shall be designed to resist the dead, live, test, operating, rain, wind and seismic loads applicable to the plant site.

3.4.3 Design shall be to approved applicable codes and standards and result in producing safe facilities.

3.4.4 Materials

Materials of construction shall be suitable for their intended purpose and longevity. Materials to be used shall be selected from the following standards or their European, South Korean, or Japanese equivalents. Only one set of standards shall be applied throughout the Facility.

A. Steel:

1. Wide Flange and WT Shapes: ASTM A992
2. Channel, Angle, M, MT, S and ST Shapes: ASTM A36, ASTM A992
3. HP Shapes: ASTM A572, Grade 50
4. Rectangular HSS Shapes: ASTM A1085, Fy=50 ksi min., ASTM A500, Grade B, Fy=46ksi min.
5. Round HSS Shapes: ASTM A1085, Fy=50 ksi min.,ASTM A500, Grade B, Fy=42ksi min.
6. Pipe: ASTM A53, Grade B, Fy=35 ksi min.
7. Threaded Rod: ASTM A36
8. Fasteners: High Strength Bolts: ASTM F3125, Grade A325, A490, Heavy Hex, Type 1; ASTM Grade F1852, F2280, Twist-Off, Type 1.
9. Common Bolts: ASTM A307, Grade A
10. Nuts: ASTM A563, Grade C, DH
11. Washers: ASTM A436, or ASTM A959 for direct tension indicators
12. Welded Headed Studs: ASTM A108
13. Anchor Rods: ASTM F1554, Grade 55 or 105
14. Stainless Steel: ASTM A276, Grade 304, 304L, 316, 316L
15. Raised pattern floor plate: ASTM A786
16. Plates and bars: ASTM A36, A572

B. Concrete:

Compressive strength as required for design and exposure per ACI 318.

Reinforcing Steel: ASTM A615, Grade 60, ASTM A706, Grade 60 (Welded reinforcing steel); ASTM A775 (Epoxy coated); ASTM A934 (Epoxy coated prefabricated bars); ASTM A955 (Stainless steel bars); ASTM A1055 (Zinc and Epoxy Dual Coated bars); ASTM A767 (Galvanized bars).

Welded Wire Fabric: ASTM A1064 (carbon steel, plain and deformed); ASTM A1022 (stainless steel plain and deformed); ASTM A884 (epoxy coated); ASTM A1060 (galvanized, plain and deformed).

Prestressing Steels: ASTM A416 (strand), A421 (strand), A722 (bars)

Aggregates: ASTM C33

Portland Cement: ASTM C150

Blended Hydraulic Cements: ASTM C595

Mixing water: ASTM C1602

Admixtures: ASTM C494

C. Masonry:

Hollow Load Bearing Concrete Masonry Units: ASTM C90

Mortar: ASTM C270

Grout: Portland Cement ASTM C150

Hydrated Lime: ASTM C207

Aggregate for Grout: ASTM C404

Joint Reinforcement: ASTM A951

3.4.5 Structural Loads

A. General:

Design loads for all enclosures, structures, structural components and equipment will be determined according to the criteria described below, except where the applicable code requires more severe loading conditions.

Loads shall be determined per the ICC International Building Code (IBC) and supplemented with ASCE 7 "Minimum Design Loads for Buildings and Other Structures", editions in effect at time of bidding.

Loads shall include all dead, live, soil, hydrostatic, flood, wind, rain, earthquake, and any special loads.

Where structural design must proceed without certified load data for vendor supplied equipment, estimated load data may be used and loads shall be increased to compensate for the lack of final certified design data. Catalog data or similar previous data for minor equipment may be used, but loads shall be increased by a minimum of 20% to cover anticipated variations and contingencies.

B. Design Loads:

1. Dead Loads - D

In lieu of actual available data, the following dead loads shall be used as minimum loads:

Roof with Metal Deck

Metal Deck	5 psf
Insulation	1 psf
Light Fixtures and Sprinklers	3 psf
Steel Framing (light)	10 psf

Steel Bar Grating

1 ¼" x 3/16"	12 psf
All other types refer to catalog data	

Cast in place Concrete

Formed	150 pcf
On metal deck (inches above deck)	12.5 lb/in of thickness

Steel Floor Framing

Light framing	10 psf
Medium framing	18 psf
Heavy framing	25 psf

Partition Walls with normal weight concrete masonry units, ungrouted (psf of wall area)

6"	37 psf
8"	42 psf
10"	47 psf
12"	62 psf

Siding and Girts 10 psf

2. Live Loads - L

In design of floors and floor support structure, the following specified uniform floor design live loads are minimums. Where equipment is located on a floor, the structure shall be designed for the larger of the equipment weight (equipment fixed in place shall be considered as dead load and moveable equipment shall be considered as live load) or the displaced specified floor live load.

a. Ground floor

Heavy Traffic Aisles	400 psf
Light Traffic Zones	250 psf

	Storage Areas	150 psf
	As required for special construction and maintenance	
b.	Office floors	50 psf
c.	Partitions	20 psf
d.	Superstructure floors	
	Main platforms and floors	100 psf
	Auxiliary platforms	70 psf
	Concrete floors	100 psf
	Steam Turbine floors	450 psf
	2000 lb concentrated point load placed on an area 2.5' square, anywhere on a floor	
e.	Electrical Rooms	200 psf
f.	Walkways	60 psf
g.	Stairs, corridors and intermediate landings	100 psf

3. Roof Live Load – Lr 20 psf

4. Roof Rain Load – R Per IBC

   Rainfall Intensity: Per United States Department of Agriculture, Natural Resources Conservation Services, Engineering Technical Note No.3, "Rainfall - Frequency and Design Rainfall Distribution for Selected Pacific Islands", Table 2-1D, 100 year, 1 hour rainfall: 4.7 inches.

5. Wind Loads - W

   Per IBC 2009 Section 1609

   Occupancy Category: IV

   Basic wind speed: 175 mph (3 second gust, Exposure Category C)

   Importance factor, I: 1.15

6. Earthquake Loads - E

   Per IBC 2009 Section 1613 and PPRBC Section RBC302.4.35

   Occupancy Category: IV

   Importance factor, I: 1.5

   Short Period Spectral Response Parameter Ss = 2.86

   1 Second Spectral Response Parameter S1 = 0.61

   Site Class shall be determined by geotechnical investigation

Seismic Design Category shall be assigned and other parameters calculated upon determination of Site Class

7. Equipment Loads:
    1. Dead Load - D
        b. Refer to vendor equipment drawings
    2. Live Load - L
        c. Refer to vendor equipment drawings
    3. Abnormal Operating Load - L
        a. This condition occurs when equipment, hoppers, vessels, conveyors, etc., are filled to capacity or choked at outlets under abnormal operations.
        b. Consider vibration, impact, and temperature loads as required under abnormal operating conditions.
    4. Impact Loads - I
        d. Per IBC Chapter 16.
    5. Rotating and Reciprocating Equipment Loads - L
        a. 50% of the equipment weight
    6. Piping and Electrical Loads – D,L, W, E
        a. Hanger, guide and anchor loads for piping shall include dead, live, test, wind, and earthquake.
        b. Electrical cable trays, bus ducts, and conduit loads shall include dead, live, wind, seismic.
    7. Hydrostatic Test Loads - F
        a. Hydrostatic test loads shall be considered for piping and equipment.
    8. Vehicular Loads – D,L
        a. Dead Load: Per specific vehicle type.
        b. Live Load: Per specific vehicle type
        c. Fork lift, 6000lb capacity: Use 85% load distribution on front axle, unless noted otherwise.

d. Truck Live Load: AASHTO HS20 44 load distribution.

e.

9. Vibration Loads - L

a. The frequencies of rotating machinery shall be defined by the vendor.

b. Adequate stiffening, bracing shall be used to produce a satisfactory design for vibration using acceptable design analysis.

c. Resonant vibration of the foundation shall be avoided. Foundation frequency shall differ from the machine, equipment operating frequency by a minimum of ± 20 percent.

10. Contingency Loads – D

a. Non-accumulating point loads shall be used on steel beams to account for concentration of hanging loads to individual beams that exceed the area hanging load allowance. (2000 pounds minimum)

3.4.6 Steel Design

A. Codes

1. American Institute of Steel Construction:

a. "Steel Construction Manual" (Thirteenth Edition).

b. "Specification for Structural Steel Buildings, including Supplement No. 1, dated 2005" (AISC 360-05).

c. "Seismic Provisions for Structural Steel Buildings" (AISC 341-05).

d. "Specification for Structural Joints Using ASTM A325 or A490 Bolts", June 30, 2004.

e. "Code of Standard Practice for Steel Buildings and Bridges" March 18, 2005 (AISC 303-05).

f. "Detailing for Steel Construction", Third Edition (AISC 326-09).

2. Steel Deck Institute:

a. "Design Manual for Composite Decks, Form Decks and Roof Decks-No. 31".

B. Design Guidelines

a. The following guidelines will apply in general and will be superseded only by engineering and design considerations:

b. Elevated concrete floor slabs can be considered as providing horizontal stability by diaphragm action after setup and curing.

c. Grating floors shall not be considered as providing horizontal rigidity.

d. For deflection limits of structural members, see 2009 IBC Section 1604.3 and Table 1604.3.

e. Minimum Sizes:

f. Bracing size minimum - L 3 x 3 x 1/4

g. Wide Flange and Tee shapes and Angles: In areas of high corrosion the web and flange min thickness = 1/4"

3.4.7 Foundation Design

A. Codes and Standards

1. American Concrete Institute:

a. "Building Code Requirements for Structural Concrete" (ACI 318 08).

b. "Foundations for Dynamic Equipment" (ACI 351.3-R04)

c. "Details and Detailing of Concrete Reinforcement" (ACI 315).

d. "Manual of Engineering and Placing Drawings for Reinforced Concrete Structures" (ACI 315R 04).

e. "ACI Detailing Manual–2004, Publication SP-66

2. American Welding Society:

a. "Structural Welding Code-Reinforcing Steel" (AWS D1.4)

B. Design Guidelines

1. All foundation design shall be in accordance with the Project geotechnical report and ACI design codes. Deviations from the recommendations will be resolved with the geotechnical consultants. Analysis of foundations shall follow generally accepted practice. Vibration requirements shall be considered in the design of foundations for equipment where manufacture or working environment requires consideration of operation or human access.

C. Stability - Minimum factor of safety:

1. Overturning: 1.5

2. Stability against sliding: 1.5

3. Uplift 1.0 (75% of Dead load used as resisting)

4. Lateral forces shall be resisted in accordance with the geotechnical report.

D. Housekeeping Pads

1. Housekeeping pads shall be supplied under all equipment unless noted otherwise. Pads will be nominally 6" thick consisting of 4 ½" thick reinforced concrete and 1½" grout or as shown on drawings.

2. Electrical equipment pads will generally consist of 4½" thick reinforced concrete with leveling channels or as otherwise indicated on the drawings.

3.4.8 Structural Welding

A. Codes:

1. American Welding Society:

a. "Structural Welding Code Steel" (AWS D1.1)

b. "Structural Welding Code – Aluminum" (AWS D1.2)

c. "Structural Welding Code Sheet Steel" (AWS D1.3)

d. "Structural Welding Code Reinforcing Steel" (AWS D1.4)

e. "Structural Welding Code Stainless Steel" (AWS D1.6)

f. "Structural Welding Code – Seismic Supplement" (AWS D1.8)

3.4.9 Surface Preparation and Protective Coatings

A. Surface preparation:

1. Structural steel shapes: "Commercial Blast Cleaning" in accordance with SSPC-SP6.

2. Guardrail, ladders and grating: "Power Tool Cleaning" in accordance with SSPC-SP3 or "Commercial Blast Cleaning" in accordance with SSPC-SP6.

B. Painting:

1. All steel shall be shop primed. Finish color will be selected by owner.

2. Guardrails, ladders and stairs shall be shop finish painted using "Safety Yellow" color for guardrails, handrails, self-closing gates and ladders.

3.5 Substation Requirements

3.5.1 General

A. Materials and equipment shall be furnished in a fully engineered and coordinated design package.

B. The substation shall be designed based on the most recent revision of the following codes and standards as of the date of approval of the design criteria unless otherwise noted:

NFPA 70 National Electrical Code

NFPA 70E National Electrical Safety Code

NFPA 780 Standard for the Installation of Lightning Protection Systems

NEMA C29.7 Wet Process Porcelain Insulators - High Voltage Line Post Type

ANSI C29.9 Wet Process Porcelain Insulators – Apparatus, Post Type

IEEE C37.010 IEEE Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis

IEEE C37.04 IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers

IEEE C37.06 IEEE Standard for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis Preferred Ratings and Related Required Capabilities

IEEE C37.09 IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis

IEEE C37.1 IEEE Standard for SCADA and Automation Systems

IEEE C37.11 IEEE Standard Requirements for Electrical Control for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis

IEEE C37.12 IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 Volts)

ANSI C37.32 High Voltage Switches, Bus Supports and Accessories Schedule of Preferred Ratings, Construction Guidelines and Specifications

IEEE C37.90 IEEE Standard for Relays and Relay Systems Associated with Electric Power Apparatus

IEEE C37.90.1 IEEE Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus

IEEE C37.110 IEEE Guide for the Application of Current Transformers Used for Protective Relaying Purposes

IEEE C57.13 IEEE Standard Requirements for Instrument Transformers

IEEE C57.19.01 IEEE Standard Performance Characteristics and Dimensions for Outdoor Apparatus Bushings

IEEE C62.11 IEEE Standard for Metal-Oxide Surge Arrestors for AC Power Circuits (>1 kV)

IEEE C62.22 IEEE Guide for the Application of Metal-Oxide Surge Arrestors for Alternating-Current Systems

IEEE 605 IEEE Guide for Bus Design In Air Insulated Substations

IEEE 80 IEEE Guide for Safety in AC Substation Grounding

IEEE 81 IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System

NEMA SG4 Alternating Current High Voltage Circuit Breakers

NETA ATS Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems

Guam Power Authority Standard Specifications as applicable.

Project Company may design to equivalent approved European, Japanese or Korean standards. Project Company must demonstrate equivalency. Only one set of standards shall be applied thoughout the Facility.

3.5.2 Steel Structures

A. Dimensions:

1. As required to provide structural strength, maintain electrical clearances, and to suit equipment specified and provided.
2. Required clearances and spacings:
    a. Bus and line clearances: NEMA SG6, NESC.
    b. Phase spacing, outdoor switches, and fuses: NEMA SG6.
3. Shielding mast
    a. Type: Self-supporting, continuously tapered tubular; galvanized steel; with welded baseplate; anchor bolts; hand-hole at base; internal damping cable, or equivalent means.
4. Grounding: Provide 2 ground lugs on opposite sides of structures or equipment.

B. Grounding (above-grade):

1. Provide grounding for equipment mounted on structures.
2. Structure ground attachment locations:
3. Provide NEMA 2-hole attachment 12" (300 mm) above each baseplate.
4. Provide single-hole attachment every 4' (100 mm) (maximum) on vertical and horizontal members to structure mounted equipment.
    a. Ground conductor shall be stranded soft-drawn copper.

C. Ground clamps:

1. Provide bolted, NEMA 2-hole, bronze or copper clamp on each structure leg or column 12" (300 mm) above baseplate.
2. Provide bolted, bronze or copper clamp for support of ground cable on vertical and horizontal members.
3. Grounding operator's platforms: 4'-0" x 5'-0" galvanized steel grating. Furnish for each group-operated switch and circuit switcher.

3.5.3 Buses and Conductors

A. Rigid buses: Aluminum tubular bus conductor AA Schedule 40 pipe (standard pipe size), ASTM B429, 6063-T6 alloy.

B. Cable for jumper buses shall be in ASCR accordance with:

1. ASTM B232.

C. Core wire shall be galvanized steel wire, ASTM B245. 1350-H19 (EC) grade aluminum: ASTM B230.

D. Provide damping conductor for horizontal and vertical bus runs of aluminum bus sized appropriately according to the current revision of IEEE 605.

E. Bus design shall be in accordance with the current revision of IEEE 605. Standard tubular aluminum bus pipe sizes shall be used. Each tubing section of shall be provided with midspan drain holes and end caps. All construction of bus systems shall be welded.

F. Bus design shall take expansion into consideration as detailed in IEEE 605 due to ambient temperatures and energized heating. Expansion shall be accounted for, where required, by fixed and slide fit bus clamps or expansion fittings. Expansion fittings shall be used for connections at major equipment.

G. Project Company shall weld all aluminum bus connections.

H. Damping conductor shall be ACSR.

I. Identification tags:

1. Furnish porcelain enamel phase identification tags with black letters on white background mounted to structures at ends and midway of each bus, at each incoming/outgoing line position, over each PCB position, and at each VT or CCVT.

2. Furnish one tag for each switch and PCB with designations provided later by Owner.

3. Switch identification tags shall be located on steel next to switch operator.

3.5.4 Grounding

A. All structures shall have two connections to ground except single phase devices and bus supports shall have one connection.

B. Ground pads shall be provided for two 2-hole NEMA type compression connectors with 1 3/4" bolt centers.

C. Below grade ground grid including the copper rods and copper cables and short leads to the above ground equipment shall be provided by the Project Company. Project Company shall provide above grade cables, cable supports and NEMA two hole full compression (indent) type connectors for all structures and equipment located within the substation including, but not limited to bus duct(s), instrument transformers, breakers, switches, lightning arresters and grounding mats. Project Company shall furnish all above-grade ground connectors for all galvanized steel fencing, including but not limited to gates and barbed wire. Grounding connectors and supports shall be tin-plated.

D. The switchyard ground grid system shall be designed in accordance with current revisions of IEEE Standards 665, 80 and 81. An approved program such as CDEGS shall be used for the ground grid design and analysis. Measured step and touch potential shall be identified as well allowable step and touch potentials as specified by IEEE 80.

Ground grid model and analysis shall be submitted to GPA and must include all pipes, conductors, water lines etc within the substation and power plant area.

E. The substation fence shall be grounded in accordance with IEEE Standards 665 and 80.

F. All above and below grade grounding conductors shall be annealed, bare, stranded copper wire conforming to ASTM Specification B8. Conductor size shall not be less than the minimum requirements of NFPA 70.

G. Ground lugs and connectors shall be of bronze or copper, and all hardware such as bolts, washers, and nuts shall be of Durium, Everdur, or silicon bronze. Ground lugs shall be Burndy or Owner approved equal.

H. Grounding system shall provide for permanent grounding of all frames, housings, and support steel of all electrical equipment, panels, lighting protective apparatus, cabinets, wiring devices, electrical metallic raceways, lighting fixtures and boxes.

I. All conduit runs shall be grounded at enclosures of electrical distribution or control equipment at which they originate, and shall provide a conductive path, in compliance with the NEC for grounding of enclosures of all locally mounted electrical equipment.

3.5.5 Surge Arrestors

A. Type: Metal-oxide station class.

B. Standard: ANSI C62.11.

3.5.6 Insulators

A. Conform to NEMA SG6, NEMA C29.7.

B. Color: ANS No.70.

C. Insulators shall be porcelain type. Insulator strength to be determined during detailed design, rated for the required impulse withstand voltage, voltage level, physical dimensions and strength class (compression, cantilever, torsion and tension). All insulators shall have galvanized malleable iron or galvanized forged steel hardware.

3.5.7 Disconnect Switches

A. The disconnect switches shall be three-pole, single-throw, gang-operated, air break, manually operated, rated for outdoor service on a 60 Hz, 3-phase, system. The operating mechanism shall be provided as a factor complete assembly including all necessary shafts, interconnecting rods, linkages, supports and accessories.

B. High pressure type contacts with silver to silver contact surfaces to be used. The contacts to have a wiping and cleaning motion when opened and closed. Switch design to all for the accurate positioning of switch blade tips in the jaw contacts.

C. Disconnect switch operating mechanisms shall be furnished with noncorrosive, greaseless, roller or ball type main bearings. A flexible braided grounding apparatus shall be provided on the operating rod, above the operating crank. The grounding device shall be rated to carry the same short time and momentary currents as the

disconnecting switch. Operating mechanisms and linkages to be designed so all blades of the switch will be in the fully opened or completely closed positions when the operating crank is in the fully rotated position. Operating mechanisms shall be provided complete with all fittings required for total switch operation.

D. Threaded clevis type fittings to be provided on all interphase type control pipes and connecting links between gang-operated switch and switch crank arm.

E. Operating mechanisms shall be designed to allow padlocking in either the fully open or fully closed position with one inch shackle clearance.

F. All manual operating type mechanisms shall be marked to indicate the open and closed switch directions.

G. Two separate normally open "a" and two normally closed "b" auxiliary contacts shall be provided for each disconnect switch for remote indication of the open and closed position of the switches.

H. Insulators shall conform to ANSI C29.9, high-voltage post-type apparatus insulators made of wet-process porcelain and used in the transmission and distribution of electrical energy.

I. Operating mechanism:

1. Heavy-duty, gear-operated complete with accessories.
2. Size to eliminate twisting or sag.
3. Switch poles shall be fully coordinated and field adjustable per pole and for alignment and 3-phase timing coordination.
4. Switch contacts to be self-wiping, field-adjustable and have field-adjustable contact pressure.
5. Standards: NEMA SG6 and ANSI C37.32.
6. Longitudinal switches (parallel to switch blades) shall be capable of resisting, without injury or failure, force listed in ANSI C37.32, Table 2.

3.5.8 Coupling Capacitor Voltage Transformers

A. Type: Base-mounted, high-capacitance, coupling capacitor voltage transformer with dual main windings

B. Terminals: Polarity and terminals: ANSI C57.13. Clearly indicate by permanent markings not easily obliterated.

C. Short circuit capability: Capable of withstanding for 1 second mechanical and thermal stresses resulting from short-circuit on secondary terminals with full voltage maintained in primary terminals in accordance with ANSI C57.13 and C93.2.

D. Other ratings and features: NEMA SG 2.

E. Accessories when required:

1. Ferroresonance-suppressing filter. Device shall pass ANSI C93 Ferroresonance test.

2. Potential grounding switch and terminal box for secondary voltage connections with conduit entrance plugs.
3. Provide corona suppression rings if required.
4. Provide lifting hooks or eyes for lifting filled unit by overhead crane.
5. Potential device: Factory calibrated.

F. Transformer oil:

1. Oil furnished with transformer shall be Type 1 mineral insulating oil in accordance with current ASTM standards.

G. Certify that oil being supplied is classified as noncontaminated by PCBs. Standard: ANSI C93.1.

3.5.9 Circuit Breakers Connections

A. Project Company shall provide the necessary bus connection adapters to bolt to the terminal connectors provided in the circuit breaker.

B. Project Company shall assemble all component parts that were initially disassembled for shipment in accordance with the manufacturer's instructions.

3.5.10 Quality Assurance

A. Regulatory requirements: Design, fabricate, and test equipment in accordance with applicable standards of ANSI, NEMA, NFPA 70, IEEE, and shall be in accordance with applicable requirements of OSHA.

3.5.11 Environmental Requirements

A. Design shall comply with any unusual service conditions as outlined in C37.010 and ASTM D1472.

3.5.12 System Description

A. Outdoor, 3-pole, single-throw, SF6 gas-filled, single-tank or 3-tank, frame-mounted on common base.

3.5.13 Control Wiring

A. Wiring:

1. Provide control wiring in accordance with ANSI C37.11 as a minimum.
2. Control voltage ranges for closing and tripping shall be in accordance with ANSI C37.06.

3.5.14 Functional Components

A. Operating mechanism: Pneumatic, hydraulic, or motor-charged spring with features and performance in accordance with NEMA SG4, Section 3.

B. Bushings:

1. Type: Porcelain, in accordance with IEEE C57.19.01.
2. Conform to general requirements of, and test in accordance with IEEE C57.19.00.
3. Use manufacturer's standard dimensions and characteristics. Electrical characteristics shall comply with IEEE C57.19.01.
4. Pressure components and systems:
5. Comply with NEMA SG4, Section 4.
6. Welds on breaker tank assembly shall meet AWS D1.1 Section 5.30.

3.5.15 Current Transformers

A. Accuracy classification, characteristics, and performance data in accordance with IEEE C57.13 and NEMA SG4. . At a minimum, multi-ratio Class 400 current transformers shall be specified.

3.5.16 Source Quality Control

A. Each circuit breaker furnished shall be completely assembled and tested at manufacturer's facility.

B. Perform production tests in accordance with NEMA SG4 and ANSI/IEEE C37.09.

C. Operating mechanisms shall be tested for proper operating speed in accordance with ANSI C37.09.

D. Components shall be given dielectric test if applicable, in accordance with ANSI/IEEE C37.09.

E. Furnish certification each type, style, and model bushing has passed test requirements of IEEE C57.19.01.

F. Furnish certification bushing-type current transformers have been tested and meet requirements of ANSI C57.13 for continuous thermal current, thermal short-time and mechanical short-time ratings, and applied potential.

3.5.17 Field Quality Control

A. Perform acceptance test as described in NETA Section 7.6.2 – Circuit Breakers.

3.5.18 Lighting

A. The lighting system shall consist of light emitting diode (LED) type fixtures. A two (2) foot candles of illumination level shall be provided in substation yard area for up lighting of the structures and ground level light. All exterior lights shall be photocell controlled and provided with control switches for manual or automatic operation.

B. All fixtures shall be completely wired in accordance with the latest requirements of the National Electrical Code. All fixtures shall bear the Underwriters' label of approval.

C. Project Company shall furnish and install all associated cables and raceways for the substation lighting.

3.5.19 Lightning Protection

A. Project Company shall provide lightning protection system for the substation against direct lightning strokes. The lightning protection system shall consist of suitable lightning masts installed on concrete footings or on substation dead-end structures to provide zones of protection in accordance with NFPA 780.

3.5.20 Relaying Protection and Control Systems

A. Substation protective relaying design to interface with existing Guam Power Authority substation, generation and transmission line protection and control relaying systems.

B. Substation relaying schemes to include but not limited to line current differential, bus differential, breaker failure, reclosing, synchronizing, distance, overcurrent and instantaneous overcurrent protection types. Vendor shall be responsible for the design, supply and installation of compatible relaying at adjacent interconnected stations on the GPA system. Step-distance relaying without communications assistance is not acceptable. Fault clearing of transmission lines must be accomplished within 5 cycles, inclusive of far end faults. Primary and backup relays shall be provided.

C. Guam Power Authority has standardized on utilizing Schweitzer Engineering Laboratories, Inc. (SEL) protective relays.

3.5.21 Communication Systems

A. Substation communications design to interface and be compatible with existing Guam Power Authority communications and SCADA systems. Communications systems shall meet all NERC CIPS security requirements.

B. Open/closed contacts to be designed to provide status to SCADA system for the following equipment:

C. Circuit breakers

D. Disconnect switches

E. The minimum data required to measure is the following: watts/vars, voltage, kilowatt-hours, power factor, harmonic distortion and historical data logging with minimum and maximum measured levels.

F. Communications mediums to include but not limited to fiber optics and microwave types.

3.5.22 Metering

Add metering requirements including identifying delivery point, the place where meters will be installed, whether the main and backup meters are required, how the data will be transferred to GPA, etc.

3.6 Transmission Requirements

3.6.1 General

A. This section covers the requirements for the transmission interconnection line between Facility's switchyard and the GPA transmission system interconnection at the 115 kV Harmon Substation.

B. The transmission interconnection line shall be designed based on the most recent revision of the following codes and standards as of the Bid Date unless otherwise noted:

1. National Electrical Safety Code (NESC-C2)
2. Rural Utilities Service Design Manual (RUS Bulletin 1724E-200)
3. American National Institute (ANSI)
4. National Electrical Manufacturers Association (NEMA)
5. American Society for Testing and Material (ASTM)
6. American Institute of Steel Construction (AISC)
7. American Society of Civil Engineers (ASCE)
8. Structural Engineering Institute (SEI)
9. Institute of Electrical and Electronics Engineers (IEEE)
10. American Concrete Institute (ACI)
11. Guam Power Authority (GPA)

3.6.2 Design Criteria

A. Project Company shall develop a detailed design criteria memorandum which shall provide the details and design guidance required to perform detailed transmission facility design. Design criteria memorandum shall comply with the latest version of IEEE 1724.

B. Design criteria shall be submitted by Project Company to GPA for review and approval.

C. Purpose of design criteria is as follows:

1. Description of design practices or procedures to be utilized.
2. Use of consistent and common material or types of material and material specifications.
3. Guidelines for consistent approach to design and engineering.
4. Transmission design criteria may be incorporated into larger design criteria documents but should exist as a stand-alone section.

5. Detailed design of transmission facilities shall not deviate from design criteria without prior approval of GPA.

3.6.3 Transmission Route

A. Transmission line route between the GPA procured property described in Section 5.0 Site Data and the Harmon substation shall be selected by Project Company and shall be reviewed and approved by GPA prior to any additional work being performed.

B. Route shall be selected based upon the following criteria:

1. Avoidance of sensitive habitats.
2. Avoidance of potential terrain hazards with the goal of increasing reliability and security.
3. Avoidance of environmentally sensitive areas.
4. Utilizing most direct route with goal of increasing reliability and security.

C. Detailed surveys shall be carried out on the transmission line route selected by Project Company and approved by GPA to support the design and identify the right-of-way (ROW). ROW shall be selected to accommodate insulator swing, structure deflection, standard electrical clearance and requirements for electrostatic and electromagnetic field strengths.

D. For Project Company offering a site other than the one described in Section 5.0 Site Data; the Project Company will be responsible for Right of Way from proposed alternate site to Harmon Substation.

3.6.4 Geotechnical Investigation

A. Project Company shall perform geotechnical investigation along the transmission line route. Geotechnical investigation shall include a detailed geotechnical report properly reviewed and affixed with a Guam registered professional engineer stamp.

B. Geotechnical investigation shall include sufficient soil borings and soils analysis to meet or exceed the following requirements:

C. Quantity of soil borings shall not be less than four (4) for line lengths of 1.5 miles or less, with at least two (2) soil borings for each additional mile of transmission centerline length.

D. All soil borings will also include soil resistivity measurements made in accordance with standard testing procedures and equipment.

E. Soil boring at each location shall be of appropriate depth required for thorough soil analysis and accurate design recommendations. Appropriate depth is assumed to be the greater of:

1. 1.2 times the anticipated depth of foundation.
2. The anticipated depth of foundation plus two times the anticipated foundation diameter.

3. 30 feet.

F. Soil boring shall be taken close to each deadend or large angle structure location (within 500 feet). These soil borings count towards the minimum requirement of soil boring quantities.

G. Soil borings shall be taken such that there is no transmission centerline length of greater than 2640 feet between adjacent soil borings.

3.6.5 Transmission Structures

A. Transmission pole structures (single or multi-pole tubular steel structures) shall be designed in accordance with the most current version of ASCE/SEI 48 – Design of Steel Transmission Pole Structures.

B. Transmission lattice structures shall be designed in accordance with the most current version of ASCE 10 - Design of Latticed Steel Transmission Structures.

C. Transmission structures shall be designed at a minimum to withstand the following weather conditions:

1. NESC 250B Warm Island District – Initial Wire Condition
2. NESC 250C Extreme Wind with a 3-sec gust wind speed of 200 mph at 33 ft above ground – Initial Wire Condition
3. Construction Load(s) – Initial Wire Condition
4. Uplift at 65°F – Initial Wire Condition
5. Camber at 80°F – Final Wire Condition
6. NESC Blowout at 6 psf wind and 80°F – Final Wire Condition
7. Stringing at 4 psf wind at 80°F – Initial Wire Condition
8. Maximum Operating Temperature at 194°F – Final Wire Condition

D. Deadend transmission structures shall be designed for a broken conductor condition. All phases and shield wire on the ahead span or back span, whichever results in the largest stresses in the structure. Initial wire condition shall be considered for this condition.

E. Transmission structure types, locations, and design shall be selected to minimize long term outage risk from natural hazards (wind, rain, storms, marine conditions, earthquakes, etc.)

F. Foundation design shall be appropriate for the geotechnical conditions and shall be based on recommendations of the geotechnical engineer. Foundation design loading cases shall be included as part of design criteria.

G. Transmission structure design will use a preferred single pole self-supporting structure type. Additional structure types may be considered and approved by GPA based on application, location, permitting and ROW issues.

H. Depths and diameters of all foundation types shall be calculated using industry standard methods. Calculations may be formulated utilizing industry standard software.

I. Foundation deflection and rotation limits shall be as follows for single pole structures:

1. 3-inch ground line deflection (1.5 inch non-recoverable)
2. 2° ground line rotation (1° non-recoverable).

3.6.6 Conductor and Overhead Ground Wires (OHGW)

A. Phase conductor shall be of type and size as is consistent with that used on existing GPA systems. Conductor selection shall be reviewed with GPA prior to procurement.

B. Current conductor types in use by GPA:

1. 336.4/Tulip AAC 19
2. 927.2 Greeley AAAC37

C. Maximum operating temperature of conductor will be limited to 194°F (90°C) in order to prolong the design life of conductor.

D. Overhead ground wire (OHGW) shall be utilized as transmission shielding wire, and shall be installed on full length of the line.

E. OHGW shall be sized to ensure adequate protection based on fault current.

F. Conductor and OHGW installation work shall be done in accordance with manufacturer's recommendations and IEEE 524 'Guide to the Installation of Overhead Transmission Line Conductors'.

G. Ground wire size will be determined through grounding study and fault analysis.

H. Transmission line shall be designed such that galloping ellipses do not overlap.

3.6.7 Electrical

A. Transmission facility shall be designed to accommodate maximum generation outlet loading levels.

B. Transmission facility voltage shall be 115kV.

C. Transmission facility structures shall be designed to meet a grounding resistance of 5 ohms or less.

D. All phase-to-phase and phase-to-ground clearance, including the mid-span ground clearance, shall be designed according to NESC-C2.

E. Mid-span ground clearance shall meet the standard requirements when the conductor is operating at maximum design temperature and maximum sag conditions.

F. All vertical clearances shall assume, as a minimum, that areas under the line are accessible to vehicles and equipment as specified in NESC-C2.

G. Project Company shall assume a tolerance of +5'/-0" shall be used for vertical clearances.

H. Vegetation clearing under the transmission line shall adhere to the following guidelines:

1. 'Phase Zone' is defined as the area between phase conductors on either side of structure plus five (5) feet on outside of either side.

2. Vegetation directly under 'phase zone' with potential to grow high enough to not meet NESC clearances shall be removed in a manner where re-growth is not practical.

3. Vegetation outside of 'phase zone' shall be removed if potential growth height exceeds a height level determined by contact at ground (0' above ground) at spot vertically down from outside edge of 'phase zone' and then extending outward at a 45° angle from outside edge of 'phase zone'.

I. Lightning performance shall have a target performance level of two (2) outages per year for the length of the entire new transmission line.

J. Insulation levels shall be sufficient for continuous operation at 1.1 per unit voltage.

3.7 Architectural Requirements

3.7.1 Building Codes

A. All buildings and structures shall be designed to meet all applicable building, accessibility, and life safety code requirements.

3.7.2 Building Requirements

A. General

1. All buildings designs are to be approved by GPA. In general, building materials and installation of architectural systems or components shall be as follows:

a. All buildings shall be enclosed and sealed weathertight.

b. All buildings shall be designed to accommodate the planned level of staffing required to operate the facility. Vehicle parking shall be adequate for the planned level of staffing.

c. A guard house shall be provided at each entrance to the facility.

d. Sound attenuation shall be provided for sound absorption as required on walls enclosing equipment.

e. Interior partitions, including fire-rated partitions, shall be non-load bearing.

f. Interior finishes shall be compatible with the intended operational use of each building area.

g. In shop, warehouse and maintenance areas, electrical generating equipment areas, and out buildings, the flooring shall be sealed concrete.

h. Suspended acoustical ceiling systems shall be used in offices and other finished spaces. Shops, warehouse and other unfinished spaces shall be exposed overhead construction which shall be painted. Moisture resistant materials shall be used in toilet rooms and shower rooms.

i. Exterior personnel doors shall be heavy duty galvanized hollow metal doors with fully welded galvanized hollow metal door frames.

j. Interior personnel doors shall be full flush painted hollow metal doors with painted hollow metal door frames.

k. Overhead service doors shall be overhead coiling type of galvanized steel, factory assembled, with factory painted slats and motor operators with manual override operation feature with weather seals and wind locks.

l. Fire exits shall be provided at outside walls as required by code. Exit signs shall be of opening and rating for door, frame, and hardware. Doors shall conform to hollow metal door requirements and have fillers adequate to meet fire rating.

m. Commercial grade standard heavy-duty butts, locksets, latches, panic hardware, closers, thresholds and other miscellaneous hardware items shall be provided as appropriate to the function of the doors. Hinges with non-removable pins and weather seals shall be used for exterior doors. All locks shall have removable cores.

n. The Administration building shall have pass card entry hardware on exterior doors and interior security doors. The interior security doors shall control open public access to the building during meetings.

o. Buildings and building openings (windows, doors) shall be designed to resist airborne debris impact under high wind (typhoon) conditions.

p. Interior windows shall be fixed hollow metal frames with double pane glazing for sound deadening.

q. Signs and graphic designs for identification and directions shall be incorporated into the interior finishes of each area. All exit signs shall follow the applicable building code. All signage shall comply with ADA requirements.

r. Fire extinguishers shall be multi-purpose, surface mounted type. Fire extinguishers shall be provided at locations in accordance with the applicable building and fire codes.

s. Each office, conference room or work area shall be provided with wiring infrastructure including wall mounted jacks for both data and voice communications. Voice communications shall utilize Voice over Internet Protocol (VOIP) technology. The wiring infrastructure shall be extended back to the central communications switching room located in the Administration building. The Project Company shall be responsible for

installation of network switching and computer equipment in this room and for data connections to the outside world.

The communications network shall include as a minimum the Administration Building, warehouse, shop, and maintenance areas or building(s), the power generation building, and the entrance guard house(s). Provisions shall be included for integration of the communications network with the plant paging system. Fiber optic cabling shall be utilized for network wiring between buildings.

B. Power Generation Building

1. The Project Company shall provide dedicated space required for operation of the plant including, but not limited to, an electrical generating equipment (prime mover) area, a control room, a control system equipment storage room, and a low voltage electrical room. The final size and design of the building shall be based on the Project Company's layout of all equipment and equipment foundations that are housed within the building. The layout shall account for adequate clearance requirements for the removal and/or normal maintenance of all equipment contained within the building.
2. The main plant control room, control system equipment room, and SCADA control room shall be located on a 12-inch raised floor.

C. Administration Building

1. The Project Company shall provide reasonable administrative office space for support of the plant.
2. The Administration Building shall be designed in accordance with Americans with Disabilities Act (ADA) regulations.
3. The Administration Building shall include as a minimum the following rooms:
   a. Project managers office
   b. Operations superintendent's office.
   c. Maintenance superintendent's office.
   d. Visitor/spare office.
   e. Entrance lobby/waiting area.
   f. Office supply/storage room.
   g. Conference room.
   h. Reference library/file storage room.
   i. Break room with kitchenette.
   j. Men's restroom.
   k. Women's restroom.
   l. Janitors closet.
   m. Mechanical equipment room.

n. Electrical equipment room.

o. Communications/telephone equipment closet.

p. Printer/Plotter room.

D. Warehouse / Maintenance Building(s)

1. The Project Company shall provide dedicated space required for operations and maintenance of the plant including, but not limited to, a warehouse, mechanical maintenance area and office, electrical maintenance area and office, instrumentation and controls shop and office, welding shop, tool crib, Unisex toilet room, janitors closet, and warehouse supervisor/receiving office.

E. Building Aesthetics

1. All buildings shall utilize an architectural style, colors, and finishes that are compatible with Guam's island heritage. Exterior colors and finishes shall be selected to blend in with the surrounding countryside and approved by GPA.

2. All exterior and interior exposed surfaces, except factory finished items, shall be painted. Environmentally-friendly products shall be used.

3. Low rise construction shall be used for all buildings except where equipment or operational requirements require structures of greater height.

4 QUALITY ASSURANCE, INSPECTION, COMMISSIONING, AND TESTING

4.1 Quality Assurance

4.1.1 General Quality Requirements

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date for receiving bids, except where a specific date is established by code.

C. When required by individual Specifications Section, obtain copy of standard. Maintain copy at job site during submittals, planning, and progress of specific work, until Completion.

D. Abbreviations used in Drawings and Specifications are as specified in ANSI Y1.1 and IEEE 260.

4.1.2 Industry Standards

A. Welding

1. Welding shall be performed by qualified welding operators using procedures which have been qualified in accordance with applicable codes and standards, including but not limited to:

a. ASME B31 Code for Pressure Piping – Power Piping

b. ASME Boiler and Pressure Vessel Code.

c. AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.6, AWS D1.8 Structural Welding Codes.

B. Welding Procedure Qualification

1. Seller, Subcontractor, or fabricator performing welding under jurisdiction of referenced codes shall be responsible for obtaining and qualifying welding procedures. Structural welding procedures conforming to AWS D1.1 are prequalified as defined in AWS D1.1, Clause 3. Project Company shall maintain records certifying successful completion of procedure qualification tests.

C. Performance Qualification

1. Seller, Subcontractor, or fabricator performing welding under jurisdiction of referenced codes shall be responsible for testing and qualifying its welding operators in accordance with applicable codes, using qualified procedures.

2. Welding operator's qualification as specified in code shall be considered as remaining in effect indefinitely unless welder has not engaged in given process of welding for which welding operator is qualified for period of 6 months.

D. Submittals

1. Except for procedures exempted by AWS D1.1, Clause 3, maintain copies of each welding procedure with certificate demonstrating successful qualification of welding procedures for each welding process performed at Sellers facilities: AWS D1.1 - Form N-1, or ASME QW-483.

2. Prior to execution of any manual shop welding, maintain copies of welder qualification form for each individual performing welding: AWS D1.1 Form N-4 or ASME QW-484.

4.2 Testing

4.2.1 General

A. Scope of Tests

1. This section includes quality assurance testing to be completed during construction, during manufacture of equipment, and plant performance tests on completion of construction.

2. After system or equipment necessary for operation is in operating condition, the Project Company shall supervise operation of the plant for a period sufficient to assure the proper functioning, and make necessary observations, investigations, and adjustment.

3. The Project Company is responsible for coordination of testing with local, state, and federal environmental authorities as required.

4. The tests mentioned in this section are not intended to form a complete list of the numerous tests which the Project Company would normally perform to ensure equipment quality and Facility reliability.
5. The Project Company shall be responsible for the submission of test certificates and reports to GPA for all the tests described here.
6. GPA or its representatives shall witness tests at the manufacturer's works as agreed with the Project Company. All testing on Site shall be witnessed by GPA or its representative.
7. The Project Company shall notify GPA in writing when tests are to be performed. Unless otherwise specified in the ECA, twenty one (21) days notice shall be given for tests in manufacturer's works, and ten (10) days notice shall be given for tests to be performed on Site.

4.2.2 Tests During Construction and Erection

Testing and inspections during construction shall comply with the requirements of the International Building Code. The Project Company shall satisfy GPA that the construction materials are of the specified quality and that the design figures are being followed. GPA must also be satisfied that electrical and mechanical equipment after erection are still up to the required standard and have not suffered because of storage, handling, construction, or erection.

4.2.3 During Manufacture

A. Equipment Factory Acceptance Tests

1. The Project Company shall be responsible for ensuring the quality of products to be installed in the plant. Reports of factory acceptance tests shall be provided to GPA within thirty (30) days of completion of the test.

4.2.4 Tests During Construction and Erection

A. Compaction

1. Conduct compaction testing in accordance with ASTM D1556 and D1557 for each type and source of material.

B. Welding

1. Welding materials and procedures for piping shall conform to ASME B31.1 and applicable state regulations.
2. Employ certified welders in accordance with Section IX ASME Boiler and Pressure Vessel Code and AWS D1.1.
3. Piping connected to pressure parts under jurisdiction of "Boiler and Pressure Vessel Code": ASME "Boiler and Pressure Vessel Codes."
4. Piping not covered by "Boiler and Pressure Vessel Code": ASME B31.1, "Code for Pressure Piping."

5. The Project Company shall maintain copies for each person, by name, assigned to do field welding of materials installed under this Agreement for review by GPA. Show on certificates that each person has passed tests specified by AWS.

C. Electrical

1. The following electrical systems and components shall be tested in accordance with the standards listed in section 3.2.1:

1. Electrical ground grid
2. Electric generator(s) and ancillaries (automatic voltage regulator, excitation system, generator governor, surge capacitors and MOV's, etc.)
3. Electrical switchgear, motor control centers, switchboards and panel boards
4. All medium voltage cable and buses
5. All low voltage cable and buses
6. Protective relay system shall be designed and set in accordance with the latest Standards. GPA has standardized on utilizing Schweitzer Engineering Laboratories, Inc. protective relays.

a. Plant Control System
b. All control system hardware
c. All control system software

4.2.5 Tests on Completion

A. General

On completion of construction, the Project Company shall undertake a series of tests to demonstrate that the Facility operational capability, performance and reliability are within the limits agreed in the ECA. These tests shall be witnessed by GPA, and as a minimum requirement these tests shall include:

a. Functional Tests
b. Energy Conversion Agreement Tests
c. Performance and Facility Reliability Tests

B. Test Procedures

1. The Project Company shall develop specific test procedures for each test, and shall be provided to GPA for review at least one hundred twenty (120) days prior to the start of the tests.
2. The test procedures shall include, but not be limited to, the following information:

a. Administrative Procedures
b. Test Equipment
c. Test Instrumentation to be installed

d. Station Instrumentation to be used

e. Test Methods

f. Test Standards to be followed

g. Sample Data Sheets

h. Test Calculation Methods

i. Instrument Calibration Sheets

j. Pre-test Uncertainty Calculation

C. Test Results Calculations

1. The Project Company shall be responsible for providing the final test calculations. The test results calculations shall follow the methods as described in the test procedures.

D. Test Measurement Uncertainty

1. The Project Company shall be responsible for pre-test and post-test uncertainty analysis to verify the quality of the test performed. The uncertainty analysis is not to be applied as a commercial test tolerance, allowance, or margin to the test results. No tolerances in calculating Facility performance test results will be permitted for measurement uncertainty.

E. Test Reports

1. The Project Company shall submit to GPA a Preliminary Test Report after completion of each test. Within five (5) business days, GPA shall state whether it concurs, or disputes the results of the test. If GPA disputes the results, it shall provide in detail the reasons for dispute. The test reports shall include the test results, calculations, uncertainty analysis results, and shall also include as an appendices the raw test data, and test procedure that was followed.

2. Within fifteen (15) business days of the conclusion of the test, the Project Company shall submit a Final Test Report, or a notification of a retest in the event of a dispute.

F. Functional Tests

1. The Project Company shall perform the following tests:

a. Test and start-up of auxiliaries

b. Control systems tests

c. Synchronizing checks

d. Electrical Protective devices tests

e. Mechanical protective device tests

f. Stability tests – AVR, Stable minimum load, minimum load while in compliance with emissions, full load rejection test and step load change rejection tests

g. Automatic startup and loading time tests for hot and cold starts

G. Environmental Compliance Tests

1. The environmental compliance test including the air emission, effluent water quality, noise level, and other applicable tests will be performed to demonstrate compliance with the requirements of environmental permits and shall be completed in accordance with the applicable EPA test procedures.

2. For the Fossil Fuel Fired Component, the Bidder shall test the plant for emissions on both ULSD and Natural Gas, when it becomes available, to ensure that it meets the air permit requirements.

H. Heat Rate

The Heat Rate and some other test requirements below are only applicable to the Facilities including Fossil Fuel Fired Component. The specification will be adjusted based on the Facility configuration and technology proposed by the selected Bidder. For the Facilities including Fossil Fuel Fired Component, the Heat Rate and Initial Dependable Capacity Tests shall be conducted on both ULSD and Natural Gas, when it becomes available.

1. A Heat Rate to establish benchmark for the end of term tests and Initial Dependable Capacity Test shall be completed prior to Commercial Operation.

2. The tests shall be done in accordance with the ASME PTC-46 Performance Test Code on Overall Plant Performance, as well as the applicable ASME Performance Test Code relevant to the generation technology.

3. The Project Company shall demonstrate the ability of the plant to achieve the Contracted Facility Capacity established in the ECA and provide to GPA information about the Facility Heat Rate. The performance test results shall be corrected to Site Reference Conditions using the correction curves included in the approved test procedure using the calculation methods provided in such test procedure. Tested Dependable Capacity and Heat Rate corrections shall be allowed for:

   a. Ambient dry bulb temperature

   b. Ambient relative humidity

   c. Barometric Pressure

   d. Generator Power Factor

   e. Fuel Temperature

   f. Fuel Heating Value

4. Plant capacity shall be tested at normal maximum capacity without exceeding any manufacturers limitations. The plant must comply with all local, state, and federal environmental permits throughout the duration of the tests. The uncorrected net power output of the plant, in kWh, will be measured at the Delivery Point.

5. The Dependable Capacity (DC) Test shall be undertaken during the Reliability Test, and shall form the basis of the declared Dependable Capacity as defined in the ECA.

6. The duration of the DC Test shall be no less than 6 hours, during which time the plant will operate at its normal Dependable Capacity while supplying the normal station auxiliary power demand. The Facility DC in MW will be determined by dividing the sent out power in MWh (as determined by the revenue meter readings at the start and end of the test and corrected to Site Reference Conditions) by the test duration period in hours.

7. All costs for performance tests will be borne by the Project Company.

8. The Project Company shall perform testing to ensure that the Facility meets functional requirements including Dependable Capacity for Natural Gas, heat rate tests and benchmark heat rate test for end of term tests.

H. Startup Duration Test

1. The Project Company will determine the startup duration, from initiation to full Plant Net Capacity, both cold and warm starts.

I. Reliability Test

1. The Project Company shall conduct a Reliability Test for a continuous seven (7) day (168 hour) test period. During this time the Facility shall operate continuously at Dependable Capacity for at least 72 hours, and for the rest of the period at any other load as may be required by GPA.

2. The equipment is considered available when the generator breaker is closed and the generator is producing positive net power output. Should the equipment become unavailable due to no fault of the Project Company, the 7-day time period will restart at GPA's convenience and the to-date demonstrated availability will be lost.

3. Should any failure occur in any portion of the Facility, due to or arising from faulty design, material, workmanship, or operation which requires or causes the Facility available capacity to be reduced, a new Reliability Test shall be undertaken after rectification has been completed.

4. The Facility capacity and reliability tests shall be carried out while the Facility is operating in compliance with the specified environmental requirements.

5. All costs associated with equipment repair or correction shall be borne by the Project Company.

J. Partial Commissioning

1. Project Company shall perform tests to demonstrate that generating units can be partially commissioned and operated without negatively impacting site safety and the ongoing construction efforts.

4.2.6 Tests Required Throughout the Life of the Plant

A. Annual Dependable Capacity Test

1. The Project Company shall perform an annual Dependable Capacity Test, to demonstrate the Facility Dependable Capacity. The performance shall be corrected to base conditions by the equipment manufacturer's correction curves, as described in the calculation methods provided in the test procedure. Output and heat rate corrections shall be allowed for:
   a. Ambient dry bulb temperature
   b. Ambient relative humidity
   c. Barometric Pressure
   d. Generator Power Factor
   e. Fuel Temperature
   f. Fuel Heating Value
2. The Project Company shall submit a Test Report in accordance with Section 4.2.1.5.

4.2.7 Tests and Inspections Prior to Facility Turnover to GPA in the End of the Term

1. Project Company shall perform tests one year prior to End of Contract Term to demonstrate the condition and performance of the plant. Tests shall include Dependable Capacity, heat rate, emissions and startup duration.
2. Project Company will allow GPA, or their designated agent, access to inspect and evaluate the plant, facilities and equipment.
3. Project Company shall correct, repair or replace deficiencies found during the turnover tests and inspections.

5 SITE DATA

5.1 Site Location

TBD – include average of min-max elevation above MSL.

5.2 Description of the Plot

TBD

5.3 Site Size and Layout

Property consists of 60 plus acres near Harmon substation. The estimated plant footprint is 25 acres. Project Company shall not build in the area outside the plant footprint other than for utility access. Project Company will locate the plant on the property to maintain a vegetation barrier while preserving as much of the remaining acres for future development.

5.4 Climate Data

1. See Appendix D for ASHRAE Guam Climate information
2. The climate of Guam is tropical, with warm weather and little seasonal temperature variation. Generally, low dry bulb temperatures are not below 70 °F. The potential for tropical storms and typhoons is common during the wet season.

5.5 Site Reference Conditions

1. The following are the site reference conditions, to be used for the basis of the plant guarantees:
   a. Ambient Dry Bulb Temperature (°F): 88.9
   b. Barometric Pressure (psia): 14.57
   c. Wet Bulb Temperature (°F): 78.1

5.6 Geotechnical Conditions – TBD based on geotechnical investigation program provided by GPA.

5.7 Raw Water Analysis (could be added as an attachment).

5.8 ULSD Analysis (could be added as an attachment).

6 PROJECT ADMINISTRATION

6.1 Design and Construction Progress

6.1.1 Monthly Reports

A. The Project Company shall submit to GPA a Monthly Project Report, commencing at the award of Contract, and concluding after the Commercial Operation Date. The Monthly Report shall include the following information:
   1. Executive Summary of overall progress, significant issues, etc.
   2. List of activities completed in prior month
   3. Anticipated activities to be completed in month ahead

4. Updated Project schedule with critical path analysis
5. Engineering report detailing status of Project engineering
6. Construction report detailing status of construction, including generation plant, fuel pipeline, and switchyard.

6.1.2 Schedule Updates.

A. The Project Company shall submit an updated Project Schedule, to be included in the Monthly Project Report. The Project Schedule shall include all Project activities, including status of permits, engineering, procurement, equipment shipment and delivery, construction activities, and commissioning and start-up activities.

6.1.3 Meetings

A. The Project Company shall hold a progress meeting at least once per month with GPA. Until construction begins, the meetings can be held at the Project Company's office, GPA's office, or via teleconference. Once construction on site begins, the meeting to be held on site. The Progress Meeting shall include a review of safety information, schedule updates, review of potential problems and risks, and any coordination issues required with GPA.

B. The Project Company shall submit to GPA meeting minutes, within 5 business days of the meeting. The minutes shall include an action item list with expected date of closure, person requesting, responsible person, status, and actual closure date.

Appendix A: Grey Water Quantity and Analysis

Later

Appendix B: ULSD and/or Natural Gas Storage and Pipeline Structure

Appendix B ULSD and/or Natural Gas Storage and Pipeline Structure

DESCRIPTION OF THE WORK

1.1 Existing Systems

The Guam Power Authority (GPA) Bulk Fuel Storage Facility or Peterra Facility is located in the Municipality of Piti between the Atlantis Submarine and the former Navy power unit on the Piti Channel. See Appendix C. The bulk storage facility is owned by GPA but operated by another company on behalf of GPA.

There are four separate and distinct petroleum handling activities which are conducted at the Peterra facility:

1. Storage of fuel oil in bulk storage tanks;
2. Pipeline transfer of fuel oil to and from tanks;
3. Pumping and valve transfer areas; and
4. Storage and processing of oil/water emulsions.

The bulk fuel storage tanks are steel above ground storage tanks with fixed dome roofs. The site contains two tanks with a design capacity of 268,000 barrels, each.

There are several product transfer pipes that connect to both tanks. Except where passing through earthen containment berms, all product transfer piping is located above ground on supports. Secondary containment systems for both tanks consist of an earthen bermed area.

There are two pump transfer areas located at the facility. The Diesel Pump Station controls fuel coming into the facility from the Shell/Navy tie-in. The GPA Fuel Transfer Station delivers fuel going out of the facility to three GPA power generation units: Cabras (to be retired), Piti-MEC and Tanguisson (retired).

Two pipelines connect the GPA Fuel Transfer Station to the power plants. A 6” pipeline connects to the Cabras and Piti-MEC plants and an 8” line connects to the Tanguisson power plant. Internal and external lines are either buried underground or supported aboveground on concrete supports with metal fasteners for thermal expansion.

The 8” fuel oil pipeline extends approximately 17.2 miles from the GPA Fuel Transfer Station to the Tanguisson power plant site. *See Exhibit X (insert overall pipeline routing plan).* The 8” RFO pipeline and the Tanguisson plant have both been de-activated.

1.2 ULSD Scope of Supply

The Project Company will design, permit and construct a pipeline to transport ultra-low sulphur diesel (ULSD) from the Guam Power Authority (GPA) Bulk Fuel Storage Facility located in Piti, Guam to the new power generation plant site identified in Section 5.0 Site Data.

The ULSD pipeline is to be constructed, as much as is reasonably possible, in the existing 8” RFO pipeline easement. The existing 8” pipeline is no longer active and the Project Company is to remove and replace with the new ULSD pipeline. Additional easement will need to be acquired to route the pipeline to the new power generation plant site. New pipeline routing shall follow existing pipeline corridors and access roads where possible. GPA will assist the Project Company with acquisition of all new easements for the pipeline.

The Fuel Transfer Station is located at the Peterra Facility. The Fuel Transfer Station is comprised of eight (8) rotary screw pumps, three (3) of which are dedicated to the 8" RFO pipeline system. The Project Company shall review the pump equipment data and station design to validate that the existing pumps have the capability to meet the design conditions of the pipeline. If the existing pumps are not viable, then the Project Company shall be responsible for the design, permitting and construction of new transfer pumps, booster pumps and other associated equipment.

If natural gas is selected as a fuel source, the Project Company will design, permit and construct a pipeline to transport natural gas from the Guam Power Authority (GPA) Bulk Fuel Storage Facility located in Piti, Guam to the new power generation plant site. The plant site has not yet been determined, but the selected site will be located near the Harmon Substation and the Tanguisson power plant site.

The natural gas pipeline is to be constructed, as much as is reasonably possible, in the existing 8" RFO pipeline easement. As with the ULSD pipeline, the existing easement shall be utilized to the extent physically possible. Additional easement will need to be acquired to route the pipeline to the new power generation plant site. New pipeline routing shall follow existing pipeline corridors and access roads where possible. GPA will assist the Project Company with acquisition of all new easements for the pipeline. Project Company will have ultimate responsibility and assumes associated risks.

A new marine LNG receipt and storage facility will be constructed by Others at the Peterra Facility. Project Company shall assume sufficient storage and supply will be available to support natural gas demand at the Facility. Project Company is responsible for natural gas system beginning at a flange between LNG storage and Project Company's regasification facility.

1.2.1 Engineering

The Project Company will be responsible for the complete engineering and design services for the procurement, construction, and commissioning of the new fuel pipeline and any associated transfer equipment, including modifications to/upgrades of existing Peterra Facility downstream systems as required for ULSD throughput. The Project Company shall provide engineering, design, drawings, specifications, databases, construction specifications, and equipment information that describes all components of the new generation facility.

1.2.2 Procurement of Equipment

The Project Company will be responsible for all aspects of the procurement of material, equipment, labor, and services for the new pipeline and any new pump equipment, tank modifications, and related existing system repairs or upgrades. Procurement service will include, but not be limited to, purchasing, subcontracting, expediting, inspections and factory testing as applicable, shipping and field services. The Project Company shall maintain a high standard of ethics to ensure the Project reflects positively on GPA, the Project Company, contractors and suppliers.

1.2.3 Construction

The Project Company will be responsible for complete construction of the new ULSD pipeline, including any ULSD supply infrastructure needed to transport ULSD from the Peterra Facility to the green-field power generating plant. The Project Company shall develop a construction plan detailing construction procedures, site safety, site security, subcontractor administration, and start-up and commissioning

procedures. The construction plan shall address any interfaces necessary at the Peterra Facility and new power plant site boundary. GPA shall have an opportunity to review and comment on the construction plan no later than six (6) months prior to commencement of construction.

1.2.4 Right-of-Ways

Obtainment of any additional right-of-ways necessary for the pipeline(s) will be the responsibility of the Project Company. However, GPA will assist the Project Company.

1.2.5 ULSD

GPA will procure and supply ULSD to the bulk storage tanks at the Peterra Facility. GPA will be responsible for the conversion of the two bulk storage tanks from RFO to ULSD.

ULSD shall be defined as meeting the specifications of ASTM D975 Grade No 2 with a maximum sulfur content of 15 ppm.

If Project Company determines that drag reducing, lubricity, or other additives are desirable for the operation of the pipeline and terminal, and do not present negative consequences in the operation of the plant, they shall provide at their own cost.

1.2.6 Natural Gas

If natural gas is selected as a fuel source, GPA will procure and supply LNG to the regasification station at the Peterra Facility.

Natural Gas shall be defined as merchantable dry gas (as defined by AGA) with minimum BTU value of 950 BTU/scf at 14.7 psi dry, and no more than trace amounts of inert gases and foreign matter. Project Company shall specify if minimum or maximum BTU values are required

Regasification system layout and design shall consider RMP requirements, including but not limited to vapor dispersion modelling and related vapor controls, as well as heat flux and impact zones.

1.2.7 Environmental Permitting

The Project Company will be responsible for procurement of all environmental permits required for construction and operation of the new terminal facilities and pipeline systems, including the Air Permit RMP, Vapor Dispersion modelling, and Heat Flux for the facilities to be constructed by Project Company. The Project shall meet all applicable local, state, and federal environmental regulations and permit conditions.

2.0 DESIGN PHILOSOPHY AND PRINCIPLES

2.1 Design Requirements, Pipeline and Terminal

2.1.1 Engineering

A. General

The design life shall be thirty years with normal required inspection and maintenance. The systems shall be designed for construction and operational safety, as well as ease of maintenance and accessibility.

All design documents must be stamped by a licensed Professional Engineer registered in the Territory of Guam, in the appropriate discipline, in accordance with the Territory of Guam Rules and Regulations.

B. Applicable Codes and Standards

The pipeline and terminal facilities shall be designed and constructed in accordance with all Federal, State, and local codes and standards including the most applicable sections of the codes, standards and regulations of the following organizations. This list of organizations is not complete, and does not relieve the Project Company from complying with any other requirements and regulations applicable to this Project. The effective dates of the Codes and Standards of these organizations shall be the most recent revision prior to the Contract date. Project Company's may offer equivalent European, Japanese and Korean standards. The Project Company must demonstrate equivalency. Only one set of standards shall be applied throughout the Facility.

ACI	American Concrete Institute
AGA	American Gas Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CFR	Code of Federal Regulations
CRSI	Concrete Reinforcing Steel Institute
EIA	Electronic Industry Association
EPA	Environmental Protection Agency
ICC	International Code Council
IEEE	Institute of Electrical and Electronics Engineers
ISA	International Society for Automation
MSS	Manufacturers Standardization Society of Valves and Fittings Industry
NACE	National Association of Corrosion Engineers
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
SSPC	Steel Structures Painting Council

UL Underwriters Laboratory

C. Drawings

A complete set of Issue for Construction (IFC) design drawings shall be submitted to GPA at the Commercial Operation Date, in CAD and PDF format. All drawings shall be in English units, or a combination of Metric / English units if the drawing initially only has Metric Units. All CAD drawings shall be maintained in electronic format, and the updated and maintained As-Built versions of the CAD drawings will be provided to GPA at the conclusion of the contract.

D. Documentation and Manuals

Prior to and during construction operations, the Project Company shall submit construction documentation for GPA review/approval. As a minimum, the Project Company shall submit the following documentation:

- Permit applications and/or approvals
- Calculations for temporary works, buoyancy, etc.
- Construction drawings
- Method Statements for the following activities:
    - Pre-Construction Survey
    - Clearing and Grading of ROW
    - Pipe Handling, Storage, Hauling and Stringing
    - Cold Bending
    - Lining Up and Welding
    - Field Joint Coating
    - NDT
    - Trench Excavation and padding
    - Pipeline Lowering-in
    - Backfilling and Berming
    - Tie-ins and Hot Taps
    - Special Crossings
    - Auger Bore
    - Thrust Bore
    - Pipework Fabrication and Installation of Appurtenances
    - Cathodic Protection Facilities
- Procedures for the following operations:
    - Cleaning and Gauging
    - Hydrostatic Testing
    - Cleaning/Swabbing
    - Drying

- Commissioning
- Baseline Intelligent Pigging Survey

• Radiography weld maps

• Pipe and welding book

• NDT reports (radiography, ultrasonic and MPI)

• Material test results (coating, welding, painting, etc.)

• Material certificates, material receipts, etc.

• Vendor drawings

• Water sample analysis results

Operations and maintenance manuals shall be submitted for all equipment and presented in clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable reviewer to review information as required. Details shall be identified by reference to sheet and detail shown on Drawings.

Operations and maintenance manuals shall be submitted to GPA in PDF format at the Commercial Operation date. Operation and maintenance manuals for new equipment purchased after the Commercial Operation date shall also be provided to GPA at the time of purchase.

E. Specifications

The Project Company shall be responsible for development of all procurement, construction, installation, start-up, and commissioning specifications required for the construction of the pipeline and pump equipment. The Project Company shall provide a PDF copy of all the conformed specifications to GPA at the Commercial Operation Date.

F. Tagging System

The pipeline shall utilize a tagging system to be determined by the Project Company. The tagging system shall include all equipment, enclosures, cables, pipes, instruments, control devices, valves, and other equipment.

G. As-Built Drawings

As-Built Drawings shall be provided to GPA at the date of Commercial Operation.

2.2 Performance Requirements

2.2.1 Capacity

For ULSD systems the pipeline shall be designed to meet the demand requirements of the Plant Net Capacity matched with associated storage at the plant and marine facilities.

For natural gas systems, the pipeline and related equipment shall be designed to meet the peak demand requirements.

2.2.2 Leak Detection and Integrity Management

For ULSD systems, Leak Detection systems and integrity management shall be utilized for the pipeline via line volume balancing, which shall be implemented in accordance with API RP 1130, and shall meet the requirements of 49 CFR 195.

For natural gas systems, integrity management systems shall be implemented for the pipeline via requirements of 49 CFR 192.

3.0 PIPELINE & TERMINAL DESIGN

3.1 Codes and Standards

Pipeline and terminal systems shall be design, constructed, tested, and operated in accordance with the following at a minimum, including those regulations, standards, and recommended practices included by reference in each:

49 CFR 192 *For PHMSA jurisdictional portions of the gas system*

49 CFR 195 *For PHMSA jurisdictional portions of the system*

40 CFR 112

ASME B&PV Section VIII

ASME B31.3 *For non-PHMSA jurisdictional portions of the system (terminals)*

ASME B31.8 *For PHMSA jurisdictional portions of the gas system*

ASME B31.4 *For PHMSA jurisdictional portions of the system*

ASME/API STD 1104

API STD 2610

API Manual of Petroleum Measurement Standards (MPMS) Chapter 5 “Metering”

API 650

API 5L

API 6D

API RP 500

API RP 651

API RP 1102

API RP 1110

API RP 1162

API RP 2350

NFPA 1

NFPA 30

NFPA 58

NFPA 59

NFPA 70 (NEC)

NFPA 70E

OSHA 1910

ANSI B16.5

ANSI B16.34

International Building Code (IBC) as adopted and modified by the Guam Code Annotated

International Fire Code (IFC) as adopted and modified by the Guam Code Annotated

Project Companies may offer equivalent European, Japanese and Korean standards. The Project Company must demonstrate equivalency. Only one set of standards shall be applied throughout the Facility.

3.2 ULSD Hydraulics and Pipeline Design

Pipeline shall be designed in accordance with design pressures and material properties per 49 CFR 195 and ASME B31.4, and shall be constructed of AP 5L-PSL2 steel line pipe.

Pipeline throughput shall be designed to operate between 7 – 12 fps based on use of API 5L materials, with an MAOP consistent with the existing tank/pump systems. Project Company shall consider optional pump station upgrades at the Peterra facility where this cost may be capitalized for improved plant economics.

Pipeline wall thickness shall be calculated in accordance with ASME B31.4 as a minimum thickness, and stresses shall not exceed 100% of SMYS at any point along the pipeline, including during hydrostatic testing. Pipeline wall thicknesses will be required to be calculated for external pressures and stresses where the pipeline is installed via HDD or under transportation features (roads, rail).

Appropriate features shall be included in the design of the pipeline system to limit potential surge to those within the allowable stress calculations of the system, at no point exceeding 110% of MOP. Hydrostatic testing of all B31.4 systems shall be performed in accordance with 49 CFR 195 and B31.4, including a minimum of 1.25 times the maximum operating pressure (MOP) at the high point elevation for each test section. Note that multiple test sections may be in the best interest of the Project Company based on pipe line fill, water availability and allowable discharge points.

Non-PHMSA portions of the systems shall be hydrostatically tested per ASME B31.3. Pneumatically testing shall not be allowed without written consent of the GPA.

3.3 Natural Gas Pipeline Design

Pipeline shall be designed in accordance with design pressures and material properties per 49 CFR 192 and ASME B31.8, and shall be constructed of AP 5L-PSL2 steel line pipe.

Pipeline throughput shall be designed to operate between 15 – 60 fps based on use of API 5L materials, with an MAOP consistent with a Class Location study of the pipeline route.

Pipeline wall thickness shall be calculated in accordance with ASME B31.8 as a minimum thickness, and stresses shall not exceed SMYS as required by a Class Location study along the pipeline, including during testing. Pipeline wall thicknesses will be required to be calculated for external pressures and stresses where the pipeline is installed via HDD or under transportation features (roads, rail).

Appropriate features shall be included in the design of the pipeline system to limit potential surge to those within the allowable stress calculations of the system. Testing of all B31.8 systems shall be performed in accordance with 49 CFR 192 and B31.8. Note that multiple test sections may be in the best interest of the Project Company based on pipe line fill, test medium and allowable discharge points.

Non-PHMSA portions of the systems shall be hydrostatically tested per ASME B31.3. Pneumatically testing shall not be allowed without written consent of the GPA.

Pipeline shall be adequately protected against corrosion even if not in use.

3.4 Pipeline Routing and Construction Considerations

New pipeline routing shall follow existing pipeline corridors and access roads where possible. Existing roads shall not be used for construction and maintenance of new pipelines. Due consideration shall also be taken for ease of construction, expansion, commissioning, maintenance, and operation of the facilities.

The route alignment sheets shall contain detailed information with respect to:

route layout, ground profile, topography, soil condition/characteristics, class location (for natural gas), location of existing above ground and buried pipelines, location of existing power cables, overhead lines and other services, and soil resistivity measurement for Cathodic Protection Design.

The route alignment sheets shall also include all construction related details of the pipeline comprising of: line pipe material, grade and wall thickness, design factors, surface/terrain details, road crossings, coating type, burial depth, special items (valves, fittings, hot bends, insulation joints, etc.), type of construction, crossing location, type and reference drawing, hydrostatic test sections, cathodic protection and markers, etc.

Pipeline shall be constructed to allow in-line inspection tool runs, with a minimum bend radius of 3R and utilizing barred tees between pig traps. This shall apply at a minimum for all piping located outside of the fence lines of the Peterra terminal and the plant facility.

Visual inspections shall be done on all welds. All welding of PHMSA-jurisdictional pipeline shall be per AP 1104, and shall be ultrasonically or radiographically inspected for 100% of their circumference. Any welds that do not meet specifications will be repaired immediately. All welding of non-PHMSA-jurisdictional piping shall be per API 1104 or ASME B31.3, and no less than 10% of pipe welds for aboveground piping shall be radiographically inspected.

Before the pipe will be lowered into the ditch, coatings will be visually inspected and checked with a holiday detector to ensure there is no damage to the coated pipe.

3.5 ULSD Plant Terminal Design and Construction Considerations

The terminal receiving ULSD from the pipeline shall be design ad constructed at a minimum in accordance with API STD 2610.

Civil features shall provide features to ensure the requirements of SPCC and CWA are met at a minimum. The site shall include spill containment in accordance for 40 CFR 112 and NFPA 30, and at a minimum shall provide 100% containment plus a 25-year/24-hour storm event for the single largest vessel. Site shall be designed to ensure post-development storm water flows do not exceed pre-development. If the site is located within a floodplain, measures shall be taken in accordance with FEMA guidelines.

The facility shall include fire detection and suppression systems. Fire detection shall be provided at areas of rotating equipment or where personnel may be present during operations. Fire suppression shall be provided per NFPA 30 at a minimum. Hydrants with suitable flowrate shall be strategically located throughout the facility as negotiated with the local first responders.

Tanks shall be provided with overfill protection compliant with API RP 2350 allowing for unmanned facility operation. Tanks shall also be provided with cathodic protection, a leak prevention barrier (with tell tales), and appropriate gaging, grounding, water draw-off, and access to allow operations and maintenance.

Piping shall be aboveground as a standard. Buried piping systems within the tank terminal shall be avoided. Piping systems and related equipment shall be adequately supported against movement or damage due to weather or seismic activities.

The facility shall include the ability to receive ULSD by tank truck in emergency situations. These facilities shall continue to meet the minimum regulatory requirements.

Terminal shall include space, access, and utilities to all allow a 3rd party testing agency to perform fuel quality testing and record-keeping.

Underground storage shall be avoided wherever possible.

3.6 Pipeline Separation

Pipeline(s) shall be separated from existing parallel pipelines within the right-of-way , and from each other by no less than 5 feet outside-to-outside to allow for location and for future access/construction.

Pipelines and utilities crossing perpendicular to the pipeline(s) shall be separated by no less than 2 feet outside-to-outside.

3.7 Pipeline Depth of Cover

In standard open trenching, pipeline cover shall be no less than 36” at a minimum. Where pipeline is crossing a roadway, the cover shall be increased to no less than 48” at a minimum. Water bodies greater than 100ft wide shall have a cover no less than 15 ft, while dry creeks, ditches, and gullies shall have cover no less than 48”.

Pipeline markers shall be placed along route in a line of sight fashion (one marker is always visible from another).

3.8 Pipeline Coating, Corrosion Protection and Monitoring

Pipeline coatings for buried pipelines shall be appropriate for the installation type. At a minimum, open trench installation will be factory coated with 3M Company, Scotchkote fusion bonded epoxy or equivalent, with field joints and coating repairs using the same manufacturer’s recommended repair and joint kits. Pipeline which will be installed using trenchless methods (slick bore or HDD) shall be factory coated with epoxy based polymer concrete coating or equivalent. All pipeline coatings shall be inspected upon receipt of the piping and as the pipeline is installed. The pipe shall be 100% holiday tested in accordance with the referenced specification.

Aboveground piping will be painted in accordance with industry practice, and shall be no less than 16mil TFT 2-part epoxy.

The pipeline exterior will be protected with impressed current cathodic protection systems located along the route of the pipeline. The design shall be based upon maintaining electrical isolation of the pipeline from power neutral using isolation kits with surge protection at pump stations and block valve locations (if applicable). Cathodic protection design shall account for existing CP systems in the same right-of-way and at crossings, and shall include test stations.

3.9 Electrical Power &Telecommunications

All electrical systems shall be design and installed in accordance with NFPA 70 (NEC), NFPA 70E (Arc Flash), and API RP 500 for hazardous area classifications. Grounding shall be accomplished using standard practice per NEC. The grounding shall serve as both power grounding and static grounding. Transient voltage surge suppression (TVSS) shall

be provided to protect electrical equipment from damage due to lightning strikes or other voltage surges. Lightning protection on tankage is not anticipated.

Project Company shall develop and install a Supervisory Control and Data Acquisition (SCADA) system to provide remote monitoring and control of the PHSMA-jurisdictional portions of the ULSD system, as well as inventory control and automation of the terminal facilities. A local virtualized historian shall be utilized to keep instrumentation and other important operational data for technician and engineering troubleshooting and regulatory compliance.

It shall meet the recommendations developed in the National Transportation Safety Board Study NTSB/SS-05/02 “SCADA in Liquid Pipelines” including following API RP 1165. The SCADA system shall manage the leak detection system per the applicable provisions of API RP 1130 Computational Pipeline Monitoring for Liquid Pipelines, including data validation and auditable data recordkeeping. In general, the scan rate shall be fast enough to minimize overpressure conditions, provide responsiveness to abnormal operations, and detect small leaks within the technology limitations of volumetric line balancing.

3.10 Reporting and Records Retention

Project Company shall provide a program of reporting, records retention, and certifications for review by GPA and its technical representatives. At a minimum it shall abide by the requirements of 49 CFR 195, or 49 CFR 192 (as applicable, EPA, and NACE as well as provide an auditable document management system.

Appendix C: ULSD Pipeline Drawings (four drawings are embedded as an object – click on file and it will open).

Appendix D: ASHRAE Guam Climate Information

2013 ASHRAE Handbook - Fundamentals (IP)

© 2013 ASHRAE, Inc.

NWSO AGANA, Guam

WMO#: 912120

Lat: 13.47N Long: 144.78E Elev: 246 StdP: 14.57 Time Zone: 10 (PCW) Period: 86-10 WBAN: 41415

Annual Heating and Humidification Design Conditions

	Coldest Month	Heating DB		Humidification DP/MCDB and HR						Coldest month WS/MCDB				MCWS/PCWD to 99.6% DB	
		99.6%	99%	99.6% DP	99.6% HR	99.6% MCDB	99% DP	99% HR	99% MCDB	0.4% WS	0.4% MCDB	1% WS	1% MCDB	MCWS	PCWD
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
(1)	2	73.8	74.8	63.7	89.0	79.3	65.1	93.6	79.7	25.1	83.2	23.2	82.8	7.7	60

Annual Cooling, Dehumidification, and Enthalpy Design Conditions

	Hottest Month	Hottest Month DB Range	Cooling DB/MCWB						Evaporation WB/MCDB						MCWS/PCWD to 0.4% DB	
			0.4%		1%		2%		0.4%		1%		2%			
			DB	MCWB	DB	MCWB	DB	MCWB	WB	MCDB	WB	MCDB	WB	MCDB	MCWS	PCWD
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
(2)	6	9.6	89.6	78.3	88.9	78.1	88.2	78.0	81.0	86.1	80.5	85.7	80.0	85.3	12.3	90

	Dehumidification DP/MCDB and HR									Enthalpy/MCDB						Hours
	0.4%			1%			2%			0.4%		1%		2%		8 to 4 & 65/60
	DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
(3)	79.4	153.9	83.7	78.9	151.6	83.4	78.4	148.7	83.1	45.0	86.4	44.4	86.1	43.8	85.3	0

Extreme Annual Design Conditions

	Extreme Annual WS			Extreme Max WB	Extreme Annual DB				n-Year Return Period Values of Extreme DB							
					Mean		Standard deviation		n=5 years		n=10 years		n=20 years		n=50 years	
	1%	2.5%	5%	WB	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
(4)	22.7	20.5	18.7	90.1	70.7	92.3	1.7	2.9	69.5	94.4	68.5	96.1	67.5	97.7	66.3	99.7

Monthly Climatic Design Conditions

			Annual (d)	Jan (e)	Feb (f)	Mar (g)	Apr (h)	May (i)	Jun (j)	Jul (k)	Aug (l)	Sep (m)	Oct (n)	Nov (o)	Dec (p)	
(5)	Temperatures, Degree-Days and Degree-Hours	Tavg	81.8	80.5	80.4	81.1	82.3	83.0	83.1	82.3	81.8	81.7	82.1	82.3	81.5	(5)
(6)		Std		1.46	1.37	1.37	1.25	1.24	1.60	1.68	1.87	1.78	1.63	1.50	1.47	(6)
(7)		HDD50	0	0	0	0	0	0	0	0	0	0	0	0	0	(7)
(8)		HDD65	0	0	0	0	0	0	0	0	0	0	0	0	0	(8)
(9)		CDD50	11623	545	850	964	968	1023	993	1001	986	952	956	968	977	(9)
(10)		CDD65	6148	480	430	499	518	558	543	536	521	502	531	518	512	(10)
(11)		CDH74	63790	4351	3754	4760	5477	6286	6270	5841	5453	5184	5623	5553	5158	(11)
(12)		CDH80	18205	941	846	1220	1636	2078	2167	1800	1580	1453	1635	1585	1264	(12)
(13)	Precipitation	PrecAvg	75.9	3.0	2.0	2.6	2.0	4.1	4.8	9.3	10.0	13.6	11.9	8.4	4.2	(13)
(14)		PrecMax	273.1	27.6	34.6	25.3	18.0	22.5	31.7	26.9	58.8	31.1	45.1	32.6	26.8	(14)
(15)		PrecMin	58.1	0.2	0.3	0.8	0.0	1.0	1.3	5.2	3.9	8.7	6.5	4.8	1.5	(15)
(16)		PrecSD	69.3	6.6	7.9	7.4	5.0	6.3	8.1	6.2	15.9	6.0	10.6	9.6	7.1	(16)
(17)	Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	87.9	87.8	88.2	89.4	89.9	90.4	89.8	89.5	89.7	89.6	89.3	88.1	(17)
(18)			MCWB	76.3	75.8	75.7	76.5	77.6	78.0	78.2	79.4	79.5	79.4	78.7	77.7	(18)
(19)		2%	DB	86.4	86.4	87.3	88.2	89.0	89.3	88.6	88.6	88.2	88.4	88.1	87.2	(19)
(20)			MCWB	75.8	75.4	75.5	76.4	77.5	78.1	78.2	79.0	79.2	79.1	78.4	77.4	(20)
(21)		5%	DB	85.6	85.7	86.4	87.6	88.0	88.2	87.8	87.6	87.5	87.7	87.4	86.2	(21)
(22)			MCWB	75.6	75.2	75.2	76.4	77.4	78.0	78.4	78.9	79.0	78.9	78.3	77.2	(22)
(23)		10%	DB	84.6	84.6	85.6	86.6	87.3	87.6	86.8	86.4	86.3	86.6	86.4	85.4	(23)
(24)			MCWB	75.3	74.9	75.1	76.2	77.3	78.0	78.4	78.7	78.9	78.8	78.2	77.0	(24)
(25)	Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	79.5	79.2	79.6	80.0	80.8	81.0	81.0	81.8	81.6	81.8	81.2	80.4	(25)
(26)			MCDB	83.7	84.2	84.1	85.3	85.8	86.3	86.2	87.5	86.9	86.6	85.6	84.5	(26)
(27)		2%	WB	78.1	78.1	78.2	79.0	79.8	80.0	80.1	80.6	80.6	80.7	80.3	79.2	(27)
(28)			MCDB	82.9	83.0	83.3	84.7	85.3	86.0	85.6	86.1	85.9	85.9	85.0	83.9	(28)
(29)		5%	WB	77.3	77.3	77.2	78.2	79.1	79.3	79.6	79.8	79.5	79.5	79.6	78.6	(29)
(30)			MCDB	82.3	82.2	82.9	84.1	84.9	85.5	85.1	85.2	85.1	85.2	84.5	83.5	(30)
(31)		10%	WB	76.6	76.4	76.4	77.6	78.5	78.9	79.0	79.1	79.2	79.2	79.0	78.0	(31)
(32)			MCDB	81.7	81.6	82.4	83.5	84.4	85.2	84.7	84.4	84.4	84.5	84.1	82.9	(32)
(33)	Mean Daily Temperature Range		MDBR	9.3	9.7	10.1	10.1	9.7	9.6	9.6	9.7	9.8	9.7	9.1	8.9	(33)
(34)		5% DB	MCDBR	10.3	10.7	10.8	10.8	10.4	10.4	10.5	11.0	10.9	10.8	9.9	9.6	(34)
(35)			MCWBR	4.7	4.9	4.5	4.2	4.0	4.3	5.0	5.3	5.2	5.0	4.6	4.5	(35)
(36)		5% WB	MCDBR	8.9	9.5	9.7	9.8	9.6	9.7	9.9	10.2	10.1	10.0	9.1	8.6	(36)
(37)			MCWBR	4.8	5.1	4.7	4.4	4.4	4.6	5.2	5.4	5.4	5.3	5.0	4.7	(37)
(38)	Clear Sky Solar Irradiance	taub		0.436	0.424	0.410	0.402	0.384	0.371	0.361	0.370	0.383	0.410	0.428	0.426	(38)
(39)		taud		2.590	2.573	2.556	2.541	2.554	2.576	2.627	2.640	2.664	2.645	2.642	2.645	(39)
(40)		Ebn,noon		275	283	288	287	288	283	292	293	291	283	275	275	(40)
(41)		Edh,noon		31	32	33	34	33	32	30	30	30	30	29	29	(41)

Nomenclature See separate page

Appendix E: Raw Water Analysis

Later

Appendix F: ULSD Analysis

Later

Appendix G: GPA Grid Stability and Reliability Standards

INVITATION FOR BID

FOR DEVELOPMENT OF A 120-180 MW POWER PLANT IN GUAM ON A BUILD, OPERATE, TRANSFER (BOT) BASIS

Tender No. GPA-XXX-XXX

Section D: Forms

~~DATE~~JULY 2018



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1 FORM 1 - PROPOSAL LETTER

John M. Benavente, P.E.
General Manager
Guam Power Authority
Post Office Box 2977
Hagatna, Guam 96932-2977
Attention: Supply Management Administrator
Email: jpangelinan@gpagwa.com
Phone: (671) 646-3054/55
Fax: (671) 648-3165

The undersigned,

Last Name: _____

First Name: _____

Title/Position: _____

Located at the following address:

Telephone:

E-mail:

Fax:

Acting:

As the representative of the company[1] _____,

Lead Bidder of the Consortium composed of the following members:

1. _____
2. _____
3. _____
4. _____

and on behalf of said Consortium, in view of the Power of Attorney provided by each of the members[2].

[1] Include legal authorization

[2] Include Powers of Attorney

Having examined the whole of the IFB documents, receipt of which is duly acknowledged, for the development of a ULSD/gas-fired, power Facility, on a BOT basis, in Guam ("the Project"), comprised of the following documents:

Invitation for Bid (IFB), dated [2017]

Draft Agreements, dated [2017]

[Supplemental Information

Amendment No. 1

Amendment No. 2

Amendment No. 3…]

Having evaluated, following our own studies undertaken under our responsibility, the nature and scope of the contractual obligations to be executed, the financing structure, the Security Package and any other regulation associated to the Project or its execution, we commit ourselves to design, finance, procure, construct, own, operate, and maintain the whole of the Project, power Facility in Guam, and to sell the electricity generated exclusively to GPA for an Initial Term of twenty-five (25) years, in conformity with the schedule and conditions stipulated in the IFB documents and for a Levelized Price in United States Dollars as calculated in Form 15 Table 15.13 hereof.

We agree to abide by this Proposal and maintain its validity for a period of twelve (12) months from the Bid Date as prescribed in the Instructions to Bidders, Section B, Article 4.7 entitled "Proposal Validity".

We accept to remain bound by this Proposal which may be accepted by GPA at any time before the expiration of that period.

We commit ourselves, if we are selected, to extend the validity of our Proposal and our Proposal Security until execution of the Project Agreements and our presentation of the Construction Security.

We have provided and attached hereto a Bank Guarantee for [Two Million United States Dollars (USD 2,000,000.00)] in accordance to the form provided herein.

We acknowledge GPA's standard of ethics, as described immediately below:

GPA requires that all Bidders observe the highest standard of ethics during the procurement process. In pursuance of this policy GPA:

a) defines for the purposes of this standard of ethics, the terms set forth below as follows:

"Corrupt Practice" means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of any value to influence the action of a public official involved in the procurement process or in contract execution;

"Fraudulent Practice" means a misrepresentation or omission of fact in order to influence the procurement process or the execution of a contract;

"Collusive Practice" means a scheme or arrangement between two or more bidders, with or without the knowledge of GPA, designed to establish bid prices at artificial, non-responsive, levels; and

"Coercive Practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract.

b) will declare a Bidder ineligible for the Project and reject the Bidder's Proposal if it determines that the Bidder engaged in any Corrupt, Fraudulent, Collusive or Corrupt Practices in competing for the Project.

We certify that (i) the information submitted as part of this Proposal is complete and accurate, (ii) the Proposal has been submitted in the legal name of the Consortium whose members will be bound to this Proposal and to the development of the Project, (iii) we accept the documents and terms of the IFB documents, and (iv) there are no material deviations in our Proposal from the terms and conditions of the draft Energy Conversion Agreement.

We understand that the GPA is not bound to accept any Proposal that it may receive.

In _____ (location) ,
on this _____ (date) _____

The Lead Bidder, duly authorized to execute the Proposal for and on behalf of the Consortium:

_____

Notarized signature and seal

_____

Attachments:

ATTACHMENT 1-A	Form of Proposal Security Bank Guarantee
ATTACHMENT 1-B	Proposal Opening Form

1.1 Attachment 1a - Form of Proposal Security Bank Guarantee

Guam Power Authority [insert date]
Hagatna, Guam

Considering the Proposals presented by _____ [insert name of Bidder]_____

(the "Principal") in response to Request for Proposals dated _____ ("IFB") made by the Guam Power Authority (GPA) (the "Beneficiary") for the development of a power generating facility at the [Guam] site.

We, _____[insert name of Bank]_____ ("the Bank") hereby irrevocably undertake to pay the Beneficiary any sum or sums up to an amount of Two Million United States Dollars (USD$2,000,000.00) upon first written demand of the General Manager of the Beneficiary (or his/her designee) certifying that one or more of the conditions specified in the IFB, Section B, Article 4.8 has occurred, all without there being need for legal or administrative procedures and without need to prove the Principal's default.

This guarantee will be valid for seventeen (17) months from [INSERT THE DATE]. The validity of the present guarantee shall be extended two (2) times for up to a total of 120 days, upon request from the Beneficiary until such time that the Project Agreements (as defined in the IFB) have been executed by Principal and the Construction Security (as defined in the IFB) has been provided to the Beneficiary. If, following any such request, the Principal does not comply with the necessary formalities to ensure the extension of the validity of the present guarantee before expiry of its validity, or if we do not grant such extension to the Principal, we shall pay the full amount indicated above immediately without further notice from you to the following account:

[GPA TO PROVIDE CORRECT BANK INFORMATION]

_____

Signature and bank seal

1.2 Attachment 1B - Proposal Opening Form

(This document is an integral part of the Proposal and shall be read during the Bid Opening.)

A) Name of Lead Bidder _____

B) Names of Consortium Members _____
_____
_____
_____

C) Contracted Facility Capacity Using ULSD (for fossil fuel fired or hybrid Projects)
_____ MW

D) Contracted Facility Capacity Using Natural Gas (for fossil fuel fired or hybrid Projects)
_____ MW

E) Guaranteed Amount of Renewable Energy (for hybrid Projects)
_____ MWh/year

F) Contracted Facility Capacity for Projects that do not operate on fuel
_____ MW

G) Are there any exceptions taken to the IFB terms and conditions, as detailed in Exhibit VII?
YES: _____ NO: _____

H) Are there any technical exceptions taken to the IFB, as detailed in Exhibit VII?
YES: _____ NO: _____

I) Are there any exceptions taken to draft Project Agreements, as detailed in Exhibit VII?

ECA:	YES: _____	NO: _____
LLA:	YES: _____	NO: _____
WSA	YES: _____	NO: _____
Other	YES: _____	NO: _____

2 FORM 2 – AFFIDAVIT BY THE BIDDER (Page 1 of 2)

The undersigned, _____, of legal age, and residing at _____
(Name of Official)
after having been duly sworn deposes and states:

1. That he is the _____ of the _____,
(Official Capacity) (Name of the Bidder's (Lead Bidder's) Company /Corporation)

corporation/association/individual, duly organized under the law of _____
(Name of Country)

2. That personally, and as _____ for and in behalf of the corporation /
(Official Capacity)

association/individual (by and under the authority indicated on Attachment 1-A) he hereby certifies:

a) That all statements made in this Bidder's statement and in the required attachments are true and correct;

b) That this Bidder's statement is made for the express purpose of identifying and describing him as a Qualified Bidder for the Project located in Guam;

c) That all Bidder information required in Section B, Article 3.2.1 are submitted herein, in substantially the formats required;

d) The Bidder will make available to GPA or its authorized agency any information they may find necessary to verify any item in this Bidder's Statement or regarding his competence and general reputation;

e) That the Lead Bidder (and parent firm if applicable) is current with regard to payment of all national and local taxes within its nation of incorporation, and in all nations in which this firm is participating in power projects (except as noted on Attachment 2-B);

f) That the Lead Bidder (and parent firm if applicable) is not the subject of litigation--within its nation of incorporation, and in all nations in which this firm is participating in power projects--that would materially affect its ability to develop this Project (except as noted on Attachment 2-C);

FORM 2 - AFFIDAVIT BY THE BIDDER (Page 2 of 2)

g) That the undersigned is duly authorized by the corporation/association/individual to make these representations and to sign this Statement.

_____

Name and Signature

WITNESSES:

1. _____ 2. _____

SUBSCRIBED AND SWORN TO before me

this ____ day of _____ 20___

at _____.

_____

Notary Public

Attachments (if applicable):

Attachment 2-A: Certificate from Parent Company (pursuant to Form 2, paragraph 2)

Attachment 2-B: (Optional) Tax Statement (pursuant to Form 2, paragraph 2.e.)

Attachment 2-C: (Optional) Litigation Pending (pursuant to Form 2, paragraph 2.f.)

2.1 Attachment 2-A: Certificate from Parent Company (if applicable)

2.2 Attachment 2-B: Tax Statement (Optional)

2.3 Attachment 2-C: Litigation Pending (Optional)

3 FORM 3 – BIDDER'S ORGANIZATION

(Page 1 or 2)

_____

Applicant

Each Consortium member of the Bidder's proposed organization, or joint venture, must fill out this Form.

1. Date of Submission: _____
2. Company's Name _____
3. Year Organized: _____
4. Country Incorporated _____
5. Type of Organization: _____
6. Local Address: _____
   _____
   _____
7. Home Address: _____
   (Local office supporting this Proposal) _____
   _____
8. Contact Person: _____
9. Other Contact Means:
   Telefax No.: _____
   Electronic Mail: _____
10. Corporate objectives or purposes of the lead firm:

_____
_____
_____
_____
_____

[Continued]

FORM 3 – BIDDER'S ORGANIZATION
(Page 2 of 2)

11. Provide in the table below the name and address of lead and associated firms to be involved in this Project (to the extent known at this point):

Table 3.1: Bidder's Team and Responsibilities

Name of Proposed Project Company: _____

Location of Incorporation:[1] _____

Type of Company: _____

Role in This Project	Company (Name and Address)	Level of Commitment (Firm, Expected, Possible)	Supporting Data Attached as Form 9 (For Each Firm) (If Any) (Yes/No)
Bidder – Lead Developer		**NA**	**NA**
Bidder – Co-Developer(S)			
[Optional: EPC Contractor]			
[Optional: Equipment Supplier]			
[Optional: O&M Contractor]			
Project Engineer			
Financial Advisor			
Legal Advisor			
Equity Participants			
Senior and Subordinated Debt Participants			

Attachments:

Attachment 3A: Letters of Agreement from Team Members (*Note: The EPC Contractor, Equipment Supplier and O&M Contractor are identified by the Bidder in its IFB Proposal submittal.)*

[1] Including the location of any affiliated special-purpose Project Companies.

3.1 Form 3-A: Letter of Agreement from Team Member (if applicable)

4 FORM 4 – FINANCIAL CAPABILITY

(Page 1 of 2)

1 Each member of the Bidder's Consortium, co-Bidder, or joint venture partner must fill in this form. Bidders, including each member of a team, should provide financial information in the form of their most recent annual reports and audited financial statements to demonstrate that they meet the requirements stated in Section B, Article 6.4.1.

2 Provide the complete contact information for the Bidder's main banker(s) and other financial institutions/references that may be familiar with the Bidder's financial capability.

Name of Banker	
Address of Banker	
Telephone(s)	Contact Name and Title
Fax Number	E-Mail Address

3 Attach a notarized affidavit (see Attachment 4A below) from an internationally recognized bank that confirms the Bidder's ability to provide the necessary Construction Security deposit upon being selected to develop the Project.

4 Please attach a notarized affidavit from an internationally recognized bank or financial institution that confirms the Bidder's ability to provide the six (6) months of Working Capital that will be required to develop this Project from Notification of Selection (award) to Financial Close.

5 Please provide your current maximum limits under each of the following types of Performance Guarantees:

A) Performance Bond _____US$

B) Bank Guarantee _____US$

[Continued]

FORM 4 - FINANCIAL CAPABILITY
(Page 2 of 2)

6 Have you provided performance guarantees for other projects? Please provide the information in the table below.

Name & Address of Surety Company or Financial Institution	Name and Location of the Project	Name and Address of the Project Owner	Type of Guarantee	Amount of Guarantee
1.				
2.				
3.				
4.				
5.				

7. Have you ever had to forfeit a performance guarantee?

☐ Yes ☐ No

If yes, please explain:

_____

_____

_____

_____

_____

Attachments:

Attachment 4-A: Certificate of Availability of Bank Guarantee

4.1 Attachment 4-A - Certificate of Availability of Bank Guarantee

1 **Background.** Should the Bidder be selected as the Bidder to develop the Project, it will be required to furnish GPA a Construction Security in the form of an irrevocable stand-by letter of credit issued by an international bank acceptable to GPA, a bank guarantee issued by an international bank in form and substance acceptable to GPA, or a performance bond issued by an international surety in form and substance acceptable to GPA, in each case in the amount of US ~~seventy-five~~fifty million ($~~75~~50,000,000). This Construction Security shall be valid months after the Project Company achieves the Commercial Operation Date of the Facility in accordance with the ECA.

2 **Requirement.** The Bidder is required to provide in this Bidder Statement (as its Form 4-A) a notarized affidavit from the Bidder's bank stating that they can issue on behalf of the Bidder the required Construction Security, in the amount of US ~~seventy-five~~fifty million ($~~75~~50,000,000) of GPA at the projective time that such Security will need to be issued.

5 FORM 5 – PROJECT DATA SHEETS

(Page 1 of 2)
(One for Each Project)

PROJECT NAME _____

LOCATION (City & Nation) _____

OVERALL CAPACITY (MW, other) _____

CHARACTERISTIC	TOTAL	UNIT 1	UNIT 2	UNIT 3	RENEWABLE GENERATION	ENERGY STORAGE
CAPACITY (MW, other)						
TECHNOLOGY (incl. Fuel & Type of Cycle)						
WHAT FIRMS PLAYED THESE ROLES ON THE PROJECT: Lead Developer						
Co-Developer(s)						
Equity Participant(s)						
Debt Participant(s)						
EPC Contractor						
O&M Contractor(s)						
Equipment Supplier(s)						
FINANCING EXPERIENCE: Total Equity (US$___M) Bidder's Equity (US$____M)						
Total Debt (US$___M) Bidder's Debt (US$____M)						
Date of Financial Close						
TECHNICAL DATA: Major Equipment Installed (& Cost)						
Turbines						
HRSGs						

Reciprocating Engine Generators						
Solar Modules						
Inverters						
Wind Turbines						
Energy Storage (batteries, compression systems, other)						
Balance of Plant						
Civil Works						

(Continued)

FORM 5 - PROJECT DATA SHEETS (Page 2 of 2)

Characteristic	Total	Unit 1	Unit 2	Unit 3	RENEWABLE GENERATION	ENERGY STORAGE
Performance: Commercial Operations Date (COD):						
Construction Period (months)						
Operating History to 2017 (years)						
Availability (%): 2014 2015 2016 2017						
Efficiency (%) 2014 2015 2016 2017						
Heat Rate (Btu/kWh) 2014 2015 2016 2017						
Production (GWh) 2014 2015 2016 2017						
Environmental Compliance History: (Describe)						
Name, address, and contact numbers of Owner (for reference):						
Name, address, and contact numbers of Operator (for reference):						

[Optional] These Certificates and Brochures are Attached:		
Certificate of Final Acceptance YES / NO		
Certificate of Good Operating Performance YES / NO		
Project Brochure or Fact Sheet YES / NO		
Other: _____ YES / NO		

6 FORM 6 – PROJECT FINANCING PLAN

(Conceptual)

1 List in the table below the potential sources of equity and debt for the Project.

Assume: US$ ____MM minimum to be raised overall, with minimum equity-debt ratio of 20:80.

Equity (20% Minimum)		
Source of Funds	**NAME[1]**	**Amount (US$)**
Bidders (Minimum of 20%)		
Contractors		
Local Sources		
Other Sources		
	TOTAL:	
Debt (80% Maximum)		
Source of Funds	**NAME[1]**	**Amount (US$)**
Supplier Credit	'	
Commercial Sources		
Bi-lateral Sources		
Multi-lateral Sources		
Other Sources		
	TOTAL:	
	TOTAL Financing:	

2 Discussion:

[1] Names of financial institution(s) or sources of funding.

7 FORM 7 – FINANCIAL DATA IN SUPPORT OF PROJECT

7.1 Financing Plan

The Bidder will be responsible for mobilizing the financing for the Facility. Agreements required to secure financing for the Project will be entered into between the Bidder and the institutions providing the financing for the Project, and they shall be based on the financial plan presented by the Bidder in its Proposal. Any subsequent changes to the financial plan after finalization of the Project Agreements will require the approval of GPA.

The financial plan provided by the Bidder will describe the sources of funds and the terms of financing for both debt and equity, as applicable. The Bidder will provide details on the financing sources as outlined in this Form 7A, Table 1. The financing should be in an amount sufficient to cover all estimated Project costs.

Financing will be in the form of equity and debt. At least 20% of the total financing, inclusive of contingencies, will be in the form of equity and the remainder in debt or subordinated debt. At least 35% of the equity shall be provided by the Lead Bidder.

	Sources of Funds	US$
	Items / Sources	
1.1	**Total Sources**[2]	
1.2	**Equity**	
	• Lead Bidder Name: _____	
	• (Member(s) of Bidder Consortium) Name: _____	
	• (Member of Bidder Consortium) Name: _____	
	• (Member of Bidder Consortium • Name: _____	
	• Contractor/Supplier Name: _____	
	• Contractor/Supplier • Name: _____	
	• Other sources (specify) • Name: _____	
1.3	**Debt Financing**	
	Export Credit Agencies *(List individually)*	

	Sources of Funds	US$
	Items / Sources	
	• Export Credit Agency Name: _____	
	• Export Credit Agency Name: _____	
	• Export Credit Agency Name: _____	
	Commercial Sources *(List individually)*	
	• Commercial source Name: _____	
	• Commercial source Name: _____	
	Multilateral Sources *(List individually)*	
	• Multilateral source Name: _____	
	• Multilateral source Name: _____	
	Other Sources ***(List individually)***	
	• Other source Name: _____	
	Total Debt:	

7.2 Financing Plan Documentation

The following documentation is to be provided in support of the financing plan outlined in Form 7A. Please fill in each section below, however, if any of the Bidder information is combined into a single document from a Lender, then the Bidder must make a reference to the particular attachment where the information can be found.

Attachment 7.2.1 — Letters of commitment from the Chief Executive Officer or Treasurer/Controller of each of the companies verifying that the company will commit to contributing the amount of equity stated in Form 7A, Table 1, Section 1.2.

Attachment 7.2.2	Letters of commitment from the Export Credit Agencies, Commercial Sources and/or Multilateral Sources and/or financial institutions committing to the amount of debt financing stated in Form 7, Table I, Section 1.3. The letter should also indicate the method of payment, repayment period, interest rates (fixed or variable), and any other charges applicable to the commitment. The letter shall also verify that the commitment is made based upon the draft of Project Agreements, the Bidder's Proposal, and adequate debt coverage.
Attachment 7.2.3	If the Bidder has obtained an underwriting for all or part of the amount, a letter from the financing institution of such undertaking.
Attachment 7.2.4	In the event that, the Bidder has appointed a financial advisor/arranger for the Facility, the name of the organization, the lead person who will perform the services from the organization, and a qualification statement for the organization and the lead person.
Attachment 7.2.5	Should the Bidder plan to have financing for the Facility at a later date, i.e. on or following the Commercial Operation Date, details of financing arrangements prior to the long-term financing being effective.
Attachment 7.2.6	A detailed schedule of activities leading to Financial Close in Form 11.
Attachment 7.2.7	The Bidder's planned projected coverage for interest rate variations.

7.3 Debt Service Coverage and Equity Ratios Projections

DEBT SERVICE COVERAGE & EQUITY RATIOS (PROJECTED)			
Agreement Period	**Year**	**Debt Service Coverage Ratio (See 7.3.1)**	**Equity Ratio (See 7.3.2)**
Contract Year 1			
Contract Year 2			
Contract Year 3			
Contract Year 4			
Contract Year 5			
Contract Year 6			
Contract Year 7			
Contract Year 8			
Contract Year 9			
Contract Year 10			

DEBT SERVICE COVERAGE & EQUITY RATIOS (PROJECTED)			
Agreement Period	**Year**	**Debt Service Coverage Ratio (See 7.3.1)**	**Equity Ratio (See 7.3.2)**
Contract Year 11			
Contract Year 12			
Contract Year 13			
Contract Year 14			
Contract year 15			
Contract Year 16			
Contract Year 17			
Contract Year 18			
Contract Year 19			
Contract Year 20			
Contract Year 21			
Contract Year 22			
Contract Year 23			
Contract Year 24			
Contract Year 25			

NOTES to Table:

1 Debt Service Coverage Ratio shall mean the ratio of Cash Flow from Operations to Debt Service, where Cash Flow from Operations means on an annual basis all Project revenue minus all operation and maintenance expenses (including but not limited to, operator costs, Fuel procurement and transportation costs (if any), insurance, management costs, local fees, legal fees, accounting and auditing fees, other professional fees, capital expenditures, and amounts contributed to the debt service and maintenance reserves) before interest, depreciation, and income taxes, and where Debt Service means repayment of all annual principal and interest on debt outstanding during the year to all lenders.

2 The Equity Ratio should be calculated as Total Equity divided by the sum of Total Debt and Total Equity.

8 FORM 8- TECHNICAL DATA

8.1 Guaranteed Data for Project

The following data is provided by Bidder and will be subsequently included as Schedules to the ECA. The Price stated in Section D, Form 15 is based upon data furnished herein.

1 Contracted Capacity of the Facility for each Year of the Term shall be as specified in **Table 15.1~~Table 15.1~~ of Envelope II, and will be consistent with the data provided in Table 8.8~~Table 8.8~~** of this section below.

2 Guaranteed Heat Rates for each Year of the Term for ULSD and Natural Gas operation shall be as specified **in Table 15.5~~Table 15.5~~ and Table 15.6~~Table 15.6~~ of Envelope II for the Facility, with the data provided in Table 8.3~~Table 8.3~~, Table 8.4~~Table 8.4~~.**

3 **In Table 8.5~~Table 8.5~~ and Table 8.6~~Table 8.6~~,** the Guaranteed Heat Rate shall consider and any maintenance to be performed on the equipment.

4 Bidder shall provide Heat Rates for each Unit at various loads identified in **Table 8.3~~Table 8.3~~ Table 8.4~~Table 8.4~~.** This information is based upon new equipment operated for less than 500

5 Bidder shall provide the Correction Curves that are to be used to verify the performance (i.e. Contracted Facility Capacity and Guaranteed Heat Rates). Only those curves provided by the Bidder will be taken into consideration for calculations of Facility performance characteristics determined by Testing.

6 For Proposals based on a hybrid facility, the Bidder will provide a Guaranteed Amount of Renewable Energy for a Typical Meteorological Year (TMY) and a guaranteed maximum annual degradation factor. The Guaranteed Amount of Renewable Energy will be demonstrated by means of a PVSyst production forecast (in the case of PV solar) or a WindSim production forecast (in the case of wind), each assuming TMY conditions and submitted along with the Contracted Capacity as part of Envelope II.

7 Bidder shall provide the following guaranteed data for environmental impact assessment.

A. Noise levels

- At Site boundary
- At one meter from major equipment
- At one hundred meters from major equipment

B. Air emissions

Maximum anticipated levels of NOx, CO, VOC, PM10, and SOx, based on the fuel characteristics provided in the IFB.

C. Water discharge:

- Provide particulate concentration and composition of wastewater discharge, other than sanitary discharge.
- Provide provisions made for treatment of wastewater and sanitary water.

8 Auxiliary load consumption

- Provide Facility auxiliary load consumption, in MW.

9 Provide information requested in paragraph 8.14 with respect to characteristics of the Facility (i.e. cold start time, etc.)

8.2 Basic Technical Information

1 Provide a short description of the Facility, and supporting facilities and Site infrastructure.

2 Source of major components.

Component	Information Requested	Manufacturer / Model / Type
Combustion Turbine Generator(s)	Manufacturer	_____
	Model/type	_____
Reciprocating Engine Generator(s)	Manufacturer	_____
	Model/type	_____
Steam Turbine Generator(s)	Manufacturer	_____
	Model/type	_____
Heat Recovery Steam Generator(s)	Manufacturer	_____
	Model/type	_____
Once Through Steam Generator(s)	Manufacturer	_____
	Model/Type	_____
Cooling Tower	Manufacturer	_____
	Model/type	_____
Control system	Manufacturer	_____
	Model/type	_____
Generator Step-up Transformers	Manufacturer	_____
	Model/type	_____
Medium Voltage Switchgear	Manufacturer	_____
	Model/type	_____
Solar Photo voltaic	Manufacturer	_____

	Model/type	_____
Inverters	Manufacturer	_____
	Model/type	_____
Wind Turbines	Manufacturer	_____
	Model/type	_____
Battery Energy Storage System	Manufacturer	_____
	Model/type	_____

3 Describe the equipment for filtering at the air inlet for the combustion turbines (for salt, dust, etc.).

4 Provide a listing of the codes and standards to be used in design, manufacturing, construction, performance testing, and quality control for civil, electrical, mechanical and control/instrumentation works of the Project. (Refer to Section C, Article 2).

5 Describe provisions made for SCADA system.

6 Provide temperature in combustion chamber at 100% load and for exhaust gas of combustion turbines in simple cycle at the combustion turbine exhaust and at the stack outlet.

8.3 Drawings

Provide the following drawings as a minimum:

- Conceptual station layout drawings
- General arrangement drawings of all buildings
- Exterior elevation drawings of all buildings
- Heat balance diagram for plant
- Water balance diagram for plant
- P&ID's of major systems
- Single line electrical diagram including protection
- Control room layout
- Pipeline route
- Transmission Line

8.4 Proposed Facility Design and Components Experience

Bidder shall provide historical data for the following items:

8.4.1 Overall Design of Facility

If a Facility of similar size (100 MW and above) or with similar major equipment (reciprocating engines, combustion turbines, solar modules, inverters, wind turbines and other renewable

generation and/or energy storage), with similar design of systems and preferably the same equipment manufacturer, has been operating for the past three (3) years, provide the name of the Facility, year commissioned, name of owner and representative (phone and Fax number), with data on reliability, availability, Gigawatt hours (GWh) produced for each of the last two (2) years, and the number of forced outages or reduced output due to technical difficulties. Information on more than one Facility is desirable but not mandatory.

8.4.2 Information on Other Equipment

For the following equipment to be used in the Facility, provide similar information, as above (and as applicable), from manufacturers for at least three (3) projects, for the past three (3) years.

- Combustion Turbine Generators
- Reciprocating Engine Generators
- Steam Turbine Generators
- Solar Modules
- Inverters
- Energy Storage
- Wind Turbines
- Other renewable energy technologies

8.4.3 Information on EPC Contractor and Engineering and Design Subcontractors

Bidder shall provide information on qualifications and experience of proposed Construction Contractor and engineering and design subcontractors (if any).

8.5 Detailed Technical Information

Bidder shall fill out all applicable portions of the data sheets provided herewith. If the information is not available at the Proposal stage, the Bidder will be required to complete the same at time of negotiations.

DATA SHEETS				
Description		**Bidder's Response:**		
	As a minimum, the following data sheets, drawings, and performance curves relating to the Project Company's proposal shall be provided:	Insert in this column all the data requested or the page number in the Proposal where the information is provided.		
8.5.1	**<u>Combustion turbines</u>** (Performance at Reference Site Conditions)			
			ULSD	**Natural Gas**
	Combustion turbine manufacturer			
	Model/type			

DATA SHEETS				
Description		**Bidder's Response:**		
	Gross output (at generator terminals)	kW		
	Gross Heat Rate (HHV)	Btu/kWh		
	RPM			
	Air Flow at inlet	lb/hr.		
	Fuel consumption	lb/hr.		
	Water injection	lb/hr.		
	Fuel pressure required	psig		
	Air inlet filter type			
	Turbine/compressor water wash	yes/no		
	Ramp rate	kW/sec		
	Fire protection:			
	– CO_2 System	yes/no		
	Detectors:			
	– Temperature detectors	yes/no		
	– Smoke detectors	yes/no		
	– UV detectors			
	Silencers:			
	– Manufacturer			
	– Correction curves for fouling shall be provided. Deterioration factor is considered from 200 h after start of Commercial Operation			
	Governor (IEEE model)			
8.5.2	**Reciprocating Engine Generators** (Performance at Reference Site Conditions)			
			ULSD	**Natural Gas**
	Reciprocating Engine manufacturer			
	Model/type			
	Gross output (at generator terminals)	kW		
	Gross Heat Rate (HHV)	Btu/kWh		

DATA SHEETS				
Description		**Bidder's Response:**		
	RPM			
	Air Flow at inlet	lb/hr.		
	Fuel consumption	lb/hr.		
	Fuel pressure required	psig		
	Air inlet filter type			
	Ramp rate	kW/sec		
	Fire protection:			
	– CO_2 System	yes/no		
	Detectors:			
	– Temperature detectors	yes/no		
	– Smoke detectors	yes/no		
	– UV detectors	yes/no		
	Silencers:			
	– Manufacturer			
	– Correction curves for fouling shall be provided. Deterioration factor is considered from 200 h after start of Commercial Operation			
	Governor (IEEE model)			
	Fuel temperature at Reciprocating Engine Generator	°F		
	Turbochargers			
	– Manufacturer			
	Radiators (if used)			
	– Manufacturer			
	Air Coolers (if used)			
	– Manufacturer			
8.5.3	**Steam turbines** (Performance at Reference Site Conditions)			
	Steam turbine manufacturer			
	Model/type			

DATA SHEETS			
Description		**Bidder's Response:**	
	Gross output (at generator terminals)	kW	
	Turbine efficiency	%	
	RPM		
	Steam Flow at inlet	lb/hr.	
	Steam pressure at inlet	Psig	
	Steam temperature at inlet	°F	
	Exhaust pressure	In Hga	
	Quantity of Extraction(s)		
	Extraction pressure(s)	psig	
	Governor (IEEE model)		
	–		
8.5.4	**Heat Recovery Steam Generators** (Performance at Reference Site Conditions)		
	HRSG manufacturer		
	Model/type		
	Duct burner heat input	MMBtu/hr	
	Gas temperature at stack	°F	
	HP Steam Flow	Lb/hr	
	HP Steam Pressure	Psig	
	IP Steam Flow	Lb/hr	
	IP Steam Pressure	Psig	
	LP Steam Flow	Lb/hr	
	LP Steam Pressure	psig	
	SCR Catalyst	Yes/no	
	Catalyst type		
8.5.5	**Cooling Tower**		
	Cooling Tower manufacturer		
	Model/type		
	Number of cells		

DATA SHEETS			
Description		**Bidder's Response:**	
	Water flow rate	gpm	
	Heat Load	MMBtu/hr	
	Design wet bulb temperature	°F	
	Approach temperature	°F	
	Solar Photovoltaic Panel(s)		
	Manufactuer		
	Model/Type		
	Panel physical size (LxWxH		
	Panel Power Output (nominal)		
	Panel DC voltage (nominal)		
	Number of panels proposed		
	Single or dual axis sun tracking		
	Inverter(s)		
	Manufacturer		
	Model/Type		
	DC voltage (nominal)		
	AC voltage (nominal)		
	Number of AC phases		
	MVA capacity		
	Power factor range (leading/lagging capability)		
	Power electronic topology		
	IEEE 1547 compliant?		
	Total harmonic distortion (THD% voltage, open circuit)		
	Peak Power	W	
	Maximum Power Voltage		
	Maximum Power Current		
	Battery Energy Storage System (BESS)		

DATA SHEETS			
Description		**Bidder's Response:**	
	Manufacturer		
	Model/Type		
	Energy storage medium (chemical batteries or flywheels)		
	Battery chemistry (if chemical batteries proposed)		
	Inverter (See the above section)		
	Power capacity output and input	MW	
	Energy capacity	MWh	
	Cycle life		
8.5.5	**Package Boiler(s)**		
	– Manufacturer		
	– Capacity		
	– Fuel		
8.5.6	**Water Treatment Plant**		
	Primary Treatment:		
	– Manufacturer		
	– Type		
	– Number of streams		
	– Rated capacity of each stream	gpm	
	Demineralized Water Treatment		
	a. Manufacturer		
	b. Type		
	c. Number of Streams		
	d. Rated Capacity of Each Stream	gpm	
8.5.7	**Storage Tanks**		
	a. Raw Water - Number and Capacity	T/gallons	
	b. Demineralized Water-Number and Capacity	T/gallons	
	c. Acid	T/gallons	

DATA SHEETS			
Description		**Bidder's Response:**	
	d. Caustic	T/gallons	
	e. Fuel storage	T/barrels	
8.5.8	**Generators & Accessories**	**Combustion Turbines**	**Diesel Engines**
	Generator		
	a. Manufacturer		
	b. Rated voltage at generator terminal (kV)		
	c. Frequency range (Hz)		
	d. Rated Power factor		
	e. Reactance Data		
	f. Insulation class		
	g. Type of cooling		
	h. Design standard		
	i. Efficiency		
	j. Reactive capability ("D") curve		
	k. Saturation & synchronous impedance curves		
	l. Vee curves		
	m Short Circuit Ratio		
	n. Excitation IEEE Model		
	Excitation System		
	a. Type		
	b. Current rating and voltage		
	Neutral Earthing Equipment		
	a. Transformer		
	– Rating (kVA/sec)		
	– Voltage ratio		
	– BIL (kV)		
	b. Secondary resistor		
	– Type		

DATA SHEETS			
Description		**Bidder's Response:**	
	– Resistance (ohms)		
	– Current rating (A)		
	Generator Circuit Breakers (if required)		
	a. Manufacturer		
	b. Type/Model		
	c. Rated voltage (kV)		
	d. Rated Frequency (Hz)		
	e. Continuous Current rating (kVA)		
	f. Maximum Interrupting current rating (kA)		
	g. Maximum interrupting time (cycles)		
	h. Maximum closing time (cycles)		
	i. BIL rating		
	j. Interrupting medium		
8.5.9	**Generator Step-up Power Transformers**		
	General		
	a. Quantity		
	b. Manufacturer		
	c. Type		
	d. Applicable Standards		
	Design Data		
	a. Voltage ratio		
	b. Maximum Continuous Rating (MVA)		
	c. Rated temperature rise (°C)		
	d. Basic Insulation Level:		
	– Of HV winding (kV)		
	– Of neutral of HV winding (kV)		
	– Of LV winding (kV)		
	– Of neutral of LV winding (kV)		
	e. Type of tap changer (Load or No-Load) and no./ratio of taps		

DATA SHEETS			
Description		**Bidder's Response:**	
	f. Total power requirements of auxiliary equipment (kW)		
	g. Power factor		
	h. Insulation class		
	i. Type of cooling		
	j. Type of connection – High voltage winding – Low voltage winding		
	k. Design standard		
	l. Vector Group		
8.5.10	**Medium Voltage Switchgear**		
	a. General		
	– Manufacturer		
	– Applicable standards		
	b. Design Data		
	– Rated/nominal voltage of switchgear (kV)		
	– Rated insulation level, low frequency/ impulse (kV/kV)		
	– Momentary (asymmetrical) current rating (kA)		
	– Breaker interrupting time		
	– Breaker closing time		
	– Bus material and rating		
	– Type of enclosure		
	– Breaker type		
	– Short time current rating, 3 sec.		
8.5.11	**ULSD Handling and Storage**		
	a. Fuel Handling Equipment		
	– Type & Capacity		

DATA SHEETS			
Description		**Bidder's Response:**	
	– Metering System		
	– Chemical Analysis (if any)		
	b. Off-loading area		
	– Number of trucks offloading & parked		
	c. Storage Facility		
	– Number of Tanks, Type, and Capacity		
	– Total Capacity of Tanks (in days of supply at for operation at 100% load)		
8.5.12	**Natural Gas System**		
	a. General		
	– Design basis		
	– Maximum fuel gas required, SCFM		
	– Maximum flow rate required during start-up (shutdown to full speed and no load), SCFM		
	– Minimum fuel gas flow rate at ignition, SCFM		
	– Minimum gas pressure for base load required at Owner's interface, psig		
	– Allowable percentage variation in fuel gas supply pressure		
	▪ Steady state, psi		
	▪ Load changing, psi		
	– System design pressure, psig		
	– Allowable temperature range for fuel gas supply, °F		
	– Piping material		
	– Corrosion allowance		
	b. Filter (Per Combustion Turbine Generator)		
	– Manufacturer		
	– Type		

DATA SHEETS			
Description		**Bidder's Response:**	
	– Quantity		
	c. Gas Treatment Skids		
	– No. of skids		
	– Location		
	– Waste collection tank (per skid)		
	d. Drains Vessel		
	– Quantity (per Combustion Turbine Generator)		
	– Corrosion allowance		
	– Design standard		
	e. Knockout Vessel		
	– Quantity (per Combustion Turbine Generator)		
	– Design standard		
	f. Metering System		
	– No. of flow meters (per Combustion Turbine Generator)		
	– Manufacturer		
8.5.13	**115 kV Switchyard**		
	a. General		
	– Supplier		
	– Applicable standards		
	b. Design Data		
	– Rated/nominal voltage (kV)		
	– Rated insulation level, low frequency/ impulse (kV/kV)		
	– Momentary (asymmetrical) current rating (kA)		
	– Breaker interrupting time		
	– Breaker closing time		
	– Bus material and rating		
	– Breaker type		

DATA SHEETS			
Description		**Bidder's Response:**	
	– Breaker manufacturer		
	– Short time current rating, 3 sec.		
8.5.14	**Gas Insulated Busbar** [if used]		
	– Rated Voltage	kV	
	– Manufacturer		
8.5.15	**Wind turbines** (Performance at Reference Site Conditions)		
	Wind turbine manufacturer		
	Model/type		
	Gross output (at generator terminals)	kW	
	Total wind plant peak power at Delivery Point	kW	
8.5.16	Other Renewable Generation Technologies		

8.6 Drawings

No.	Drawing Type	Data (or page # on which to find the data)
8.6.1	**Outline drawings** of Combustion Turbine Generators and/or Reciprocating Engine Generators, Heat Recovery Steam Generators, and Steam Turbine Generators	
8.6.2	**Plant Layout**	
	1 Overall site layout drawing showing principal dimensions, major plants, cooling towers, radiators, buildings, roads, interfaces with the Electrical Interconnection Facilities, ULSD supply pipelines, natural gas supply pipeline(s), perimeter buffer zones, etc.	
	2 Proposed layout and elevation drawings of all buildings in the Facility. 3 Layouts of ULSD supply pipeline and Electrical Interconnection Facilities.	
8.6.3	**Mechanical**	

No.	Drawing Type	Data (or page # on which to find the data)
	1 Process flow diagrams for Fuels and auxiliary equipment and systems.	
8.6.4	**Electrical**	
	1 Electrical single line diagrams (showing equipment ratings) for switchyard, MV switchgear, Unit synchronization plan, step up transformers and overall plant electric system including connections for emergency diesel, if required.	
	2 Principal Protection/Metering block diagram for generators, generator station transformers,).	
	3 One line block diagram for each battery and UPS system.	
	4 One line block diagram for energy metering system.	
	5 Description of philosophy for sizing of station service transformers, switchgear, battery and UPS system.	
	6 Description of generator and excitation systems with block diagrams.	
	7 General arrangement drawings of generator main connections showing generator, generator step-up transformers and excitation transformers.	
	8 Block diagram of proposed Control System) configuration showing all major components of the facility.	
	9 Basic schematics of the power block and common auxiliary plant control systems.	
	10 One line diagram of Electrical Interconnection Facilities including metering system.	

8.7 Performance Correction Curves

	Type of the Curve	Data (or page # on which to find the data)
8.7.1	**Combustion Turbine Generator (for each Fuel type)**	
	1 Combustion turbine net output versus ambient temperature	
	2 Exhaust flow versus ambient temperature	
	3 Exhaust temperature (after last stage) versus ambient temperature	

	Type of the Curve	Data (or page # on which to find the data)
	4 Exhaust temperature (after last stage) versus combustion turbine output	
	5 Exhaust flow versus combustion turbine output	
	6 Heat rate versus combustion turbine output	
	7 Heat rate versus ambient temperature	
	8 Fuel flow versus combustion turbine output	
	9 Correction curve for barometric pressure	
	10 Correction curves for variation in ULSD and Natural Gas heating value	
	11 Correction curves for variation in humidity	
	12 Performance degradation (output and heat rate)	
	13 Table showing the expected non-recoverable yearly percent (%) degradation of the net plant output and heat rate	
8.7.2	**Reciprocating Engine Generator (for each Fuel type)**	
	1 Reciprocating engine output versus ambient temperature	
	2 Fuel flow versus engine output	
	3 Heat rate versus engine output	
	4 Heat rate versus ambient temperature	
	5 Correction curve for barometric pressure	
	6 Performance degradation (output and heat rate)	
	7 Correction curves for variation in ULSD and Natural Gas heating value	
	8 Correction curves for variation in humidity	
	9 Table showing the expected non-recoverable yearly percent (%) degradation of the net plant output and/or heat rate	
8.7.3	**Entire Facility (for each Fuel type and technology)**	
	1 Facility net output versus ambient temperature	
	2 Facility net output versus barometric pressure	
	3 Facility net output versus grid frequency	
	4 Facility net output versus power factor	

	Type of the Curve	Data (or page # on which to find the data)
	5 Facility net output versus Fuel heating values	
	6 Facility net Heat Rate versus ambient temperature	
	7 Facility net Heat Rate versus barometric pressure	
	8 Facility net Heat Rate versus grid frequency	
	9 Facility net Heat Rate versus power factor	
	10 Facility net Heat Rate versus Fuel heating values	

8.8 Commercial Operation Tests Procedures

The Bidder shall provide Commercial Operation Test procedures for Facility applicable to the respective technology and for testing on both ULSD and Natural Gas in the case of fossil fuel fired generation.

8.9 Project Summary Data

8.9.1 Type of plant:

Describe technology used, number of Units, ratings, and method to recover heat (if used).

8.9.2 Fuel to be used

GPA will be responsible for supply of Natural Gas when it becomes available. Describe the Fuel supply system for the Units (and other any equipment in the Facility that will use this Fuel) including ULSD Supply Infrastructure, ULSD Storage Facilities and Natural Gas system.

8.9.3 Combustion Turbine, Reciprocating Engine, and Generator Suppliers.

Show model identification, when applicable.

8.9.4 Solar Module, Wind Turbine, Inverter, and Energy Storage System Suppliers and other proven renewable technologies.

Show model identification, when applicable.

8.9.5 Describe Standards Applied to Project Design and Equipment Selection.

All designs, materials, and equipment will conform to the requirements of the codes and standards specified in Section C of this IFB as well as the requirements of applicable Law and Prudent Utility Practices. The codes and standards that follow will be used where applicable to the equipment, material, components, or construction practices. All work described will be designed, constructed, tested and installed in accordance with the latest edition of the following list of codes and standards (To be completed by the Bidders). In order not to create possible duplication or different interpretations, the names and initials of the respective entities must not be translated.

In the event conflicts arise between the codes and standards of practice described herein and codes, laws, rules, decrees, regulations, standards, etc., of the locality where the equipment is to

be installed, the codes and standards of practice described herein will govern. In the event conflicts arise between any of the codes and standards described herein, the more stringent section of the applicable codes will govern. Each of the equipment and designs will comply with one or more of the above codes, but none will necessarily comply with all the listed standards.

8.9.5.1 General design codes
(List)

8.9.5.2 Civil engineering design criteria, standards and codes
(List)

8.9.5.3 Structural engineering design criteria, standards and codes
(List)

8.9.5.4 Mechanical engineering design criteria, standards and codes
(List)

8.9.5.5 Control and electrical engineering design criteria, standards and codes
(List)

8.9.6 Suppliers of Major Equipment

Provide the information requested below for all major equipment suppliers that have been selected for the Project.

Equipment	Supplier's Name
Combustion Turbine Generators, (State Technology)	
Reciprocating Engine Generators (State technology)	
Heat Recovery Steam Generators	
Once Through Steam Generators	
Steam Turbine Generators	
Step-up Transformers	
Control System	
Solar Modules	
Wind Turbines	
Inverters	
Energy Storage Systems	
Other proven renewable generation technologies	

8.9.7 List of Participants.

Check all of the following that have been selected:

Participant	Check if Selected	Name	Status (letter of intent, contract, etc.)
Architect/Engineer			
Environmental Consulting Firm			
Construction Firm			
Operations & Maintenance Contractor			
Other (describe)			
Power Train Subcontractor			
Guam Legal Counsel			
Financial Advisor/Lender			

8.9.8 Additional Data

Attach the following data clearly labeled. Individual data should be numbered to correspond to the question they are addressing; e.g., data submitted in response to Question 8.9.8.1 should be labeled "Form8, Article 8.9.8.1".

1 Describe the equipment suppliers' experience with the specific models that will be used for each major piece of equipment as specified in Paragraph 9.3.

2 Provide a complete heat and material balance diagram and flow sheet. These diagrams should include sufficient detail to allow GPA to verify the accuracy of the representations. Provide the information for full load, sixty five percent (65%) of full load, and minimum load using performance guarantee conditions listed in paragraph 6.5 of Section C in the IFB and assuming the higher heating value (HHV) of the Fuel

3 Provide drawings of the Facility's Site layout and major equipment arrangement. Identify the size of major components and describe areas of key equipment redundancy. Identify the area (m^2) required for the generating station, radiators and/or air coolers (if used), Fuel storage and Fuel handling facilities.

4 Provide any additional technical information that is available (e.g., drawings, specifications, etc.).

5 Provide preliminary generator capability curves and specify the reactive capability and control strategies for the Project. Also describe any voltage or equipment limitation affecting the GPA control center's ability to control the reactive output.

6 Describe the equipment procurement plan. Provide information concerning how commitments to purchase major equipment items relate to the schedules for acquiring permits and financing. Provide information concerning any equipment production space

that has been reserved with suppliers of major components. Note that all equipment must be new.

7 Provide descriptions of the fire protection systems to be used including those within any equipment enclosures, any buildings and all general Site facilities.

8 Provide descriptions of equipment enclosures (including buildings) and what protection against the weather will be provided to major machines during periods of maintenance, especially if no high-bay buildings are to be constructed.

9 Provide a description of the overall control system used for the Project equipment, including all local, centralized and remote controlling including the proposed means to communicate with the GPA control center to follow its instructions.

10 Describe how the Facility will be started, including the expected amount of time to synchronize each unit, starting with the equipment in "cold" and "warm" conditions. State the maximum MVA and MW required from the GPA system to start the Facility.

11 Provide a description of the monitoring and protection systems to be used on major equipment including the prime movers, generators, transformers, substations and interconnection lines. Describe how the protection systems will be coordinated with the corresponding GPA installations.

12 Provide a description of the design of the main and auxiliary equipment cooling, potable and waste waters facilities. Provide a description of the water plan for the project including average, minimum, and maximum water intake and discharge, destination, temperature, quantity and quality of plant discharge water; and individual chemicals used with estimated consumption rates. Describe the treatment and/or disposal of discharge waters resulting from periodic cleaning of the equipment.

13 Describe the proposed methods to dispose of solid wastes and sludge produced by the combustion of fuels as well as normal O&M of the Facility.

14 In the case of PV solar generation, describe the proposed method for panel cleaning.

15 Describe provisions for diminishing the probability of fires and contamination of the environment during the handling and storage of the ULSD and Natural Gas including spill prevention control. Describe the proposed methods to measure the Fuel and its calorific content. All calorific content is to be expressed in HHV.

16 Describe how the auxiliary power will be obtained when plant is disconnected from the 115 kV system.

17 Provide design values for seismic, wind and any other data (Refer to paragraphs 6.4 and 6.5 of Section C).

18 Provide/the following data for new and clean conditions at 100% load:

a) Total combustion turbine or reciprocating engine inlet pressure drop, in H_2O _____

b) Exhaust gas temperature, ◦F _____

19 Describe all material interfaces of Facility.

8.10 Environmental Data

Answer the questions below or attach a detailed environmental impact study that includes answers to at least the following questions:

1 Describe the technology to be used to maintain air emissions and air pollution within the specified guidelines.

~~1~~2 Describe control devices (if applicable), and proposed monitoring systems and procedures.

~~2~~3 Provide information concerning the containment measures planned for the Project's Fuel and hazardous substances handling and storage areas.

~~3~~4 Address the following issues as they relate to design and construction of the Project.

~~4~~5 Describe the proposed timetable to carry out the environmental impact studies and obtain environmental permits, if you are selected as the Selected Bidder. Indicate the scope of the environmental impact studies and the methodology to be used to perform these studies and to present findings and recommendations. State the commitment of the Bidder to carry out all suggestions and recommendations of the studies related to environmental permits, including possible design modifications.

~~5~~6 Threatened and endangered species assessment and mitigation.

~~6~~7 Cultural and archeological impact (natural, national and state landmarks, historical status and other historical landmarks, graveyards, burial ground proximity to nearby parks and other recreational areas).

~~7~~8 Noise impact analysis and mitigation; please describe technology to be employed or actions to be taken to reduce noise. Provide the guaranteed maximum sound levels for the Facility at all of the Facility boundaries and at any Facility interfaces with other entities including residential, industrial and others. Provide the guaranteed sound level for the plant at one meter from the equipment enclosures or exterior walls of the powerhouse(s), which should not exceed 85 dB(A). The measurement shall not include the existing background noise.

~~8~~9 Indicate the height of the proposed exhaust stack(s) for the Facility and indicate reasons for this selection (could include "Prudent Utility Practices", dispersion of pollutants, height of other exhaust stacks in the immediate vicinity, etc.). Why does Bidder feel this height is adequate from an environmental standpoint? Indicate if this height selection could be changed by the environmental impact study and environmental permits requirements.

~~9~~10 Land use impact mitigation techniques, including the effect on nearby inhabited and tourist areas.

~~10~~11 Describe the architectural style, exterior materials and exterior color schemes proposed for all plant buildings. Provide samples of proposed exterior colors.

~~11~~12 Hazardous waste - type generated and disposal.

~~12~~13 Solid waste - type generated and disposal.

8.10.1 Air Emissions

With regard to projected air emissions, please fill out the following table for the Facility when fired with the Fuels specified.

Table 8.1: ULSD Air Emission Levels

Pollutant	Percent Removal Efficiency at 100% Capacity	Emission Quantity		
		At 100% Capacity	At 50% Capacity	At Minimum Capacity
NO_x		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu
		mg/m^3	mg/m^3	mg/m^3
CO		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu
		mg/m^3	mg/m^3	mg/m^3
SO_2		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu
		mg/m^3	mg/m^3	mg/m^3
Particulates		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu
		mg/m^3	mg/m^3	mg/m^3
VOC		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu
		mg/m^3	mg/m^3	mg/m^3

Table 8.2: Natural Gas Ail Emission Levels

Pollutant	Percent Removal Efficiency at 100% Capacity	Emission Quantity		
		At 100% Capacity	At 50% Capacity	At Minimum Capacity
NO_x		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu

Pollutant	Percent Removal Efficiency at 100% Capacity	Emission Quantity		
		At 100% Capacity	At 50% Capacity	At Minimum Capacity
		mg/m³	mg/m³	mg/m³
CO		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu
		mg/m³	mg/m³	mg/m³
SO_2		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu
		mg/m³	mg/m³	mg/m³
Particulates		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu
		mg/m³	mg/m³	mg/m³
VOC		ppmv	ppmv	ppmv
		lb/hr	lb/hr	lb/hr
		lb/MMbtu	lb/MMbtu	lb/MMbtu
		mg/m³	mg/m³	mg/m³

Notes:

1 Capacity is defined as the total gross capacity of one Unit as commissioned.

2 ppmv is defined as volumetric parts per million at 15% O_2.

3 lb/hr is defined as pounds per hour.

4 lb/MMBtu is defined as pounds per Million Btus of heat input.

5 gr/scf is defined as grains per standard cubic foot

Provide total emissions for all air toxics on an aggregate basis, not on an individual basis. Air toxic pollutants are described on the US EPA Web page: http://www.epa.gov/ttn/atw/allabout.html.

8.11 Electric Interconnection Data

8.11.1 Items to Be Provided

1 A detailed single-line diagram from the generators and proposed interconnection to the 115 kV GPA transmission system. Identify the Point(s) of Delivery.

2 Equipment descriptions and functional specifications of:

a) Generators, transformers, switchgear equipment, circuit breakers, etc.

b) Protective relays, current transformers, voltage transformers, etc.

c) Metering System

d) Telecommunication equipment

e) Control and data acquisition system

Any design changes which may affect the interconnection must be reviewed and approved by GPA. This approval does not relieve the Project Company from any contractual responsibility.

8.12 Performance Data

1 Provide a heat rate curve for each Unit in the Facility, assuming that the load will be allocated to each Unit in proportion to its maximum output power level.

2 The Bidder shall also tabulate the heat rates (HHV) corresponding to the percentages of the output power levels stated in Table 8.3 through Table 8.6 below. The Unit heat rate for the purpose of Table 8.3 and Table 8.4 is defined as the Fuel energy consumption expressed in Btu (higher heating value) required to generate one kWh at the generator terminals (Unit gross heat rate). This data is for technical evaluation purposes only and will not be used for economic evaluation.

3 Provide data on the overall performance of the Facility

Table 8.3: Unit ULSD Heat Rates
(Combustion Turbine in Simple Cycle or Reciprocating Engine)

Power Levels - %	Heat Rate (HHV) MBtu/kWh*
100	
85	
65	
50	
25	
10	
Minimum load	

Table 8.4: Unit Natural Gas Heat Rates
(Combustion Turbine in Simple Cycle or Reciprocating Engine)

Power Levels - %	Heat Rate (HHV) MBtu/kWh*
100	
85	
65	
50	
25	
10	
Minimum load	

* Measured at generator terminals.

Table 8.5: Facility ULSD Heat Rates

Power Levels - %	Heat Rate (HHV) MBtu/kWh**
100	
85	
65	
50	
25	
10	
Minimum load	

Table 8.6: Facility Natural Gas Heat Rates

Power Levels - %	Heat Rate (HHV) MBtu/kWh**
100	
85	
65	
50	
25	
10	
Minimum load	

** Measured at the Delivery Point.

Table 8.7: Facility ULSD Performance

Description	Units	Value*
Plant Gross Output	kW	*
Auxiliary Power + Losses	kW	*
Step-up Transformer Losses	kW	*
Total Losses	kW	*
Net Power Output at Delivery Point **	kW	**
Heat Rate (based on HHV)**	Btu/kWh	**
Noise Level **	db(A) @ Facility boundary	**
	Equipment db(A) @ 3 feet	**
Particulate emissions **	ppmv	**
NO_x Emissions for @ 15% O_2 **	ppmv	**
SO_2 Emissions@ 15% O_2 **	ppmv	**
VOC Emissions@ 15% O_2 **	ppmv	**

* The Bidder shall fill-in data.

** The Bidder shall guarantee these values.

Table 8.8: Facility Natural Gas Performance

Description	Units	Value*
Plant Gross Output	kW	*
Auxiliary Power + Losses	kW	*
Step-up Transformer Losses	kW	*
Total Losses	kW	*
Net Power Output at Delivery Point **	kW	**
Heat Rate (based on HHV)**	Btu/kWh	**
Noise Level **	db(A) @ Facility boundary	**
	Equipment db(A) @ 3 feet	**
Particulate emissions **	ppmv	**
NO_x Emissions for @ 15% O_2 **	ppmv	**
SO_2 Emissions@ 15% O_2 **	ppmv	**
VOC Emissions@ 15% O_2 **	ppmv	**

* The Bidder shall fill-in data.

** The Bidder shall guarantee these values.

8.13 Technology and Design Data

8.13.1 Technical Maturity:

Table 8.9: Similar Technology Experience

Quantity (of all that apply)	Criterion
	One or more similar facility(ies) has (have) achieved an annual equivalent availability equal to or greater than 85% over three consecutive years during commercial operation.
	One or more similar facility(ies) is(are) currently in commercial operation.
	One or more similar facility(ies) is(are) under construction.
	None of the above.

For each of the facilities referenced above, fill out a copy of the form below which describes operating history and statistics.

Table 8.10: Similar Technology Experience

Project Name			
Location			
Contact at Plant			
Name			
Phone Number			
Plant Owner			
Name			
Phone Number			
Power Purchaser			
Name			
Phone Number			
*The Project Came On-line in XXXX.			
Year of Operation:	XXXX	XXXX	XXXX
Operational Months that Year:			
Annual Equivalent Availability			

8.14 Operations and Maintenance Data

8.14.1 Operating Characteristics

Table 8.11: Net Generation Levels

Parameter	Value	Units
a) Maximum emergency level: capacity that may be available during system declared emergencies		MW (net)
		hours available
b) Minimum emergency level: used during system declared emergencies		MW (net)
		hours available
c) Net capability: the maximum level that the Facility could be dispatched during normal system conditions		MW (net)
d) Interim operating level: the operating level at which the Facility operates most efficiently (i.e., at the lowest heat rate)		MW (net)
e) Minimum operating level: the minimum level that the Facility could be dispatched during normal system conditions (i.e., the must-run level)		MW (net)

* The Bidder shall fill-in Data.

8.14.2 Operating Parameters

Provide the operating parameters of the Facility measured in minutes in Table 8.12.

Table 8.12: Synchronizing and Load Pick-up Times

Action	Minutes to Achieve Action After Shutdown:		
	Warm Engine	**Cold Engine**	
Reciprocating Engine Generator			
Synchronized (min)	*	*	
Normal Ramp Rate (MW/min)	*	*	
Emergency Ramp Rate (MW/min)	*	*	
Reciprocating Engine Facility at Full Load	*	*	
Combustion Turbine Generator			

	Hot Start	Warm Start	Cold Start
Synchronized (min)	*	*	*
Normal Ramp Rate (MW/min)	*	*	*
Emergency Ramp Rate (MW/min)	*	*	*
Combustion Turbine Facility at Full Load	*	*	*

* The Bidder shall fill-in Data.

1 Describe the Automatic Generation Control capability of the Facility. Describe how the control will allocate the dispatch orders of increasing or decreasing the generation level.

2 Describe quick start capability.

8.14.2.1 Equivalent Hours of Start-up.

One normal start-up is equivalent to _____ hours of operation.

One emergency start-up is equivalent to _____ hours of operation.

One hour of peak load is equivalent to _____ hours of operation.

8.14.3 Maintenance

Table 8.13: Annual Maintenance Outage Schedule Combustion Turbine Generator (ULSD)

Duration (number of days):	
Time of Year (season):	
Cycle (number of operating hours):	

Table 8.14: Annual Maintenance Outage Schedule Combustion Turbine Generator (Natural Gas)

Duration (number of days):	
Time of Year (season):	
Cycle (number of operating hours):	

Table 8.15: Annual Maintenance Outage Schedule Reciprocating Generator (ULSD)

Duration (number of days):	
Time of Year (season):	
Cycle (number of operating hours):	

Table 8.16: Annual Maintenance Outage Schedule Reciprocating Generator (Natural Gas)

Duration (number of days):	
Time of Year (season):	
Cycle (number of operating hours):	

Note: As a requirement of this solicitation, Bidders must agree to schedule maintenance and planned outages with GPA and accommodate any reasonable request for revisions required by GPA.

Table 8.17: Annual Availability of the Facility

Parameters	Value, %
Annual Availability	
Maintenance Outages	
Scheduled Outages	
Forced Outages	
Total:	

8.14.4 Operations and Maintenance Staff and Services

Attach the following data clearly labeled. Individual data should be numbered to correspond to the question they are addressing; e.g., data submitted in response to Question 8.14.4 Item 1 should be labeled "Form 8, Article 14.4.1".

1 Operator's experience with Facility technology - provide number of unit-years of experience with generating facilities of the same or similar technology and size as the Facility.

2 Provide the plan for operational staffing including, but not limited to, the number, type and responsibilities of operations personnel on each shift.

3 Provide plan of maintenance staffing including, but not limited to, the number of permanent on-site maintenance personnel and their responsibilities; the personnel available for emergency maintenance and their response times; and the personnel that will be utilized for minor and major scheduled maintenance. If contracted, specify contractor, location and experience with this type of equipment.

4 Describe briefly the procedure that will be followed for daily, weekly, monthly and yearly maintenance programs.

5 Provide outline plans for initial and ongoing training of all plant and support personnel, including any qualifications programs.

6 Provide a brief description of plans for the purchasing and warehousing of tools, parts and supplies.

7 Provide a major maintenance schedule.

9 FORM 9 – ADDITIONAL SUPPORTING DATA

1 Bidder shall provide the following information for each participant in the Consortium comprising the Bidder.

- Name and address of each member of the Consortium, starting with the designated Lead Bidder.
- Legal status of each member (i.e. corporation, association, individual).
- Country of registration and home office.
- Name of authorized representative for this project and contact information (i.e. address, telephone and Fax numbers, etc.).
- Percentage of equity contribution by each member. If percentage of voting rights is different than the percentage of equity contribution, please also provide details on allocation of voting rights.

2 Provide to the extent possible, the name of organizations and project managers who will provide the services listed below, along with their relevant experience and qualifications. (Any standard printed material may be included as an attachment.)

- Financial advisor/ arranger
- Legal advisors, local and foreign
- Turnkey construction contractor
- Operation and maintenance contractor
- Detailed engineering for Project
- Environmental consultant
- Engineer for the Project Company (Owner's engineer)
- Insurance advisor

3 Provide an outline description of the insurance coverage including company name, to be put into effect by Bidder/Project Company during the Term, including the amounts for which insurance will be purchased and name the potential insurers.

4 Bidder shall provide a listing of the following Project Information:

- A listing of proposed subcontracts for the major elements of the Project; to include subcontractors' name, address, scope of supply or services, and amount of subcontract.

10 FORM 10 – EXCEPTIONS TO THE IFB DOCUMENT

Bidders are advised that any material modification to documents may result in disqualification. If there are no exceptions, please state so for each document.

1 List Exceptions to the IFB

a) Section A – Information for Bidders

b) Section B - Instructions to Bidders

c) Section C - Functional Specifications

d) Section D – Bidder's Proposal Forms and Supportive Data

2 List exceptions to the draft Project Agreements, individually.

a) Exceptions to the Energy Conversion Agreement

b) Exceptions to the Land Lease Agreement

c) Exceptions to the Water Supply Agreement.

11 FORM 11 – BIDDER'S PROJECT SCHEDULE

Bidder shall provide its detailed Bidder's Project Schedule which supports and confirms the construction phase of the Project Milestone Schedule contained in Section A, Article 11, starting from the signing of the ECA.

- Bidder's Project Schedule shall be submitted in a CPM network format which shall address all the milestones in the referenced Article and those additional milestones shown in 11.1 below for financing, engineering, procurement, shipping, construction activities, etc. necessary to demonstrate a complete and accurate knowledge of the Project, as well as his knowledge of procedures and prevailing conditions in Guam.
- The Bidder's Project Schedule shall address all details of the Project financing, engineering, procurement and construction of the Facility, which as a minimum include the following:

11.1 Bidder's Milestone Schedule

By completing the Milestone Schedule below assuming execution of the ECA, WSA and LLA by [], provide a milestone schedule which will result in a Commercial Operation Date on or prior to []. For all milestones specify the day, month and year for commencing and completing the milestone. Any item not applicable to the Project must be so marked with a brief explanation as to why it is not applicable. This list is not intended to be inclusive, but rather to include appropriate milestones to allow GPA to evaluate proposals. It is the Bidder's sole responsibility to identify and complete all the appropriate milestones necessary for the completion of its Project whether included here or not. This includes the identification and acquisition of all necessary permits.

(Bidder to include its CPM Project Schedule as back-up to Milestone Schedule below)

Table 11.1: Milestone Schedule

Milestone	Start Date	Completion Date
Financing		
• Construction & permanent financial closing		
Engineering		
• Preliminary		
• Detailed		
Solicitation & award of proposals for major equipment		
• Equipment procurement		
• Prime Mover(s)		
• Boilers(s) Contract (if applicable)		
• Electrical equipment procurement		
• Cooling equipment procurement		
• _____ (other)		
Permits		
• Local site plan approval		

Milestone	Start Date	Completion Date
• Local building permits		
• Other)		
Environmental permits		
• Air permits		
• Water permits		
• Other environmental permits		
• Solid Waste		
• _____ (Other) (Any other applicable permit(s), not listed above)		
Construction		
On-site construction activities		
• Foundation		
• Electric interconnection		
• Major equipment installation		
• Fuel Receiving Facilities		
• (other)		
Off-site construction activities		
• Electrical Interconnection Facilities		
• ULSD Supply Infrastructure		
Operation		
• Phase 1 Startup and Commissioning		
• Phase 1 Commercial Operation		
• Phase 2 Start-up and Commissioning		
• Phase 2 Commercial Operation		

12 FORM 12 – BIDDER'S STAFFING PLAN

12.1 BIDDER'S PROPOSED HOME OFFICE (OFF-SHORE) ORGANIZATION

The Bidder shall submit a detailed organization chart showing its home office management organization (off-shore) and its interface with the Project Site in Guam (on-shore) organization. This organization chart shall designate the authorized representative(s) and key personnel. Personnel not specifically designated to the Project will be so identified on the organization chart. The chart shall be supplemented by a narrative outline which indicates the duties, the functional responsibilities, and the designated authority of each member of the home office organization. Bidder's key personnel and Bidder's authorized representative(s) shall include but not be limited to the following:

a) Overall Project Management
b) Home Office Manager
c) Responsible Officer/Director
d) Engineering Functions
e) Procurement, Traffic and Vendor Surveillance
f) Construction Management
g) Planning and Scheduling
h) Quality Program Management
i) Accounting
j) Production Manager

12.2 BIDDER'S PROPOSED SITE (ON-SHORE) ORGANIZATION

The Bidder shall submit a detailed organization chart showing its proposed Site (on-shore) organization, which will be responsible for the execution of the Works. All authorized Contractor Representative(s) and Contract Key Personnel shall be so designated on the organization chart. Specifically, the Bidder's organization chart must indicate the key personnel who will be responsible for performing the following functions:

a) Project Management
b) Engineering Functions
c) Procurement of materials; traffic and logistics
d) Supervision of Construction and Construction Management
e) Health and Safety Management
f) Environmental Compliance Management
g) Community Relations Management
h) Planning and Scheduling
i) Accounting and Commercial Functions

This chart shall be supplemented by a narrative outline that indicates the duties, the functional responsibilities and designated authority of each member designated on Bidder's Site organization chart.

13 FORM 13 – RESERVED

14 FORM 14 – RESERVED

ENVELOPE II

15 FORM 15 – PROPOSED PRICE

Bidder warrants that the proposed Price to be inserted in the tables below, is based on the requirements of the IFB, and the specific Price instructions of Article 4 of Section B.

Each Bidder shall complete the schedules and tables in the following pages by providing the required data where applicable. There shall be no changes in format allowed to be made to the schedules and tables by any Bidder.

Table 15.1: Schedule of Commercial Operation Period

Commercial Operation Date[1] (dd/mm/yyyy)	Number of Months[2]	Contracted Facility Capacity[3] for ULSD Operation or Non-Fossil Fuel Fired Facility.	Contracted Facility Capacity[4] for Natural Gas Operation.	Guaranteed Amount of Renewable Energy (GARE)[5]	Renewable Component Degradation Guarantee
	300	_____ MWs	_____ MWs	_____ MWh/yr	____%

Contracted Facility Capacity must be based on the portion of the Facility that is fully dispatchable on a continuous basis.

1 The proposed Date must be the first day of a month.

2 COD must be December 31, 2021 or earlier.

3 Contracted Facility Capacity must be in the range of 120 to180 MW.

4 Contracted Facility Capacity must be in the range of 120 to180 MW.

5 GARE is based on a Typical Meteorological Year (TMY) and will be demonstrated by means of a PVSyst production forecast (in the case of PV solar) or a WindSim production forecast (in the case of wind).

15.1 Proposed Fixed Capacity Charges (FCCs)

Each Bidder shall complete the FCC table below. These values will be used in Equations 4.1 of Section B to calculate the FCCs to be paid by GPA. Once submitted, there shall be no changes allowed to be made to the table by any Bidder. Bidders are free to propose a different FCC for each Contract year in the table below, but in no event shall the FCC vary by more than 10% (+or-) from one Contract Year to another commencing with Contract Year 2 compared to Contract Year 1. Furthermore, the ratio of the Maximum FCC to the Minimum FCC below shall not exceed 1.50.

Table 15.2: Proposed Fixed Capacity Charge

Agreement Period	FCC[1] (US$/kW/Month)
Contract Year 1	
Contract Year 2	
Contract Year 3	
Contract Year 4	
Contract Year 5	
Contract Year 6	
Contract Year 7	
Contract Year 8	
Contract Year 9	
Contract Year 10	
Contract Year 11	
Contract Year 12	
Contract Year 13	
Contract Year 14	
Contract Year 15	
Contract Year 16	
Contract Year 17	
Contract Year 18	
Contract Year 19	
Contract Year 20	
Contract Year 21	
Contract Year 22	
Contract Year 23	
Contract Year 24	
Contract Year 25	

[1] Contract Years are each of 12 months duration, with Contract Year 1 beginning at COD.

15.2 Fixed Operations & Maintenance Charge (FOMC)

Each Bidder shall complete the FOMC table detailed below. These values will be used in Equation 4.2 of Section B to calculate the FOMC to GPA. The FOMC will be adjusted each year based on the inflation Index. Once submitted, changes will not be allowed to be made to the table by any Bidder. For Projects offering Fossil Fuel Fired Component, Price evaluation will be performed based on the FOMC for the Facility operating on ULSD for Contract Years 1 through ? and on Natural Gas for the remainder of the Term.

Table 15.3: Proposed Fixed Operation and Maintenance Charge

Agreement Period	FOMC on ULSD or for Non-Fossil Fuel Fired Facility (US$/kW/Month)	FOMC on Natural Gas (US$/kW/Month)
Commercial Operation Date through end of the Term		

15.3 Variable O&M Charge (VOMC)

Each Bidder shall complete the VOMC as detailed in the table below. These values will be used in Equation 4.3 of Section B to calculate the VOMC to GPA. The VOMC will be adjusted each year based on the inflation Index. Once submitted, changes will not be allowed to be made to the table by any Bidder. For Project offering Fossil Fuel Fired Component Price evaluation will be performed based on the VOMC for the Facility operating on ULSD for Contract Years 1 through 3 and on Natural Gas for the remainder of the Term.

Table 15.4: Proposed Variable O&M Charge

Agreement Period	VOMC on ULSD of for Non-Fossil Fuel Fired Facility (US$/kWh)	VOMC on Natural Gas (US$/kWh)
Commercial Operation Date through end of the Term		

15.4 Fuel Charge (FC)

The Fuel Charge portion of the Price to the Bidder will be calculated at the end of each billing period based on the Guaranteed Heat Rate, adjusted for the billing period ambient temperatures and Fossil Fuel Fired Component loads using Equations 4.4 for ULSD and/or 4.5 of Section B, as applicable, and the values provided in Tables in this Section 15.4 of Envelope II.

For purposes of evaluation, it will be assumed that the Facility operates at the load profile described in Article 15.6.1 below. It will also be assumed that the Facility uses ULSD for Contract Years 1 through 3 and Natural Gas for the remainder of the ECA Term.

Bidders shall provide their proposed Guaranteed Heat Rates for the Commercial Operation Period in this Section 15.4 based on the Higher Heating Value for Fuel at Site Reference Conditions (SRC) at different Facility outputs. These data shall be used for calculation of allowable Fuel consumption.

The Guaranteed Heat Rate shall not be corrected for degradation at any time during the ECA Term. These Guaranteed Heat Rates shall remain effective for the entire Term of the Project. Bidders must

therefore account for heat rate degradation when establishing their proposed Guaranteed Heat Rates. Once submitted, no changes will be allowed to be made to the data in these tables by any Bidder.

Table 15.5: Guaranteed Heat Rates at Site Reference Conditions on ULSD

Percent of Dependable Capacity[1]	Guaranteed Heat Rate (HHV) (Btu/kWh)[2]
100%	A[3]
95%	
90%	
85%	B[3]
80%	
75%	C[3]
70%	
65%	D[3]
60%	
55%	
50%	E[3]
45%	
40%	F[3]
35%	
30%	
25%	G[3]
20%	
15%	
10%	
Minimum Load	

[1] Initial Dependable Capacity must be in the range of 120 MW to 180 MW.

[2] Use linear interpolation when the load values fall between the stated percentages.

[3] This value will be used for tariff evaluation calculations

Table 15.6: Guaranteed Heat Rates at Site Reference Conditions on Natural Gas

Percent of Dependable Capacity[1]	Guaranteed Heat Rate (HHV) (Btu/kWh)[2]
100%	A[3]
95%	
90%	
85%	B[3]
80%	
75%	C[3]
70%	
65%	D[3]
60%	
55%	
50%	E[3]
45%	
40%	F[3]
35%	
30%	
25%	G[3]
20%	
15%	
10%	
Minimum Load	

[1] Dependable Capacity must be in the range of 120 MW to 180 MW.

[2] Use linear interpolation when the load values fall between the stated percentages.

[3] This value will be used for tariff evaluation calculations

Table 15.7: Guaranteed Heat Rate Correction Curve for Air Temperature Variations

Temperature, %F	K_t,%, ULSD	K_t,%, Natural Gas
110		
105		
100		
95		
88.9[1]		
85		
80		
75		
70		
65		
60		

15.5 Supplemental Charges

15.5.1 Startup Charges

The Bidder shall propose in the Tables in this Section 15.5.1 fuel consumption values for startups of the individual Units installed at the Facility under the three different startup conditions. These values will be used to determine the allocation of Fuel cost between the Bidder and GPA depending upon which party is responsible for a particular startup. The Bidders shall provide necessary technical justification for fuel consumption values included this Section 15.5.1. The Bidder shall propose in this Section 15.5.1 costs other than Fuel that are associated with each type of startup, such as incremental major maintenance costs. These values will be used to determine Supplemental Charges owed by GPA for GPA dispatch related startups.

Table 15.8: Fuel Consumption per Unit For Startups

Type od Start	Cold Start		Warm Start		Hot Start	
	ULSD	NG	ULSD	NG	ULSD	NG
Fuel Consumption, MMBTU (HHV)						

Table 15.9: Non-Fuel Supplemental Charge For Startups

Type od Start	Cold Start		Warm Start		Hot Start	
	ULSD	NG	ULSD	NG	ULSD	NG
Non-Fuel Supplemental Charge, US$/start						

[1] Reference Site Condition ambient temperature.

15.5.2 Synchronous Condenser O&M Charges

The Bidder shall propose in the Tables in this Section 15.5.2 O&M charges for synchronous condenser. The O&M charges for operation of synchronous condenser will inblude Synchronous Condenser Fixed Hourly Charge for each hour when syncronous condenser is connected to the grid (SCFHC), and Synchronous Condenser VAR Propduction Charge (SCVARPC) for reactive power produced by the synchronous condenser.

Table 15.10: Syncronous Condenser Fixed Hourly Charge

Agreement Period	SCFHC, USD/hr.
Commercial Operation Date through end of the Term	

Table 15.11: Fixed Hourly Charge

Agreement Period	SCVARPC, USD/VARh.
Commercial Operation Date through end of the Term	

15.6 Levelized Price

15.6.1 Assumptions for Evaluation

1 Inflation Adjusted Indices: For purposes of evaluation, it will be assumed that the annual FOMC and the VOMC charges will remain constant (no index adjustments) for the duration of the ECA Term.

2 Discount Rate: For purposes of evaluation, the discount rate used to calculate the Levelized Price (LP) will be 7% on an annual basis.

3 Price of Fuel: Evaluation will be performed assuming operation on ULSD for Contract Years 1 through 3 and on Natural Gas for the remainder of the ECA Term. For purposes of evaluation, it will be assumed that, for the duration of the ECA, the Fuel Price is:

a) ULSD = US$ [.....] per MMBtu [GPA TO ~~ADVISE ABOUT EXPECTED ULSD PRICE~~PROVIDE S]. Higher Heating Value of 138,490 Btu/gal.

b) LNG = **US$ 7 per MMBtu** all in delivered to the Facility (higher heating value).

4 Land Lease Rent: ~~The land lease rent will be paid a Land Lease Agreement at a cost of **US$ [.....]per calendar year. GPA to advise.**] This costs should be included as part of the FOMC calculation~~GPA will not assess a land lease fee.

5 Taxes and Customs Duties: Bidder should include any and all taxes and customs duties that will apply over the term of the Project as of the Bid Date. Assume that there will be no unplanned changes in taxes and customs duties during the Term.

6 Plant Operating Parameters:

a) *Load Profile:* For purposes of evaluation, the following load profile[1] will be assumed for the Facility:

- 100% load for 25% of the time each year)
- 85% load for 15% of the time each year)
- 65% load for 12% of the time each year)
- 50% load for 10% of the time each year)
- 40% load (10% of the time each year)
- 25% load 8% of the time hours each year)
- 0% load 10% of the time each year)

b) For the purposes of evaluation, annual Fuel consumption will be calculated as follows:

- From the annual electricity output calculated based on the a) above, subtract the Guaranteed Amount of Renewable Energy to calculate the annual electricity output generated by the Fossil Fuel Fired Component
- Distribute the resulting annual electricity output generated by the Fossil Fuel Fired Component according to the dispatch assumptions presented in a).
- For Contract Years 1 through 3 (ULSD operation), used dated from Table 15.5:
  - 100% load (entry A in Table 15.5
  - 85% load (entry B in Table 15.5
  - 65% load (entry C in Table 15.5
  - 50% load (entry D in Table
  - 40% load (entry E in Table 15.5
  - 25% load (entry F in Table 15.5
  - 0% load (entry G in Table 15.5
- For Contract Years 4 through 25 (Natural Gas), use data from Table:
  - 100% load (entry A in Table 15.6
  - 85% load (entry B in Table 15.6
  - 65% load (entry C in Table 15.6
  - 50% load (entry D in Table
  - 40% load (entry E in Table 15.6
  - 25% load (entry F in Table 15.6
  - 0% load (entry G in Table 15.6

7 Heat Rate: For purposes of evaluation, there will be no correction for changes in temperature or barometric pressure compared to the Reference Site Conditions as defined

[1] The load profiles are percentage of the Initial Dependable Capacity as represented in Table 15.5.

in Section C, or for degradation. However, the proposed temperature and load correction curves will be evaluated for reasonableness.

The heat rates proposed at each of the loads at which the Price is being evaluated will be data entry A, B, C, D, E, F, and G as highlighted in Section 15.4 tables.

8 Supplemental Charges: For purposes of evaluation, it will be assumed that there will be [55] starts per Unit per Contract Year in addition to the annual startup allowance specified in Section B, Article 4.5.

For purposes of evaluation it will also be assumed that the syncronous condenser will be connected to the grid for **[7500]** hours and produce ~~[.....]~~ [TBD] VARh per year.

9 In the case of a hybrid plant with both a Fossil Fuel Fired Component and a Renewable Component, the evaluation will assume that GPA will dispatch and purchase a certain amount of Excess Energy each Contract Year. The concept of Excess Energy is derived from the Renewable Component's potential to increase available Facility capacity beyond the Contracted Capacity. In the Bid evaluation model, it will be assumed that the amount of Excess Energy for each Contract Year equals [25%] of the Guaranteed Amount of Renewable Energy for such year. The price of the Excess Energy will be equal to VOMC plus Fuel Charge. The Fuel Charge for Excess Energy will be calculated based on the Guaranteed Heat Rate corresponding to 100% load (entry A from Table 15.5 for Contract Years 1 through 3 and Table 15.6 for Contract Years 4 through 25).

15.6.2 Resulting Price Each Year

Total annual charges for each Price component will be calculated based on the operating parameters outlined above. The sum of all payments will be divided by the total calculated Net Energy Output to determine the average Price charged per kilowatt-hour for the year.

Bidders will submit the results in Table 15.12. These results are unofficial, subject to GPA evaluation and validation.

Table 15.12: Bidder's Price (Unofficial Results)

Agreement Period	Average Price, US$/kWh
Contract Year 1	_____
Contract Year 2	_____
Contract Year 3	_____
Contract Year 4	_____
Contract Year 5	_____
Contract Year 6	_____
Contract Year 7	_____
Contract Year 8	_____
Contract Year 9	_____
Contract Year 10	_____
Contract Year 11	_____
Contract Year 12	_____
Contract Year 13	_____
Contract Year 14	_____
Contract Year 15	_____
Contract Year 16	_____
Contract Year 17	_____
Contract Year 18	_____
Contract Year 19	_____
Contract Year 20	_____
Contract Year 21	_____
Contract Year 22	_____
Contract Year 23	_____
Contract Year 24	_____
Contract Year 25	

15.6.3 Bidder Present Value and Levelized Price Calculations

a) Present Value Calculations

Based upon the components of the Price provided by the Bidder in the tables in Envelope II, the Levelized Price will be calculated using the discount rate specified in paragraph 15.6.1 2 and the following methodology:

The Price in US Dollars per kilowatt-hour will be discounted **annually** to the COD to determine the present value (PV) of the Price payments for the entire Term.

b) Equivalent Levelized Price Calculations

The Net Present Value Calculations will be used to determine the Levelized Price (LP) that would apply over the same period during the ECA Term. The Levelized Price is the one constant price ($/kWh) that if charged throughout the term of the ECA, would yield the same net present values (NPV), using the same discount rate on an annual basis, as the actual proposed price. The LP is calculated by running a PMT function off the NPV over the same period and using the discount rate used in the NPV calculation as the interest rate in the PMT calculation.

Bidders will submit the results of their NPV and LP calculations in Table 15.13. These results are unofficial, subject to GPA evaluation and validation. The evaluation and validation will be based on the Bidder's data submitted in Envelope II.

Table 15.13: Bidder's Present Value (PV) & Levelized Price (LP) Calculations (Unofficial Results)

Present Value	Equivalent Levelized Tariff ($/kWh)
PV = $_____	LP= $_____

15.6.4 Ranking the Price

GPA will rank the LPs. For the Proposal ranking GPA will evaluate and validate the LP scores as follows:

- GPA will rank the Proposal LP scores in a ranked list. This ranking will be from the lowest LP to the highest LP.
- The lowest LP supported by the required financial data will be deemed the best.

[INSERT PROJECT NAME]

ENERGY CONVERSION AGREEMENT

BETWEEN

THE GUAM POWER AUTHORITY
(GPA)

AND

[PROJECT COMPANY]

for a

Gas Dual Fired Power Electric Facility

Located at [Insert Location], Guam

2018

CPINTL: 1223721.16

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ENERGY CONVERSION AGREEMENT

THIS ENERGY CONVERSION AGREEMENT (the "**Agreement**") is entered into as of this _____ day of _____, 2017 **BETWEEN** the Guam Power Authority, a public corporation and an enterprise fund of the Government of Guam established by the Guam Power Authority Act of 1968 (herein referred to as "**GPA**"), with principal offices located at Gloria B. Nelson Public Service Building 688 Route 15 Fadian, Mangilao, Guam, **AND** [Project Company], a [insert legal name and description] (herein referred to as the "**Project Company**"), with principal offices at [insert address].

RECITALS

WHEREAS, pursuant to the Invitation For Bids issued by GPA on [insert applicable date] (as amended or supplemented), the Project Company has been chosen to develop, design, permit, finance, construct, test, commission, complete, own, insure, operate and maintain an electric power plant (the "Facility", as hereinafter defined) on a build, own and transfer basis at [insert location], Guam, to provide electric power capacity and net energy output to GPA;

WHEREAS, under [the Guam Power Authority Act of 1968] GPA is authorized to enter into contracts whereby it will purchase electric capacity and net energy output from third parties in Guam;

[INSERT WHEREAS CLAUSE REGARDING RELEVANT AND UPDATED PUC APPROVAL ORDER/S]

WHEREAS, the Project Company desires to sell electric capacity and net energy output of the Facility to GPA in accordance with the terms and conditions set forth in this Agreement; and

WHEREAS, GPA is agreeable to purchasing such electric capacity and net energy output from the Project Company in accordance with the terms and conditions set forth in this Agreement.

NOW THIS AGREEMENT WITNESSETH as follows:

[Note: Sections of this ECA and other IFB documents which reference Fuel or Fuel related concepts and defined terms such as Heat Rate, Guaranteed Heat Rate, Fuel Charge, etc... are only applicable to Proposals and Facilities that include a Fossil Fuel Fired Component.

ARTICLE 1
DEFINITIONS

Each of the following capitalized terms shall have the meaning set forth below unless a different meaning is expressly attributed to it in the Agreement. All units of measurement used in this Agreement shall conform to the International System of Units (SI).

"**Abandonment**" means a voluntarily cessation by Project Company of the development, construction or operation of the Facility and either (i) the Project Company expressly declares in writing that development, construction or operation of the Facility will not be resumed; or (ii) such cessation continues for 120 consecutive Days, provided that an Abandonment shall not occur if the Project Company is using commercially reasonable and diligent efforts to commence or reinstate development, construction or operation.

"**Actual Heat Rate**" means the Heat Rate expressed in BTU per kWh as determined by Commercial Operation Tests.

"**AGC**" means automatic generation control.

"**Agent**" has the meaning set forth in Article 5.2.

"**Agreement**" or "**ECA**" means this Energy Conversion Agreement, including its Schedules, as amended, supplemented or modified in accordance with the terms and conditions herein.

"**Allowable Outages Energy**" has the meaning set forth in Article 9.3(a).

"**Annual Average Dependable Capacity**" means for the relevant Contract Year, an amount equal to (a) the sum of the multiplication of each Dependable Capacity (including Initial Dependable Capacity) in effect during such Contract Year by the number of hours that each such Dependable Capacity was in effect during such Contract Year, divided by (b) the number of hours in such Contract Year.

"**Average Dependable Capacity**" means, for the period from the Phase 1 Commercial Operation Date to the end of the first Contract Year, an amount equal to (a) the sum of the multiplication of each Dependable Capacity (including the Initial Dependable Capacity) in effect during the period by the number of hours that each such Dependable Capacity was in effect during the period, divided by (b) the number of hours in the period.

"**Bank**" means the Federal Reserve Bank of the United States of America.

"**Bank Rate**" means the prime interest rate of the Bank from time to time.

"**Bid Date**" means [ ].

"Black Start" means the process of restoring an electric power station to operation without relying on the external transmission network.

"**British Thermal Unit**" or "**Btu**" means the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit.

"**Business Day**" means any Day (including partial Days) of the Year on which banks are required to be open for business in Guam.

"**Capacity Charge**" has the meaning set forth in Schedule 5.

"**Capacity Damages**" has the meaning set forth in Article 9.3.

"**Cause**" means, in relation to the issuance, renewal, revocation, amendment or modification of any Government Authorization, any default, neglect or failure by Project Company to abide by any Laws of Guam or any of the terms and conditions of any Government Authorization which entitles the relevant Government Authority to revoke, or refuse to issue or renew, the Government Authorization or make an amendment to its terms and conditions.

"**Change in Law**" means any of the following events occurring as result of any action by any Government Authority:

(a) the adoption, imposition, promulgation, coming into effect, modification or repeal of any Law of Guam that affects the Project or Project Company; or

(b) any change in the manner in which a Law of Guam that affects the Project or Project Company is applied or interpreted; or

(c) the imposition by a Government Authority (other than for Cause) of any material condition or delay in connection with the issuance, renewal, or modification of any Government Authorization,

that establishes or results in requirements that affect or relate to the Project that are materially more or less restrictive or materially more or less costly for Project Company.

"**Commercial Operation Date**" or **"COD"** means, for each of Phase 1 and Phase 2, the earlier of (i) the Day following the Day upon which the Phase is Commissioned; or (ii) the Day following the Day upon which the Phase is deemed Commissioned in accordance with Article 8.

"**Commercial Operation Period**" means, with respect to the Facility, the period of time commencing on the Phase 1 COD and ending on (but including) the last day of the Term.

"**Commercial Operation Tests**" mean the tests specified in Schedule 4 to demonstrate that the standard requirements and the guaranteed values (set out in Schedule 4) are met to achieve the COD with respect to each Phase.

"**Commissioned**" means notification by Project Company, accompanied by a report of the GPA Engineer certifying that the tests for Phase 1 or Phase 2, as the case may be, have been satisfactorily completed in accordance with Schedule 4, and that the Facility meets the relevant characteristics set out in Schedule 1 and Schedule 2, provided that upon receipt of such notice and report the date on which each Phase is Commissioned shall be the date upon which the tests for such Phase (as referred to above) have been satisfactorily completed.

"**Commissioning**" means the process by which a Phase is Commissioned.

"**Connection Agreement**" has the meaning set forth in Article 5.5(i).

"**Construction Contract**" means the agreement/s between Project Company and the Construction Contractor/s for the design, engineering, procurement, construction and Commissioning of the Facility, as amended from time to time.

"**Construction Contractor**" means the construction contractor/s that are party to the Construction Contract.

"**Construction Period**" means the period of time commencing on the Construction Start Date and ending on the Phase 2 Commercial Operation Date.

"**Construction Security**" means the security established in accordance with Article 9.6(d) to secure the Project Company's ability to pay liquidated damages in accordance with Article 9.

"**Construction Start Date**" means the day on which Project Company issues the first Notice to Proceed to a Construction Contractor.

"**Contracted Characteristics**" means the characteristics of the Facility described in Schedule 2.

"**Contracted Facility Capacity**" means the net electric power generating capacity of the Facility guaranteed to be provided to the Delivery Point on a continuous basis, adjusted to Site Reference Conditions as set forth in Schedule 2 and to the Fuel being consumed by the Facility at any given time, if applicable.

"**Contracted Phase 1 Capacity**" means the net electric power generating capacity of Phase 1 guaranteed to be provided to the Delivery Point on a continuous basis, adjusted to Site Reference Conditions as set forth in Schedule 2 and to the Fuel being consumed by the Facility at any given time, if appllicable.

"**Contractors**" means the Construction Contractor and the O&M Contractor.

"**Contract Year**" means a period of twelve (12) consecutive months commencing on each consecutive anniversary of the Phase 1 Commercial Operation Date and ending as of the end of the Day preceding the next anniversary of the Phase 1 Commercial Operation Date, except for the first Contract Year which shall start on the Phase 1 Commercial Operation Date.

"**Day**" means a twenty-four (24) hour period beginning and ending at 12:00 midnight Guam time.

"**Declared Capacity**" means the estimated net capacity of the Facility (adjusted to Site Reference Conditions) announced by Project Company pursuant to Article 10.3.

"**Delivery Point**" means the connection point of the Electrical Interconnection Facilities to the 115 kV bus bar at the Facility's switchyard where GPA receives the Net Energy Output from the Project Company, as to be specified in Schedule 3.

"**Dependable Capacity**" means, at any given time, the net capacity of the Facility (excluding any capacity associated with a Renewable Component) operating on ULSD or Natural Gas if and when applicable, measured in kW (adjusted to Site Reference Conditions), at the Delivery Point of the Facility as determined by the most recent Dependable Capacity Test, provided that for purposes of calculating the Capacity Charge the Dependable Capacity shall not exceed the Contracted Facility Capacity.

"**Dependable Capacity Test**" has the meaning set forth in Schedule 4 and the frequency described in Article 8.2.

"**Dispatch Instruction**" is an instruction issued directly by the PSCC to Project Company in accordance with (i) the dispatch principles and guidelines established by GPA in accordance with the applicable system grid code for the Grid System; (ii) the Operating Procedures; (iii) the Technical Limits; (iv) Prudent Utility Practices; and this Agreement.

"**Dispute**" means any dispute or disagreement of any kind whatsoever between GPA and Project Company in connection with or arising out of this Agreement.

"**Dollars**" or "**USD**" or "**US$**" all mean the lawful currency of the United States of America.

"**Early Transfer Price**" means the applicable price set forth in Schedule 10 for the purchase of the Facility by GPA from Project Company pursuant to Article 5.5(d) or (e), as the case may be.

"**Electrical Interconnection Facilities**" means all of the electrical interconnection facilities and equipment described in Schedule 1 to be constructed by the Project Company and transferred to GPA at the Phase 1 Commercial Operation Date.

"**Emergency**" means a condition or situation that in the reasonable opinion of GPA poses an imminent threat of (a) materially adversely affecting the ability of GPA to maintain safe, adequate and continuous electrical service to its customers, having due regard to the then current standard of electrical energy provided to its customers; or (b) endangering the safety of people, plant, or equipment.

"**Energy Charge**" has the meaning set forth in Schedule 5.

"**Environmental Attributes**" means (a) credits, benefits, reductions, offsets and other beneficial allowances, howsoever named or referred to, with respect to any and all fuel, emissions, air quality, or other environmental characteristics, resulting from the use of Facility generation or the avoidance of the emission of any gas, chemical or other substance into the air, soil or water attributable to the sale of energy generated by the Project during the Term and in which Project Company has property rights or will have property rights upon such attributes coming into existence, and include any of the same arising out of legislation or regulation (i) concerned with (A) oxides of nitrogen, sulfur, or carbon, (B) particulate matter, soot, or mercury, or (C) implementing the United Nations Framework Convention on Climate Change (the "**UNFCCC**") or protocols connected to the UNFCCC or crediting "early action" with a view thereto, and (b) all Environmental Attribute Reporting Rights.

"**Environmental Attribute Reporting Rights**" means the rights to report the ownership of any Environmental Attribute, including those rights accruing under any emissions trading program.

"**Equity Documents**" means any agreements relating to the issuance, subscription, placement or underwriting of Shares or other securities convertible into Shares issued by Project Company and any instruments constituting or evidencing Shares or other securities convertible into Shares issued by Project Company, and any documents or agreements evidencing or relating to indebtedness for money borrowed by Project Company from the Investors or their affiliates which, by its terms, is subordinated to any indebtedness for borrowed money incurred by Project Company under any Financing Document.

"**Excess Energy**" means, for a hybrid Facility, any energy that can be made available by the Facility, for any given hour, in excess of the energy that can be generated by the Facility operating at 100% of Dependable Capacity due to the spare capacity of the Fossil Fuel Fired Component that is available during the periods when the Renewable Component is capable of generating rernewable energy.

"**Excess Energy Output**" means any Excess Energy which is dispatched by the PSCC under a Dispatch Instruction and is subsequently delivered by the Facility to the Delivery Point.

"**Excusable Event**" means events or circumstances constituting a Change in Law or Force Majeure event occurring after the date of this Agreement and prior to Financial Close that prevents Project Company from performing its obligations under this Agreement.

"**Expected Phase 1 Commercial Operation Date**" means [insert applicable date].

"**Facility**" means an electric generating facility with an expected continuously available fully dispatchable capacity of [ ]MW net (when operating on ULSD if the Facility operates on fossil fuel) to be constructed by Project Company at a leased Site in Guam, whether completed or at any stage of development and construction, including, without limitation or regard to the level of development, the leased land, buildings, engineering and design documents, all power producing equipment and auxiliary equipment including Black Start capability, Fuel handling and storage infrastructures, water intakes and discharges, water treatment and pumping facilities, solid waste disposal facilities, main and plant transformers, plant switchgear, and all other installations as described in Schedule 1.

"Facility Transfer" has the meaning set forth in Article 18.1.

"FERC" means the U.S. Federal Energy Regulatory Commission.

"Final Major Overhaul" has the meaning set forth in Article 18.2.

"**Financial Close**" means the date on which all conditions of the Lenders under the Financing Documents have been met or waived (in accordance with the terms thereof), and initial financing disbursements can take place (as certified by the Agent in writing).

"**Financing Documents**" means the loan agreements, notes, bonds, note or bond purchase agreements, participation agreements, indentures, security agreements, hedging agreements, guarantees, shareholder support agreements, the Lenders' Direct Agreements and other documents relating to the construction and permanent financing (including refinancing) of the Facility or any part thereof provided by any Lender, but excluding any Equity Documents.

"**First Fill**" has the meaning set forth in Article 4.3.2.

"**Fixed Operation and Maintenance Charge**" has the meaning set forth in Schedule 5.

"**Force Majeure**" has the meaning set forth in Article 17.

"**Force Majeure Transfer Price**" means the applicable price set forth in Schedule 10 for the purchase of the Facility by GPA from Project Company pursuant to Article 5.5(g).

"**Forced Outage**" means a failure to make available the Dependable Capacity:

(a) that is not the result of a request by GPA in accordance with this Agreement;

(b) that is not the result of a Scheduled Outage or a Maintenance Outage;

(c) that is not the result of an event or occurrence of a Force Majeure;

(d) that is not the result of a condition caused by GPA or by the Grid System provided that such condition would not have nevertheless occurred without the action or inaction of GPA or the condition of the Grid System; or

(f) that does not occur during any period during which the Facility is deemed to provide the Dependable Capacity under Article 8.

"Fossil Fuel Fired Component" means, for a hybrid plant, the part of the Facility which utilizes Reciprocating Engine Generators or Combustion Turbine Generators.

"Fossil Fuel Fired Net Energy Output" means the portion of the Net Energy Output generated by the Fossil Fuel Fired Component and equal, for any time interval, to the Net Energy Output minus Renewable Net Energy Output.

"**Fuel**" means fuel used by the Facility, which will be ULSD (as specified in Schedule 7) or Natural Gas (as specified in Schedule 9).

"**Fuel Delivery Point**" has the meaning set forth in Schedule 1.

"**Fuel Price (FP)**" has the meaning set forth in Schedule 5.

"**Fuel Supply Requirement**" has the meaning set forth in Article 4.3.1(a).

"**Functional Specifications**" or "**Specification**" means the characteristics (adjusted to Site Reference Conditions) for the design, construction and operation of the Facility, as set forth in Schedule 1.

"**Government**" means the Government of Guam [and the Government of the United States, as applicable].

"**Government Authority**" means the Government and/or any national or local governmental authority of Guam with jurisdiction over Project Company, the Project or any part thereof, and/or any department, regulatory, supervisory or competent authority, or political subdivision or instrumentality, agency or judicial body of the Government, or any national or local governmental authority of the Government and/or any person under the direct or indirect control of any of the foregoing.

"**Government Authorizations**" means all formal written permits, licenses, authorizations, consents, decrees, waivers, privileges, approvals and filings required to be obtained from or provided by any Government Authority for the execution, delivery and performance of this Agreement, any other Project Agreement or any Financing Document, including without limitation the design, development, construction, financing, ownership, maintenance and operation of the Facility (and all other activities incidental thereto), as contemplated by this Agreement, the other Project Agreements and the Financing Documents.

"**GPA**" has the meaning set forth in the Preamble hereto.

"**GPA Engineer**" means the engineering company selected by GPA, the costs of whose appointment and retention shall be paid by GPA.

"**GPA Event of Default**" has the meaning set forth in Article 5.3.

"**Grid System**" means the transmission and distribution facilities through which the Net Energy Output may be transmitted and distributed to users.

"**Guaranteed Heat Rate**" or "**GHR**" means the Heat Rate (at the Site Reference Conditions) guaranteed by the Project Company for the Fossil Fuel Fired Component, for Phase 1 and Phase 2, as set forth in the tables included in Schedule 5.

"**Guam**" or "**Territory of Guam**" means that certain unincorporated and organized territory of the United States in Micronesia.

"**Heat Rate**" expressed in Btu per kWh, means the fuel energy consumption expressed in Btu (higher heating value) required to generate one kWh by the Fossil Fuel Fired Component at the high voltage bushings of the main power transformers.

"**ICC Rules**" means the Rules of Arbitration of the International Chamber of Commerce.

"**IFB**" means the invitation for bids issued by GPA on […] and including all updates and amendments thereto between the date of its submission and the date of this Agreement.

"**Independent Engineer**" means a qualified, international, and independent engineering firm selected by Project Company and approved by GPA for purposes of certifying any claim by

Project Company that the Facility should be deemed Commissioned in accordance with Article 8.5.

"**Independent Expert**" has the meaning set forth in Article 18.4.

"**Initial Dependable Capacity**" means, at the Commercial Operation Date for Phase 1 or Phase 2, as the case may be, the capacity set upon successful completion of the Dependable Capacity Test for such Phase and used to establish its respective Commercial Operation Date, which is the maximum capacity adjusted for Site Reference Conditions that the Facility is demonstrated to be capable of delivering continuously at the Delivery Point at that time, in accordance with (and subject to) Article 8.1(d)(iii) and is the capacity to apply until the next Dependable Capacity Test occurs after the Phase 2 Commercial Operation Date.

"**Initial Shareholders**" means [ ].

["**Investor**" means a shareholder of Project Company]

"**Invoice Due Date**" has the meaning set forth in Article 14.4.

"**Joint Coordinating Committee**" is the committee established by Project Company and GPA pursuant to Article 11.

"**kW**" means Kilowatts.

"**kWh**" means Kilowatt-hours.

"**Law**" or "**Laws**" means the laws of Guam and the United States of America.

"**Land Lease Agreement**" or "**LLA**" means the agreement entered into by and between Project Company and GPA whereby Project Company will lease the site on which the Facility shall be built.

"**Lenders**" means the lenders, guarantors, credit providers, multilateral agencies, export credit agencies or other financial institutions or insurers providing (or supporting) the financing or refinancing arrangements for the Project pursuant to the Financing Documents, but not including any Investor or affiliate of an Investor with respect to indebtedness for money borrowed by Project Company from any such Investor or affiliate.

"**Lenders' Direct Agreement**" means the agreement entered into by the Project Company, GPA, and the Lenders and/or their security agent on [ ].

"**Liquidated Damages Due Date**" has the meaning set forth in Article 9.7.

"**Liquidated Damages Notice**" has the meaning set forth in Article 7.

"**Loss**" means any loss, cost, expense damage, liability, payment or obligation (including reasonable legal fees and expenses but excluding any indirect or consequential loss, cost, expense, damage, liability, payment or obligation or any loss of revenue or loss of profit).

"**Maintenance Outage**" means an interruption or reduction of the generating capability of the Facility that:

(a) is not a Scheduled Outage;

(b) has been scheduled in accordance with Article 10.4(f); and

(c) is for the purpose of performing work on specific components of the Facility which work should not, in the reasonable judgment of Project Company, be postponed until the next Scheduled Outage.

"**Major Overhaul**" means the repair and reconditioning of any Unit of the Facility that is conducted in accordance with Article 10.4(g) and Schedule 2.

"Maximum Natural Gas Switch Quantity" has the meaning set forth in Article 8.2(f)

"**Metering System**" means the measurement system capable of interpreting readings of all pertinent parameters required by the invoicing process.

"**Million Btu**" or "**MMBtu**" means 10^6 Btu.

"**Month**" means a month according to the Gregorian Calendar, and "**Monthly**" shall be construed accordingly.

"**MW**" means megawatts.

"**MWh**" means megawatt hours.

"**Natural Gas**" means natural gas meeting the Fuel specifications contained in Schedule 9.

"**Net Energy Output**" means the energy output delivered by the Facility and accepted by GPA during a given period of time measured in kWh by the Metering System at the Delivery Point (including Excess Energy Output).

"NERC" means North American Electric Reliablity Corporation.

"**Notice**" has the meaning set forth in Article 22.

"**Notice of Intent to Terminate**" has the meaning set forth in Article 5.5(a).

"**Notice to Proceed**" means the initial notice to the Construction Contractor to commence engineering, procurement or construction work pursuant to the Construction Contract.

"**O&M Contract**" means any agreement entered into between Project Company and a third party contractor for the operation and maintenance of the Facility.

"**O&M Contractor**" means the party to any O&M Contract which is responsible for the operation and maintenance of the Facility.

"**Operating Procedures**" means the operating procedures developed by the Parties pursuant to Articles 7.4 and 10.2 and in compliance with the applicable system grid code, as such procedures may be modified from time to time in accordance with Article 7.4 and the applicable system grid code.

"**Outage Hours**" means for each month during the Commercial Operation Period, the total number of full load equivalent hours during such month in which Dependable Capacity is reduced due to Forced Outages, Maintenance Outages and Scheduled Outages which shall be calculated as the summation of the duration of each such outage in the month (in hours) multiplied by the

reduction in Dependable Capacity during such outage (in MW) divided by the Dependable Capacity (in MW).

"**Party or Parties**" means GPA and Project Company, either individually or collectively.

"**Period of Testing**" means, with respect to each Phase, the period from initial synchronization of a Unit or Facility to the Commercial Operation Date for such Phase, during which period testing occurs and net power is produced.

"**Phase**" means either Phase 1 or Phase 2, or both, as the context indicates.

"**Phase 1**" means all work as required to put the Simple Cycle Unit in case of a combined cycle Facility or the first 50 to 70 MW of firm base load capacity in case of other technologies into commercial operation.

"**Phase 1 Commercial Operation Date**" means the Commercial Operation Date for Phase 1.

"**Phase 2**" means all work as required to put the entire facility into commercial operation.

"**Phase 2 Commercial Operation Date**" means the Commercial Operation Date for Phase 2.

"**Power System Control Center**" or "**PSCC**" means GPA's main control center located at [ ] or such other control center designated by GPA from time to time (but not more than one center at a time) which shall issue Dispatch Instructions to Project Company.

"**Pre-Existing Site Condition**" means any obstructions on, under, in or affecting the Site or any contamination that could not have been discovered by an experienced international engineering and construction contractor using the most sophisticated devices and personnel available at the time of Site investigation by such contractor but shall not, for the avoidance of doubt, include archaeological discoveries on the Site.

"**Pre-Existing Site Condition Period**" means the period from the date of this Agreement to the date falling 12 months after the issuance of Notice to Proceed under the Construction Contract.

"**Price**" means the price of electricity charged by Project Company to GPA and calculated in accordance with the formulas in Schedule 5.

"**Project**" means the development, design, engineering, financing, refinancing, insurance, procurement, construction, startup, testing, Commissioning, completion, ownership, operation and maintenance of the Facility, all activities incidental thereto, and the Facility itself.

"**Project Agreements**" means collectively, the Energy Conversion Agreement, Land Lease Agreement, O&M Contract (if applicable), Construction Contract, and any other document contract or agreement executed subsequent to the date hereof by Project Company that is relevant to the construction and development of the Project or the ownership or management of Project Company (other than any Financing Document, Equity Document or Government Authorization) or otherwise mutually agreed in writing to constitute a "Project Agreement".

"**Project Company**" has the meaning set forth in the Preamble hereto.

"**Project Company Default Transfer Price**" means the applicable price set forth in Schedule 10 for the purchase of the Facility by GPA from Project Company pursuant to Article 5.5(f).

"**Project Company Event of Default**" has the meaning set forth in Article 5.2.

"**Prolonged Force Majeure**" means a condition in which a Force Majeure event has caused 50% or more of the Contracted Facility Capacity to be unavailable for dispatch for eighteen (18) consecutive months or more and is continuing.

"**Proposal**" means Project Company's written offer and amendments based on the covenants, terms and conditions as contained in the IFB for the development, financing, construction, ownership, operation and transfer of the Project.

"**Proposal Security**" means the security established in accordance with the IFB to secure inter alia, Project Company's obligations as set forth in this Agreement, during the period between the execution of this Agreement and Financial Close.

"**Prudent Utility Practices**" means those practices, methods, techniques and standards, as changed from time to time, that are generally accepted internationally for use in electric utility industries (taking into account conditions in Guam), and commonly used in prudent engineering and operation to design, engineer, construct, test, operate and maintain equipment lawfully, safely and economically as applicable to power stations of the size, service, and type (and operating with the contemplated Fuels) as the Facility.

"**PUC**" means the Public Utilities Commission of Guam.

"**Remedial Actions**" has the meaning set forth in Article 9.2.

"Renewable Component" means, for a hybrid plant, the part of the Facility which utilizes solar or wind power generation technology.

"Renewable Component Degradation Guarantee" means the Bidder's guaranteed rate of degradation for the Renewable Component as provided in Table 15.1 of Section D.

"Renewable Net Energy Output" means the portion of the Net Energy Output generated by the Renewable Component.

"**Required Phase 1 Commercial Operation Date**" means, with respect to Phase 1, the date falling [•] Days from Notice to Proceed, or such later date as may apply in accordance with the provisions of this Agreement.

"**Required Phase 2 Commercial Operation Date**" means, with respect to Phase 2, the date falling [•] Days from Notice to Proceed, or such later date as may apply in accordance with the provisions of this Agreement.

"**Required Financial Closing Date**" means [ ], or such later date as may apply in accordance with the provisions of this Agreement.

"**Scheduled Outage**" is a planned interruption of the generating capability of the Facility that:

(a) is not a Maintenance Outage;

(b) has been scheduled in accordance with Article 10; and

(c) is for inspection, testing, Major Overhauls, preventive and corrective maintenance, repairs, replacement or improvement of the Facility.

"**Security**" means any one or more of the following: the Proposal Security, the Construction Security, or the Transfer Security.

"**Security Package**" consists of:

(a) this Agreement;

(b) the LLA;

(e) the Construction Contract;

(f) the O&M Contract (if applicable);

(g) the Financing Documents;

(i) the bylaws and articles of Project Company;

(j) the Equity Documents;

(k) the insurance policies required to be obtained by Project Company pursuant to Article 15;

(m) the documents creating or evidencing the security for the Lenders (including the Lenders' Direct Agreement);

(n) all Government Authorizations, including a generation license issued in accordance with [ ]; and

(o) any other Project Agreements to which Project Company is party.

"**Shares**" means shares of Project Company with voting or other rights of management and/or control.

"**Simple Cycle Unit**" means the unit of the Facility formed by the combustion turbines and the supplementary equipment for generation of electric power.

"**Site**" means the land on which the Facility is to be installed (defined by the boundaries [Insert site plot designation or coordinates]), and has been leased by GPA to Project Company by means of the LLA.].

"**Site Reference Conditions**" means the physical and meteorological conditions at which the Facility would be operating under hypothetical representative circumstances as defined in Schedule 1.

"**Start**" means the process of starting up a Unit or the Facility until its synchronization, when the corresponding Unit or Facility has been shut down.

"**Supplemental Charge**" means any additional charges agreed by the Parties which are payable by GPA to Project Company as part of the Price payments.

"**Technical Limits**" means the limits and constraints described in Schedule 2 relating to the operation and maintenance of the Facility, and which shall be in accordance with the Functional Specifications.

"**Term**" has the meaning set forth in Article 5.1.

"**Termination Notice**" has the meaning set forth in Article 5.5(b).

"**Testing**" means the process of testing the Facility pursuant to Article 8.

"**Threshold Capacity**" means a Dependable Capacity equal to ninety (90%) per cent of the Contracted Facility Capacity.

"**Transfer Date**" means the date upon which all ownership, custody and control of the Facility shall be transferred from Project Company to GPA, which date shall be the final day of the Term unless mutually agreed otherwise.

"**Transfer Security**" has the meaning set forth in Article 18.4.

"Typical Meteorological Year" or "TMY" – means, for a hybrid or renewable Facility, the set of meteorological conditions relevant to the performance of such Facility's Renewable Component or a renewable Facility, which was provided by the awarded Bidder including any subsequent changes made by GPA.

"ULSD" means means ultra-low sulfur diesel fuel with maximum sulfur content of 15 ppm suitable for firing by diesel engine generators or combustion turbine generators meeting Fuel quality specifications contained in Schedule 7.

"**ULSD Storage Facilities**" has the meaning set forth in Article 4.3.1.

"ULSD Supply Infrastructure" means the existing GPA ULSD bulk storage located near the existing Cabras power station to be modified by the Project Company, as required, and ULSD supply pipeline between the bulk storage and the Site with all its associated systems, equipment, and accessories to be constructed by the Project Company and transferred to GPA on the Phase 1 Commercial Operation Date.

"**Unit**" means an individualgas turbine-gernerator, reciprocating engine-generator, or wind turbine-generator unit.

"**Unit Available Capacity**" means the capacity of each Unit (adjusted to Site Reference Conditions) announced by Project Company pursuant to Article 10.3(e).

"U.S. EPA" means the United States Environmental Protection Agency.

"**Variable Operation and Maintenance Charge**" has the meaning set forth in Schedule 5.

"**Wilful Misconduct**" means an intentional, conscious or reckless default in announcing an accurate Declared Capacity by a director, officer, manager or employee of Project Company exercising apparent authority to announce, or cause to be announced, a Declared Capacity, provided, however, that Wilful Misconduct shall not include any error of judgement or mistake made in good faith in the exercise of any function, authority or discretion arising under or in connection with the performance of this Agreement.

"**Year**" means a calendar year according to the Gregorian calendar beginning at midnight December 31 in Guam.

ARTICLE 2
INTERPRETATION

In this Agreement (including its Schedules), unless otherwise stated:

2.1 Any references to:

(a) any agreement (including this Agreement) or document shall be construed, at any particular time, as including a reference to the relevant agreement or document as it may have been amended, novated, assigned, modified or supplemented in accordance with its terms;

(b) the Preamble, Recitals or a particular Article or Schedule, shall be a reference to the Preamble, Recitals or relevant Article or Schedule in or to this Agreement;

(c) a particular paragraph or sub-paragraph, if contained in an Article or Schedule, shall be a reference to the relevant paragraph or sub-paragraph of that Article or Schedule; and

(d) a Party or any other person includes its successors in title, permitted assigns and permitted transferees.

2.2 Words in the singular may be interpreted as referring to the plural and vice versa.

2.3 A requirement that a payment be made on a Day which is not a Business Day shall be construed as a requirement that the payment be made on the next following Business Day.

2.4 The words "including" and "include" are to be construed as being at all times followed by the words "without limitation", unless the context otherwise requires.

2.5 For the purpose of any calculation under this Agreement, references to any period or periods of an hour or hours shall be rounded up to the nearest 1/10th of an hour.

2.6 The Schedules contained herein form an integral part of this Agreement. In the event of an inconsistency between the body of this Agreement and the Schedules thereto, the provisions of the body shall govern.

2.7 Where reference is made in this Agreement to a period or periods of time the periods in question shall be deemed to end at midnight on the last Day of such period unless otherwise stated.

2.8 Unless otherwise stated, whenever a consent or approval is required by one Party from the other Party, such consent or approval shall not be unreasonably withheld or delayed.

2.9 In carrying out its obligations and duties under this Agreement, each Party shall have an implied obligation of good faith.

2.10 Any capitalized term used but not defined in this Agreement shall have the meaning attributable thereto in the IFB.

2.11 The Parties agree that, should a situation arise where the provisions of Schedule 1 require clarification, then Form [ ] of the Proposal, to the extent relevant, would be used to interpret the provisions of Schedule 1, provided that this process in no event results in the

modification of the Project Company's obligations hereunder or the imposition of obligations additional to those included in this Agreement.

2.12 Any reference to GPA's successors and permitted assigns shall be a reference to such successors and permitted assigns in all of GPA's capacities.

ARTICLE 3
RESERVED

ARTICLE 4
SALE AND PURCHASE OF CAPACITY AND ENERGY

4.1 Energy and Capacity

Subject to and in accordance with the terms and conditions of this Agreement, Project Company agrees to maintain and make available and deliver exclusively to GPA, and GPA agrees to accept and purchase from Project Company, from and after the Phase 1 Commercial Operation Date, for the consideration described in Article 14 and Schedule 5, the entire Dependable Capacity and, subject to Dispatch Instructions, the Net Energy Output of the Facility. GPA further agrees to pay to Project Company all amounts (and adjustments to amounts) described in Article 14.1 in the circumstances contemplated in Article 14.1. [Any Environmental Attributes associated with Dependable Capacity and Net Energy Output shall accrue to GPA's benefit.]

4.2 Sales to Third Parties and Test Energy

4.2.1 No Sales to Third Parties

The Parties agree that Project Company shall not during the Term sell or deliver electric capacity or energy produced by the Facility to any other entity than GPA.

4.2.2 No Payment for Test Energy

Prior to the Phase 1 Commercial Operation Date, GPA shall not pay for energy delivered to GPA during Testing and Commissioning.

4.3 Fuel Supply

4.3.1 Fuel Suppy After COD

(a) Commencing as of the Phase 1 Commercial Operation Date, GPA shall deliver Fuel to Project Company in compliance with the Fuel Specifications for each day of operation, at such times as it may be required by Project Company to satisfy the hourly dispatch requirements to be provided by GPA (the "**Fuel Supply Requirement**"). All Fuel required to be delivered by GPA to Project Company under this Article shall be delivered to the corresponding Fuel Delivery Point and shall be measured at the corresponding Fuel Measurement Point in accordance with the provisions set forth in Schedule 12. Project Company shall be responsible for the installation, operation and maintenance of the Fuel measurement facilities.

(b) Unless Project Company informs GPA otherwise, the Fuel Supply Requirement shall be consistent with the Guaranteed Heat Rate specified in Schedule 2,

adjusted to Site Conditions and expressed in BTUs per kWh. In the event the Expected Operating Heat Rate applicable to any period of operation, is higher than the corresponding Guaranteed Heat Rate, Project Company shall inform the magnitude of the deviation, the likely cause of such deviation and the way this deviation is going to be corrected. Project Company shall use its best efforts to meet the Guaranteed Heat Rate. GPA shall supply the Fuel Supply Requirement even if the Expected Operating Heat Rate is higher than the Guaranteed Heat Rate.

(c) Each Party shall cooperate reasonably with the other Party to coordinate the supply and transportation of Fuel to the Fuel Delivery Point with the operation of the Plant as follows: (x) by providing the other Party such information as the first Party shall reasonably request regarding the supply and transportation of the Fuel to the Fuel Delivery Point (on both an historical and estimated future basis); and (y) by maintaining personnel available at all times to address scheduling of Fuel supply and transportation.

(d) Subject to the foregoing, GPA shall have the right to change the quantities of Fuel nominated and received on a daily basis, or more frequently, to the extent permitted, so long as such changes do not disrupt Project Company's operations.

(e) GPA shall be deemed to be in exclusive control of, and responsible for any damage or personal injury caused by, Fuel up to the Fuel Delivery Point. Project Company shall be deemed to be in exclusive control of, and responsible for any losses of Fuel, and any damages or injury caused by, such Fuel at and from the Fuel Delivery Point. GPA warrants that Fuel caused to be delivered hereunder to Project Company shall be free and clear of all liens or other encumbrances. Title to and risk of loss of all Fuel shall transfer from GPA to Project Company upon delivery to the Fuel Delivery Point.

(f) GPA undertakes that all Fuel delivered at the Fuel Delivery Point shall meet the Fuel Specifications. Project Company shall have the right to reject Fuel which fails to meet the Fuel Specification at the Fuel Delivery Point ("Non-Conforming Fuel") provided that Project Company has made commercially reasonable efforts to receive such Non-Conforming Fuel. If Project Company erroneously rejects Fuel that in fact meets the Fuel Specification, Project Company shall be liable to GPA for all damages caused by said rejection and shall indemnify and hold GPA harmless therefor. If either Party becomes aware that Fuel that is being or will be delivered by GPA to the Project Company fails to meet the Fuel Specification, such Party shall inform the other Party of this fact as soon as possible after becoming aware thereof.

(g) Project Company shall, in accordance with Schedule 1, construct and maintain storage facilities at the Site for the supply of ULSD for the operation of the Facility. Such storage facilities shall be capable of holding an inventory equivalent to the amount of ULSD necessary to operate the Facility at the full Contracted Facility Capacity (in accordance with the Guaranteed Heat Rate) for at least fourteen (14) consecutive Days or such larger quanties as may be required by Lenders.

(h) Project Company shall, in accordance with Schedule 1 finance, design and construct the ULSD Supply Infrastructure and transfer it to GPA at no cost on the

Commercial Opeation Date. GPA will own, operate, and maintain the ULSD Supply Infrastructure during the Term of the ECA.

4.3.2 Fuel Supply During Testing and Commissioning

(a) GPA shall procure and deliver the Fuel required for start-up and commissioning prior to the Phase 1 Commercial Operation Date to the ULSD Bulk Storage pursuant to the specifications in Schedule 7. GPA shall pay for the Fuel required for start-up and commissioning up to a maximum of [ ]MMBtu and Project Company shall pay for any Fuel required and delivered in excess thereof. The Project Company shall be responsible for the operation and maintenance of the ULSD supply infrastructure prior to the Phase 1 Commercial Operation Date and the cost of first fill of ULSD in an amount equal to the Fuel storage requirements in Article 4.3.1 (the "First Fill"). At least eighteen (18) Months prior to the Expected Phase 1 Commercial Operation Date, Project Company and GPA shall agree to a procedure to periodically estimate and forecast the necessary amount of Fuel expected to be required for commissioning and start-up, provided, however, that the final amount of Fuel required shall be set no later than 120 days prior to the Expected Phase 1 Commercial Operation Date.

4.4 Natural Gas Supply

The following is applicable for Natural Gas if and when it becomes available and if and when GPA so elects to supply Natural Gas to the Facility.

4.4.1 Natural Gas Procurement

At any time after the Phase 1 Commercial Operation Date, GPA, in its sole discretion may elect to supply Natural Gas to the Facility and require that the Facility burn Natural Gas. The procedure set forth in Article 8.2(f) and (g) of this Agreement shall apply to the implementation of this election.

4.4.2 Natural Gas Nominations by the Project Company

After receiving the daily Dispatch Instructions, the Project Company shall provide to GPA the Natural Gas daily nominations as required by the Project Company to satisfy the Dispatch Instructions. The detailed procedure for daily nominations and for renominations shall be determined by the Joint Coordinating Committee.

4.5 Fuel Cost Allocation

When GPA receives bills for Fuel supply and transportation for the Facility, GPA shall send a copy to the Project Company. Once received by the Project Company, the Joint Coordinating Committee shall meet to distribute the cost between the Parties. The Project Company shall be responsible for the cost of any Fuel consumed in excess of the quantity of Fuel that should have been required to produce the applicable amount of Net Energy Output had the Facility operated in compliance with the Guaranteed Heat Rate as adjusted to the operating parameters provided in the applicable Dispatch Instructions. In the event that, in any given hour or portion thereof, the Facility is unavailable to operate at 100% load due to a reason other than the fault of GPA and does not occur during a Scheduled Outage or Maintenance Outage or occurs during a Scheduled Outage or Maintenance Outage after the Facility has exceeded its Allowable Outages Energy for the applicable Contract Year pursuant to Article 9.3, then the Guaranteed Heat Rate used to

calculate the Fuel cost allocation shall be the Guaranteed Heat Rate applicable to the load at which the Facility would have been dispatched had the Facility been available to operate at 100% load.

4.6 Set-off for Fuel Costs

Any amounts owed to GPA by the Project Company with respect to Fuel, if any, shall be deducted from the monthly invoice as set forth in Article 14.

4.7 Non-conforming Fuel

(a) If Fuel supplied by GPA fails to conform to the specifications set out in Schedule 7 or Schedule 9 as the case may be ("Non-Conforming Fuel"), Project Company may send a Notice to GPA notifying that Project Company has received Non-Conforming Fuel.

(b) GPA shall, promptly upon becoming aware of such delivery or promptly upon receipt of the Notice from Project Company referred to in paragraph (a) above, send a Notice to Project Company stating, to the extent known to GPA, the period during which the Non-Conforming Fuel was delivered, the quantity thereof and how its specifications vary from the ones set out in Schedule 7 or Schedule 9, as the case may be.

(c) If, after exercising commercially reasonable efforts to receive the Non-Conforming Fuel, Project Company determines that it is unable to accept, or operate the Facility, on such Non-Conforming Fuel, then it shall be under no obligation to accept such fuel. In the event that the Dependable Capacity would otherwise be available but for the delivery of Non-Conforming Fuel, then GPA shall remain obligated to pay the Capacity Charge.

ARTICLE 5
TERM, DEFAULTS AND REMEDIES

5.1 Term of Agreement

(a) Except for the provisions of Article 1, 2, 5, 6.6, 7, 11, 16, 17, 19, 20, 22, 23, and 23 (which shall commence and be effective upon the date of signature of this Agreement), the term of this Agreement ("**Term**") shall commence and be effective upon Financial Close (provided that this Agreement shall be effective upon satisfaction or waiver of all conditions precedent other than the condition to achieve Financial Close if the only condition precedent to Financial Close that is not satisfied or waived is that any or all of this Agreement or other Project Agreement is not in full force and effect because Financial Close has not occurred) and shall terminate twenty five (25) Contract Years after the Phase 1 Commercial Operation Date, unless extended or earlier terminated pursuant to the provisions of this Agreement. The termination of this Agreement shall be without prejudice to all rights and obligations of the Parties accrued under this Agreement prior to the date of such termination.

(b) On or before the end of the twenty-first (21st) Contract Year the Parties shall meet to discuss whether the Term of this Agreement shall be extended. To the extent the Parties agree to extend the Term, then the terms and conditions of this Agreement shall be negotiated and mutually agreed by the Parties, as required and

appropriate. To the extent this Agreement is not extended, then this Agreement shall terminate in accordance with its terms and conditions, and the Parties shall commence the implementation of the Facility Transfer procedures set forth in Article 18.

5.2 Project Company Events of Default

The Project Company shall be in default under this Agreement upon the occurrence of any of the following events set forth in subsections (a) to (r) below (each an "**Project Company Event of Default**"); provided, however, that none of such events shall constitute a Project Company Event of Default if such event (a) results from a breach or default by GPA under this Agreement or the LLA or (b) occurs as a result of or during a Force Majeure pursuant to Article 17.

Subject to the provison in the preceding sentence, the following are Project Company Events of Default:

(a) the failure of Project Company to achieve Financial Close by the Required Financial Closing Date [due to the failure of the Project Company, in the reasonable opinion of GPA, to use commercially reasonable efforts to do so];

(b) the failure of Project Company to issue Notice to Proceed to the Construction Contractor within two (2) Business Days after Financial Close;

(c) prior to the achievement of the Phase 1 Commercial Operation Date, an Abandonment occurs without GPA's prior written consent and continues for a period of thirty (30) consecutive Days from the receipt of a Notice from GPA;

(d) the failure of Project Company to achieve the Phase 1 Commercial Operation Date within a period of one hundered and twenty (120 Days) after the Required Phase 1 Commercial Operation Date;

(e) the failure of the Project Company to achieve the Phase 2 Commercial Operation Date within one hundred and twenty (120) Days after the Required Phase 2 Commercial Operation Date;

(f) the failure of Project Company to submit the Construction Security on or before Financial Close;

(g) the failure of the Project Company to establish and maintain any Security in accordance with the terms of this Agreement; after the Phase 1 Commercial Operation Date, an Abandonment occurs without the prior written consent of GPA and continues for a period of fifteen (15) consecutive Days from receipt of a Notice from GPA;

(h) the failure of the Facility to achieve the Threshold Capacity upon completion of the Phase 2 Commercial Operation Tests under Article 8.1 or, (ii) after the Phase 2 Commercial Operation Date, the failure of the Facility to (A) achieve a Dependable Capacity level equal to eighty-five (85%) per cent of the Initial Dependable Capacity after any Dependable Capacity Test and (B) achieve such level of Dependable Capacity after a later Dependable Capacity Test or otherwise make available to GPA such level of capacity, in each case no later than six (6) Months after the test mentioned in (A) above, provided that, in the

case of a failure of equipment where the Project Company can demonstrate that replacement equipment has been ordered, or that a repair has been undertaken, as soon as reasonably practicable after the failure (taking into account the amount of time required to determine whether a repair can be achieved), but in any event no later than the end of such 6 Month period, such period shall be extended for as long as Project Company is awaiting delivery of such equipment or is otherwise diligently pursuing a cure of the cause of the failure, up to a maximum of fifteen (15) Months;

(i) should the Facility experience more than 285 Outage Hours in each month for a period of six (6) consecutive Months, provided that, in the case of a failure of equipment where the Project Company can demonstrate that replacement equipment has been ordered, or that a repair has been undertaken, as soon as reasonably practicable after the failure (taking into account the amount of time required to determine whether a repair can be achieved), but in any event no later than the end of such six (6) Month period, such period shall be extended for as long as the Project Company is awaiting delivery of such equipment or is otherwise diligently pursuing a cure of the Forced Outage, up to a maximum of fifteen (15) Months;

(j) Project Company's failure to operate, maintain, modify, or repair the Facility in accordance with Prudent Utility Practices and applicable environmental Laws, such that safety of persons and property (including the Facility) is materially adversely affected, and such failure shall continue unremedied for a period of thirty (30) Days after Notice from GPA, provided that where Project Company has implemented a remedial plan approved by GPA, such failure shall continue unremedied for a period of ninety (90) Days after Notice from GPA;

(k) the occurrence of any of the following events: (i) the passing of a resolution by the Investors for voluntary liquidation (or other similar relief) of Project Company; (ii) the appointment of a liquidator by Project Company or by the Controller of Companies for liquidation of Project Company; (iii) submission of an application to a court of competent jurisdiction for mandatory liquidation of Project Company which application is not dismissed within ninety (90) Days, (iv) the issuance of a final and conclusive order by a court of competent jurisdiction for liquidation or winding up of Project Company; or (v) except as otherwise permitted under and pursuant to the Financing Documents or the Project Agreements, the transfer, conveyance, loss or relinquishment to any person of Project Company's right to own and/or operate the Facility or any material part thereof or to occupy the Site without the prior written approval of GPA;

(l) any statement, representation or warranty by Project Company in this Agreement proves to have been incorrect, in any material respect, when made and such failure or incorrect statement, representation, or warranty has a material and adverse effect on Project Company's ability to perform its obligations under this Agreement;

(m) the failure of Project Company to make any payment or payments required to be made by it hereunder (other than payments disputed by Project Company in good faith and by Notice to GPA) within thirty (15) Days of the due date for such payment;

(n) any material breach by Project Company of this Agreement (other than any such breach referred to elsewhere in this Article 5.2), that is not remedied within sixty (60) Days after Notice from GPA to Project Company (which Notice shall (i) state that a material breach of this Agreement has occurred that could result in the termination of the Agreement; (ii) identify the material breach in question in reasonable detail; and (iii) demand remedy thereof);

(o) the occurrence of a Project Company Event of Default under any project agreement (as such term is defined in each of such agreements respectively), which is not cured within the applicable cure period (if any) provided for therein;

(p) Project Company makes an assignment of this Agreement or transfers or creates a lien on the Project in violation of Article 21.2;

(q) The failure of Project Company to obtain or maintain the Governmental Authorizations which is not remedied within ninety (90) Days after Notice from GPA;

(r) Except as otherwise provided in this Article 5.2, Project Company shall fail to comply with any of its other obligations under this Agreement and such failure has a material adverse effect upon GPA, and such failure shall continue uncured for sixty (60) Days after notice thereof by Company, provided that if such failure is not capable of being cured within such period of sixty (60) Days with the exercise of commercially reasonable efforts, then such cure period shall be extended for an additional reasonable period of time (not to exceed one-hundred-twenty (120) Days) so long as Project Company is exercising commercially reasonable efforts to cure such failure;

GPA shall deliver to the Lenders' agent ("**Agent**") (in accordance with the Lenders' Direct Agreement) a copy of any Notice given under this Article 5.2.

5.3 GPA Events of Default

GPA shall be in default under this Agreement upon the occurrence of any of the following events set forth in subsections (a) to (e) (each a "**GPA Event of Default**"); provided, however, that none of such events will constitute a GPA Event of Default if such event (i) results from a breach or default by Project Company under this Agreement or the LLA, or (ii) occurs as a result of a Force Majeure pursuant to Article 17. Subject to the proviso in the preceding sentence, the following are GPA Events of Default:

(a) the submission for voluntary liquidation (or other similar relief) of GPA by GPA or any Government Entity with the authorization to make such submission, the appointment of a liquidator by GPA [or the Public Utilities Commission], the submission of an application to a court of competent jurisdiction for mandatory liquidation of GPA which application is not dismissed within ninety (90) Days, or the issuance of a final and conclusive order by a court of competent jurisdiction for liquidation or winding up of GPA;

(b) any default or defaults by GPA in the making of any payment or payments (other than payments disputed by GPA in good faith and by Notice to Project Company) required to be made by it within thirty (30) Days of the due date for such payment;

(c) any material breach by GPA of this Agreement (other than any such breach referred to elsewhere in this Article 5.3) that is not remedied within sixty (60) Days after Notice from the Project Company to GPA (which Notice shall (i) state that a material breach of this Agreement has occurred that could result in the termination of this Agreement, (ii) identify the material breach in reasonable detail and (iii) demand remedy thereof);

(d) any statement, representation, or warranty made by GPA in this Agreement proves to have been incorrect in any material respect when made and such failure or incorrect statement, representation, or warranty has a material and adverse effect on GPA's ability to perform its obligations under this Agreement; or

(e) the occurrence of a GPA Event of Default under the LLA (as such term is defined therein) which is not cured within the applicable cure period (if any) provided for therein.

The Project Company shall deliver to the Agent a copy of any Notice given under this Article 5.3.

5.4 GPA Early Termination and Termination for Prolonged Force Majeure

(a) GPA shall have the right to terminate this Agreement for convenience at any time subject to the terms and procedures set forth in Article 5.5(e).

(b) GPA shall have the right to terminate this Agreement during a Prolonged Force Majeure, subject to the terms and procedures set forth in Article 5.5(g), unless the Project Company is exercising its [best efforts] to resolve the impact of the underlying Force Majeure event on the Project's performance and that such resolution is reasonably expected to occur within three (3) months and result in the Facility operating, on a continuing basis, with an annual availability of 90% or more.

5.5 Termination Notices and Rights

(a) Upon the occurrence of a GPA Event of Default or a Project Company Event of Default, as the case may be, the non-defaulting Party may, subject to the Lenders' Direct Agreement at its option, initiate termination of this Agreement by delivering a Notice (a "**Notice of Intent to Terminate**") of its intent to terminate this Agreement to the defaulting Party and the Agent. The Notice of Intent to Terminate shall specify in reasonable detail the Project Company Event of Default or the GPA Event of Default, as the case may be, giving rise to such Notice.

(b) Following the delivery of a Notice of Intent to Terminate, the Parties shall consult for a period of up to forty-five (45) Days in the case of a failure by either Party to make payments when due, and up to sixty (60) Days with respect to any other Event of Default (or such longer period as the Parties may mutually agree), as to what steps shall be taken with a view to mitigating the consequences of the relevant Event of Default taking into account all the circumstances. During the period following the delivery of the Notice of Intent to Terminate, the Party in default may continue to undertake efforts to cure the Event of Default, and if the Event of Default is cured at any time prior to the delivery of a Termination Notice

in accordance with Article 5.5(b) then the non-defaulting Party shall have no right to terminate this Agreement in respect of such cured Event of Default.

(c) Upon expiration of the consultation period described in Article 5.5(a) and unless the Parties shall have otherwise agreed or unless the Event of Default giving rise to the Notice of Intent to Terminate shall have been remedied, the Party having given the Notice of Intent to Terminate may, subject to the Lenders' Direct Agreement and the conditions set forth in sub-sections (d)-(h) below, terminate this Agreement by delivery of a Notice (a "**Termination Notice**") to the other Party and the Agent, whereupon, subject to the Lenders' Direct Agreement, this Agreement shall immediately terminate.

(d) In the event of a termination by Project Company due to a GPA Event of Default, GPA shall have the right, but not the obligation, to acquire the Facility from Project Company for the applicable Early Transfer Price set forth in Schedule 10. In order to exercise such right, GPA shall provide Project Company with Notice of its election to acquire the Facility within sixty (60) Days of receiving the applicable Notice of Intent to Terminate from Project Company, after which the Parties will commence working together diligently and in good faith to effect such transfer within forty-five (45) Days or as soon as practicable thereafter.

(e) In the event of an early termination by GPA for convenience pursuant to Article 5.4, GPA shall be required to acquire the Facility from Project Company for the applicable Early Transfer Price set forth in Schedule 10. The Parties shall work together diligently and in good faith to effect such transfer within forty-five (45) Days of Project Company's receipt of GPA's early termination Notice or as soon as practicable thereafter.

(f) In the event of a termination by GPA due to a Project Company Event of Default, GPA shall have the right, but not the obligation, to acquire the Facility from Project Company for the applicable Project Company Default Transfer Price set forth in Schedule 10. In order to exercise such right, GPA shall provide Project Company with Notice of its election to acquire the Facility within sixty (60) Days of the date Project Company received the Notice of Intent to Terminate from GPA, after which the Parties shall commence working together diligently and in good faith to effect such transfer within forty-five (45) Days or as soon as practicable thereafter.

(g) In the event of a termination by GPA due to a Prolonged Force Majeure pursuant to Article 5.4, GPA shall have the right, but not the obligation, to acquire the Facility from Project Company for the applicable FM Transfer Price set forth in Schedule 10. In order to exercise such right, GPA shall provide Project Company with Notice of its election to acquire the Facility within sixty (60) Days of the date Project Company receives the applicable Notice of Intent to Terminate from GPA, after which the Parties will commence working together diligently and in good faith to effect such transfer within ninety 90 days or as soon as practicable thereafter.

(h) Any transfer contemplated in sub-sections (d)-(g) above shall be free and clear of all liens or other encumbrances and shall include all right, title and interest in and to the Facility including all fixtures, fittings, plant and equipment (including all test equipment, special tools, as-built drawings, software, documents, reports,

analyses, all relevant files, plant procedures and forms as reasonably required and necessary for GPA to effectively operate the Facility after the transfer) and all improvements comprising the Facility.

(i) In the event of a termination resulting in Project Company (or any successor thereof) continuing to be the owner of the Facility, the Parties shall enter into a connection agreement (the "Connection Agreement") whereby the Project Company shall be granted the exclusive rights to use the Electrical Interconnection Facilities and to provide Facility capacity and inject Facility energy to the Grid System at the Delivery Point as if this Agreement had not been terminated; provided that the Connection Agreement shall (i) be compliant with the applicable system grid code, (ii) have a term that is equal to or greater than the remaining term of this Agreement immediately prior to its termination, and (iii) obligate GPA to operate and maintain the Electrical Interconnection Facilities in accordance with the applicable system grid code and Prudent Utility Practices for a reasonable and customary annual fee limited to the amount necessary to cover the reasonable costs of such operation and maintenance.

5.6 Other Remedies

(a) Subject to Article 5 and subject to the proviso of this Article i, the exercise of the right of a Party to terminate this Agreement, as provided herein, does not preclude such Party from exercising other remedies that are provided herein or available at law, provided that, notwithstanding the above:

i. no Party may terminate this Agreement other than in accordance with the express terms of this Agreement;

ii. the termination rights, rights to liquidated damages and right to draw under the Construction Security as expressly set out in this Agreement shall be the sole and exclusive remedies available to GPA against Project Company or the Project for any delay in Commissioning or failure of the Facility to be available or to meet the Dependable Capacity and/or outage requirements set out in this Agreement; and

iii. The termination right and right to draw under the Proposal Security shall be the sole and exlcusive remedies available to GPA against Project Company for failure to achieve Financial Close by the Required Financial Closing Date.

(b) Subject to Article 5 and paragraph (a) above, remedies are cumulative, and the exercise of, or failure to exercise, one or more of them by a Party shall not limit or preclude the exercise of, or constitute a waiver of, other remedies by such Party.

ARTICLE 6
COVENANTS, REPRESENTATIONS AND WARRANTIES

6.1 Project Company Covenants

The Project Company hereby covenants and agrees with GPA to:

(a) Develop, design, permit, engineer, finance, construct and complete the Facility in a good and workmanlike manner, only with materials and equipment that are

new and of international utility-grade quality, and in all material respects in accordance with:

i. the Functional Specifications set forth in Schedule 1;

ii. the plans and specifications prepared in accordance with this Agreement;

iii. the Technical Limits set forth in Schedule 2;

iv. the EPA requirements;

v. all applicable Laws and the Government Authorizations;

vi. Prudent Utility Practices; and

vii. FERC and NERC requirements.

(b) Design, engineer, construct and complete the Facility in such a manner as to provide, with proper maintenance and operation, that the useful life of the Facility will be at least equal to 30 years;

(c) After the Phase 1 Commercial Operation Date, operate and maintain the Facility in all material respects, in accordance with:

i. the operating procedures developed pursuant to Article 7.4 and the Dispatch Instructions;

ii. the Technical Limits set forth in Schedule 2;

iii. the Guam and U.S. EPA requirements;

iv. all applicable Laws and the Government Authorizations; and

v. Prudent Utility Practices.

(d) Use all reasonable efforts to procure and maintain all Government Authorizations necessary for its performance under this Agreement;

(e) Engage only such advisors, representatives and experts as are experienced in the development, engineering, construction, financing, operation and maintenance of power stations similar to the Facility;

(f) Provide at its own risk and expense the necessary facilities and services for the safety, comfort and protection of its personnel;

(g) Work and cooperate in good faith with GPA with respect to all of GPA's obligations and rights hereunder.

6.2 GPA Covenants

GPA hereby covenants and agrees with Project Company to:

(a) Work with and cooperate in good faith with Project Company with respect to all of Project Company's obligations and rights hereunder;

(b) [Upon request by Project Company, GPA shall use its reasonable efforts to support Project Company in obtaining the Government Authorizations required by the provisions of Article 7.]

6.3 The Project Company Representations and Warranties

The Project Company hereby represents and warrants at the date of this Agreement that:

(a) The Project Company is a company duly organised, validly existing and in good standing under the Laws of Guam, and Project Company has all requisite corporate power and authority to conduct its business, to own its properties, and to execute, deliver, and perform its obligations under this Agreement;

(b) The execution, delivery and performance by Project Company of this Agreement have been duly authorised by all necessary corporate action on the part of Project Company, and do not and will not:

i. require any consent or approval of Project Company's Board of Directors, shareholders or partners other than those which have been obtained (evidence of which consents and approvals shall be, if it has not heretofore been, delivered to GPA upon its request), or

ii. violate or result in a breach of, or constitute a default under any provisions of Project Company's articles and memorandum of association or bylaws or other organic documents, or any material indenture, contract, or agreement to which it is a party or by which it or its properties may be bound, or any material law, rule, regulation, order, writ, judgment, injunction, decree, determination, or award presently in effect applicable to Project Company.

(c) To the best of Project Company's knowledge, no Government Authorization or approval by any other Government Authority is necessary for the due execution, delivery and performance by Project Company of this Agreement;

(d) This Agreement is a legal, valid and binding obligation of Project Company, enforceable against Project Company in accordance with its terms; and

(e) There is no pending or, to the best of Project Company's knowledge, threatened action or proceeding against Project Company before any court, Government Authority or arbitrator that could materially and adversely affect the financial condition or operation of Project Company or the ability of Project Company to perform its obligations hereunder, or that could affect the legality, validity or enforceability of this Agreement (as in effect on the date hereof).

6.4 GPA Representations and Warranties

GPA hereby represents and warrants at the date of this Agreement that:

(a) GPA is a public corporation and an enterprise fund of the Government of Guam established by the Guam Power Authority Act of 1968, duly organised, validly

existing and in good standing under the Laws of Guam and has all requisite corporate power and authority to conduct its business, to own its properties, and to execute, deliver, and perform its obligations under this Agreement.

(b) The execution, delivery and performance by GPA of this Agreement have been duly authorised by all necessary corporate or Government action, and do not and will not:

i. require any consent or approval of GPA's Board of Directors, shareholders, officers, or officials other than those which have been obtained (evidence of which consents and approvals shall be, if it has not heretofore been, delivered to the Project Company upon its request);

ii. violate or result in a breach or constitute a default under any provisions of GPA's articles and memorandum of association or bylaws, or other organic documents, or any material indenture, contract, or agreement to which it is a party or by which it or its properties may be bound, or any material law, rule, regulation, order, writ, judgment, injunction, decree, determination, or award presently in effect applicable to GPA.

(c) To the best of GPA's knowledge, no Government Authorization or approval by any other Government Authority is necessary for the due execution, delivery and performance by GPA of this Agreement other than [ ].

(d) This Agreement is a legal, valid and binding obligation of GPA, enforceable against GPA in accordance with its terms.

(e) There is no pending or, to the best of GPA's knowledge, [threatened action or proceeding against GPA before any court], Government Authority, or arbitrator that could materially and adversely affect the financial condition or operation of GPA or the ability of GPA to perform its obligations hereunder, or that could affect the legality, validity or enforceability of this Agreement (as in effect on the date hereof).

6.5 Not used.

6.6 Pre-Existing Site Condition

(a) If a Pre-Existing Site Condition is discovered during the Pre-Existing Site Condition Period, Project Company will notify GPA within fourteen (14) Days of such discovery (or, if later, the date when Project Company is informed of such discovery).

(b) Following a notification under paragraph (a) above, Project Company will promptly submit to GPA a remediation plan and a proposal for the cost of any remedial action required to remove such Pre-Existing Site Condition. Within thirty (30) Days of receipt of such plan and proposal, GPA will either (i) approve the remediation plan and proposal or (ii) not approve the remediation plan and proposal (setting out in reasonable detail the reasons therefore).

(c) In the event that GPA does not approve the remediation plan and proposal proposed by Project Company, GPA and Project Company shall discuss in good faith to attempt to agree such plan and proposal for a period of thirty (30) Days.

In the event of a failure to agree such plan and proposal within such thirty (30) Days, GPA shall carry out, or shall appoint a third party to carry out, the remediation work and Project Company shall grant access to the Site to GPA or such third party for this purpose, provided that the remediation work shall be carried out on a timely basis and in a manner that does not interfere with the activities of Project Company and its Contractors and that all persons present on the Site on behalf of GPA or the third party appointed by it to carry out the remediation work will comply with Project Company or its Contractors' safety rules.

(d) GPA may not unreasonably withhold or delay its consent in relation to any remediation plan and proposal delivered by Project Company pursuant to this Article 6.6 and failure by GPA to respond to any remediation plan and proposal within fifteen (15) Days of receipt of such proposal shall be deemed to constitute GPA's consent to such remediation plan and proposal.

(e) Following any remediation plan and proposal being agreed (or being deemed to have been agreed) by Project Company and GPA:

i. Project Company shall be responsible for the first three hundred thousand Dollars (US$300,000) (in aggregate) of remediation costs resulting from the discovery of Pre-Existing Site Condition(s) during the Pre-Existing Site Condition Period; and

ii. GPA shall be responsible for all remediation costs resulting from the discovery of Pre-Existing Site Condition(s) during the Pre-Existing Site Condition Period in excess of the first three hundred thousand Dollars (US$300,000) of costs (in aggregate) to be met by Project Company and GPA shall pay such costs to Project Company within thirty (30) Days of receipt of an invoice from Project Company in respect of such costs.

(f) Late payment of any invoice delivered by Project Company under this Clause shall accrue interest in accordance with Clause 14.4 (Late Payment). Project Company shall not be in default or breach of any of its obligations under this Agreement where directly attributable to a Pre-Existing Site Condition.

ARTICLE 7
PRE-OPERATIONAL PERIOD

7.1 Permits, Licenses and Approvals

Prior to the Phase 2 Commercial Operation Date, Project Company shall, at its own expense, obtain and maintain all Government Authorizations or any other permit, license, approval or authorization required to be obtained and maintained by Project Company as and when required to comply with its obligations under this Agreement, including reaching Financial Close by the Required Financial Closing Date, achieving the Phase 1 Commercial Operation Date by the Required Phase 1 Commercial Operation Date, and achieving the Phase 2 Commercial Operation Date by the Required Phase 2 Commercial Operation Date.

7.2 Documents to be Submitted by Project Company

Project Company shall provide the following documents to GPA:

(a) As soon as available but no later than the earlier of Financial Close and Notice to Proceed, a complete copy of the Construction Contract, including all exhibits and schedules thereto, and complete plans and specifications for the construction of the Facility, including drawings and interconnection points for SCADA and AGC, as soon as practical as these are completed, provided that the Project Company shall be entitled to request approval from GPA to redact certain certain commercial terms from the copy of the Construction Contract.

(b) As soon as available but no later than the earlier of Financial Close and Notice to Proceed, a complete copy of the O&M Contract (if applicable), including all exhibits and schedules thereto, provided that Project Company shall be entitled to request approval from GPA to redact certain commercial terms from the copy of the O&M Contract supplied to the GPA.

(c) As soon as available but no later than Financial Close, a complete copy of [placeholder for any other relevant agreements].

(d) On or before Financial Close, complete copies of all Government Authorizations that have been issued to Project Company for the design, financing, construction, operation and maintenance of the Facility.

(e) As soon as available, copies of all Government Authorizations other than those provided under the preceding clause that have been issued to Project Company or the Contractors (as applicable) for the design, financing, construction, operation and maintenance of the Facility.

(f) On or before Financial Close, a copy of Project Company's quality control program, [safety program, environmental compliance program, and security (including cybersecurity) program, each] with respect to all aspects of the design, engineering, equipping, construction, and operation and maintenance of the Facility.

(g) On or before the Construction Start Date, complete copies of all insurance policies and certificates of insurance required for construction as indicated in Article 15, provided that Project Company shall be entitled to redact from the copy of the insurance policies supplied to GPA, all commercial terms and all other information that Project Company reasonably considers to be of a confidential or proprietary nature.

(h) As soon as available, but not later than the Phase 1 Commercial Operation Date, complete copies of all insurance policies and certificates of insurance obtained pursuant to Article 15 other than those provided under the preceding clause.

(i) At least one hundred and twenty (120) Days (or such other period as shall be agreed between the Parties) before the scheduled commencement of the Testing and Commissioning for Phase 1, detailed programs and protocols to be used during the Testing and Commissioning of the Facility consistent with the provisions of this Agreement, including Article 8 and Schedule 4. The GPA Engineer and GPA shall have the opportunity to comment on the proposed program and protocols within thirty (30) Days of receipt from Project Company of said documentation, and the GPA Engineer, GPA and Project Company will work together to agree on the procedures and protocols to be used for Testing

and Commissioning not later than sixty (60) Days prior to the scheduled commencement of the respective Testing and Commissioning.

(j) At least sixty (60) Days before the scheduled commencement of the Phase 1 Commercial Operation Tests, the intended start up and test schedule.

(k) Not later than thirty (30) Days after the Commercial Operation Date for each Phase, copies of all test results, certified by the GPA Engineer, for the Commercial Operation Tests performed with respect to such Phase.

(l) All the drawings, manuals, procedures, and other technical documents listed in Schedule 1 at the time specified in Schedule 1.

7.3 Supply of Power

(a) The Project Company will arrange for the supply of all electrical energy and capacity required for construction of the Facility through (i) self-generation, or (ii) to the extent available, through making arrangements to purchase construction power from the GPA.

(b) GPA will arrange for backfeed power to be available at the Harmon Substation as required for testing and commissioning in accordance with the parameters set forth in Schedule 3. Any such backfeed power shall be charged to Project Company at the prevailing rates applicable to such power.

(c) Project Company will arrange for the supply of all electrical energy and capacity required for the maintenance and operation of the Facility by (i) generating it with Project Company's own facilities, or (ii) to the extent available, using backfeed power through GPA's Harmon substation. Any such backfeed power, to the extent it is supplied by GPA, shall be paid to GPA by Project Company at the then current rate for electricity at that location.

7.4 Operating Procedures

(a) Not later than one hundred eighty (180) Days before the Required Phase 1 Commercial Operation Date, Project Company shall provide GPA with a first draft of its proposed operating procedures dealing with all operation interfaces between GPA and Project Company, including the method of day-to-day communication, key personnel lists, clearances and switching practices, outage scheduling, capacity and energy reporting, operating log and reactive power support, which procedures shall be consistent with this Agreement, the designs of the Facility and the Grid System (including the principles and guidelines developed by GPA for the Grid System as part of and in accordance with the applicable system grid code and provided to Project Company), and Prudent Utility Practices (the "Operating Procedures"). GPA shall cooperate with Project Company, including by providing responses to reasonable requests for information submitted by Project Company in preparation of the Operating Procedures.

(b) Within ninety (90) Days after GPA's receipt of the first draft of the Operating Procedures, GPA shall notify Project Company of any requested deletions, amendments or additions which, in the exercise of GPA's reasonable judgment, are necessary or desirable. Project Company shall make any deletions,

amendments or additions that GPA reasonably requests unless such requests would be inconsistent with this Agreement, the designs of the Facility and the Grid System or Prudent Utility Practices. GPA may, from time to time, require the Operating Procedures to be revised to conform to any duly established grid code binding on GPA to the extent that those revisions are not inconsistent with the terms of this Agreement, the designs of the Facility, the Grid System (including the principles and guidelines developed by GPA as part of and in accordance with the applicable system grid code for the Grid System), and Prudent Utility Practices.

7.5 GPA Observation Visits

GPA shall have the right, upon reasonable prior Notice, and subject to the safety rules and regulations of Project Company, to have its agents or employees at the Site at any time; provided that (i) such visits do not unreasonably interfere with the construction, testing, Commissioning, operation or maintenance of the Facility and (ii) such visits are at GPA's own expense. All persons visiting the Facility on behalf of GPA shall comply with the reasonable instructions and directions of Project Company and/or its Contractors. GPA shall bear responsibility for any claim, demand, action, proceeding, loss or damage to such persons or any property of Project Company caused by the negligence or wilful misconduct of any persons visiting pursuant to this Article 7.5 or the negligence or wilful misconduct of GPA during such visits. Insurance policies issued to Project Company must also cover GPA personnel and the GPA Engineer during their visits to the Site during the Term.

7.6 Project Company Progress Reports

Commencing on the date of this Agreement and continuing until the end of the Term, the Project Company shall submit progress reports to GPA prior to the fifteenth (15th) Day of each Month. Such reports shall cover in reasonable detail the progress in the development, permitting, financing, procurement, construction, and operation of the Facility for the preceding Month.

The progress report shall include, as a minimum, an updated critical path schedule, a list of activities completed in the preceding month, a list of activities behind schedule and reasons therefor, a recovery plan for activities more than 30 days behind schedule, and a list and description of outstanding issues or concerns impacting, or reasonably expected to impact, the Project or its implementation schedule.

ARTICLE 8
TESTING OF THE FACILITY

8.1 Testing of the Facility Prior to the Commercial Operation Date

(a) Project Company shall provide to GPA on an on-going basis relevant information regarding its program for testing the Facility, including any delay suffered, or reasonably anticipated to be suffered, in the date of synchronization of a Unit (or Facility) or to the Expected Phase 1 or Phase 2 Commercial Operation Dates.

(b) Not less than sixty (60) Days prior to each of the Expected Phase 1 Commercial Operation Date and Phase 2 Commercial Operation Date, Project Company will deliver to GPA in writing the final program for testing, including the expected duration of Project Company's start-up and testing program and a tentative

schedule for conducting all tests required by Schedule 4. Project Company shall advise GPA in writing of its final schedule for the testing program not less than fifteen (15) Days prior to the commencement of the tests required by Schedule 4. If the schedule for any test required by Schedule 4 is adjusted after Project Company has provided GPA with the final testing program schedule, Project Company shall advise GPA not less than seventy-two (72) hours prior to the commencement of any such test. On each Day beginning with the Day on which testing commences, Project Company shall provide GPA with a schedule of the tests to be conducted on the following Day or Days, if such test will continue for more than one (1) Day. All testing of the Facility shall satisfy the requirements provided in Schedule 4, the procedures and protocols agreed upon by GPA, Project Company and the GPA Engineer pursuant to Article 7.2(i). GPA will make all reasonable efforts to accept all the energy generated by the Facility during the Period of Testing and enable full load operation of the Facility during Dependable Capacity Tests.

(c) If GPA is unable to accommodate the schedule for such test or tests as provided by Project Company in the final schedule for the program of tests pursuant to the foregoing Article 8.1(b), GPA will give Project Company a Notice regarding deferral of any test or tests within seventy-two (72) hours of its receipt of the final schedule for testing, and the Parties will mutually agree on a date for any deferred test or program of tests.

(d) Additional Commercial Operation Tests

i. Project Company shall be entitled to attempt as many Commercial Operation Tests as are necessary to ensure that each Phase is Commissioned in accordance with the requirements of this Agreement. Project Company shall give GPA not less than seventy-two (72) Hours' Notice of each additional Commercial Operation Test it desires to attempt.

ii. Notwithstanding Article i, if the results of a Commercial Operation Test satisfy the applicable minimum performance criteria for successful completion of such Commercial Operation Test, but Project Company is not satisfied with the results of such Commercial Operation Test, Project Company may request additional tests to establish the results of the Commercial Operation Test with at least seventy-two (72) Hours' prior Notice provided to GPA prior to a subsequent test; provided, however, that Project Company will continue to be responsible for any delay liquidated damages under Article 9.1 and will not be paid for capacity until it has notified GPA that Project Company has designated the test as the Commercial Operation Test in accordance with sub-clause (iii) below.

iii. When Project Company is satisfied with a test to establish the Phase 1 Commercial Operation Date or Phase 2 Commercial Operation date, as the case may be, Project Company shall notify GPA that Project Company has designated such test as the Commercial Operation Test. The Initial Dependable Capacity shall be set at any level successfully demonstrated during the Commercial Operation Test up to the Contracted Facility Capacity.

iv. The Phase 1 Commercial Operation Date and the Phase 2 Commercial Operation Date shall occur and payment for Capacity Charges shall commence as of the first Day after the Day the relevant Phase is Commissioned. In the event that Project Company is unable to demonstrate in the Phase 2 Commercial Operation Tests (carried out in accordance with the foregoing subparagraph (d)(i)) that the Facility is capable of operating at Threshold Capacity, GPA may terminate this Agreement as a Project Company Event of Default in accordance with Article 5.5.

8.2 Testing of Dependable Capacity of the Facility after the Commercial Operation Date

The following provisions with respect to Testing the Facility after the Phase 2 Commercial Operation Date shall apply:

(a) Dependable Capacity shall be tested annually after the Phase 2 Commercial Operation Date at times mutually agreed upon by Project Company and GPA. Project Company may, within twenty-four (24) hours of completion of a Dependable Capacity Test, reject the test and may conduct a retest at a time to be mutually agreed; provided, however, that Project Company cannot conduct more than two (2) retests of any Dependable Capacity Test before the level of capacity achieved during such a test is set as the Dependable Capacity. Project Company shall give GPA at least forty eight (48) hours' prior Notice of the first retest and twenty four (24) hours' prior Notice of the second retest, and any retest shall be conducted within ten (10) Days after the completion of the rejected test.

(b) The test period for the Dependable Capacity Test shall be for six (6) continuous hours for a fossil fuel fired Facility or a Fossilf Fuel Fired Component of the hybrid Facilty. The test shall be run using the Metering System and plant instrumentation for measurements, unless otherwise decided by the Joint Coordinating Committee. The Dependable Capacity shall be the Net Energy Output (Excluding any Excess Energy) during those six (6) hours corrected for Site Reference Conditions divided by six (6), but may not exceed the Contracted Facility Capacity. If, as the result of a Dependable Capacity Test, the tested capacity is shown to be above the Dependable Capacity in effect prior to such test, Project Company shall set the Dependable Capacity at the new tested capacity up to the Contracted Facility Capacity, and payments for the Dependable Capacity shall be increased accordingly, effective the Day such Dependable Capacity Test is completed. If, as result of the Dependable Capacity Test, the tested capacity is shown to be below the Dependable Capacity in effect prior to such test, the Dependable Capacity will be reduced to the newly tested capacity, and payments for the Dependable Capacity shall be decreased to the tested level, effective the Day Dependable Capacity Test is completed.

(c) Between annual tests, GPA may request one (1) additional Dependable Capacity Test if GPA reasonably believes that the currently set Dependable Capacity does not accurately reflect the Dependable Capacity previously declared to GPA. GPA shall provide written Notice of its request to test fourteen (14) Days prior to the requested test date. Project Company shall be entitled to one (1) retest of such Dependable Capacity Test before the level of capacity

achieved during such a test is set as the Dependable Capacity provided that it rejects the test within twenty-four (24) hours of completing the Dependable Capacity Test. Each such Dependable Capacity Test and, as appropriate, any retest shall be conducted in accordance with the foregoing Subsection (b), within ten (10) Days of its request or, as the case may be, the rejection, and Project Company shall give GPA not less than seventy-two (72) hours Notice of its intention to perform such retest.

(d) Between annual tests, Project Company may:

i. conduct one additional Dependable Capacity Test; and

ii. in addition to Project Company's right to request an additional Dependable Capacity Test under Article i above, conduct (at Project Company's cost) one additional Dependable Capacity Test if GPA has elected to conduct an additional Dependable Capacity test mentioned in Article 8.2 (c) during a Forced Outage,

in each case, if Project Company reasonably believes that the currently set Dependable Capacity does not accurately reflect the Dependable Capacity that the Facility is able to achieve.

Each such Dependable Capacity Test carried out pursuant to this Article 8.3(d) shall be conducted in accordance with Article 8.2(b) and Project Company shall give GPA not less than seventy-two (72) hours' Notice of its intention to perform each such Dependable Capacity Test.

(e) Notwithstanding anything to the contrary in this Agreement, no Dependable Capacity Test will be conducted during a Scheduled or Maintenance Outage, during the occurrence of a Force Majeure that affects the Facility, or while the consequences of such Force Majeure continue to affect the Facility. For the avoidance of doubt, the additional Dependable Capacity Test mentioned in Article 8.2(c) may be conducted during a Forced Outage.

(f) If GPA requires the Facility to operate on Natural Gas in accordance with the provisions of Article 4.4:

i. GPA shall issue a Notice to Project Company stating the date, which shall not be less than 60 Days from the date of the Notice, starting from which it could start the supply of Natural Gas;

ii. Project Company shall be allowed a period of twenty five (25) Days following the date set forth in the above-mentioned Notice to implement the switch to Natural Gas and to perform the tests set forth in Schedule 4;

iii. during such twenty five (25) Day period, which shall be extended in case of occurrence of any Force Majeure event or unavailability of Natural Gas:

(A) The Facility shall be deemed to provide the Dependable Capacity and the Project Company shall receive the full Capacity Charge;

(B) GPA shall provide sufficient quantities of Natural Gas in order to allow Project Company to implement the switch;

(C) Provision of Natural Gas by GPA to Project Company up to [ ] MMBtu of Natural Gas (the "**Maximum Natural Gas Switch Quantity**") shall be at GPA's cost;

(D) Provision of Natural Gas by GPA to Project Company in quantities exceeding the Maximum Natural Gas Switch Quantity shall be at Project Company's cost;

(E) and Project Company shall perform the tests referred to in Schedule 4 and shall be required to conduct (including after the expiry of such period) as many retests as necessary to pass these tests in accordance with the provisions of Schedule 4.

(g) The Parties agree that the provisions of paragraph (f) above shall only apply when GPA elects to burn Natural Gas for the first time during the Term.

8.3 Notice of and Compliance with Testing Procedures

Project Company shall carry out Commissioning of Phase 1 and Phase 2, the testing of the Initial Dependable Capacity at or prior to the Phase 1 and Phase 2 Commercial Operation Dates and the testing of the Dependable Capacity of the Facility thereafter in accordance with Articles 8.2 and Schedule 4. GPA shall use its reasonable efforts to comply promptly with all reasonable requests made by Project Company for assistance in carrying out such testing and Commissioning. GPA shall be given prior Notice of the testing or Commissioning procedure in accordance with Article 8.2 and shall be entitled to be present and observe any such testing and Commissioning. The procedures and results of such Tests shall be certified by the GPA Engineer.

8.4 Copies of Test Results

Project Company shall provide GPA with copies of the results of all tests performed pursuant to Schedule 4 and after every Major Overhaul of a generating Unit at the Facility. GPA shall not use or disclose such results other than in connection with the administration and enforcement of this Agreement or subject to applicable Law.

8.5 Deemed Commissioning

(a) In the event that for any reason (other than a breach by Project Company of its obligations under this Agreement or any other Project Agreement):

i. Due to (A) any action or inaction by GPA which is inconsistent with the terms of this Agreement (including any default or breach), [(B) the discovery of a Pre-Existing Site Condition, (C) any failure by GPA or any third party appointed by GPA to carry out remediation work in accordance with Article 6.6(c)] or (D) unavailability of Fuel, a Commercial Operation Test is delayed beyond the date falling fourteen (14) Days before the Required Phase 1 Commercial Operation Date or Required Phase 2 Commercial Operation date (whichever is applicable), then upon receipt of a certificate from an Independent Engineer to the effect that the Facility is,

or would have been, ready for testing by the relevant Required Commercial Operation Date, the Facility shall be deemed Commissioned for the respective Phase fifteen (15) Days after the relevant Required Commercial Operation Date (provided that for the avoidance of doubt the Project Company shall in no event be required to pay delay liquidated damages under Article 9.1 for such fifteen (15) Day period) and the Facility shall be deemed to be providing Initial Dependable Capacity equal to the applicable Contracted Facility Capacity for the purposes of payments of Capacity Charges to be made by GPA to Project Company.

If the Facility has been deemed Commissioned for a Phase, the Commercial Operation Tests for such phase shall be conducted at the first available opportunity after such deemed Commissioning, and the Initial Dependable Capacity adjusted as a result of such test in accordance with subsection (b) below. Project Company shall use reasonable efforts to mitigate the delay caused by any of the events mentioned in this Article 8.5(a).

(b) In the event that the Initial Dependable Capacity of the Facility at the Commercial Operation Tests after the Phase has been deemed Commissioned, is less than the applicable Contracted Facility Capacity, Project Company shall refund to GPA an amount equal to:

i. the difference, if any, between the applicable Contracted Facility Capacity and the Initial Dependable Capacity divided by the applicable Contracted Facility Capacity; times

ii. the total Capacity Charges paid between the date of deemed Commissioning and the date upon which the Initial Dependable Capacity Tests take place; provided, however, that in the event that the Initial Dependable Capacity for Phase 2 is less than the Threshold Capacity, the Project Company shall refund all Capacity Charges received based on deemed Commissioning.

(c) If, due to a delay mentioned in Article 8.5(a), either or both of the actual Phase 1 Commercial Operation Date or the actual Phase 2 Commercial Operation Date does not occur within one (1) month of the relevant Required Commercial Operation Date, GPA shall indemnify Project Company for (i) the actual reasonable documented costs of demobilisation and remobilisation of personnel of Project Company, the O&M Contractor and of the Construction Contractor, and (ii) for any other actual reasonable documented costs payable to the Construction Contractor.

ARTICLE 9
LIQUIDATED DAMAGES PAYABLE BY PROJECT COMPANY

9.1 Delay in Commissioning

Project Company covenants that Phase 1 shall be Commissioned on or before the Required Phase 1 Commercial Operation Date. If the Phase 1 Commercial Operation Date has not occurred by the Required Phase 1 Commercial Operation Date, the Project Company shall pay GPA, as liquidated damages, for the delay in Phase 1 Commissioning a sum equal to US$ [ ] for each Day of delay or fraction thereof.

Project Company covenants that Phase 2 shall be Commissioned on or before the Required Phase 2 Commercial Operation Date. If the Phase 2 Commercial Operation Date has not occurred by the Required Phase 2 Commercial Operation Date, the Project Company shall pay GPA, as liquidated damages, for the delay in Phase 2 Commissioning a sum equal to US$ [ ] for each Day of delay or fraction thereof.

In no event shall the damages assessed under this Article 9.1 exceed [US$40,000,000].

9.2 Failure to Meet Contracted Facility Capacity

(a) Project Company covenants that the Initial Dependable Capacity of Phase 1 shall not be less than the Contracted Phase 1 Capacity. In the event that upon completion of the Dependable Capacity Test used to establish the Initial Dependable Capacity of Phase 1 at or prior to the Phase 1 Commercial Operation Date, pursuant to Article 8, the Initial Dependable Capacity for Phase 1 is less than the Contracted Phase 1 Capacity, Project Company shall have the option for a period of up to six (6) months from the Phase 1 Commercial Operation Date to undertake any necessary actions ("**Remedial Actions**") to increase the Initial Dependable Capacity to the Contracted Phase 1 Capacity at its own cost. Within 15 Days of the expiration of such period or any decision by Project Company not to undertake Remedial Actions (whichever is the earlier to occur), Project Company shall pay to GPA, as liquidated damages, an amount equal to US$ [ ] per kW of the shortfall between the most recently determined Initial Dependable Capacity and the Contracted Phase 1 Capacity.

(b) Project Company covenants that the Initial Dependable Capacity of Phase 2 shall not be less than the Contracted Phase 2 Capacity. In the event that upon completion of the Dependable Capacity Test used to establish the Initial Dependable Capacity of Phase 2 at or prior to the Phase 2 Commercial Operation Date, pursuant to Article 8, the Initial Dependable Capacity for Phase 2 is less than the Contracted Phase 2 Capacity (but greater than the Threshold Capacity), Project Company shall have the option for a period of up to six (6) months from the Phase 2 Commercial Operation Date to undertake Remedial Actions to increase the Initial Dependable Capacity to the Contracted Phase 2 Capacity at its own cost. Within 15 Days of the expiration of such period or any decision by Project Company not to undertake Remedial Actions (whichever is the earlier to occur), Project Company shall pay to GPA, as liquidated damages, an amount equal to US$ [ ] per kW of the shortfall between the most recently determined Initial Dependable Capacity and the Contracted Phase 2 Capacity.

(c)

(d) In no event shall the damages assessed under this Article 9.2 exceed [US$ 35,000,000].

(e) Results of all Initial Dependable Capacity Tests and Dependable Capacity Tests shall be valid only to the extent such tests are performed while the Facility operates within the requirements of all Government Authorizations and the environmental permits.

9.3 Excessive Outages

Project Company covenants that, in respect of each Contract Year, the Excessive Outages Energy ("**EOE**") for such Contract Year shall be less than or equal to zero (0).

In the event that, during any Contract Year other than the first Contract Year, the Excessive Outages Energy is greater than zero (0), then Project Company shall pay to GPA, as liquidated damages, the Capacity Damages, calculated as follows:

Capacity Damages (US$) =
Capacity Damages Amount (US$/MW) x 1.4 x Excessive Outages Energy (MWh)/ eight thousand seven hundred sixty (8760) hours)

Where the Capacity Damages Amount equals the product of (i) the Capacity Charge per MW per Month prevailing during the relevant Contract Year and (ii) 12 Months.

(a) The Excessive Outages Energy (EOE) for any Contract Year, other than as modified in Article 9.3 for the first Contract Year, will be the sum of the actual outages (FOE, MOE and SOE) minus the Allowable Outages Energy (AOE), namely:

Excessive Outages Energy (MWh) = [FOE + MOE + SOE - (AOE)] (MWh)

FOE (MWh)	=	the summation of all periods of Forced Outage for this product:duration of outage (hours) x reduction in Dependable Capacity(MW).
MOE (MWh)	=	the summation of all periods of Maintenance Outage of this product: duration of outage (hours) x reduction in Dependable Capacity (MW).
SOE (MWh)	=	the summation of all periods of Scheduled Outage of this product: duration of outage (hours) x reduction in Dependable Capacity (MW).
AOE (MWh)	=	Annual Average Dependable Capacity (MW) x eight hundred seventy six (876) hours.

(b) If the EOE for any Contract Year is less than or equal to zero, no liquidated damages are due.

9.4 Failure to Meet Guaranteed Amount of Renewable Energy

If the Facility is a hybrid Facility, the Project Company guarantees that, for each Contract Year, the Net Energy Output derived from the Renewable Component shall be equal to or greater than the Guaranteed Amount of Rewable Energy. After the end of each Contract Year, GPA shall verify the amount of Net Energy Output derived from the Renewable Component for such year and if it is less than the Guranteed Amount of Renewable Energy applicable to such year, the Project Company shall be liable for Renewable Component Liquidated

Damages which shall be payable as part of the next monthly invoice. Renewable Component Liquidated Damages shall be equal to the amount of the annual shortfall (in Kwh) multiplied the average Energy Charge (in $/Kwh) for the applicable Contract Year.

9.5 Waiver of Defences

Notwithstanding that GPA may be substantially damaged in amounts that may be difficult or impossible to determine in the event that a Phase or Renewable Component (i) is not Commissioned by the date required, (ii) is not capable of achieving and maintaining the Contracted Phase 1 Capacity or the Contracted Facility Capacity or the Guaranteed Amount of Renewable Energy, (iii) cannot minimise the number of Forced Outages, or (iv) cannot achieve the designated operating levels, the Parties agree that the sums set out in this Article 9 constitute a genuine pre-estimate of the loss to GPA and as a result are fair and reasonable as liquidated damages and it is further understood and agreed that the payment of liquidated damages is in lieu of actual damages for such occurrences. Project Company hereby waives any defence as to the validity of any liquidated damages in this Agreement on the grounds that such damages are void as penalties.

9.6 Financial Close and Security Deposits

(a) Notice of Possible Delays to Financial Close

Project Company shall, promptly (and in no event later than seven (7) Days after becoming aware thereof) give written notice to GPA of the occurrence of any event which delays, or is reasonably likely to delay, Financial Close beyond the Required Financial Closing Date. Within fourteen (14) Days after any such initial notice, Project Company shall provide GPA with a further written notice substantiating such occurrence in reasonable detail, its effect on Project Company's ability to achieve Financial Close and its effects, if any, on the Project, including financial implications. Further, Project Company shall thereafter provide such further information and updates as GPA may reasonably request from time to time in order to substantiate such occurrence and/or such effects.

(b) Extension of Required Financial Closing Date

If Project Company does not achieve Financial Close by the Required Financial Closing Date due to reasons other than an Excusable Event or other than Project Company's failure, then the Required Financial Closing Date shall be extended until the date that is ninety (90) Days after the original Required Financial Closing Date, provided that prior to any such extension, the validity period of the Proposal Security shall have been extended (by written amendment thereto delivered to GPA) until the extended Required Financial Closing Date.

(c) Failure to Achieve Financial Closing

In the event that Project Company fails to achieve Financial Close by the Required Financial Closing Date or extended Required Financial Closing Date, either Party may terminate this Agreement. In the event of such termination, GPA shall be entitled to cash the Proposal Security, in which event neither Party shall have any further liability or obligation to the other under this Agreement, except

for liabilities accrued hereunder prior to or upon such termination (including liability for any breach of this Agreement by the Project Company).

(d) Financial Closing

At Financial Close, GPA shall return the Proposal Security to Project Company and Project Company shall provide to GPA a security deposit (the "**Construction Security**") in an amount in Dollars equal to US$75,000,000 to ensure Project Company's obligations to pay liquidated damages in accordance with Articles 9.1 and 9.2. The Construction Security shall terminate three (3) Months after the Phase 2 Commercial Operation Date (or, in the case that Project Company opts to pursue Remedial Actions, six (6) months thereafter), at which point GPA shall return the Construction Security to IPP. The Construction Security shall consist of either: (i) an unconditional and irrevocable direct pay letter of credit issued by an international bank with an investment grade rating in form and substance reasonably acceptable to GPA; (ii) a bank guarantee issued by an international bank with an investment grade rating in form and substance reasonably acceptable to GPA; or (iii) a performance bond issued by an international surety with an investment grade rating in form and substance reasonably acceptable to GPA.

9.7 Payments of Liquidated Damages

(a) Within fourteen (14) Days after the end of (i) each Month in respect of amounts due pursuant to Articles 9.1 and 9.2, and (ii) each Contract Year in respect of amounts due pursuant to Article 9.3 and 9.4, GPA shall compute and advise Project Company by Notice (a "**Liquidated Damages Notice**") of the amount of liquidated damages, if any, due to GPA pursuant to this Agreement for the preceding Month or Contract Year, as the case may be. Subject to Article 9.7(b), Project Company shall pay to GPA the amount of liquidated damages shown on the Liquidated Damages Notice within ten (10) Business Days of the date of the Liquidated Damages Notice (the "**Liquidated Damages Due Date**"). If Project Company fails to pay any amount due pursuant to Article 9.1, 9.2, 9.3, and 9.4 by the Liquidated Damages Due Date, GPA shall be entitled to draw such amount from the Construction Security. Interest shall accrue on any unpaid and undrawn amount from the Liquidated Damages Due Date until the date payment is made at the rate of the Bank Rate. Save to the extent that the amount of liquidated damages reflected on the Liquidated Damages Notice is paid to GPA by Project Company or, with respect to liquidated damages pursuant to Article 9.1, 9.2, 9.3, and 9.4, drawn from the Construction Security, the amount of liquidated damages pursuant to Article 9.1, 9.2, 9.3, or 9.4 plus accrued interest due to GPA may be set off against amounts owed to Project Company by GPA on the next statement(s) submitted to GPA pursuant to Article 14.

(b) In the event of any Dispute as to the computation or payment of liquidated damages, Project Company shall provide Notice to GPA specifying the amount disputed and the reason therefore. In such event, the amounts not disputed shall be paid as described in this Article 9 and the Dispute shall be settled in accordance with the Dispute resolution procedures set forth in Article 19. If any such Dispute is resolved in favor of GPA, the determination of amounts due to GPA shall include interest at the rate specified for late payment in Article 9.7(a). Upon resolution, the Project Company shall pay the amount determined to be

owed to GPA within ten (10) Days of such resolution, failing which GPA shall be entitled to claim such amount from the Construction Security, as applicable.

ARTICLE 10
CONTROL AND OPERATION OF THE FACILITY

10.1 Operating Procedures

The Facility shall be operated and maintained in accordance with the Operating Procedures.

10.2 Dispatch

(a) The PSCC will issue Dispatch Instructions to establish the Net Energy Output that the Facility is expected to feed into the Grid System during forthcoming periods of time. In coordination with GPA, Project Company shall be responsible for determining the operating modes (including but not limited to the determination of how to load each Unit) that will result in the most efficient and reliable operation.

(b) Project Company shall notify GPA and the PSCC whenever a Dispatch Instruction results in a part of or the whole Facility being operated beyond the Technical Limits. Project Company never has an obligation to operate and GPA never has a right to dispatch the Facility beyond the Technical Limits. The Operating Procedures shall establish the circumstances under which Project Company will trip a Unit, prior to such Unit being tripped by a protective device.

(c) Dispatch Instructions shall indicate the total amount of Net Energy Output required during the relevant period, expressed as an amount of MW, which amount (i) may only correspond to (A) any Unit Available Capacity or (B) an amount equal to the addition of two or more Unit Available Capacities and (ii) may not exceed the Declared Capacity unless and to the extent Excess Energy is available.

10.3 Scheduling of Capacities and Energy

GPA and Project Company shall cooperate in establishing the following scheduling for the Facility's Dependable Capacity and Net Energy Output:

(a) Year-Ahead Notification: Not less than ninety (90) Days before the scheduled Commercial Operation Date for a Phase and thereafter not less than ninety (90) Days before the beginning of each Contract Year, GPA shall provide to Project Company good faith estimates of its requirements on a Monthly basis, for the Net Energy Output and the maximum capacity required during that Contract Year, but shall not be bound by those figures. GPA will also indicate the desired maintenance periods for the upcoming Contract Year.

(b) Quarter-Ahead Notification: Not less than sixty (60) Days before each quarter of each Contract Year, GPA shall provide to Project Company good faith estimates of its requirements, on a week-by-week basis for the Net Energy Output and

maximum capacity required during that quarter and also provisionally for the following quarter, but shall not be bound by those figures.

(c) Month-Ahead Notification: Not less than fourteen (14) Days before each Month GPA shall provide to Project Company good faith estimates of its requirements on a day-by-day basis, for the Net Energy Output and maximum capacity required during that Month and also provisionally for the following Month, but shall not be bound by those figures.

(d) Week-Ahead Notification: Not later than 12:00 noon on Thursday before each week beginning on each Saturday, GPA shall:

(i) provide Project Company estimated requirements, on an hour by hour basis, for the Net Energy Output and maximum capacity required during that week and also provisionally, during the following week, but shall not be bound by these figures; and

(ii) determine which Fuel shall be used each hour during that week.

(e) Declared Capacity Notification: To enable GPA to give final schedules of requirements, Project Company shall notify the PSCC, by 8:00 a.m. each Day, of the Declared Capacity available during each hour of the following Day. However, Project Company may notify the PSCC, not less than twelve (12) hours prior to its scheduled occurrence, of any reasonable modification to the Declared Capacity schedule. The Notices that Project Company is required to send to GPA pursuant to this Article 10.3(e) shall include the number of MW available for each Unit during each hour of the following day and the amount and type of Fuel required to comply with the expected dispatch. The availability of the Facility shall be based, for the purposes of determining the Declared Capacity or calculating Outage Hours, on the availability of the Facility with the Fuel that GPA instructs the Project Company to run.

(f) Day-Ahead Notification: Not less than 8 hours before the start of each Day the PSCC shall provide to Project Company firm requirements in accordance with Article 10.2(c), on an hour-by-hour basis for capacity during that Day and also, provisionally, during the following Day. The firm requirements shall be binding upon GPA; provided, however, Project Company shall not unreasonably withhold its consent to any reasonable request from GPA for an alteration to its requirements.

(g) Information Related to Renewable Component: Project Company shall provide the PSCC with [real time] updates of the current production and the seven (7) day hourly production forecast for the Renewable Component.

(h) The methods for scheduling the capacity may be modified from time to time. Such modifications may be initiated by GPA, the PSCC or Project Company and must be approved by the Joint Coordinating Committee.

10.4 Scheduled Maintenance.

(a) Project Company shall submit its desired schedule of Scheduled Outage periods (including the duration of each such period) to GPA six (6) months before the Required Phase 2 Commercial Operation Date and thereafter on [ ] 1st of each

calendar year. Project Company shall use commercially reasonable efforts to schedule any Scheduled Outage periods during the period from [insert applicable month] to [insert applicable month] only or such other alternative periods as GPA may specify, provided that GPA does specify at least one (1) year in advance the alternative period and that the period available for Scheduled Outages is of equal duration to the period specified herein. Within thirty (30) Days of receipt of such schedule, GPA shall notify Project Company in writing as to the acceptability of such schedule. Project Company shall use all reasonable efforts to make each such Scheduled Outage period of relatively short duration consistent with the Technical Limits, Prudent Utility Practices, and the recommendations of the manufacturers of the various components of the Facility. The Project Company shall use all reasonable efforts to perform maintenance of equipment connected with photovoltaic solar production between the hours of [8:00pm and 6:00am].

(b) If GPA does not accept any one or more of the requested Scheduled Outage(s) periods, GPA shall advise Project Company within thirty (30) Days of the receipt of Project Company's notification in accordance with sub-section (a) above of the acceptable period when GPA determines any such unacceptable Scheduled Outage can be rescheduled. The rescheduled time shall be as close as reasonably practicable to the requested time, shall be consistent with the Technical Limits, Prudent Utility Practices and the recommendations of the manufacturers of the various components of the Facility, and shall be of the same duration as the requested period. If GPA fails within such thirty (30) Day period to object to any Scheduled Outage for which it receives Notice pursuant to subsection (a) above or fails within such period to advise Project Company of a substitute time, Project Company may schedule and conduct the Scheduled Outage(s) as initially requested.

(c) Project Company shall schedule Scheduled Outages only at times determined as aforesaid; provided, however, that GPA may not require Project Company to schedule Scheduled Outages in a manner or time which is outside the Technical Limits, is inconsistent with Prudent Utility Practices or the recommendations of the manufacturers of the various components of the Facility.

(d) Notwithstanding the fixing of a time for a Scheduled Outage pursuant to subsections (a), (b) and (c) above, GPA may, upon at least ninety (90) Days prior Notice and upon agreeing to pay the documented increased cost, if any, to the Project Company resulting therefrom, require Project Company to reschedule a Scheduled Outage; provided, however, (i) GPA shall not require such Scheduled Outage to be rescheduled for a period of shorter or longer duration or in a manner or time that is outside the Technical Limits, or inconsistent with Prudent Utility Practices or the recommendations of the manufacturers of the various components of the Facility, (ii) GPA shall not require that a single Scheduled Outage period be split into two or more periods without compensating Project Company for any additional costs incurred thereby, and (iii) GPA shall not require that a Scheduled Outage be brought forward any earlier than sixty (60) Days from the date of such Notice without the consent of Project Company.

(e) Notwithstanding the fixing of a time for a Scheduled Outage pursuant to sub sections (a), (b) and (c) above, Project Company may request a rescheduling of any Scheduled Outage upon ninety (90) Days prior written Notice to GPA. GPA

shall respond to such request within ten (10) Business Days and shall not unreasonably withhold its permission for such rescheduling.

(f) When the need arises for a Maintenance Outage, Project Company shall advise GPA of such need and of the commencement and estimated duration of such work, and GPA shall allow Project Company to schedule such Maintenance Outage within a period of time that is reasonable under the circumstances, but in any event not to exceed the time required by the Technical Limits and Prudent Utility Practices. Project Company shall use all reasonable efforts to conduct such Maintenance Outage during off-peak hours, provided, however, that with respect to equipment used for photovoltaic solar production, the Project Company shall use all reasonable efforts to perform maintenance between the hours of [8:00pm and 6:00am]. Project Company may advise GPA orally of the above matters set forth in this subsection (g), and GPA shall respond orally within twenty-four (24) hours of such notice. GPA shall confirm its communication in writing within one (1) week of such oral notice.

(g) For those years in which Project Company plans to conduct a Major Overhaul, Project Company shall submit its Major Overhaul schedule (including the number of Units subject to Major Overhaul and outage duration of each Unit for such period) to GPA, for each Contract Year, one year in advance by Notice. It is expected that a Major Overhaul will take place approximately every [ ] operating hours, both as defined by the manufacturer and will not exceed [ ] Days in any Contract Year. Project Company shall use commercially reasonable efforts to not schedule a Major Overhaul during the months of [insert month] through [insert month] inclusive. Within thirty (30) Days of receipt of this schedule, GPA shall notify Project Company in writing as to the acceptability of such schedule. If GPA does not accept this schedule, GPA shall advise Project Company within thirty (30) Days of receipt of such Schedule of the time when GPA determines the Major Overhaul can be rescheduled. The rescheduled time shall be as close as reasonably practicable to the requested time, shall be consistent with the Technical Limits, Prudent Utility Practices and the recommendations of the manufacturers of the various components of the Facility, and shall be of equal duration as the requested period. If GPA fails within the allowed period to object to any Major Overhaul for which it receives Notice pursuant to this Article or fails within such period to advise Project Company of a substitute time, Project Company may schedule the Major Overhaul as initially requested.

10.5 Emergencies

(a) Project Company shall cooperate with GPA in establishing agreed Emergency plans for the Facility at least ninety (90) Days before the Required Phase 1 Commercial Operation Date, including recovery from a local or widespread electrical blackout and voltage reduction in order to curtail load.

(b) On or after the Phase 1 Commercial Operation Date, Project Company shall, during an Emergency, within no more than fifteen (15) minutes of GPA's request, and more quickly if possible consistent with Prudent Utility Practices, supply such power as the Facility is able to generate; provided, however, that Project Company shall not be obligated to operate the Facility beyond the Technical Limits or beyond the limits which Project Company reasonably believes could

result in a trip. If a Scheduled Outage or Maintenance Outage occurs or would occur coincident with an Emergency, Project Company, upon consultation with GPA and at GPA's sole cost and expense, shall make all reasonable efforts to reschedule the Scheduled Outage or Maintenance Outage or, if the Scheduled Outage or Maintenance Outage has begun, expedite the completion of the work to restore power supply as soon as possible.

10.6 Maintenance of Operating Records

(a) Each Party shall keep complete and accurate records and all other data required by each of them for the purposes of proper administration of this Agreement. Among, but not limited to, other records and data required hereby or elsewhere in this Agreement, Project Company shall maintain an accurate and up-to-date operating log at the Facility with records of:

i. Net Energy Output production for each demand period and Delivery Point, and bus voltage at all times (for this purpose Project Company shall install a computerized system that will maintain an agreed data base of all pertinent parameters, as determined by the Joint Coordinating Committee).

ii. Changes in operating status, Scheduled Outages, Maintenance Outages and Forced Outages; and

iii. Any unusual conditions found during inspections.

(b) All such records required under Article 10.6(a) shall be maintained for a minimum of sixty (60) Months after the creation of such record or data; provided, however, that the Parties shall not dispose of or destroy any such records after such sixty (60) Month period without thirty (30) Days' prior Notice to the other Party. Either Party shall have the right, upon reasonable prior Notice to the other Party, and at reasonable times during normal office hours, to examine the records and data of the other Party relating to this Agreement or the operation and dispatch of the Facility within the Grid System at any time during the period such records and data are required hereunder to be maintained.

10.7 Annual Report

Project Company shall deliver to GPA an annual operating and maintenance report for each Contract Year, within two (2) Months following the expiration of each Contract Year. Such annual report must include the operation and maintenance report for the prior year and the anticipated operation and maintenance plan and Emergency plan for the upcoming year.

10.8 Facility Improvements

Subject to the prior written consent of Project Company and the Agent (in accordance with the Lenders' Direct Agreement), if Project Company shall be requested by GPA to (a) increase the generation capacity of the Facility or (b) add equipment, then Project Company shall (once all relevant details have been

agreed by Project Company and GPA) implement and prosecute such request at GPA's expense.

Notwithstanding the first sentence of this Article 10.8, the Project Company shall not prosecute and implement such request until:

(a) GPA and the Project Company shall have agreed on the feasibility, schedule and cost of such implementation and additional construction (if any), with capital costs and operational costs being recoverable through Supplemental Charges or by direct cost-plus reimbursement at the discretion of the Project Company;

(b) the financing for such implementation and construction (if any) has been obtained; and

(c) appropriate adjustments to the Price (if any), including the Capacity Charge and the Energy Charge, have been agreed, and taking into account any lost revenue due to necessary Facility outages and all other costs or Losses to be incurred by Project Company consequent upon implementation of such changes.

10.9 Reactive Power

If, due to instability in the Grid System, GPA requests Project Company to operate the Facility in a power factor range outside the range mentioned in Schedule 2, Project Company shall comply with such request, provided that (i) it shall not have any obligation to operate the Facility in such a way for more than 1 hour at a time if, in the opinion of Project Company, it could damage the Facility and (ii) Project Company shall never be required to operate the Facility in a manner that is inconsistent with the Functional Specifications or the Technical Limits and the Contracted Characteristics.

10.10 GPA Acces to Site

Project Company shall allow GPA to have reasonable access to the Site subject to prior notice by GPA. GPA personnel will be required to comply with all Project Company safety rules and procedures when accessing the site.

GPA will be allowed to access the on site ULSD storage facilities, without the need for prior notice, to fuel GPA's tanker trucks at no charge.

ARTICLE 11
JOINT COORDINATING COMMITTEE

11.1 Membership

Within ninety (90) Days from the date of this Agreement, the Parties shall establish a Joint Coordinating Committee of ten (10) members, with Project Company and GPA each appointing five (5) members. Each Party shall also appoint two (2) substitutes for each of its members. The substitutes must be appointed at least thirty (30) Days prior to being able to substitute for one of the members. Substitutes may attend the Joint Coordinating Committee meetings but cannot participate in them unless they are replacing a regular member.

The Joint Coordinating Committee shall meet at least once per month.

The chairmanship of the Joint Coordinating Committee shall rotate each year between the Parties, and the first chairman shall be appointed by GPA. The Joint Coordinating Committee shall develop procedures for holding meetings, keeping minutes of meetings, maintaining records and appointing and operating sub-committees as may be required.

11.2 Duties

The power and duties of the Joint Coordinating Committee shall include only the following:

(a) coordination of the respective programs of the Parties for the permitting, design, construction and Commissioning of the Facility, the Fuel supply and transportation interfacing, and the Electrical Interconnection Facilities, and agreement where necessary upon the respective Commissioning procedures;

(b) discussion of the steps to be taken upon shutdown or reduction in capacity for Force Majeure or any other reason;

(c) coordination and modification, if required, of Operating Procedures, including day-to-day communications, dispatching procedures, and Emergency plans and procedures, and compliance with Operating Procedures;

(d) coordination and modification, if required, of scheduled maintenance programs and scheduling and acceptance of performance tests and periodic tests;

(e) review of maintenance records, including results of periodic tests, for compliance with manufacturers' maintenance instructions and recommendations;

(f) coordination of annual, monthly, weekly, and daily forecasts or requirements for the Facility;

(g) developing, monitoring, and auditing the procedures to record Dependable Capacity, reliability, Net Energy Output, and any other parameters that may influence the billing or liquidated damages arising from operation;

(h) developing protocols for invoicing and for measuring Dependable Capacity and Net Energy Output;

(i) developing detailed procedures with respect to Natural Gas (when available) daily nominations and renominations based on Dispatch Instructions, ambient conditions for the next day and data provided in the tables entitled "Guaranteed Heat Rates at Guaranteed Conditions" and "Guaranteed Heat Rate Correction Curve" contained in Schedule 5;

(j) dealing with safety and security matters affecting the Facility, the Parties, and their Contractors;

(k) consultation on Emergency plans developed by the Parties for recovery from a local or widespread electrical blackout;

(l) review of metering and protective schemes and devices; and

(m) any other matter agreed by the Parties affecting the operation of the Facility and the Grid System.

11.3 Scope and Effect

The Parties agree and acknowledge that the jurisdiction of the Joint Coordinating Committee shall be limited to liaison and consultation only and that any decisions or agreements of the committee shall not be binding upon the Parties absent express written agreement to the contrary. The resolutions, considerations and discussions taking place from time to time within the Joint Coordinating Committee shall at all times remain subject to the express provisions of this Agreement, and, accordingly the respective rights and obligations of the Parties under this Agreement (or otherwise) shall not be affected by Articles 11.1 to 11.2.

11.4 Special Reporting

During any period during which either of the six (6) Month periods mentioned in Article 5.2(g) or Article 5.2(h) are extended in accordance with Article 5.2(g) and Article 5.2(h), as applicable, the Joint Coordinating Committee will meet every fourteen (14) Days and the members of the Joint Coordinating Committee appointed by Project Company will report on the status of the measures taken by Project Company to cure the deficiency.

ARTICLE 12
ELECTRICAL INTERCONNECTION

12.1 Electrical Interconnection Facilities

The Electrical Interconnection Facilities shall be designed, procured, and constructed by Project Company. Upon achieving the Phase 1 Commercial Operation Date and GPA's written acceptance thereof, the ownership, custody and control of the Electrical Interconnection Facilities shall be transferred by Project Company to GPA, after which the latter will operate and maintain the facilities in accordance with Prudent Utility Practices and the applicable system grid code at no cost to the Project Company. The transfer of the Electrical Interconnection Facilities shall be at no cost to GPA.

12.2 Testing

The Parties shall cooperate in testing the Electrical Interconnection Facilities from time to time prior to the scheduled synchronization dates of each Phase and at such other times thereafter as either Party may reasonably require. All such testing shall be carried out on a timely basis.

ARTICLE 13
METERING

13.1 Electrical Metering

The standards for performance measurement systems and testing are specified in Schedule 6.

(a) All electrical metering devices used to measure Net Energy Output pursuant to this Agreement, and to monitor and coordinate operation of the Facility, shall be

purchased, owned, installed and maintained by Project Company according to the specifications in Schedule 6. All electrical metering will be done jointly by the Parties, and each Party shall designate a representative for performing such metering. All electrical metering devices used to provide data for the computation of payments due under this Agreement shall be sealed, and the seal shall be jointly broken by the designated representatives of the Parties when such metering devices are to be inspected and tested or adjusted in accordance with Article 13.1(b) below. The number, type and location of such electrical metering devices shall be on the 115 kV high voltage bushings of the main power transformers and according to the single line diagram presented by Project Company and approved by GPA.

(b) Project Company shall inspect, test, and calibrate all electrical metering devices upon installation and at least once every five (5) years thereafter. Project Company shall provide GPA with reasonable advance Notice of, and allow a representative of GPA to witness and verify such inspections, tests, and calibrations. Upon the written request by GPA, and in the presence of GPA, Project Company shall perform additional inspections, tests, or calibrations of the electrical metering devices within twenty (20) Days following the date of such written request. The actual expense of any such requested additional inspection, tests, or calibration shall be borne by GPA, unless, upon such inspection, tests or calibration, a metering device is found to register inaccurately by more than 0.2%, in which event the expense of the requested additional inspection or testing shall be borne by Project Company. If a electrical metering device is found to be defective or inaccurate, whether or not within the accuracy and repeatability tolerances set forth in Table 6.1 of Schedule 6 Project Company shall, at its own expense, adjust, repair, replace, and/or recalibrate the electrical metering device as near as practicable to a condition of zero error.

(c) GPA may elect to install and maintain, at its own expense, back-up electrical metering devices at the Delivery Point in addition to (and identical to) those installed and maintained by Project Company, which installation and maintenance by GPA shall be in a manner reasonably acceptable to Project Company.

13.2 Adjustment for Inaccurate Electrical Meters.

If an electrical metering device fails to register, or if the measurement made by a metering device is found upon testing to be inaccurate, an adjustment shall be made correcting all measurements by the inaccurate or defective electrical metering device for the Project for the amount of the inaccuracy and the period of the inaccuracy, in the following manner:

(a) By (i) integrating the capacity measurements obtained by the MW-meter readings which are registered every thirty (30) minutes in the PSCC, or (ii) by using the Declared Capacity, whichever is applicable; or

(b) As may be agreed upon by the Parties; or

(c) In the event that the Parties cannot agree on the amount of the adjustment necessary to correct the measurements made by any inaccurate or defective electrical metering device, the Parties shall use GPA's back-up electrical metering device, if installed, to determine the amount of such inaccuracy; so long as such

electrical metering devices are tested and maintained in the same manner as Project Company's. In the event GPA's back-up electrical metering devices are also found to be outside the accuracy and repeatability tolerances set forth in Table 6.1 of Schedule 6, as are applied to Project Company's electrical metering devices under Article 13.1(b) above, the Parties shall estimate the amount of the necessary adjustment on the basis of deliveries of Net Energy Output during periods of similar operating conditions when the electrical metering device was registering accurately.

(d) In the event that the Parties cannot agree on the actual period during which the inaccurate measurements were made, the period during which the measurements are to be adjusted shall be the shorter of (i) the last one-half of the period from the last previous test of the electrical metering device, or (ii) the (120) Days immediately preceding the test which found the electrical metering device to be defective or inaccurate.

To the extent that the adjustment period covers a period of deliveries for which payment has already been made by GPA, GPA shall use the corrected measurements as determined in accordance with Article 13.2(a), (b), (c), or (d) hereof to recompute the amount due for the period of the inaccuracy and shall subtract the previous payments by GPA for this period from such recomputed amount. If the difference is a positive number, the difference shall be paid by GPA to Project Company. If the difference is a negative number, the difference shall be paid by Project Company to GPA, or in the sole discretion of GPA, the difference may take the form of an offset to payments due to Project Company by GPA. Payment of such difference by the owing Party shall be made not later than thirty (30) Days after the owing Party receives Notice of the amount due, unless GPA elects payment via an offset.

13.3 Natural Gas Metering

(a) Natural Gas Metering Equipment

i. GPA at its cost shall be responsible to install and maintain primary Natural Gas measurement equipment at the gas metering station in the Natural Gas pipelines supplying Natural Gas to the Facility in accordance with Schedule 6. GPA shall read its meter(s) at that point and such readings shall be considered official meters.

ii. Project Company may install Natural Gas backup measurement equipment downstream of GPA's measurement equipment for Natural Gas. In such case, Project Company shall be responsible for installing and maintaining the Natural Gas backup measurement equipment.

iii. GPA's Natural Gas metering devices shall be inspected, tested, and calibrated by GPA at least once each three (3) years. If Project Company at any time desires a special test of any meter or the computer used in the operation of the GPA's Natural Gas metering devices, it will promptly notify GPA and the Parties will then co-operate to secure a prompt test. All tests of GPA's Natural Gas metering devices shall be made at GPA expense, except that Project Company shall bear the GPA's reasonable cost of special tests made at the Project Company's request if the inaccuracy is found to be within 1%. Following each test, GPA shall ensure that GPA's

Natural Gas metering devices shall be adjusted as required to record centrally and accurately.

iv. Project Company's Natural Gas metering devices shall be inspected, tested, and calibrated by Project Company at least once each three (3) years. If GPA at any time desires a special test of any meter or the computer used in the operation of Project Company's Natural Gas metering devices, it will promptly notify Project Company and the parties will then co-operate to secure a prompt test. All tests of Project Company's Natural Gas metering devices shall be made at Project Company's expense, except that GPA shall bear Project Company's reasonable cost of special tests made at GPA's request if the inaccuracy is found to be within 1%. Following each test, Project Company shall ensure that Project Company's Natural Gas metering devices shall be adjusted as required to record centrally and accurately.

(b) Adjustment for Inaccurate Natural Gas Meters.

i. If, for any reason, GPA's Natural Gas meters are out of service or registering outside the specified limits, so that the quantity of Natural Gas delivered cannot be ascertained or computed from the reading thereof, the Natural Gas delivered during the period such meters are out of service shall be determined upon the basis of the best data available, using the first of the following methods which is feasible:

(A) By using the quantity recorded by Project Company's Natural Gas meters, if installed and accurately registering;

(B) By adjusting for the error, if the extent of the error is ascertainable by calibration, test or mathematical calculation; or

(C) By estimation on the basis of deliveries (Net Energy Output) during preceding periods of similar demand under similar conditions when the equipment was registering accurately, and for purposes of this estimation, the Parties may agree upon using data from measurements from outside of the measurement facility.

ii. In the event that the Parties cannot agree on the actual period during which the inaccurate measurements were made, the period during which the measurements are to be adjusted shall be the shorter of (i) the last one-half of the period from the last previous test of the Natural Gas metering device, or (ii) the (120) Days immediately preceding the test which found the Natural Gas metering device to be defective or inaccurate.

To the extent that the adjustment period covers a period of deliveries for which payment has already been made by GPA, GPA shall use the corrected measurements as determined in accordance with Articles 13.3(b) (i), or (ii) hereof to recompute the amount due for the period of the inaccuracy and shall subtract the previous payments by GPA for this period from such recomputed amount. If the difference is a positive number, the difference shall be paid by GPA to Project Company. If the difference is a negative number, the difference shall be paid by Project Company to GPA, or in the sole discretion of GPA, the difference may take the form of an offset to payments due to Project Company

by GPA. Payment of such difference by the owing Party shall be made not later than thirty (30) Days after the owing Party receives Notice of the amount due, unless GPA elects payment via an offset.

13.4 ULSD Metering

(a) ULSD Fuel Metering Equipment

i. GPA shall be responsible at its cost for installing and maintaining primary ULSD measurement equipment at the ULSD metering station in the ULSD pipelines supplying ULSD to the Facility in accordance with Schedule 6. GPA shall read its meter(s) at that point and such readings shall be considered official meters.

ii. Project Company may install ULSD backup measurement equipment downstream of GPA's measurement equipment for ULSD. In such case, Project Company shall be responsible for installing and maintaining the ULSD backup measurement equipment.

iii. GPA's ULSD metering devices shall be inspected, tested, and calibrated by GPA at least once each three (3) years. If Project Company at any time desires a special test of any meter or the computer used in the operation of the GPA's ULSD metering devices, it will promptly notify GPA and the Parties will then co-operate to secure a prompt test. All tests of GPA's ULSD metering devices shall be made at GPA expense, except that Project Company shall bear the GPA's reasonable cost of special tests made at the Project Company's request if the inaccuracy is found to be within 1%. Following each test, GPA shall ensure that GPA's ULSD metering devices shall be adjusted as required to record centrally and accurately.

iv. Project Company's ULSD metering devices shall be inspected, tested, and calibrated by Project Company at least once each three (3) years. If GPA at any time desires a special test of any meter or the computer used in the operation of Project Company's ULSD metering devices, it will promptly notify Project Company and the parties will then co-operate to secure a prompt test. All tests of Project Company's ULSD metering devices shall be made at Project Company's expense, except that GPA shall bear Project Company's reasonable cost of special tests made at GPA's request if the inaccuracy is found to be within 1%. Following each test, Project Company shall ensure that Project Company's ULSD metering devices shall be adjusted as required to record centrally and accurately.

v. Project Company shall, or shall have other party(ies) on its behalf, install and maintain measurement equipment at the ULSD truck delivery stations with the coordination and approval of GPA. The specifications and the location for ULSD Fuel meters and the associated metering system are set forth in Schedule 12. The measurement equipment for each Fuel shall be installed next to the storage tank dedicated to the respective Fuel.

vi. The Project Company's ULSD metering devices shall be inspected tested and calibrated in accordance with the provisions of Schedule 12.

(b) Adjustment for Inaccurate ULSD Meters.

i. If, for any reason, Project Company's main ULSD meters are out of service or registering outside the specified limits, so that the quantity of ULSD consumed cannot be ascertained or computed from the reading thereof, the ULSD consumed during the period such meters are out of service shall be determined upon the basis of the best data available, using the first of the following methods which is feasible:

(A) By using the quantity recorded by Project Company's back-up ULSD meters, if accurately registering; or

(B) By adjusting for the error, if the extent of the error is ascertainable by calibration, test or mathematical calculation.

ii. In the event that the Parties cannot agree on the actual period during which the inaccurate measurements were made, the period during which the measurements are to be adjusted shall be the shorter of (i) the last one-half of the period from the last previous test of the ULSD metering device, or (ii) the (120) Days immediately preceding the test which found the ULSD metering device to be defective or inaccurate.

To the extent that the adjustment period covers a period of deliveries for which payment has already been made by GPA, GPA shall use the corrected measurements as determined in accordance with Articles 13.4(a)i or ii hereof to recompute the amount due for the period of the inaccuracy and shall subtract the previous payments by GPA for this period from such recomputed amount. If the difference is a positive number, the difference shall be paid by GPA to Project Company. If the difference is a negative number, the difference shall be paid by Project Company to GPA, or in the sole discretion of GPA, the difference may take the form of an offset to payments due to Project Company by GPA. Payment of such difference by the owing Party shall be made not later than thirty (30) Days after the owing Party receives Notice of the amount due, unless GPA elects payment via an offset.

ARTICLE 14
BILLING AND PAYMENT

14.1 Invoices

(a) Invoices shall be prepared monthly by Project Company in accordance with this Article 14 for payment by GPA in Dollars, as specified in this Article 14.

(b) GPA and Project Company shall read directly by their representatives or via billing centers the metering devices on the first Day of each Month at 00:00 or 10:00 a.m., commencing with the first Month of the Period of Testing.

(c) Project Company shall render an itemized invoice to GPA by the tenth (10th) Day of each Month of the Term, commencing in respect of amounts due by GPA for deliveries of Net Energy Output and/or Dependable Capacity hereunder, with the first Month immediately following the Month in which the Phase 1 Commercial Operation Date occurs.

(d) Not used.

(e) Each itemized invoice for amounts due by GPA to Project Company under Article 14.1(c) for deliveries of Net Energy Output and/or Dependable Capacity hereunder in respect of any month from and after the Phase 1 Commercial Operation Date shall show, calculated, where applicable, in accordance with Schedule 5:

i. Net Energy Output delivered to GPA during each half hour of the previous Month and the total Net Energy Output for such Month;

ii. The Energy Charge for such Net Energy Output, and the Capacity Charge for the previous Month;

iii. Supplemental Charges, if any;

iv. any adjustments or offsets pursuant to Article 13, Article 9.7, or Article 18 hereof;

v. any adjustments pursuant to Article 14.3;

vi. any adjustments pursuant to Article 7.3(c);

vii. any adjustment pursuant to Article 4.3.2(ii)(B);

viii. the total amount in Dollars that is due from GPA to Project Company with respect to such deliveries of Net Energy Output and Dependable Capacity during the preceding Month, including, for the avoidance of doubt, the full Capacity Charge for the Dependable Capacity in the event that the Dependable Capacity is unavailable, in whole or in part, due to a request by GPA in accordance with this Agreement, due to a Scheduled Outage, due to a Maintenance Outage, due to a Forced Outage, due to a condition caused by GPA or by the Grid System, or due to the unavailability of Fuel during any period during which the Facility is deemed to provide the Dependable Capacity in Article 8.

14.2 Payment

Each invoice shall be paid within thirty (30) Days of receipt thereof, with those portions of the Price to be adjusted and calculated in accordance with Schedule 5.

14.3 Estimates

In order that invoices may be rendered promptly after the end of each Month, it may be necessary, from time to time, to estimate certain factors involved in calculating the monthly billing. Adjustments for errors in such estimates shall be included in the invoice for the first Month following the time when the information necessary to make such corrections or adjustments becomes available.

14.4 Late Payment

If an invoice is not paid within thirty (30) Days of receipt thereof (the "**Invoice Due Date**"), interest on unpaid amounts shall accrue daily from the Invoice Due Date until the date upon which payment is made at the Bank Rate plus two percent (2%).

14.5 Disputed Amounts

In the event of any Dispute as to the Capacity Charge, Energy Charge, or the Supplemental Charges, GPA shall notify Project Company of the amount in dispute. In such event, the amounts not disputed shall be paid as described in this Article 14 and GPA shall either deposit in escrow with a commercial bank selected by GPA and reasonably acceptable to Project Company an amount equal to the disputed amounts on the date such amounts, if undisputed, would otherwise be due or furnish to Project Company an irrevocable and unconditional letter of credit issued by a commercial bank selected by GPA and reasonably acceptable to the Project Company in an amount equal to the disputed amounts. This letter of credit shall be in a form and substance reasonably satisfactory to Project Company. The Dispute will be settled in accordance with the Dispute resolution procedures set forth in Article19. The resolution of the disputed amount shall include interest at the rate specified for late payment in Article 14.4. Upon resolution, the funds in the escrow account shall be disbursed in accordance with the resolution of the matter under Article 19.

14.6 Billing Errors

Any claim regarding an error in invoices previously paid shall be made (in accordance with Article 14.5 or 14.7) within fifteen (15) Business Days from the date of discovery of such error, but in any event no later than the date six (6) Months after the date of issuance of such invoice. If such claim is not made within the six-month period referred to in the previous sentence, the original invoice and the calculations therein shall be binding upon the Parties.

14.7 Inaccurate Meters

In the event adjustments to an invoice are required as a result of corrected measurements made with respect to inaccurate meters as described in Article 13.2, the Parties shall use the method of correcting measurements described in Article 13.2 to recompute the amounts due from or to GPA for the Net Energy Output and, in the event of corrected measurements made in respect of any Dependable Capacity Test, the Dependable Capacity sold under this Agreement during the period of inaccuracy. If the total amount, as recomputed, due from a Party for the period of one inaccuracy varies from the total amount due as previously computed, and payment of the previously computed amount has been made, then, following agreement by the Parties on the amount due as a result of the recomputation, Project Company shall promptly issue an adjusted billing statement. The owing Party shall pay any amount owed as shown on such billing statement within thirty (30) Days of the issuance of the adjusted billing statement.

ARTICLE 15
INSURANCE REQUIREMENTS

15.1 Terms and Conditions

(a) All insurance policies are subject to the jurisdiction and laws of the United States.

(b) All insurance policies should be effected through insurers registered in the United States to the extent required by the Laws of Guam.

(c) Re-insurance of all policies should be in accordance with the effective instructions issued by the insurance commission or any substitute authority and

accordingly, insurers should prove that they have implemented the aforesaid instructions.

(d) Insurance is subject to cut through clause and insured have the right to claim from either insurers or reinsurers or both of them.

(e) Project Company shall not be obliged to obtain any insurance policies covering sabotage, war or terrorism risk.

15.2 Maintenance of Insurance Policies

(a) Project Company shall obtain and maintain from and after Financial Close and throughout the term of this Agreement the policies of insurance set forth in the minimum coverage amounts (or if not set forth, on terms and conditions, including sub-limits, deductibles and exclusions that are obtained by independent power generators of comparable size, technology and location) and during the periods, provided, however, that such minimum amounts may be changed from time to time with the written consent of GPA, which consent may not be unreasonably withheld or delayed. In addition to the foregoing, the Project Company may obtain any additional coverage required by the Lenders or the Laws of Guam, or deemed necessary by Project Company. Project Company shall not be in breach of its obligations hereunder if and to the extent that any particular insurance policy, or amount of coverage or any particular term of policy is not or ceases to be available on commercially reasonable terms for reasons other than any negligence or default by, or the deterioration of the financial condition of Project Company from the date of execution of this Agreement.

(b) In the event that any particular insurance policy or amount of coverage required to be maintained hereunder ceases to be available on commercially reasonable terms for reasons other than any negligence or default by, or the deterioration of the financial condition of Project Company from the date of this Agreement, Project Company shall notify GPA of such occurrence promptly upon becoming aware of it, and GPA shall have the option to procure such particular policy or amount of coverage and to require Project Company to reimburse it for the cost thereof up to an amount not exceeding the premium paid by Project Company immediately prior to such insurance becoming unavailable on commercially reasonable terms (provided that the terms of such policy and the insurers and reinsurers providing it are otherwise substantially the same as those of the policy that it replaces).

15.3 Insurance Requirements for the Construction Period

(a) Cargo transportation insurance (imports and re-exported items):

This insurance shall cover all materials, equipments, machineries, spares and other items for incorporation into the Facility against all risks of physical loss or damage while in transit by sea and\or air and/or by land conveyance and/or sending by post from the country of origin anywhere in the world to the site, or vice versa, from the time the insured items leave the warehouse or the factory and\ or place of storage for shipment to the site (final destination named in the policy), plus war, strikes, riot and civil commotions in accordance with the provisions of institute cargo clause "**A**", war, strikes, and civil commotions or land transit "All Risks clause".

Coverage shall be in an amount equal to the cost, freight and all other expenses and fees.

In the alternative, Project Company may satisfy its obligations hereunder by requiring the vendor of such items to insure them in the manner specified herein, provided the vendor names Project Company and the other parties and first provides Project Company with evidence of such insurance, a copy of which shall be provided to GPA upon request.

Name of insureds include Project Company, GPA and all other concerned parties.

(b) Delay in start up following cargo transport insurance:

This insurance shall cover debt service and fixed costs incurred following delays in reaching the Required Commercial Operation Date as a direct result of physical loss or damage to the materials, equipments, machineries and other items in transit by sea and/or air and/or by motor truck to the site to the extent covered under the cargo transport insurance.

This insurance shall indicate indemnity period not less than one calendar year as from the date of the occurrence of the risk covered under the transport policy.

15.4 Insurances Required During Construction Period Plus Erection, Trial Testing and Commissioning Period Plus Debt Service and Fixed Operation and Maintenance Costs Loss Due to Delay

(a) Contractors all risks policy (C.A.R. Policy):

This insurance shall cover all permanent and temporary works at the site in the course of execution, including machinery and equipment for incorporation in the Facility, against all risks of physical loss or damage (other than nuclear risk, penalties, consequential losses, cash, vehicles, vessels and aircraft) and shall include cover for loss or damage caused by faulty design, defective workmanship and defective material. Coverage shall be not less than the probable maximum loss value of the items covered.

Coverage also shall include equipment, machinery used by the concerned parties plus removal of debris, third party liability plus cross liability during the period of construction, plus one calendar year maintenance period.

(b) Delay in start up following C.A.R. incidents:

This insurance shall cover debt service and fixed operation and maintenance costs incurred following delays in reaching the Required Commercial Operation Date as a direct result of physical loss or damage to the works to the extent that such loss or damage is covered under the C.A.R. policy.

(c) Professional indemnity policy:

This policy, which the Project Company shall have the option to obtain and maintain if it considers it necessary taking into account the financial standing of the Construction Contractor, covers any loss or damage due to negligence, error,

mistakes, faults and/or defaults or any other risks cover under P.I. policy which occurred during the period of construction or erection.

This policy shall include a sum insured equal to the said losses and/or damage.

15.5 Insurances Requirements after Construction Stage

(a) Properties insurance:

Subject to all risks policy to cover buildings, structures, fittings, equipments, machineries, appliances and/or other items.

This insurance to cover the said properties against:

ix. Fire and other allied perils plus debt service and fixed operation and maintenance costs due to fire and/or other allied perils.

x. To cover the physical loss or damage due to sudden and unforeseen cause.

xi. This policy shall include the machinery breakdown perils subject to Munich-Re specimen or similar policy wording and also to cover debt service and fixed operation and maintenance costs due to machinery breakdown.

Note: Coverage shall be not less than the probable maximum loss value of the items covered. Indemnity period for debt service and fixed operation and maintenance costs due to fire or due to machinery breakdown is not less than one calendar year as from the date of occurrence of the original risk.

(b) Workmen's compensations policy for all workers and employees in accordance with the provisions of Guam labour law.

(c) Employer's liability towards temporary workers and other employees.

(d) Motor insurance policy (comprehensive cover) to include third party liability plus the cars and all vehicles and spares and appliances.

(e) Public liability insurance policy to cover any legal liability (bodily injuries and damages to property). Such policy should be sufficient to cover, at a minimum, US$ [ ] for any one occurrence and in aggregate US$ [ ] for bodily injuries and US$ [ ] for property damages.

ARTICLE 16
LIABILITY AND INDEMNIFICATION

16.1 Limitation of Liability

Except as expressly provided in this Article 16, without prejudice to any rights to damages that either Party may have as expressly provided for in Articles 5, 9 and 17, neither Party shall be liable to the other Party in contract, tort, warranty, strict liability or any other legal theory for any indirect, consequential, incidental, punitive or exemplary damages or for loss of revenue or loss of profits. In respect of a breach of the provisions of this Agreement, neither Party shall have any liability to the other Party save as expressly stated in this

Agreement; provided, however, that this provision is not intended to constitute a waiver of any rights of one Party against the other with regard to matters unrelated to this Agreement or to any activity not contemplated by this Agreement.

16.2 Indemnification

(a) GPA

Subject to Article 16.5, GPA shall indemnify Project Company and Project Company's officers, directors, shareholders and employees against, and hold Project Company and Project Company's officers, directors, shareholders and employees harmless from, at all times after the date hereof, any and all Losses, and any and all actions, claims and demands in respect of such Losses, incurred, suffered, sustained, or required to be paid, directly or indirectly, by, or sought to be imposed upon, Project Company or Project Company's officers, directors, shareholders or employees for personal injury or death to persons or damage to property arising out of the negligent or intentional acts or omissions of GPA in connection with this Agreement.

(b) The Project Company

Subject to Article 16.5, Project Company shall indemnify GPA and GPA's officers, directors, shareholders and employees against, and hold GPA and GPA's officers, directors, shareholders and employees harmless from, at all times after the date hereof, any and all Losses, and any and all actions, claims and demands in respect of such Losses, incurred, suffered, sustained, or required to be paid, directly or indirectly, by, or sought to be imposed upon, GPA or GPA's officers, directors, shareholders or employees for personal injury or death to persons or damage to property arising out of the negligent or wilful default of Project Company in connection with this Agreement.

(c) Joint Negligence

Subject to Article 16.5, in the event that any Loss results from the joint or concurrent negligent or intentional acts or omissions of the Parties, each Party shall be liable under this indemnification in proportion to its relative degree of fault.

16.3 Indemnification for Fines and Penalties

Any fines or other penalties incurred by Project Company for non-compliance with the applicable Laws of Guam or the Government Authorizations shall not be reimbursed by GPA but shall be the sole responsibility of Project Company, except to the extent that such non-compliance is caused by the negligence or intentional acts or omissions of GPA.

16.4 Notice of Proceedings

Each Party shall promptly notify the other Party of any Loss, claim, action, demand or proceeding in respect of which it is or may be entitled to indemnification under Article 16.2. Such Notice shall be given as soon as reasonably practicable after the relevant Party becomes aware of the Loss, claim, action, demand or proceeding. Failure to give such Notice in a timely fashion shall not affect the indemnified Party's rights to indemnification except to the extent that the indemnifying Party is materially prejudiced thereby.

16.5 Limitation on Indemnification

(a) Each Party shall be solely liable, and shall not be entitled to assert any claim for indemnification under this Agreement for any Loss that would otherwise be the subject of indemnification under this Agreement until all Losses of such Party arising during the current Contract Year exceed the equivalent of two hundred thousand Dollars (US$ 200,000) in the aggregate in which case only the amount of Loss greater than two hundred thousand Dollars (US$ 200,000) shall be subject to indemnification. For purposes of this Article 16.5, a Loss (or claim for indemnification) shall be deemed to arise in the Contract Year during which the event giving rise to the Loss (or claim for indemnification) occurred or, in the case where the event is continuing in more than one Contract Year, in the Contract Year during which the event ends, provided that a Party shall not be obliged to refrain from making a claim under this Article 16.5 (where it is otherwise entitled to do so) at the end of a given year ("**Year End**") by reason of the fact that the event in question ("**Relevant Event**") is still continuing, and provided further that in the event that such Party does make such a claim at the Year End it shall continue to be able to claim in relation to all remaining Losses arising from the Relevant Event regardless of when they occur.

(b) Neither Party shall be entitled to the indemnity under Article 16.2 if and to the extent that a Party has received payment in respect of a Loss or proceeding under the indemnities contained in the Lease Agreement or any other document comprising the Security Package in respect of the relevant act or omission.

16.6 Defence of Claims

(a) The indemnifying Party shall be entitled, at its option, to assume and control the defence of such claim, action, suit or proceeding at its expense with counsel of its selection and the indemnified Party shall provide it with a power of attorney if required for this purpose, provided it gives prompt Notice of its intention to do so to the indemnified Party and reimburses the indemnified Party for the reasonable costs and expenses incurred by the indemnified Party prior to the assumption by the indemnifying Party of such defence.

(b) Unless and until the indemnifying Party acknowledges in writing its obligation to indemnify the indemnified Party and assumes control of the defence of a claim, suit, action or proceeding in accordance with Article 16.6(a), the indemnified Party shall have the right, but not the obligation, to contest, defend and litigate, with counsel of its own selection, any claim, action, suit or proceeding by any third party alleged or asserted against the indemnified Party in respect of, resulting from, related to or arising out of any matter for which it is entitled to be indemnified hereunder, and the reasonable costs thereof shall be subject to the indemnification obligations of the indemnifying Party hereunder.

(c) Upon assumption by the indemnifying Party of the control of the defence of a claim, suit, action or proceeding, the indemnifying Party shall reimburse the indemnified Party for the reasonable costs and expenses of the indemnified Party in the defence of the claim, suit, action or proceeding prior to the indemnifying Party's acknowledgement of the indemnification and assumption of the defence.

(d) Following the acknowledgement of the indemnification and the assumption of the defence by the indemnifying Party, the indemnified party shall have the right to employ its own counsel and such counsel may participate in such claim, suit, action or proceeding, but the fees and expenses of such counsel shall be at the expense of such indemnified Party, when and as incurred, unless (i) the employment of counsel by such indemnified Party has been authorised in writing by the indemnifying Party, (ii) the indemnified Party shall have reasonably concluded that there may be a conflict of interest between the indemnifying Party and the indemnified Party in the conduct of the defence of such action, (iii) the indemnifying Party shall not in fact have employed independent counsel reasonably satisfactory to the indemnified party to assume the defence of such action and shall have been so notified by the indemnified Party, or (iv) the indemnified Party shall have reasonably concluded and specifically notified the indemnifying Party either that there may be specific defences available to it that are different from or additional to those available to the indemnifying Party or that such claim, action, suit or proceeding involves or could have a material adverse effect upon it beyond the scope of this Agreement. If clauses (ii), (iii) or (iv) of the preceding sentence shall be applicable, then counsel for the indemnified Party shall have the right to direct the defence of such claim, action, suit or proceeding on behalf of the indemnified Party and the reasonable fees and disbursements of such counsel shall constitute legal or other expenses hereunder, subject to the indemnification obligations of the indemnifying Party hereunder.

ARTICLE 17
FORCE MAJEURE

17.1 Definition

For the purposes of this Agreement, a "**Force Majeure**" means a cause or event (i) that is beyond the reasonable control of the affected Party and was not due to the fault or negligence of the affected Party and that prevents such Party's performance of its obligations under or pursuant to this Agreement, and (ii) which the affected Party is unable to prevent, overcome or remedy by the exercise of diligence and reasonable care, or avoid by the exercise of reasonable foresight and mitigation [, it being understood and agreed that reasonable care includes the expenditure of sums of money ("**Mitigating Costs**") to protect the Facility from a casualty event, which sums are reasonable in light of the likelihood of such event, the probable effect of such event if it should occur, and the likely efficacy of the protection measures].

"**Force Majeure**" shall include the following events and circumstances, but only to the extent that each satisfies the above requirements:

(a) floods, hurricanes, tornadoes, typhoons, cyclones, earthquakes and other natural calamities;

(b) fires or explosions that could not have been prevented by acting in accordance with industry standards or Prudent Utility Practices, as applicable;

(c) war (declared or undeclared), riots, insurrection, rebellion, civil disturbance, acts of the public enemy, acts of terrorism and sabotage, blockades, embargoes or sanctions;

(d) strikes which are widespread within the Territory of Guam, regional and industry-wide labor disputes unless affecting only or caused by Project Company or its Contractors (or their subcontractors of any tier) or their employees;

(e) any Change in Law:

(f) the unavailability of Fuel supply or Fuel transportation as a result of Force Majeure.

Force Majeure shall expressly not include the following conditions, except and to the extent that they result from a Force Majeure:

(a) the absence of sufficient financial means to perform obligations or the failure to make payments in accordance with this Agreement;

(b) weather conditions that could reasonably be expected to occur by an experienced contractor or electric generator in Guam other than extreme or unusually severe weather conditions that constitute a Force Majeure event in accordance with clause above;

(c) shortages, unavailability, late delivery, or changes with respect to materials, spare parts, supplies, consumables or components of equipment for the Project;

(d) price fluctuations with respect to materials, spare parts, supplies, consumables or components of equipment for the Project;

(e) late delivery of materials, supplies or components of equipment;

(f) economic hardship;

(g) shortages of manpower;

(h) the delay, default or failure to perform by a contractor or subcontractor;

(i) machinery or equipment breakdown;

(j) customs procedures

(k) flaws in the Final Technical Specifications prepared by Contractor which require Contractor to re-design or re-engineer any portion of the Project or otherwise change or modify the Work.

(l) normal wear and tear or random flaws in materials and equipment or breakdowns in equipment.

No event, whether or not it constitutes "Force Majeure" will excuse GPA from the obligation to:

(a) make any payment when due and payable under this Agreement, provided that if the occurrence or effects of a Force Majeure affects the operation of all or a portion of the Facility, GPA shall continue, during the continuance of such Force Majeure or its effects, to pay the Capacity Charge for each MW of Dependable Capacity, after deducting from the Capacity Charge an amount determined by multiplying the Capacity Charge by a fraction, the numerator of which is the

capacity that is unavailable due to the Force Majeure, and the denominator of which is the Dependable Capacity.

(b) fulfill payment obligations under this Agreement including payment of the full Capacity Charge for the Dependable Capacity.

In the event that the Facility and associated energy is unavailable, in whole or in part, due to:

i. the unavailability of Fuel supply or, subsequent to the transfer of the Electrical Interconnection Facilities to GPA, the unavailability of the Electrical Interconnection Facilities or electric transmission or distribution service sufficient to export the entire output of the Facility; or

ii. a condition caused by GPA or the Grid System,

the Facility, to the extent it is unavailable due to the foregoing reasons, shall be deemed available and providing the Dependable Capacity for the purposes of calculating liquidated damages under Article 9.

17.2 Notification Obligations

(a) The Party affected by a Force Majeure shall give Notice to the other Party of any event constituting a Force Majeure as soon as reasonably practicable. Any Notice shall include full particulars of the event constituting a Force Majeure, of its effects on the Party claiming relief and the remedial measures proposed, including estimated cost and time to restore the Project, if appropriate. The Party affected by a Force Majeure shall coordinate with the other Party and give the other Party regular reports on the progress of those remedial measures and such other information as the other Party may reasonably request.

(b)

(c) The Party affected by a Force Majeure shall give Notice to the other Party of (i) the cessation of the relevant event constituting a Force Majeure, and (ii) the cessation of the effects of such event constituting a Force Majeure on the enjoyment by such Party of its rights or the performance by it of its obligations under this Agreement, as soon as reasonably practicable after becoming aware of each of (i) and (ii) above.

17.3 Duty to Mitigate

The affected Party shall be responsible to use all reasonable efforts to mitigate the effects and costs of a Force Majeure.

17.4 Term Extension

If, during any period, the Dependable Capacity is not available due to the occurrence or effects of a Force Majeure and this Agreement is not terminated earlier than the original Term, the Term of this Agreement and the Lease Agreement shall be extended by the number of Days that the Dependable Capacity was not available due to the occurrence or effects of such Force Majeure.

17.5 Delay Caused by Force Majeure

Except as otherwise set forth below, neither Party shall be responsible or liable for or deemed in breach hereof because of any failure or delay in complying with its obligations (other than an obligation to make a payment) under or pursuant to this Agreement due to one or more events of Force Majeure or its or their effects or by any combination thereof, and the periods allowed or dates required (including the Required Commercial Operation Dates) for the performance by Parties of such obligation(s) shall be extended on a day-for-day basis to account for such event(s), effects or combination thereof; provided that no relief shall be granted to the Party claiming Force Majeure pursuant to this Article 17 to the extent that such failure or delay would have nevertheless been experienced by that Party had such Force Majeure not occurred.

17.6 Adjustments for Change in Law

(a) In the event of a Change in Law which is of the type described in the Change in Law definition and has an impact on the Project that is equal or greater to [$500,000] for a Contract Year , GPA shall pay to Project Company (without double recovery) a Supplemental Charge under this Agreement in such amount as is necessary to compensate Project Company for, and make Project Company whole with respect to any such additional costs and/or adverse affect on the expected financial benefit suffered as a result of such Change in Law.

(b) In the event of a Change in Law that has a positive impact on the Project Company that is equal to or greater than [US$500,000] for a Contract Year , Project Company shall adjust the Capacity Charge under this Agreement in such amount as is necessary to return the benefit of such increase to GPA.

ARTICLE 18
TRANSFER OF OWNERSHIP

18.1 Facility Transfer

(a) On the Transfer Date, Project Company shall transfer to GPA, free from any lien or encumbrance and without the payment of compensation, all right, title and interest in and to the Facility including all fixtures, fittings, plant and equipment (including all test equipment, special tools, as-built drawings, software, documents, reports, analyses, all relevant files, plant procedures and forms as reasonably required and necessary for GPA to effectively operate the Facility after the transfer) and all improvements comprising the Facility (the "Facility Transfer"), provided that there is no default in payment obligations by GPA that has not been cured.

(b) Six (6) months prior to the Transfer Date, GPA and Project Company shall meet and agree on the inventories involved and the mechanics of the Facility Transfer but Project Company shall not be liable for any discrepencies between such inventories and the actual fixtures, fittings, plant and equipment transferred, provided that following agreement on inventories Project Company shall exercise the same care regarding the fixtures, fittings, plant and equipment and all improvements therein as it did prior to agreeing to the same and provided further that GPA shall be entitled to provide a security unit within the Site.

(c) [ ] shall be responsible for all costs and expenses (including legal fees and taxes or duties) incurred in connection with the Facility Transfer and shall at its own cost obtain or effect all Government Authorizations and other approvals, licenses, registrations and filings and take such other action as may be necessary for the Facility Transfer as contemplated in this Article 18, and reimburse [ ] on demand for all such costs and expenses incurred by [ ] in respect thereof.

18.2 Testing Prior to End of Term and Facility Transfer

(a) Unless this ECA is terminated early, during the last year of the Term, the Project Company shall perform the tests described in Schedule 4 ("End of Term Tests") and the final pre-Facility Transfer overhaul described in Schedule 1 (the "Final Major Overhaul"). In the event that the End of Term Test results demonstrate that the Facility requires repair and/or replacement of equipment or parts, the Project Company shall carry out such corrective action as is required by Schedule 1.

(b) If the Facility does not satisfy the requirements of Schedule 1, including the performance requirements set forth in Schedule 1, the Project Company shall immediately take such actions as will cause the Facility to comply with the requirements of Schedule 1. If the Project Company fails to cause the Facility to comply with the requirements of Schedule 1 within thirty (90) Days prior to the expiration of the Term, GPA (or its nominee) may take such measures as may be required for the Facility to comply with the requirements of Schedule 1 at the sole expense of the Project Company. In the event that Project Company does not make timely payments for such expenses, GPA shall have the right to draw such amounts from the Transfer Security and/or set off such amounts under Article 14.1(e)(iv).

18.3 Transfer Overhaul

Three (3) years prior to the expiration of the Term, the Project Company shall deliver to GPA a plan that is consistent with Prudent Utility Practices and reasonably acceptable to GPA setting out the anticipated costs and activities associated with the Final Major Overhaul and the Facility Transfer. The Final Major Overhaul shall occur no earlier than 18 months and no later than 6 months from the expiration of the Term. In the event that GPA, acting reasonably, does not agree with the costs and activities anticipated by the Project Company in such transfer plan and the Parties cannot agree on the costs and activities, the Dispute shall be resolved in accordance with ARTICLE 19, provided, however, that the Project Company's obligations under the transfer plan shall always be limited to the scope set out in Schedule 1. The plan shall also describe the reserves to be maintained by the Project Company to cover these anticipated costs and activities. The Project Company shall maintain adequate reserves to complete the Facility Transfer obligations required by Schedule 1.

18.4 Transfer Security

On or prior to the end of the twenty-first (21st) Contract Year, the Project Company shall deliver to GPA a security deposit in the amount of US$15,000,000 (the "Transfer Security"). The security deposit shall be issued in one of the forms set out in Article 6 as security for performance of the Project Company's obligations under this ARTICLE 18. The deposit shall

remain valid for one (1) year subsequent to the date of Facility Transfer. In the event that Project Company has not delivered the security deposit in favor of GPA by the end of the twenty-first (21st) Contract Year, GPA shall have the right to withhold payments to Project Company (including payment amounts owed pursuant to Article 14) up to the Transfer Security amount.

ARTICLE 19
CHOICE OF LAW AND RESOLUTION OF DISPUTES

19.1 Governing Law

This Agreement and the rights and obligations hereunder shall be interpreted, construed and governed by the laws of Guam and all applicable laws of the United States of America.

19.2 Initiation of Dispute Resolution

(a) In the event that a Dispute arises, the Parties shall attempt in good faith to settle such Dispute by mutual discussions within thirty (30) Days after the date that the disputing Party gives Notice of the Dispute to the other Party which may include referring the Dispute to the Joint Coordinating Committee for a specified time period, subject to mutual agreement of the Parties.

(b) In the event that the Dispute is not resolved in accordance with Article 19.2(a), either Party may refer the Dispute to the chief executive officer or chief operating officer of Project Company and GPA for further consideration. In the event that such individuals are unable to reach agreement within fifteen (15) Days, or such longer period as they may agree, then either Party may commence arbitration of the Dispute in accordance with Article 19.3

19.3 Arbitration

(a) Any Dispute arising out of or in connection with this Agreement and not resolved following the procedures described in Article 19.2 shall be finally settled by arbitration under the ICC Rules by three (3) arbitrators appointed in accordance with the ICC Rules.

(b) Any arbitration shall be conducted in English, and unless otherwise agreed by the Parties, the number of arbitrators shall be three (3).

(c) The place of arbitration shall be Guam.

(d) Unless otherwise provided in this Agreement, during the conduct of Dispute resolution the Parties shall continue to perform their respective obligations under this Agreement.

(e) The arbitration tribunal may consolidate an arbitration arising out of or relating to this Agreement with any arbitration arising out of or relating to the Lease Agreement if the subject matter of the Disputes arises out of or relates to essentially the same facts or transactions. Such consolidated arbitration shall be

determined by the arbitration tribunal appointed for the arbitration proceeding that was commenced first in time.

19.4 Consent to Jurisdiction

Each Party hereby consents to the jurisdiction of the courts of Guam for any action filed by the other Party to enforce a judgment entered for the purpose of recognising any award or decision of any arbitrator(s) or expert(s) who were duly appointed under this Agreement to resolve any Dispute between the Parties. With respect to any such proceedings for the enforcement of any such award against the assets of a Party:

(a) GPA appoints [ ] the [ ] of GPA, whose address is presently Gloria B. Nelson Public Service Building 688 Route 15 Fadian, Mangilao, Guam, to receive for and on its behalf service of process in such jurisdiction in any such enforcement proceeding; and

(b) The Project Company appoints its [ ], whose address is presently at [ ], to receive for and on its behalf service of process in such jurisdiction in any such enforcement proceeding.

ARTICLE 20
NO LIABILITY FOR REVIEW

No review, non-objection or approval by GPA of any agreement, document, instrument, drawing, specifications or design proposed by Project Company shall relieve Project Company from any liability that it would otherwise have had for its negligence or wilful misconduct (i) in the preparation of such agreement, document, instrument, drawing, specification or design or (ii) the failure to comply with the applicable Laws of Guam with respect thereto.

ARTICLE 21
SHARE TRANSFER AND DISPOSAL OF ASSETS

21.1 Shares Certificate Legend Requirement

With respect to the transfer of the registered ownership of any Shares, Project Company (i) shall include appropriate legends on all share certificates evidencing Shares of Project Company to put prospective purchasers of such Shares on notice of the restrictions in the following provisions and, (ii) to the extent permitted by the Laws, shall not register or give effect to any purported transfer of Shares that is not in compliance with such restrictions or do not bear such legend.

21.2 Transfer Restriction

Prior to the second anniversary of the Phase 2 Commercial Operation Date, none of the Initial Shareholders shall (i) transfer any Shares owned by them or (ii) merge into or consolidate with any other individual, corporation, company, voluntary association, partnership, joint venture, trust, or (iii) dispose of assets of Project Company at any time, except for:

(a) a transfer required by any Laws or by the operation of the Laws or by order of a court, tribunal, or Governmental Authority with appropriate jurisdiction; or

(b) a transfer resulting from the enforcement of a pledge or security interest in or over any Shares in accordance with the Security Package; or

(c) a transfer of Shares in accordance with the Lenders' Direct Agreement; or

(d) a transfer to which GPA has given its prior written approval.

ARTICLE 22
NOTICES

Except as otherwise expressly provided in this Agreement, all notices, communications, or other documents (together "**Notices**") to be given or made by one Party to the other Party pursuant to this Agreement shall be in English and in writing, shall be addressed for the attention of the person indicated below, and shall be delivered by hand or sent by reputable international express courier by facsimile, or registered mail. Any Notice given by facsimile shall be confirmed by sending a copy of the same by personal delivery or by registered mail, but the failure to so confirm shall not void or invalidate the original Notice if it is in fact received by the Party to which it is addressed. The addresses for service of the Parties and their respective facsimile numbers are:

[……]

or such other addresses and facsimile numbers as either Party may have notified to the other Party in accordance with thisArticle 22.

All Notices shall be deemed delivered (a) when presented personally, (b) when transmitted by facsimile to the receiving Party's facsimile number specified above, (c) one (1) Day after being delivered to a courier for express delivery, addressed to the receiving Party, at the address indicated above (or such other address as such Party may have specified by written Notice), or (d) five (5) Days after being sent by registered mail addressed to the receiving Party, at the address indicated above (or such other address as the receiving Party may have specified by written Notice). Any Notice given by facsimile shall be confirmed in writing delivered personally or sent by registered mail, but the failure to so confirm shall not void or invalidate the original Notice if it is in fact received by the Party to which it is addressed.

ARTICLE 23
MISCELLANEOUS PROVISIONS

23.1 Amendment

This Agreement cannot be amended except by prior written agreement between the Parties.

23.2 Headings

The headings contained in this Agreement are used solely for convenience and do not constitute a part of this Agreement nor shall such headings be used in any manner to aid in the construction of this Agreement.

23.3 Third Parties

This Agreement is intended solely for the benefit of the Parties hereto. Nothing in this Agreement shall be construed to create any duty or any liability to or any right of suit or action whatsoever, to any person not a Party to this Agreement.

23.4 No Implied Waiver

The failure or delay of either Party to enforce at any time any of the provisions of this Agreement, or to require at any time performance by the other Party of any provision hereof, shall neither be construed to be a waiver of such provisions nor affect the validity of this Agreement or any part hereof or the right of such Party thereafter to enforce each and every such provision.

23.5 Relationship of the Parties

This Agreement shall not be interpreted or construed to create an association, joint venture, partnership or agency between the Parties or to impose any partnership obligation or liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party. Nothing in this Agreement shall be construed as creating any relationship between the Parties other than that of independent sale and purchase of capacity and electricity generated at the Facility. Except as otherwise set forth herein, the Parties do not intend to create any rights, or grant any remedies to, any third party beneficiary of this Agreement. Therefore, Project Company shall be solely responsible for the payment of salaries, wages and mandatory and fringe benefits of its employees, which will not have any labour relationship with GPA.

23.6 Rights of Inspection

Project Company shall promptly furnish to GPA such information as GPA may from time to time reasonably request. Subject to Article 7.5, Project Company shall permit representatives of GPA on reasonable notice and during reasonable hours to visit the Facility, such visit to be at the cost of GPA.

23.7 Periodic Reports

(a) Each Party shall, as soon as available but in any event within one hundred twenty (120) Days after the end of each fiscal year, furnish to the other Party: (a) two (2) copies of its complete financial statement for such fiscal year (which are in agreement with its books of accounts and are prepared in accordance with accounting principles which are generally accepted in Guam and consistently applied), together with an audited report thereon; (b) a copy of any management letter or other communication sent by the auditors to the Party or to its management in relation to the Party's financial, accounting and other systems, management and accounts; and (c) a report by the auditors certifying that, based on its financial statements, the Party was in compliance with its financial obligations as of the end of the relevant fiscal year or, as the case may be, detailing any non-compliance. In addition, each Party shall authorise its auditors (whose fees and expenses shall be for the account of the Party) to communicate directly with the other Party at any time regarding the Party's accounts and operations and shall furnish to the other Party a copy of such Authorization.

(b) Each Party shall, as soon as available but in any event within sixty (60) Days after the end of each six (6) Month period of each fiscal year, furnish to the other Party: (i) two (2) copies of balance sheets of such Party, as of the close of that period, and statements of sources and uses of income and retained earnings and changes in the Party's capital accounts and financial position, for the period and

for the portion of the fiscal year ending with that period, in each case setting forth in comparative form the figures for the corresponding period for the preceding fiscal year, all in reasonable detail and in accordance with the generally accepted accounting principles in Guam consistently applied and certified as complete and correct, subject to changes resulting from year-end adjustments, by the chief accounting officer of the Party; and (ii) a report on any factors materially and adversely affecting or that might materially and adversely affect the Project or the Party's business and operations or its financial condition.

23.8 Survival

Articles [1, 2, 16, 6.3, 6.4 19, 23, and 23] shall survive the cancellation, expiration or termination of this Agreement.

23.9 Language

The language of this Agreement shall be English. All documents, Notices, waivers and all other communication written or otherwise between the Parties in connection with this Agreement shall be in English.

23.10 Entirety

This Agreement and Schedules attached hereto [and the LLA] and any scedules or annexes thereto, taken together, are intended by the Parties as the final expression of their agreement and are intended also as a complete and exclusive statement of the terms of their agreement with respect to the subject matter of this Agreement and the LLA. All prior written or oral understandings, offers or other communications of every kind pertaining to the sale or purchase of capacity and energy hereunder to GPA by Project Company or to Project Company by GPA or pertaining to the connection of the Facility to the Grid System are hereby abrogated and withdrawn.

23.11 Assignment

This Agreement may not be assigned by either Party other than by mutual agreement between the Parties in writing. Notwithstanding the foregoing, for the purpose of financing or refinancing the Facility, GPA agrees that Project Company may assign to the Lenders its rights and interest or create security over its rights and interest under or pursuant to (i) this Agreement, (ii) the Facility, (iii) the movable property and intellectual property of Project Company and (iv) the revenues or any of the rights or assets of Project Company. The Parties acknowledge and agree that provisions, which shall be agreed with the Lenders, will be included in the Lenders' Direct Agreement which will provide, inter alia, for the Lenders' security interest, cure and step-in rights in and under this Agreement.

23.12 Successors and Assigns

This Agreement shall be binding upon, and inure to the benefit of, the Parties hereto and their respective legal successors and assigns permitted in accordance with Article 23.11.

23.13 Confidentiality

Each of the Parties shall hold in confidence the agreements relating to the Project and all documents and other information, whether technical or commercial, which is of a confidential nature supplied to it by or on behalf of the other Party relating to the design,

construction, insurance, operation, maintenance, management and financing of the Project and shall not publish, disclose or use the same for its own purposes other than as may be required to perform its obligations under this Agreement or as may be required by law.

23.14 Counterparts

This Agreement may be executed in more than one counterpart, each of which shall be deemed to be an original and all of which when taken together shall be deemed to constitute one and the same instrument.

23.15 Severability

If one or more provisions contained in this Agreement are held or found to be invalid, illegal, or unenforceable in any respect, the provision(s) shall be given effect to the extent permitted by law and the invalidity, illegality, or unenforceability of any provisions shall not affect the validity of the remaining provisions of this Agreement.

GUAM WATERWORKS AUTHORITY

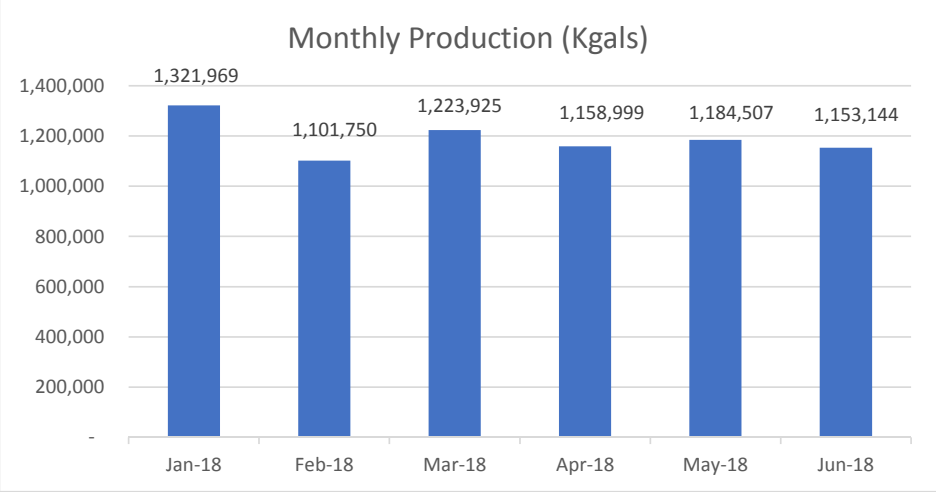
General Manager's Report
GPWA CCU Board Meeting, July 24, 2018

Operations Update

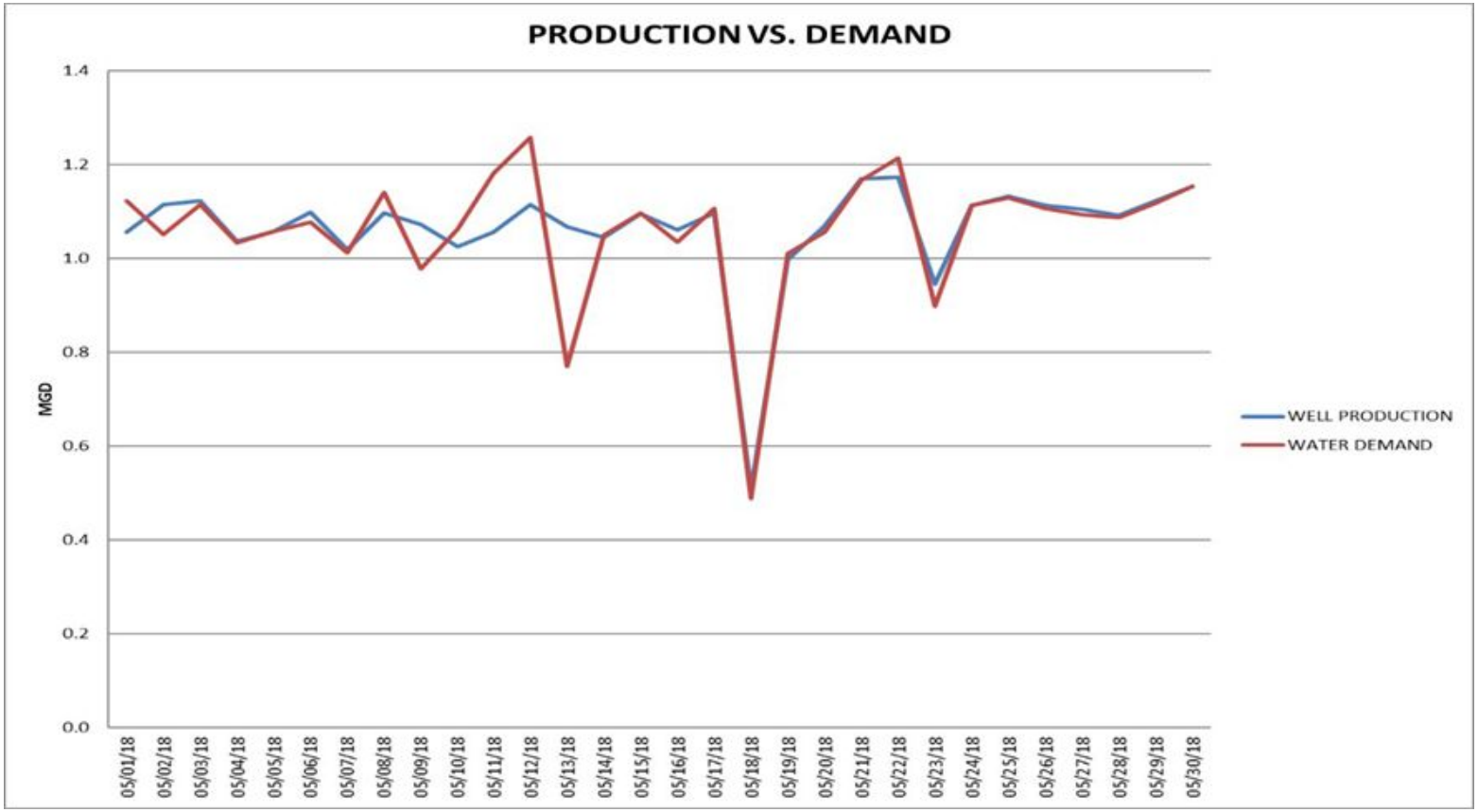
Production

Monthly Production Summary - May 2018					
Deep Wells				35.2	MGD
	Active wells =	95	of 120		
	Avg days in operation =	31.00	days		
	Total Production =	1,089,902	Kgals		
Springs				0.00	MGD
	Avg days in operation =	0	days	*placed on standby	
	Total Production =	0	Kgals		
Ugum Surface Water Plant				2.0	MGD
	Avg days in operation =	31	days		
	Total Production =	61,545	Kgals		
Tumon Maui Well				1.07	MGD
	Avg days in operation =	31	days		
	Total Production =	33,060	Kgals		
		1,184,507	Kgals	38.2	MGD

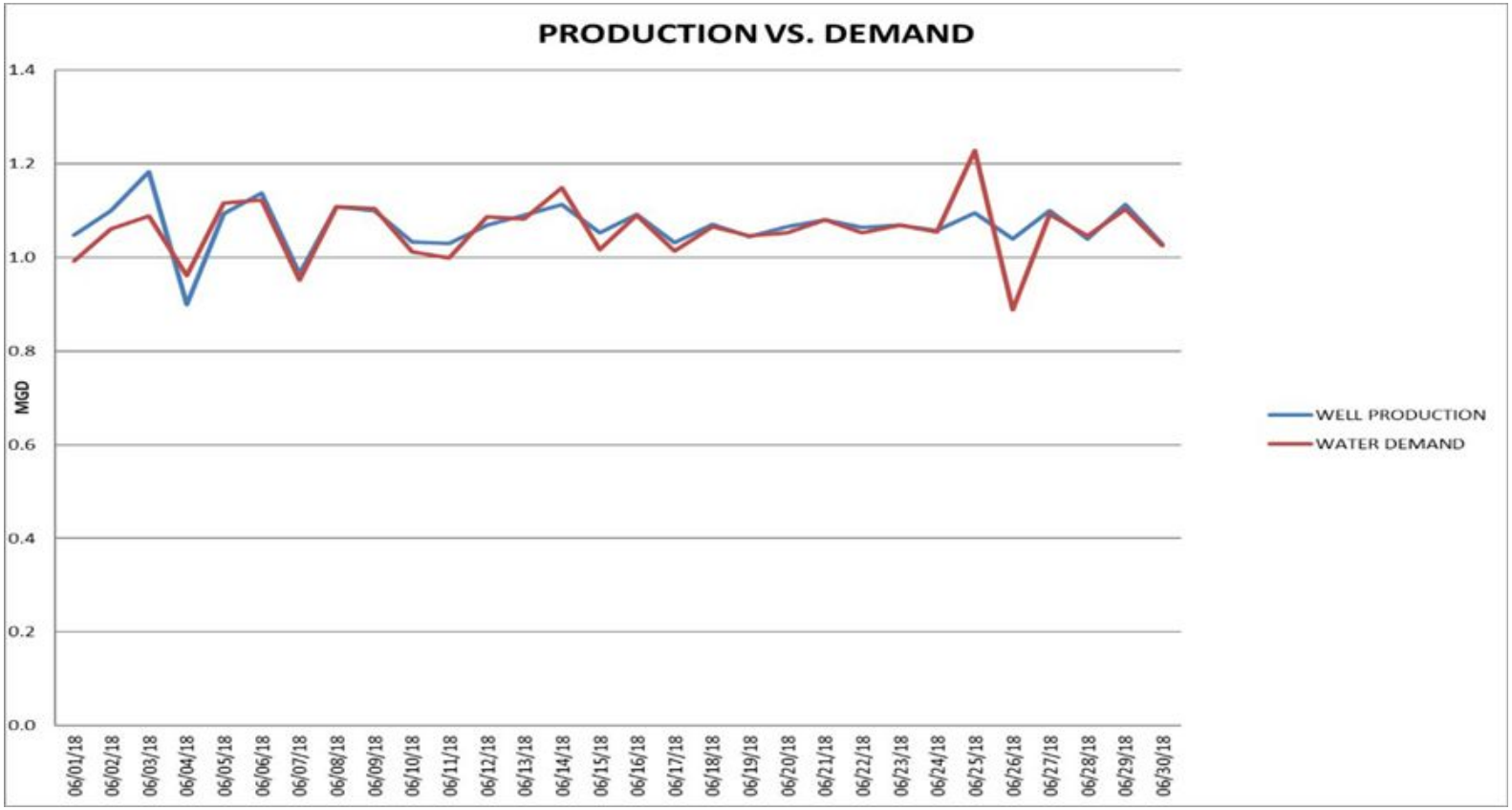
Monthly Production Summary - June 2018					
Deep Wells				35.4	MGD
	Active wells =	94	of 120		
	Avg days in operation =	30.00	days		
	Total Production =	1,062,758	Kgals		
Springs				0.00	MGD
	Avg days in operation =	0	days	*placed on standby	
	Total Production =	0	Kgals		
Ugum Surface Water Plant				1.9	MGD
	Avg days in operation =	30	days		
	Total Production =	58,373	Kgals		
Tumon Maui Well				1.03	MGD
	Avg days in operation =	30	days		
	Total Production =	32,013	Kgals		
		1,153,144	Kgals	38.4	MGD



Tumon Maui Well Production vs. Demand for May 2018



Tumon Maui Well Production vs. Demand for June 2018



Distribution

Monthly Distribution Summary - May 2018

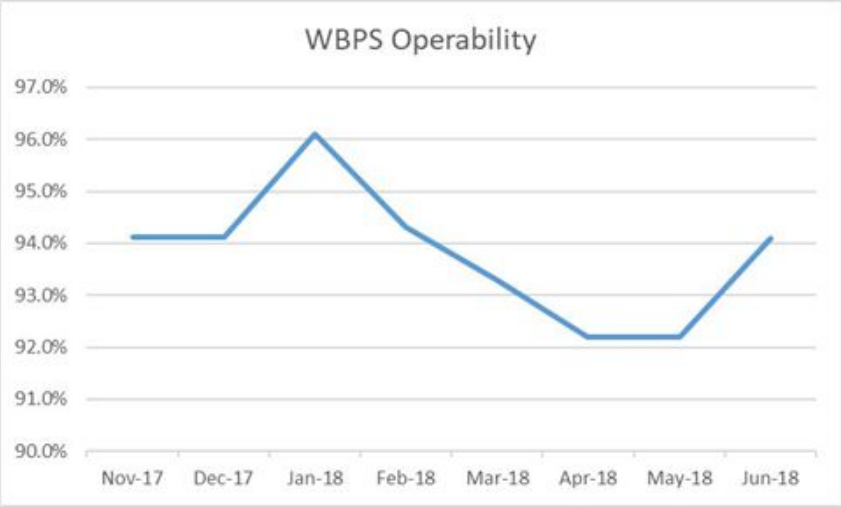
Water Booster Pump Stations

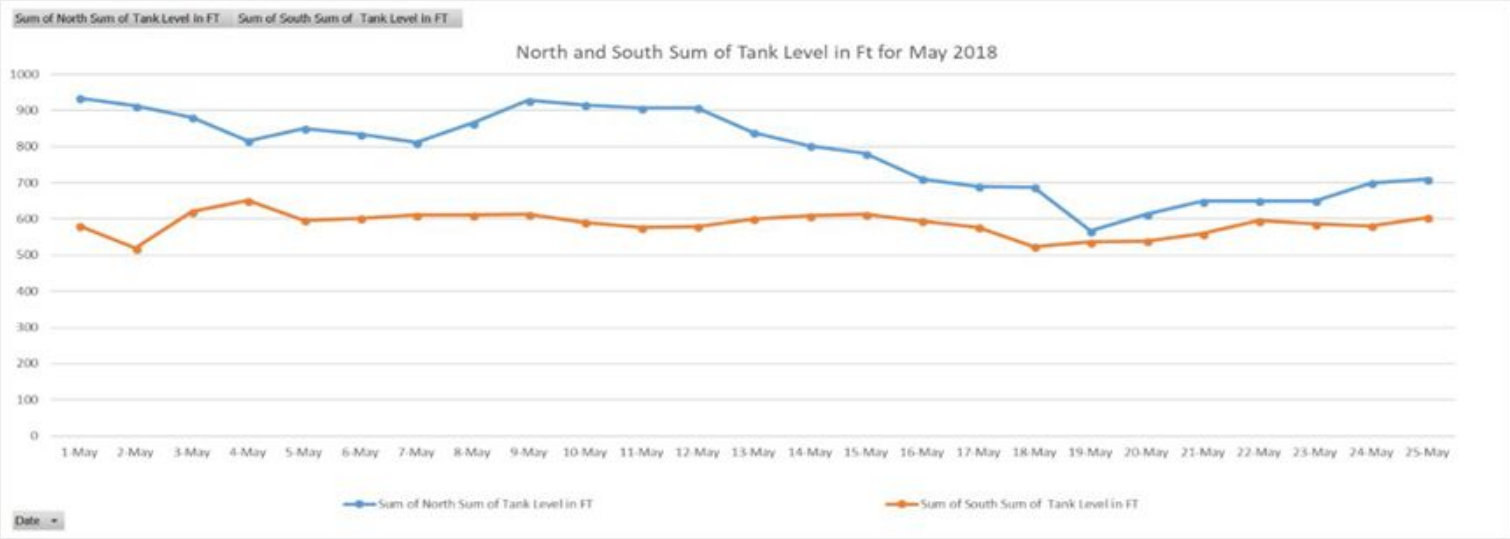
	District	No. of Stations	Total Pumps	Pumps Operating	% Operationa
	Northern	11	21	20	95.2%
	Central	7	15	13	86.7%
	Southern	7	15	14	93.3%
		25	51	47	92.2%

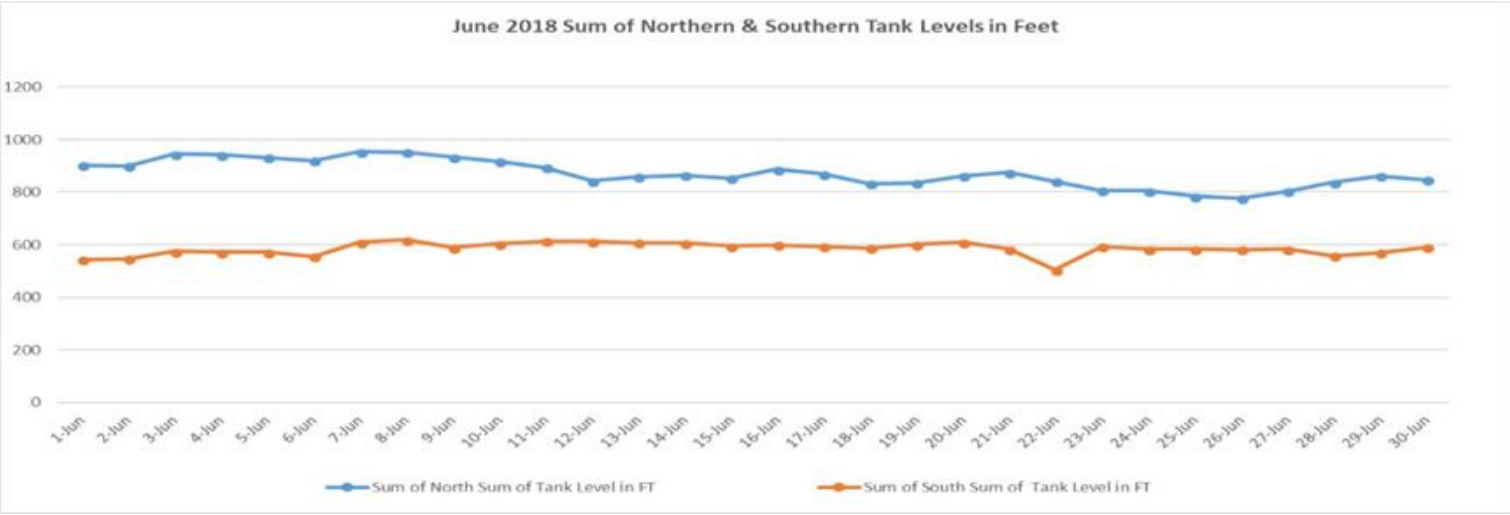
Monthly Distribution Summary - June 2018

Water Booster Pump Stations

	District	No. of Stations	Total Pumps	Pumps Operating	% Operational
	Northern	11	21	20	95.2%
	Central	7	15	13	86.7%
	Southern	7	15	15	100.0%
		25	51	48	94.1%

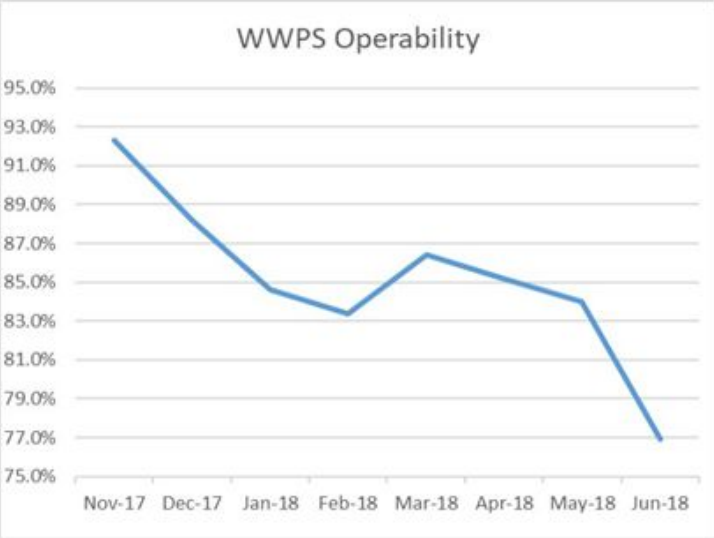


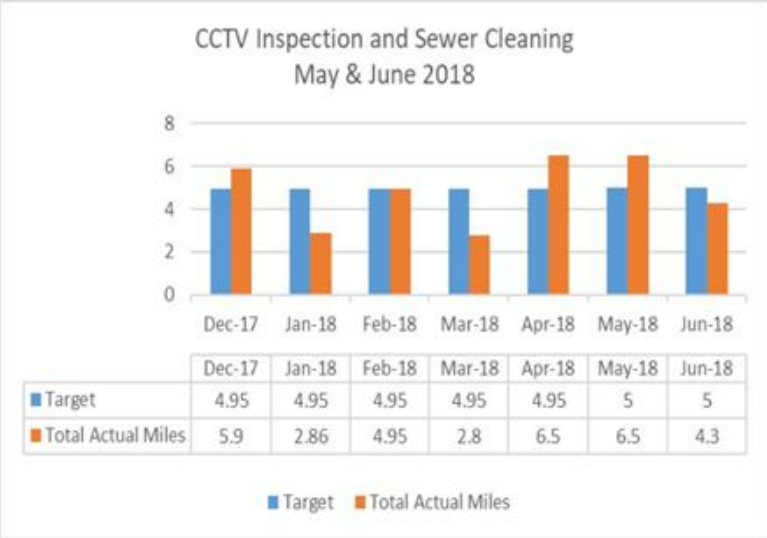

Sum of North Sum of Tank Level in FT
Sum of South Sum of Tank Level in FT
North and South Sum of Tank Level in Ft for May 2018
1000
900
800
700
600
500
400
300
200
100
0
1 May
2 May
3 May
4 May
5 May
6 May
7 May
8 May
9 May
10 May
11 May
12 May
13 May
14 May
15 May
16 May
17 May
18 May
19 May
20 May
21 May
22 May
23 May
24 May
25 May
Sum of North Sum of Tank Level in FT
Sum of South Sum of Tank Level in FT
Date


June 2018 Sum of Northern & Southern Tank Levels in Feet
1200
1000
800
600
400
200
0
1-Jun
2-Jun
3-Jun
4-Jun
5-Jun
6-Jun
7-Jun
8-Jun
9-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
19-Jun
20-Jun
21-Jun
22-Jun
23-Jun
24-Jun
25-Jun
26-Jun
27-Jun
28-Jun
29-Jun
30-Jun
Sum of North Sum of Tank Level in FT
Sum of South Sum of Tank Level in FT

Wastewater Collections

Monthly Collections Summary - May 2018						Monthly Collections Summary - June 2018					
Wastewater Pump Stations						Wastewater Pump Stations					
	District	No. of Stations	Total Pumps	Pumps Operating	% Operational		District	No. of Stations	Total Pumps	Pumps Operating	% Operational
	Northern	22	52	45	86.5%		Northern	22	52	44	84.6%
	Central	29	63	54	85.7%		Central	29	63	45	71.4%
	Southern	27	54	43	79.6%		Southern	27	54	41	75.9%
		78	169	142	84.0%			78	169	130	76.9%

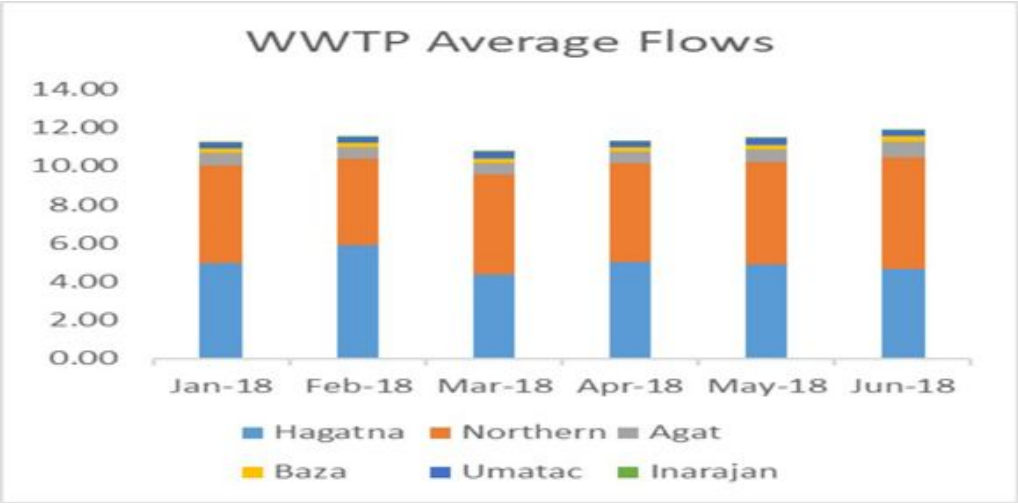




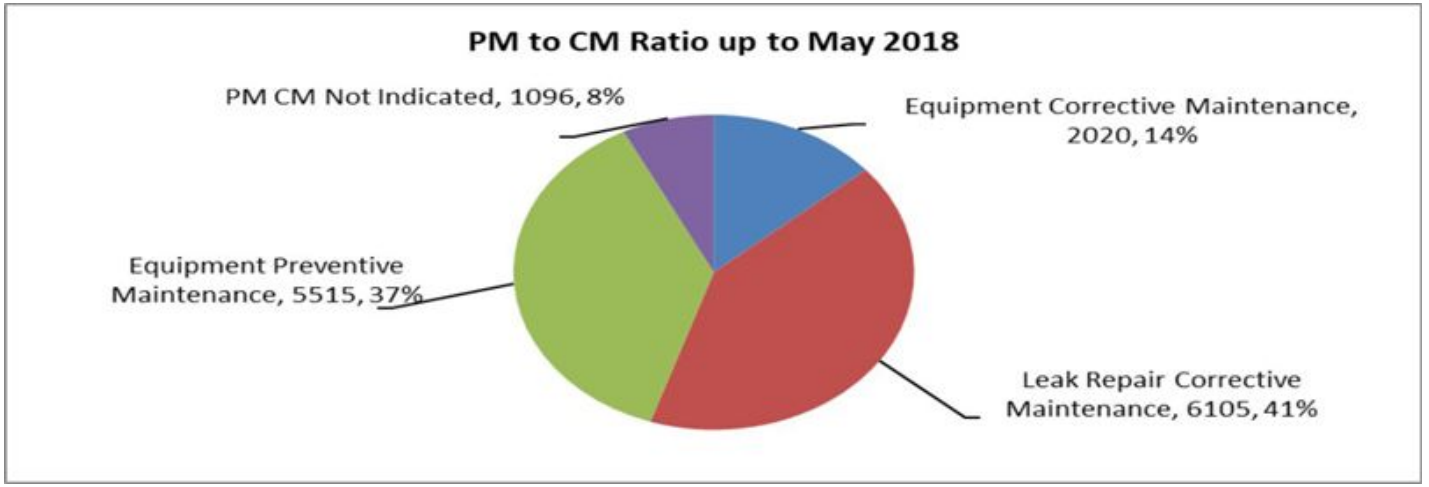
Wastewater Treatment

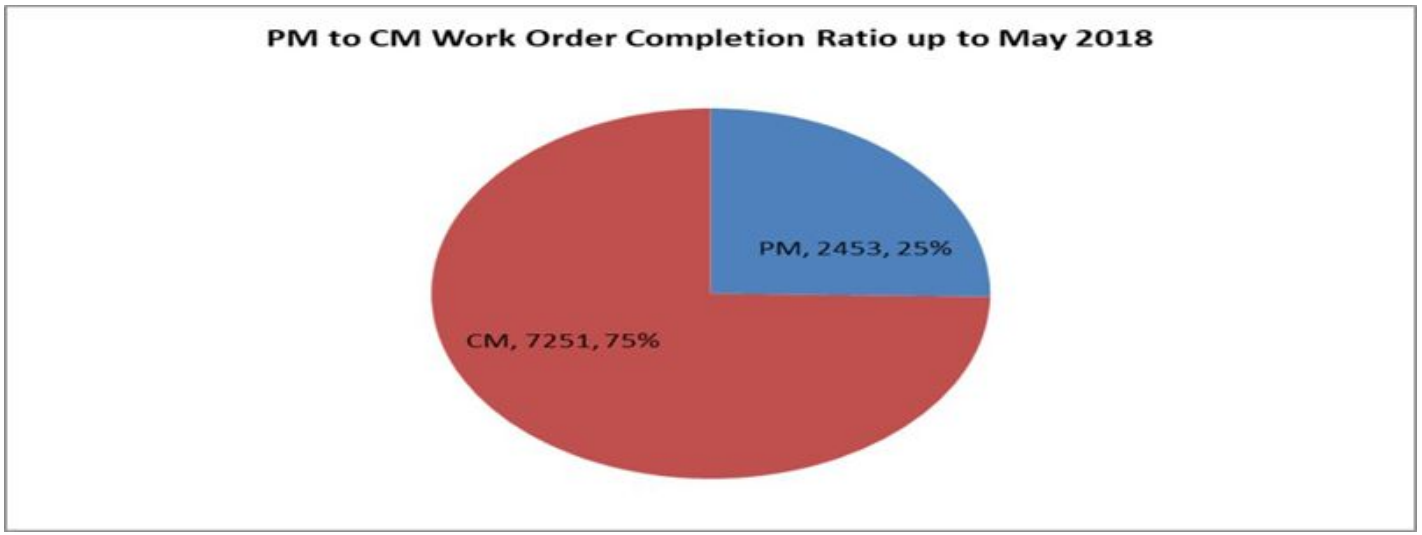
Monthly Wastewater Treatment Summary - May 2018				
WW Treatment Plants - Flows				
	Facility	Avg. Daily Flows	Sludge (lbs)	Sludge Disp. ($)
	Hagatna	4.93	583,080	$ 52,477
	Northern	5.32	786,700	$ 70,803
	Agat	0.63		
	Baza	0.25		
	Umatac	0.30		
	Inarajan	0.07		
		11.50	1,369,780	$ 123,280

Monthly Wastewater Treatment Summary - June 2018				
WW Treatment Plants - Flows				
	Facility	Avg. Daily Flows	Sludge (lbs)	Sludge Disp. ($)
	Hagatna	4.67	717,120	$ 64,541
	Northern	5.78	836,600	$ 75,294
	Agat	0.86		
	Baza	0.25		
	Umatac	0.30		
	Inarajan	0.06		
		11.92	1,553,720	$ 139,835

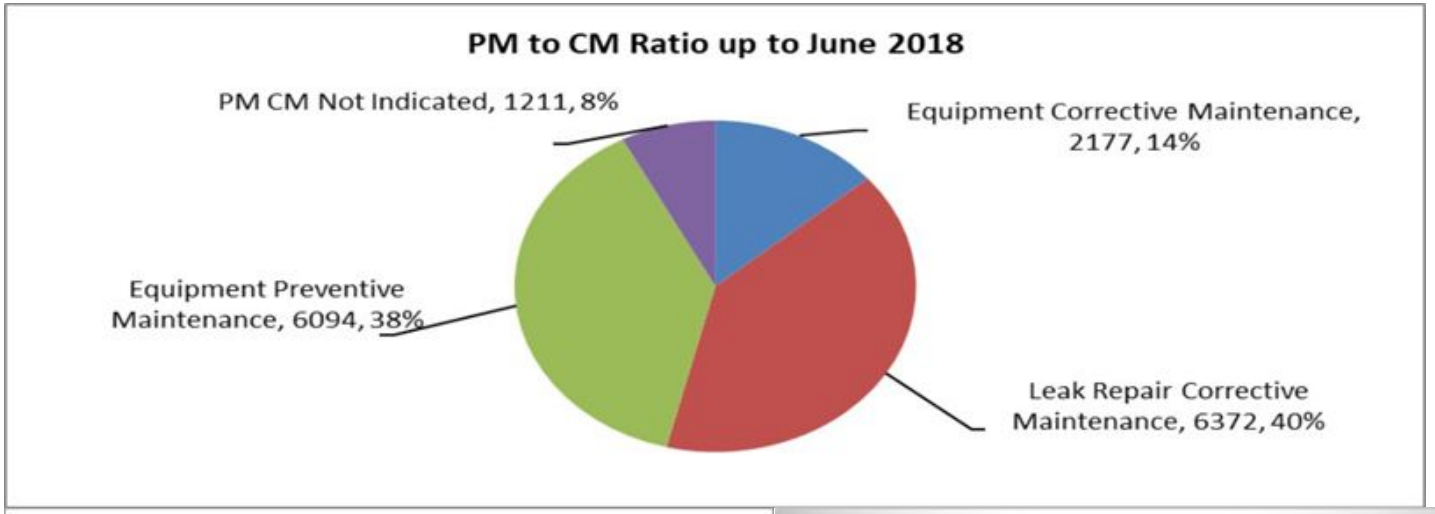


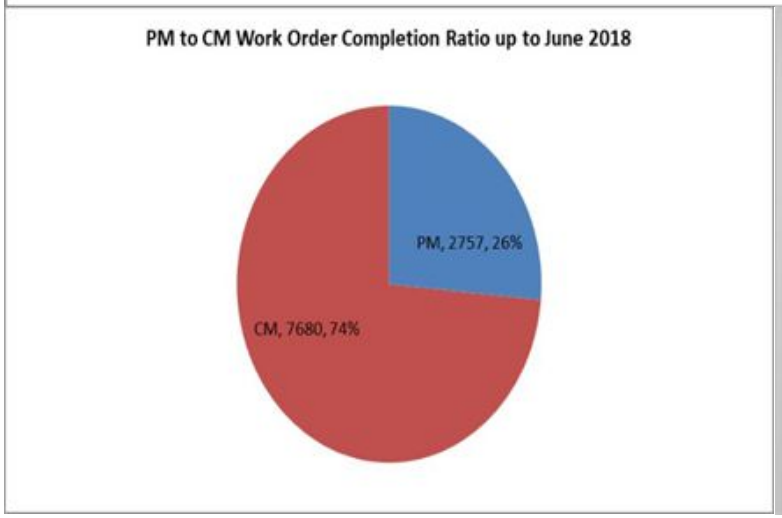
Asset Management for May 2018

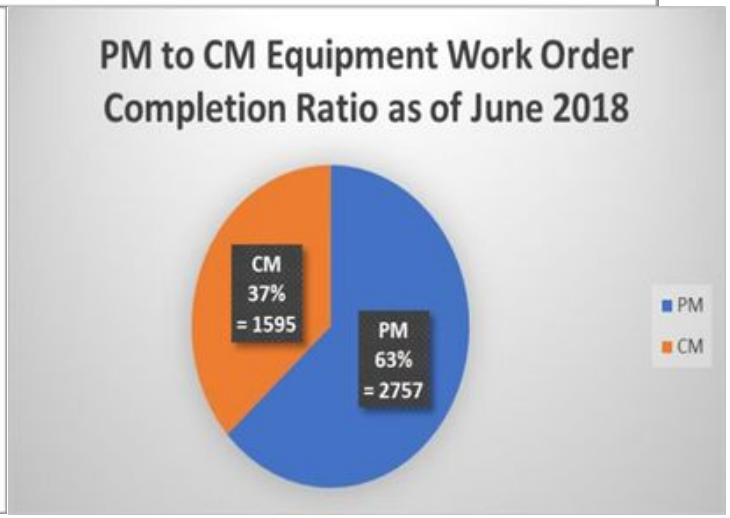




Asset Management for June 2018







Operational Issues

Production & Distribution

- Leak repair
    - Crews maintaining performance - As of June 30th, there were less than 40 pending repairs
        - 88% reduction from 2017-2018 Maximum of 283 pending
        - 80% reduction from 2018 Maximum of 179 pending
    - IFB for advanced remote leak detection services should be advertised next month
- WSCC –
    - SCADA FAT completed
    - Coordination of WSCC – PSCC layout on-going
    - SCADA equipment and installation requirements on-going
- Pump and motor inventories okay; additional orders for recent replacements are being made
- GWA Crane Repair –new cable installation pending; load testing completed.

Wastewater Collection & Treatment

- CCTV & Collections System:
  - Planning department assisting CCTV Crews to revise completed reports to meet appropriate industry standards
  - SSES and CCTV-based repairs to collection lines and SMHs are being conducted by Ops personnel
- Pump stations
  - Facility maintenance efforts have been completed
  - Minimum pump and motor inventory levels being established (similar to effort with deep-wells)
  - Critical spares and replacements procurement is on-going
- Treatment Plants
  - Hagatna WWTP
    - Effluent pumps back up
    - Centrifuges: one operational, repairs to 2nd are almost complete.
  - Northern WWTP
    - Both centrifuges back in operation
  - Agat-Santa Rita WWTP
    - Solids process commissioning (GBTs, Centrifuges) to be completed in the next 2 weeks
    - With that, critical process facilities all operating and substantially complete
  - U-M WWTP
    - Work on-going at the site
    - Significant delays have occurred because of USF&W / EPA permitting issues
  - Baza Gardens
    - Work on-going for all 3 phases
    - Anticipated completion is now Sep 30th
    - Delay letter has been sent to USEPA

Meters for month of May 2018

COMPLETED FIELD ACTIVITY JAN 2017 THRU MAY 2018 (POSTED IN CIS)	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	TOTAL:	COMPLETED FIELD ACTIVITIES (IN PROCESS) TO BE POSTED IN CIS
GWA - Test Meter	30	9	9	371	745	87	393	743	1000	1007	434	378	750	969	1213	1429	84	9651	856
GWA - Meter Exchange	393	179	220	276	482	353	501	807	1526	1039	452	259	239	1086	2120	121	121	10174	0
GWA - Verify Zero Report	30	124	114	94	96	402	261	199	550	89	82	169	356	106	117	69	13	2871	0
GWA - Verify Low Usage	0	0	0	2	37	36	196	488	657	202	127	612	858	1122	1055	463	19	5874	0
TOTAL:	453	312	343	743	1360	878	1351	2237	###	###	1095	1418	###	3283	4505	2082	237	28570	856

# OF METERS TESTED AS PER METER TEST FACILITY REPORTS:	345	350	144	252	305	210	302	397	1013	1130	927	704	721	1041	1347	815	671	10674	
# OF BACKBILLINGS APPLIED AS PER FINANCE REPORTS:	0	0	0	20	122	84	29	111	219	80	77	4	136	23	323	48	75	1351	$ 912,582.81

# OF FIELD CREW PERFORMING CHANGE OUTS:	19	10	13	9	21	21	14	24	35	28	28 *	28 *	5	13	2	2	2
# OF ADMIN STAFF TO CREATE AND POST FIELD ACTIVITIES IN CIS:	7	4	5	6	9	9	10	13	15	15	13	13	8	11	5	4	1
# OF SUPPLY STAFF TO ISSUE MATERIALS AND PROGRAM NEW METERS:	2	2	2	2	2	2	2	2	2	2	2	2	2	4	0	0	0
# OF TEST FACILITY PERSONNEL TESTING METERS:	2	2	2	3	3	3	3	3	3	3	3	3	3	2	2	2	2
# OF ACCOUNTANTS CALCULATING BACK BILLS:	0	0	0	2	3	2	2	3	3	2	2	2	2	2	2	2	2
TOTAL:	30	18	22	22	38	37	31	45	58	50	48	48	20	32	11	10	7

*Project overtime on hold Nov 18, 2017 thru Dec 16, 2017. During this period, 4 personnel performed work on this project during the regular work day with a majority of the work completed during Nov and Dec month occuring before and after the OT moratorium.

NOTE: MARCH 18, 2018 - PROJECT ON HOLD PENDING ARRIVAL OF METERS

Project resumed June 04 2018

REMAINING ACTIVE BADGER LP MODELS AS OF MAY 31, 2018: 20936

ACTIVE LP MODELS - PURCHASE YEAR	COUNT	WARRANTY STATUS
2012	8892	13843 METERS WITH EXPIRED WARRANTY
Jan-13	2133	
Feb-13	743	
Mar-13	629	
Apr-13	0	
May-13	1446	
Aug-13	2546	7093 METER WITH AN ACTIVE WARRANTY
Sep-13	1	
Oct-13	0	
Nov-13	1	
Dec-13	0	
Jan-14	1	
Feb-14	646	
Mar-14	0	
Apr-14	2434	
May-14	0	
Jun-14	72	
Jul-14	0	
Aug-14	1392	
TOTAL:	20936	

Meters for month of June 2018

COMPLETED FIELD ACTIVITY JAN 2017 THRU JUNE 2018 (POSTED IN CIS)	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	TOTAL:	COMPLETED FIELD ACTIVITIES (IN PROCESS) TO BE POSTED IN CIS
GWA - Test Meter	30	9	9	371	745	87	393	743	1000	1007	434	378	750	969	1213	1429	84	1299	10950	122
GWA - Meter Exchange	393	179	220	276	482	353	501	807	1526	1039	452	259	239	1086	2120	121	121	1056	11230	284
GWA - Verify Zero Report	30	124	114	94	96	402	261	199	550	89	82	169	356	106	117	69	13	2	2873	0
GWA - Verify Low Usage	0	0	0	2	37	36	196	488	657	202	127	612	858	1122	1055	463	19	5	5879	0
TOTAL:	453	312	343	743	1360	878	1351	2237	###	###	1095	1418	###	3283	4505	2082	237	2362	30932	406

# OF METERS TESTED AS PER METER TEST FACILITY REPORTS:	345	350	144	252	305	210	302	397	1013	1130	927	704	721	1041	1347	815	671	544	11218	
# OF BACKBILLINGS APPLIED AS PER FINANCE REPORTS:	0	0	0	20	122	84	29	111	219	80	77	4	136	23	323	48	75	20	1371	$ 916,550.91

# OF FIELD CREW PERFORMING CHANGE OUTS:	19	10	13	9	21	21	14	24	35	28	28 *	28 *	5	13	2	2	2	28
# OF ADMIN STAFF TO CREATE AND POST FIELD ACTIVITIES IN CIS:	7	4	5	6	9	9	10	13	15	15	13	13	8	11	5	4	1	13
# OF SUPPLY STAFF TO ISSUE MATERIALS AND PROGRAM NEW METERS:	2	2	2	2	2	2	2	2	2	2	2	2	2	4	0	0	0	2
# OF TEST FACILITY PERSONNEL TESTING METERS:	2	2	2	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2
# OF ACCOUNTANTS CALCULATING BACK BILLS:	0	0	0	2	3	2	2	3	3	2	2	2	2	2	2	2	2	2
TOTAL:	30	18	22	22	38	37	31	45	58	50	48	48	20	32	11	10	7	47

*Project overtime on hold Nov 18, 2017 thru Dec 16, 2017. During this period, 4 personnel performed work on this project during the regular work day with a majority of the work completed during Nov and Dec month occuring before and after the OT moratorium.

NOTE: MARCH 18, 2018 - PROJECT ON HOLD PENDING ARRIVAL OF METERS

Project resumed June 04 2018; added 2 hrs per weekday field work on June 18, 2018

REMAINING ACTIVE BADGER LP MODELS AS OF JUNE 30, 2018: 20054

AS OF JUNE 30 2018

ACTIVE LP MODELS - PURCHASE MO & YEAR	COUNT	
2012	8908	WARRANTY EXPIRED
Jan-13	2129	
Feb-13	742	
Mar-13	640	
Apr-13	0	
May-13	1452	
Jun-13	0	
Jul-13	0	
Aug-13	1614	ACTIVE WARRANTY
Sep-13	1	
Oct-13	0	
Nov-13	1	
Dec-13	0	
Jan-14	1	
Feb-14	648	
Mar-14	1	
Apr-14	2445	
May-14	0	
Jun-14	72	
Jul-14	0	
Aug-14	1400	
TOTAL :	20054	
	13871	WARRANTY EXPIRED
	6183	ACTIVE WARRANTY

Marbo (Andy-South) Wells – Status

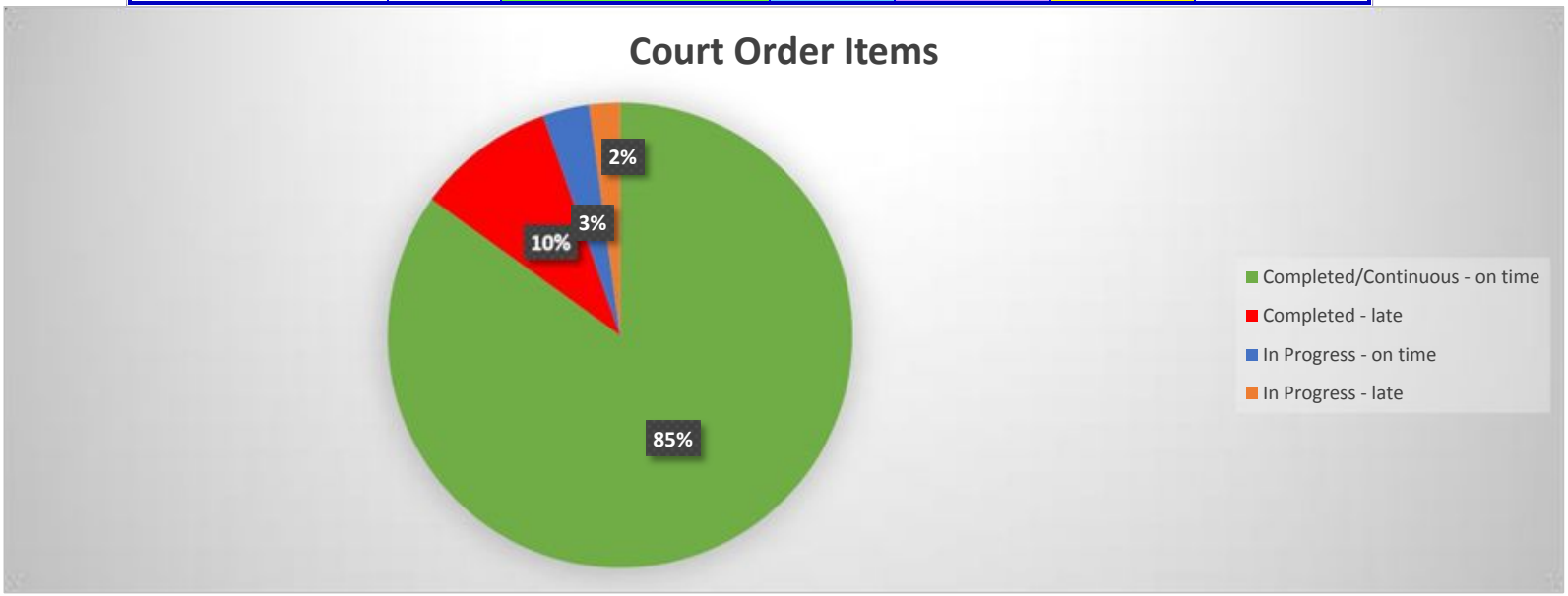
- Involuntary reversion appears imminent; GWA Counsel transmitted draft easement documents to GSA for consideration with DoD
- No updates - Waiting on response from GSA

One Guam Update

- Santa Rosa Tank:
  - GWA and DOD are finalizing the design of the Intertie. All the property maps were completed and submitted to DOD.
  - Once the maps are completed, the letter to General Cox will be finalized for the temporary easement.
  - The After-Action Report format is being reviewed.
  - The Standard Operation Procedure (SOP) and MOU are being reviewed by DOD.
- Agat-Santa Rita WWTP
  - Compensation for the Agat-Santa Rita easement is still under discussion. Waiting on Navy Real Estate
- Date Sharing MOU has been drafted – under review and comment
  - This MOU will outline the standards for GIS, hydraulic and other data to be shared between DOD and GWA.

Court Order

	Items	On-time Items Completed/Continuous	Items Delayed	Completed Late	Items on Schedule	Performance %
Court order total	93	79	2	9	3	97.8%



Status Information

- 2 items delayed
  - Meters
  - Baza Gardens Sewer Line
- Final Date to complete all Court Order items is December 31, 2020.
- Overflow or Bypass events reported to USEPA:
  - 06/18/2018 - Tun Jesus Crisostomo St., Tamuning; MH OF -- FOG
  - 06/25/2018 - BOH Marine Corps Dr., Tamuning; MH OF -- FOG
  - 06/27/2018 - Aga Dr., Santa Rita; sewer overflow -- debris aggravated by FOG
  - 06/27/2018 - Chagamin Lago St., Inarajan; sewer overflow -- Control problems
  - 06/30/2018 - Ypao Rd., Tamuning; manhole over flow -- rocks and misc. debris aggravated by FOG
  - 07/03/2018 - Dairy Pump Station -- Control Problem
  - 07/05/2018 - Vietnam Veterans Highway; ATS failure, generator not running - generator manual start failed (no island power)
  - 07/05/2018 - Mamajanao Pump Station; ATS failure, generator not running (no island power)
  - 07/05/2018 - Alupang Sunset Condo, Tamuning; FOG
  - 07/06/2018 - Sereno Ave., Tamuning; rags and debris
  - 07/05/2018 - Route 1, Marine Corp Drive, Asan; control problems due to storm related issues
  - 07/06/2018 - Route 2, Agat; Sewer main break, Contractor damage to GWA sewer
  - 07/06/2018 - Chagamin Lago, Inarajan; sewer overflow - only one pump in a two-pump station, couldn’t keep up with heavy rain
  - 07/08/2018 - Umatac-Merizo WWTP; Lower Lagoon (Bypass - ongoing) -- Heavy rainfall

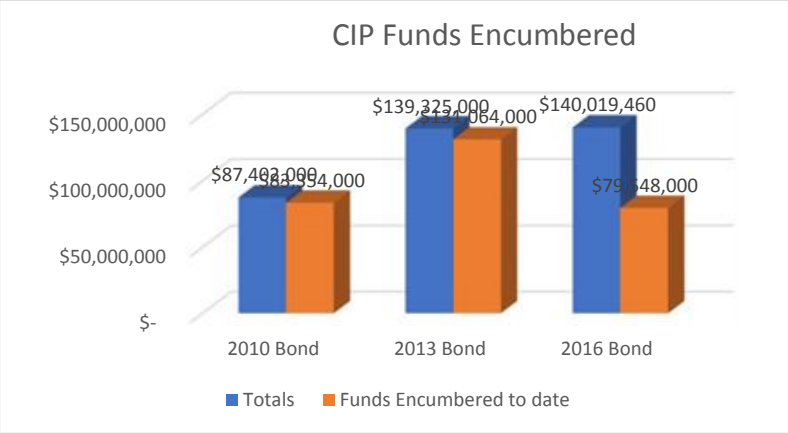
CIP Summary

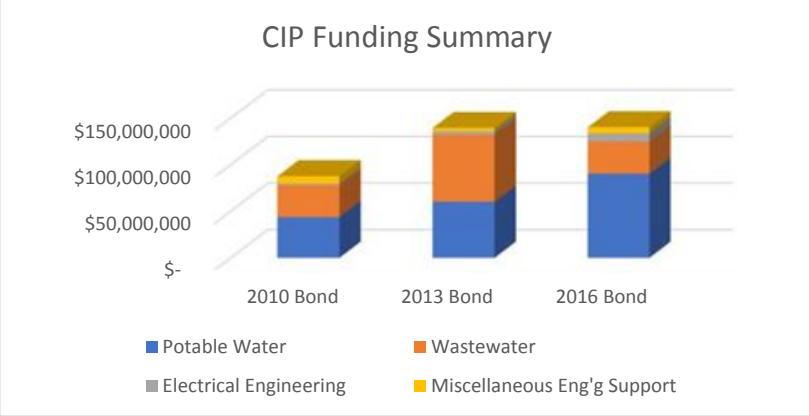
CIP Summary - Project Encumbrance

	2010 Bond		2013 Bond		2016 Bond			
	Funded	Complete	Funded	Complete	Funded	Complete	Total CIP Projects	%
Potable Water	28	17	21	7	20	0	35	49%
Wastewater	16	13	7	3	8	1	22	31%
Electrical Engineering	5	5	6	1	5	0	10	14%
Miscellaneous Eng'g Support	2	0	3	1	4	1	4	6%
Totals	51	35	37	12	37	2	71	100%
% of Total CIP by Fund Source	72%		52%		52%			

CIP Summary - Project Amounts

	2010 Bond		2013 Bond		2016 Bond			
	Funded	%	Funded	%	Funded	%	Total CIP Projects	%
Potable Water	$ 41,903,305	48%	$ 58,317,117	42%	$ 64,647,830	46%	$ 164,868,252	45%
Wastewater	$ 36,009,577	41%	$ 73,837,883	53%	$ 60,227,170	43%	$ 170,074,630	46%
Electrical Engineering	$ 1,748,118	2%	$ 3,395,000	2%	$ 8,750,000	6%	$ 13,893,118	4%
Miscellaneous Eng'g Support	$ 7,741,000	9%	$ 3,775,000	3%	$ 6,394,460	5%	$ 17,910,460	5%
Totals	$ 87,402,000	100%	$ 139,325,000	100%	$ 140,019,460	100%	$ 366,746,460	100%
Funds Encumbered to date	$ 83,354,000	95%	$ 131,064,000	94%	$ 79,548,000	57%		
% of Total CIP Funding	23.8%		38.0%		38.2%			





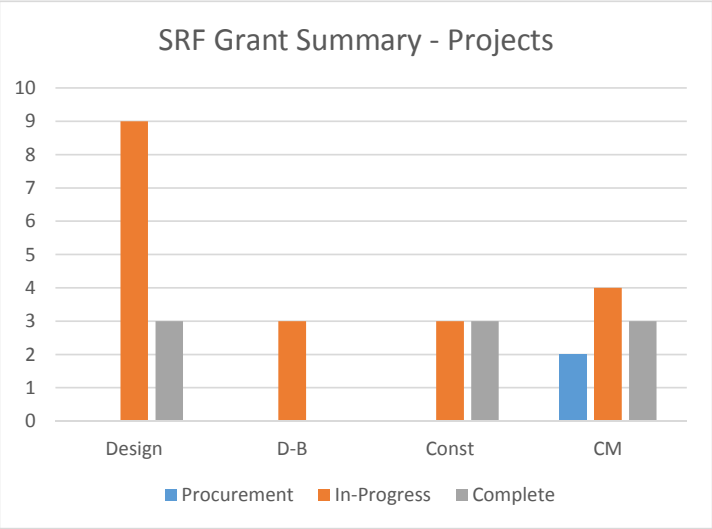
SRF Grant Summary

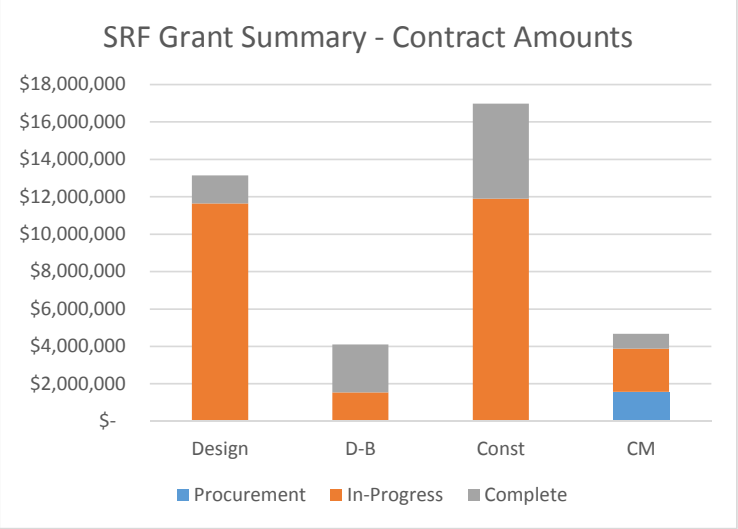
SRF Grant Summary - Projects

	Procurement	In-Progress	Complete	Totals	%
Design	0	9	3	12	40%
D-B	0	3		3	10%
Const	0	3	3	6	20%
CM	2	4	3	9	30%
Totals	2	19	9	30	
%	7%	63%	30%		

SRF Grant Summary - Contract Amounts

	Procurement	In-Progress	Complete	Totals	%
Design	$ -	$ 11,642,195	1,499,418	$ 13,141,613	34%
D-B	$ -	$ 1,542,979	$ 2,565,237	$ 4,108,216	11%
Const		$ 11,902,506	$ 5,086,129	$ 16,988,635	44%
CM	$ 1,572,000	$ 2,303,747	$ 802,243	$ 4,677,990	12%
Totals	$ 1,572,000	$ 27,391,427	$ 9,953,027	$ 38,916,454	
%	4%	70%	26%		





OEA Grant Summary

- NDWWTP Upgrades
  - 60% design submittal scheduled for Sep 24th.
  - Sitework bid package to be issued Sep 12th
  - Vertical bid package planned for issuance Mar 2019

- Outfall Diffuser:
  - Re-bid package under review by GWA
  - To be advertised by end of July
  - Bids expected in September

- Sewer Line Interceptor Design-Build
  - Contract Award / NTP pending insurance requirements
  - Design and prep work is set to start
  - Construction start expected in January

- NGLA Observation wells – Design work completed
  - Bid package drawings and specs under review by GWA
  - Permitting issues being resolved and permits being obtained by PM/CM
  - Bid package to be issued once permits approved – expected in Mar 2019

Action Item	Date (Target)	Date (Actual)	Status	Remarks
Project Funds Available	July-16	AUG-30-16	Completed	
Land Acquisition	Jan-17	Jan-17 (Compensation Pending)	Pending	Survey complete, appraisals complete – under review
Procure PM/CM Firm	Jan-17	Jan-17 (NTP Issued Feb 10th)	Completed	
Procure Design Firm	Jul-17		Completed	Contract issued; kickoff pending
Design -- 30/60/90/Final -- Review	Jun-18	30% - completed May 60% - expected Sep	On-target	Project design schedule has been revised / delayed
NEPA Analysis and Determination	Feb-17	Pending final SHPO concurrence	Delayed	USEPA work on-going; procurement of contractor completed
Procure Construction Firm	Dec-18		On-target	
Construction Complete/Commence Operations	Nov-21		On-target	
Sewer line connection from MCB to GWA infrastructure	Jul-19		On-target	
MCB Initial Operating Capability	Jul-22		On-target	

Land Acquisition Summary

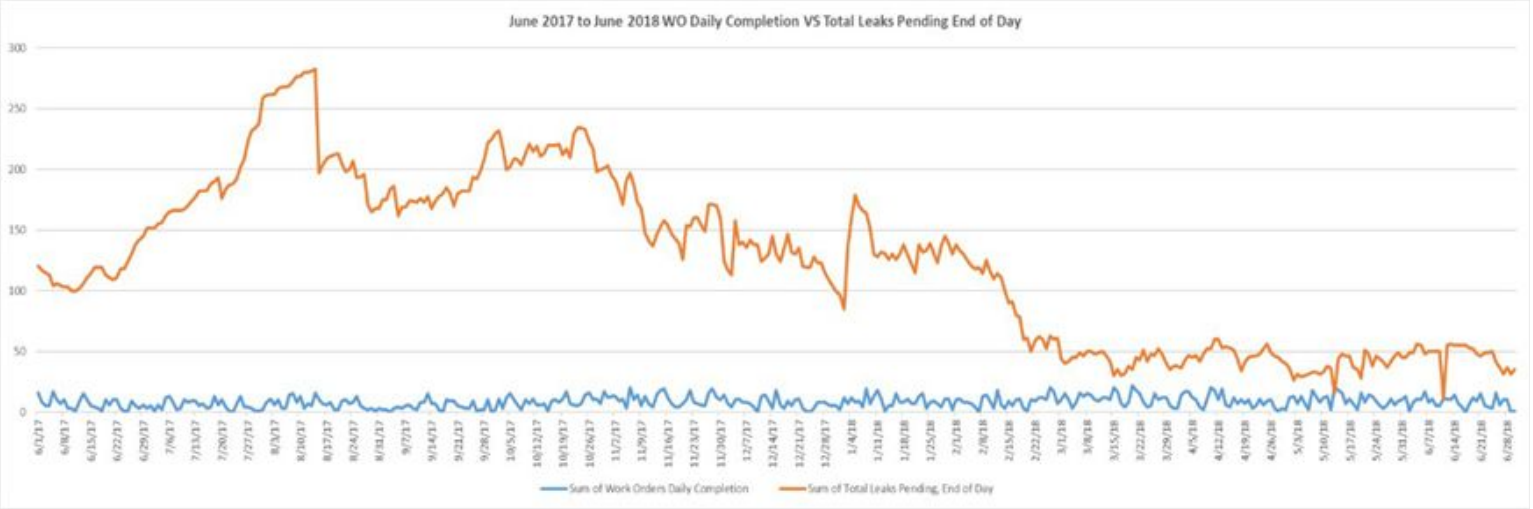
GWA Facility	Location	Gov't./Private/Other	Land Acquisition Status
Tanks	Ugum	Private	Appraisal Services completed 05/09/18.
	Astumbo	Gov't./CLTC	GWA and DoLM working together on Land Registration process. Pending Notification of surrounding lot owner information from DoLM.
	Piti	Private	Preliminary geotechnical investigation and archaeological investigation in the process 05/01/18.
Expansion of the Northern District Wastewater Treatment Plant (NDWWTP)	Dededo	Gov't./GALC	Pending Grant Deed approval from GALC 07/09/18.
Deep Well	A-12	Private	Property ownership vested in GWA 10/16/17.
	AG-12	Dept. of Agriculture/Manhita Farms	Land Registration has been approved by Superior Court of Guam. Pending release and recordation of the Decree Establishing Title at DoLM. DCA will be submitting Retracement Survey Check Print Map to DoLM for review and comments 07/13/18.
	Y-8	Gov't./CLTC	Deed of Dedication approved by legal counsel 07/03/18.
Booster Pump Station	Agfayan	Private	Denial Letter received from private property owner on Lot 61-R2, Inarajan - 06/07/18. Pending response from CLTC on L28, B19, T3734, Inarajan - 07/09/18.
Sewer Pump Stations	Property adjacent to Southern Link	Private	GWA started acquisition process on 12/23/2016. Property ownership vested in GWA 08/11/2017.
Asan Springs	Asan	Gov't./Private	GWA request for land acquisition to be reviewed and approved by GHURA board 06/29/18. LA Bobbie Cruz to send follow-up to GHURA 07/19/2018. Package submitted to DOI for portion of land from Park Service.

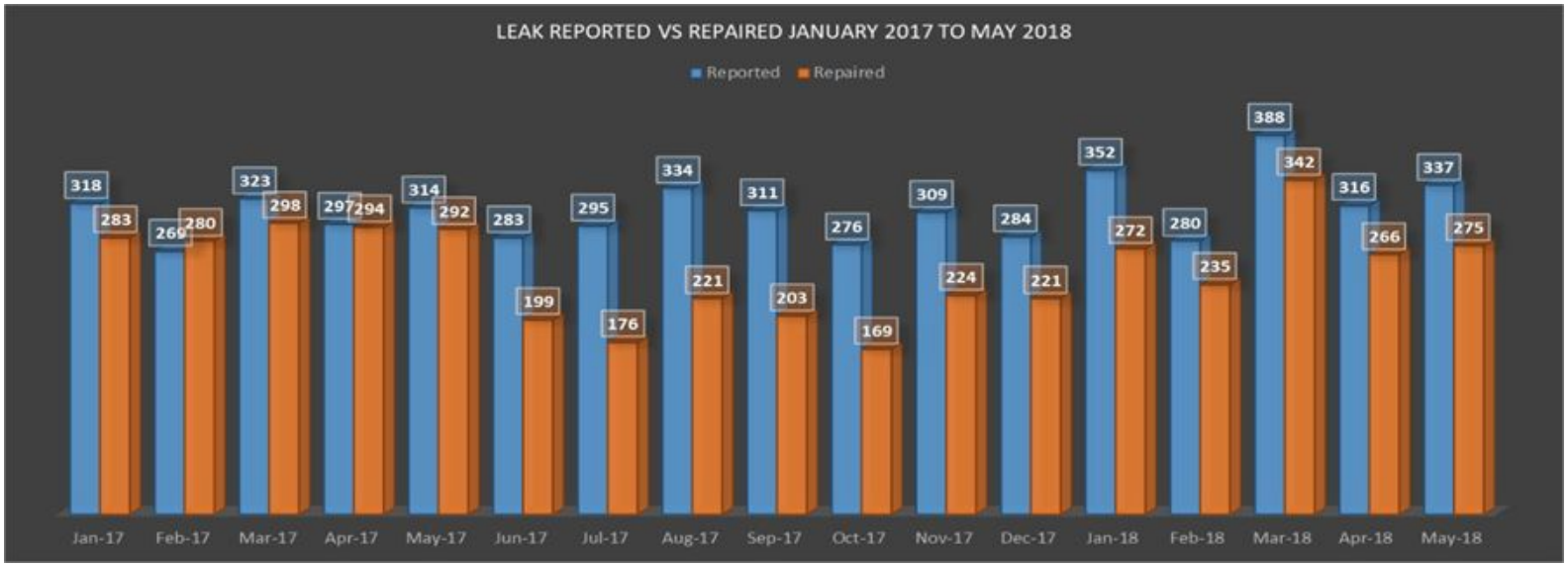
NRW – Update

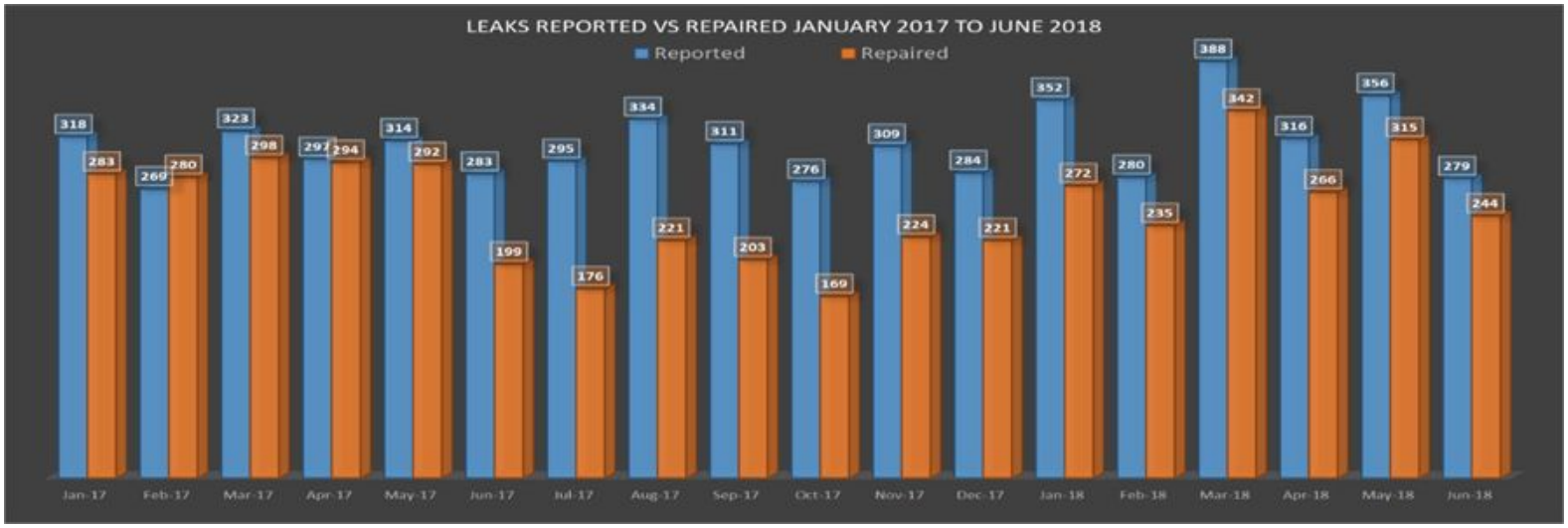
- Water Loss Control Program activities are on-going
    - Latest water audit results reviewed by Technical Consultant under EPA grant. Scope modifications being proposed for Consultant due to GWA's progress on refining audit results
    - Production meter replacement program is under design for 65 well sites. Portable flow meter is being procured to calibrate existing meters.
    - District Metering Areas are currently being developed for pilot project. Locations have been identified. Grant application was submitted for this pilot project
    - DOI Grant application has been approved for training and equipment.

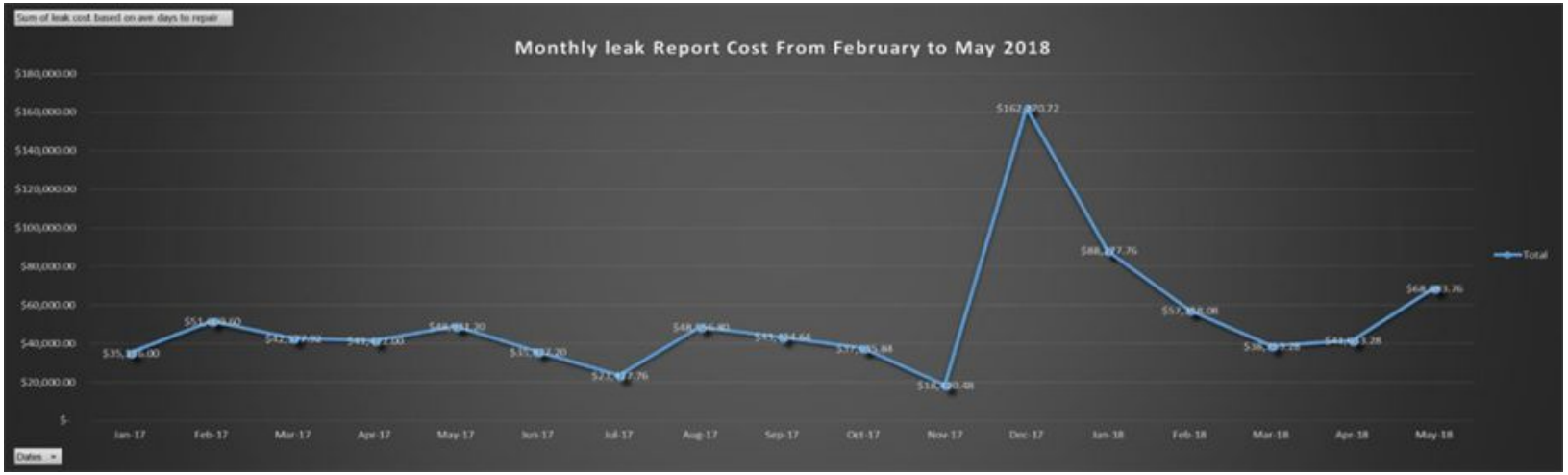
Leak Repair Summary for May and June 2018

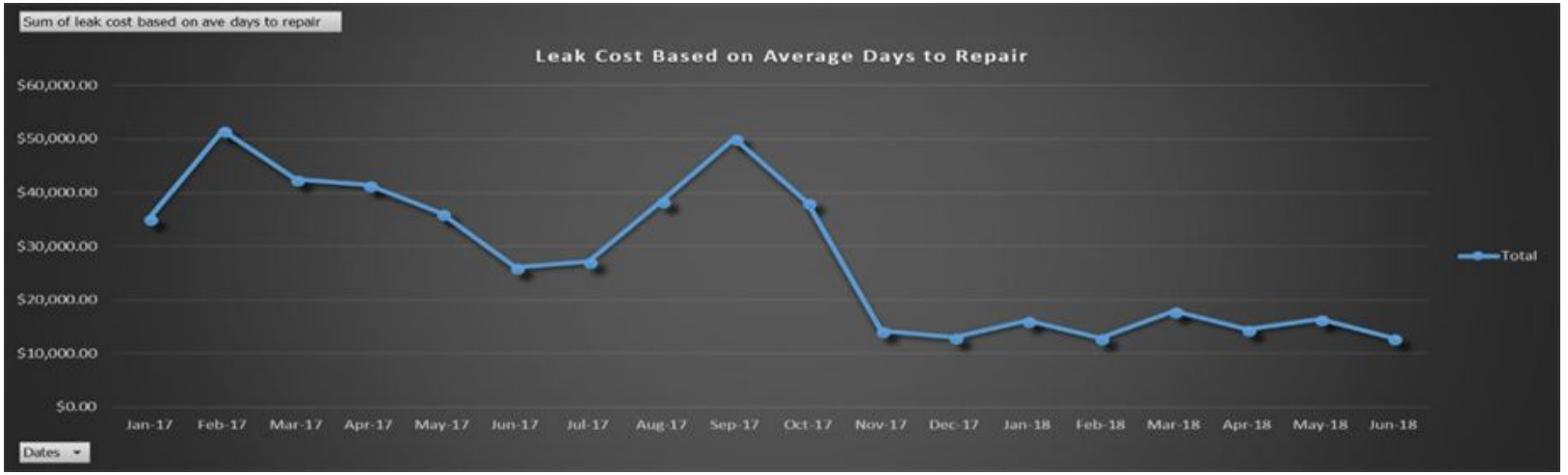





LEAK REPORTED VS REPAIRED JANUARY 2017 TO MAY 2018
Reported
Repaired
318
283
269
280
323
298
297
294
314
292
283
199
295
176
334
221
311
203
276
169
309
224
284
221
352
272
280
235
388
342
316
266
337
275
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18
Apr-18
May-18


LEAKS REPORTED VS REPAIRED JANUARY 2017 TO JUNE 2018
Reported
Repaired
318
283
269
280
323
298
297
294
314
292
283
199
295
176
334
221
311
203
276
169
309
224
284
221
352
272
280
235
388
342
316
266
356
315
279
244
Jan-17
Feb-17
Mar-17
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Sep-17
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Nov-17
Dec-17
Jan-18
Feb-18
Mar-18
Apr-18
May-18
Jun-18





Assumptions:

1. Leak rate = 4 gpm
2. Cost per kgal = $4.00

DASHBOARD

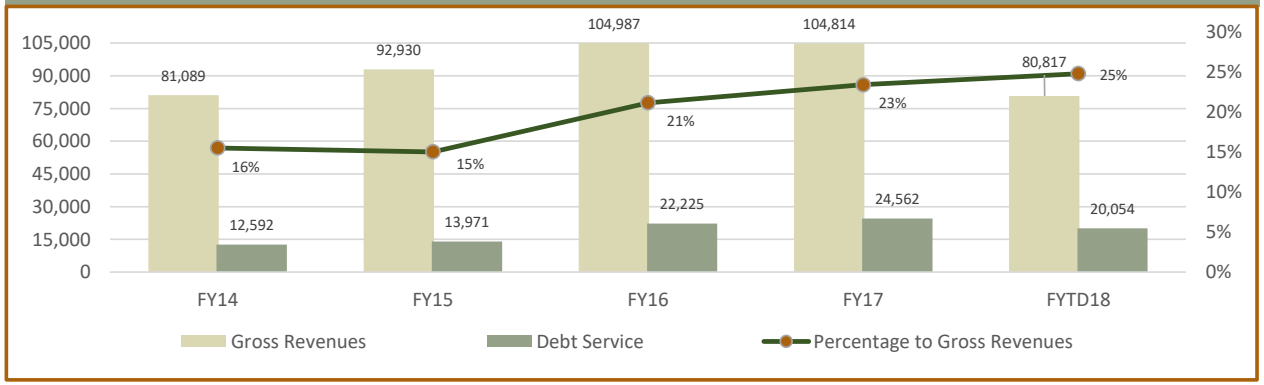
FYTD June 2018 Budget vs Actual ($000)

Category	Description	Budget FYTD18	Actual FYTD18	Variance
Rate Based Revenues	Water	$53,474	$50,921	($2,552)
	Wastewater	29,896	29,557	(339)
	Total	83,370	80,479	(2,891)
Operations & Maintenance	Salaries & Benefits	18,012	14,849	(3,163)
	Power	9,522	10,931	1,409
	Water Purchases	6,490	6,811	321
	A&G	9,070	8,010	(1,061)
	Contractual	3,939	3,402	(537)
	Total	$63,392	$60,345	($3,047)

Key Financial Ratios ($000)

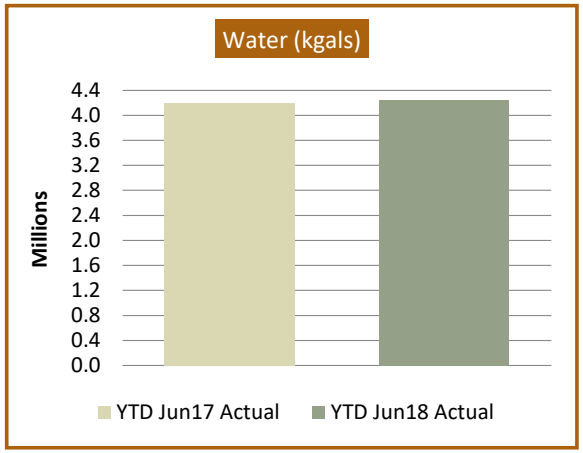
Category	FY18	FY17
Accounts Payable $$/Days	$4,342 / 46 days	$5,390 / 59 days
Accounts Receivable $$/Days	$15,848 / 59 days	$15,451 / 51 days
Days Cash On Hand	156 days	184 days
Annual Debt Service (Revenue Bonds)	$26,739	$24,563
Debt Service Coverage (Bond/PUC)	1.74 / 2.16	1.98 / 2.44

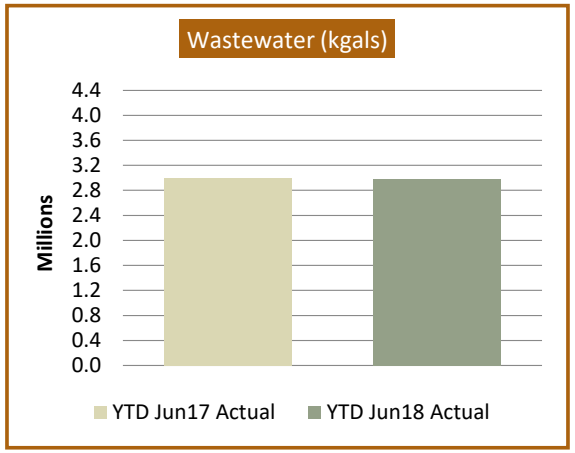
Debt as a Percent to Gross Revenue

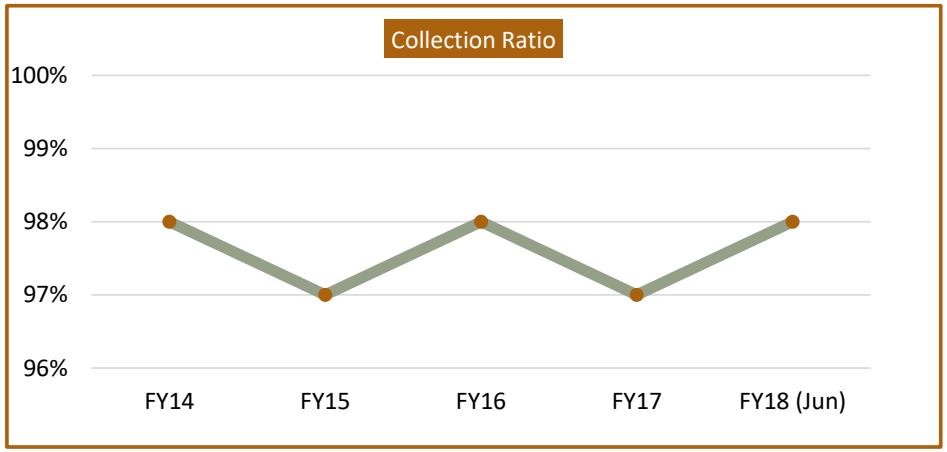


(1) Gross Revenues excludes SDC
(2) Debt Service Includes Cap I

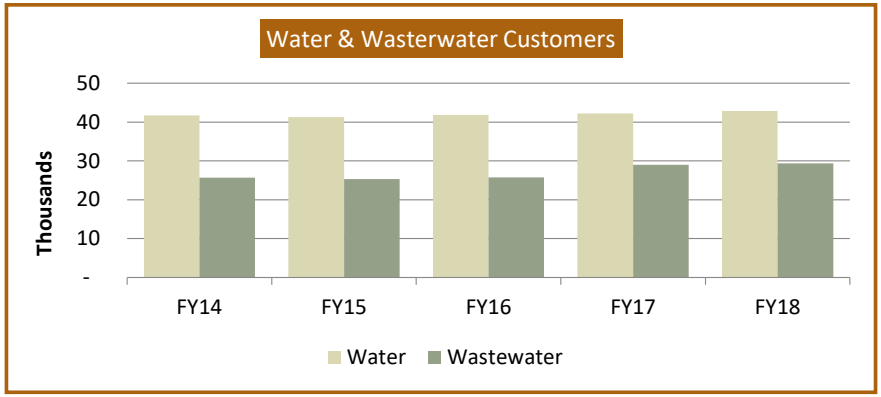
Water & Wastewater Analytics

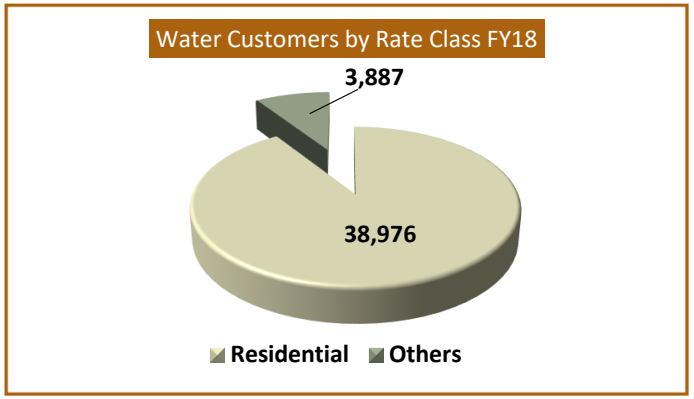


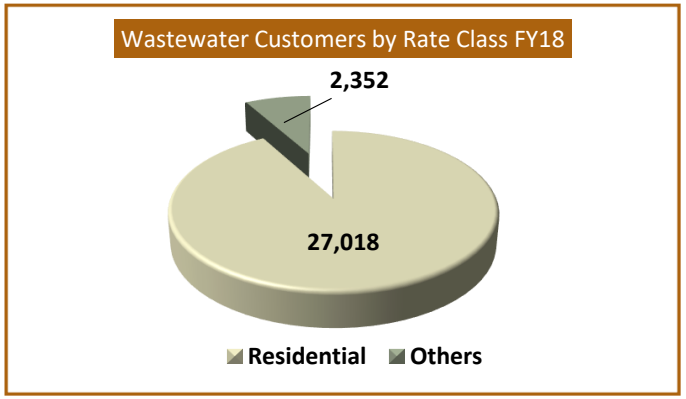


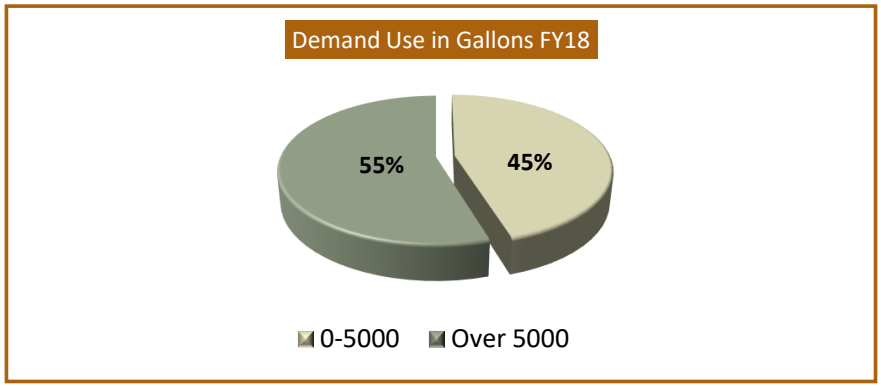


Water & Wastewater Customers





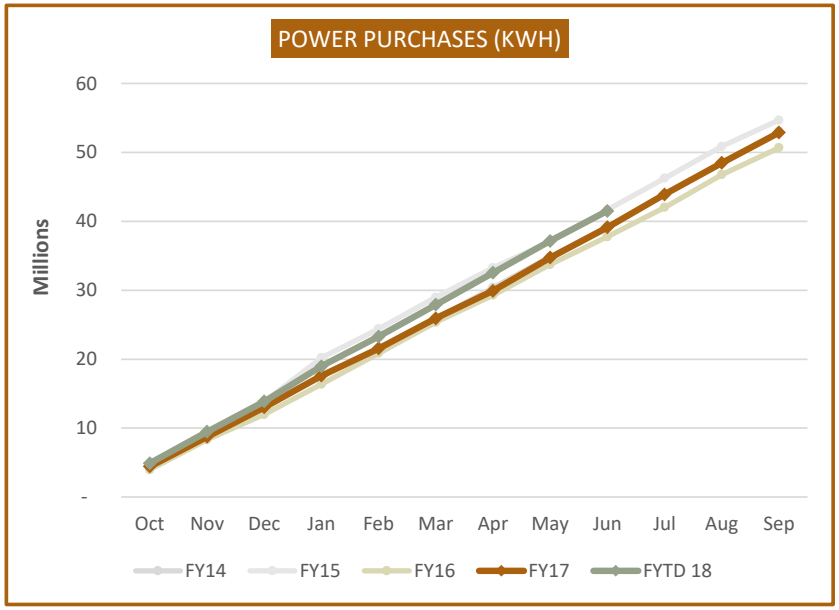


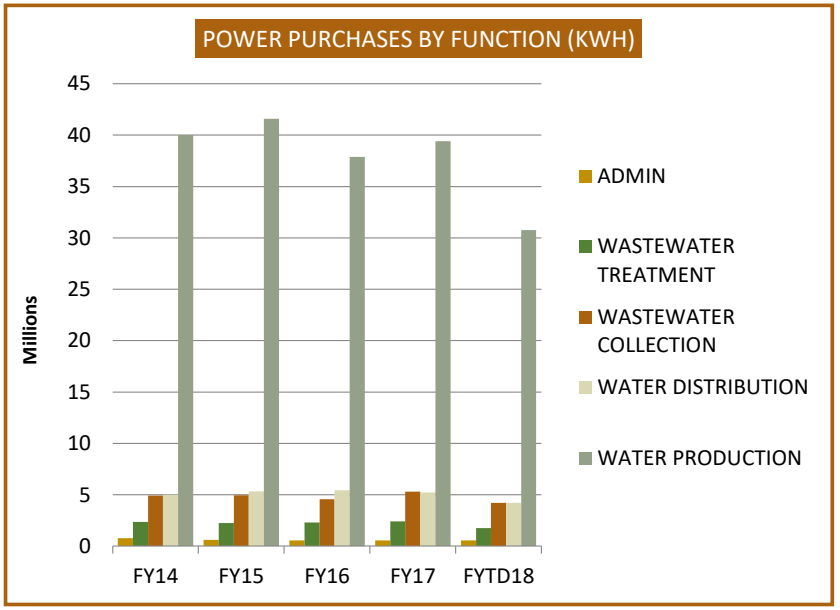


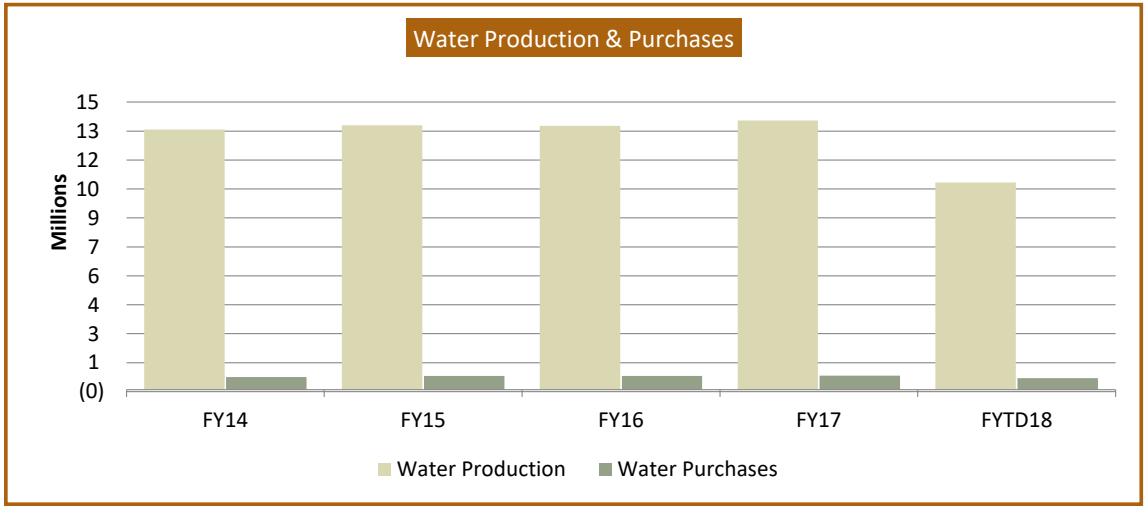
Top Ten Largest Water and Wastewater Customers – June 2018

Water			Wastewater		
Customer Name	FYTD18 Revenues	% of Total	Customer Name	FYTD18 Revenues	% of Total
1) MDI GUAM CORPORATION/LEOPALACE	$985,874	1.94%	1) AIR FORCE DOD	$2,700,025	9.12%
2) PACIFIC ISLANDS CLUB	909,167	1.79%	2) NAVY DOD	1,755,393	5.93%
3) HOTELS OF THE MARIANAS INC	739,619	1.45%	3) HOTELS OF THE MARIANAS INC	790,900	2.67%
4) HYATT	669,134	1.31%	4) HYATT	716,318	2.42%
5) HOTEL NIKKO GUAM	631,022	1.24%	5) HOTEL NIKKO GUAM	674,248	2.28%
6) GUAM REEF HOTEL INC	615,987	1.21%	6) GUAM REEF HOTEL INC	659,228	2.23%
7) SHERATON LAGUNA GUAM RESORT	569,039	1.12%	7) SHERATON LAGUNA GUAM RESORT	608,798	2.06%
8) MDI GUAM CORPORATION/WESTIN	494,833	0.97%	8) MDI GUAM CORPORATION/WESTIN	529,088	1.79%
9) OUTRIGGER GUAM RESORT	478,263	0.94%	9) OUTRIGGER GUAM RESORT	512,420	1.73%
10) GOODWIND DEVELOPMENT CORP	466,501	0.92%	10) GOODWIND DEVELOPMENT CORP	497,524	1.68%
Total	**$6,559,440**	**12.89%**	**Total**	**$9,443,943**	**31.91%**

Power, Water Purchases and Water Production

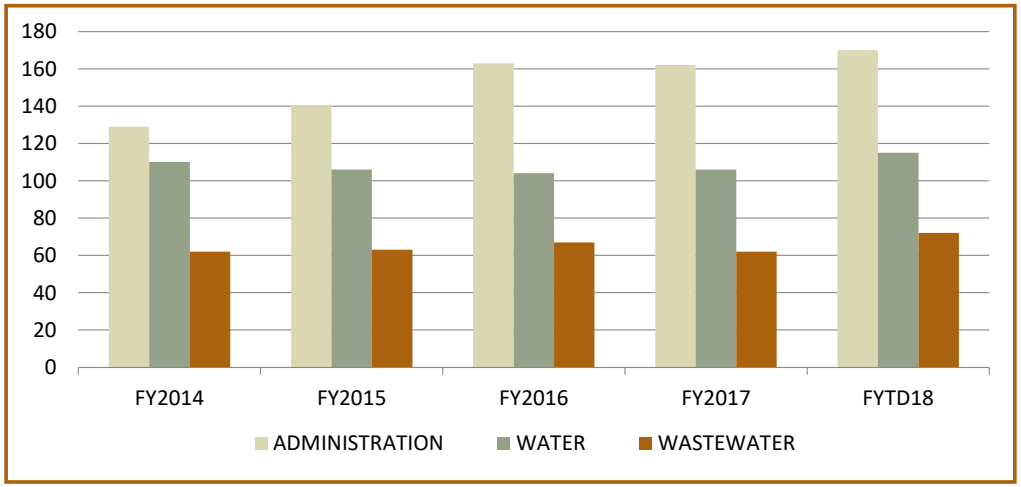




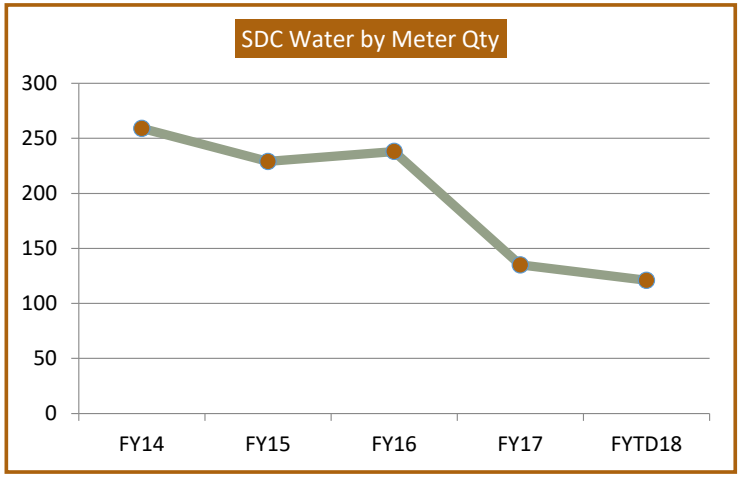


FTE by Major Division

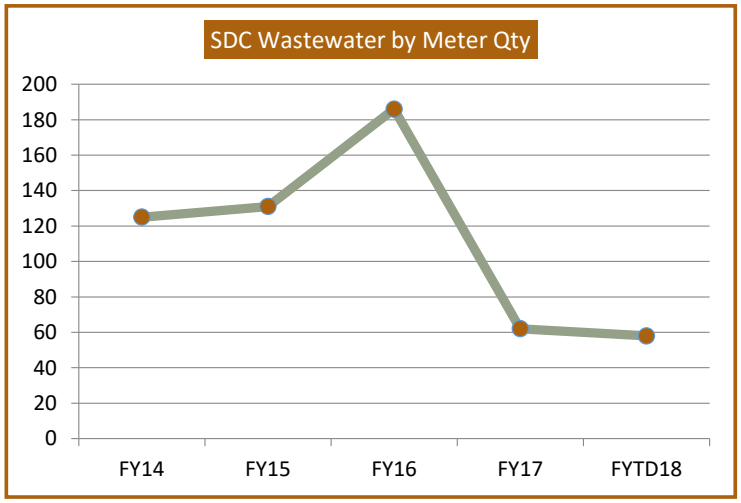
DIVISION	FY2014	FY2015	FY2016	FY2017	FYTD18
ADMINISTRATION	129	140	163	162	170
WATER	110	106	104	106	115
WASTEWATER	62	63	67	62	72
TOTAL NUMBER OF STAFF	**301**	**309**	**334**	**330**	**357**
Gross Salaries & Wages ($000)	15,585	17,590	16,008	16,963	12,488
Water Customers	41,702	41,274	41,858	42,181	42,863
Staff to Customers Ratio	0.72%	0.75%	0.80%	0.78%	0.83%



SDC Water & Wastewater (Meter Quantity)



Actual Meter Sizes (Inches)	FY 2014	FY 2015	FY 2016	FY 2017	FYTD18
5/8 x 3/4	248	220	239	129	113
1	5	5	7	2	1
1 1/2	1	1	1	1	3
2	3	2	4	2	3
3	1	-	1	-	-
4	-	1	-	-	1
6	-	-	-	1	-
8	1	-	-	-	-
10	-	-	-	-	-
Total SDC by Water	259	229	252	135	121



Actual Meter Sizes (Inches)	FY 2014	FY 2015	FY 2016	FY 2017	FYTD18
5/8 x 3/4	115	124	179	58	50
1	4	3	2	-	1
1 1/2	1	1	1	1	3
2	3	2	3	2	3
3	1	-	1	-	-
4	-	1	-	-	1
6	-	-	-	1	-
8	1	-	-	-	-
10	-	-	-	-	-
Total SDC by Wastewater	125	131	186	62	58

GUAM WATERWORKS AUTHORITY
JUNE 30, 2018
FINANCIAL AND RELATED REPORTS
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GUAM WATERWORKS AUTHORITY
Balance Sheet
June 30, 2018

SCHEDULE A

ASSETS	Unaudited June 30, 2018	Audited September 30, 2017	Increase (Decrease)
Current Assets:			
Cash:			
Unrestricted (Schedule G)	1,799,133	4,873,275	(3,074,142)
Restricted Funds (Schedule G)	70,347,742	65,124,400	5,223,342
Accounts Receivable Trade, Net of Allowance for Doubtful Receivables of $13,606,332 at Jun 30, 2018 and $12,619,034 at Sep 30, 2017	15,848,312	15,450,733	397,579
Other Receivable	944,691	8,433,446	(7,488,755)
Materials & Supplies Inventory, Net of Allowance for Obsolescence of $457,370 at Jun 30, 2018 and Sep 30, 2017	3,706,640	2,166,557	1,540,083
Total Current Assets	92,646,518	96,048,411	(3,401,893)
Property, Plant and Equipment			
Utility plant in service:			
Water system	328,674,340	327,484,191	1,190,148
Wastewater system	287,213,495	286,394,940	818,556
Non-utility property	19,042,110	18,938,255	103,854
Total property	634,929,945	632,817,387	2,112,558
Less Accumulated Depreciation	(299,786,904)	(286,043,580)	(13,743,324)
Land	1,163,298	1,110,998	52,300
Construction Work in Progress	176,284,494	111,695,887	64,588,607
Property, Plant and Equipment, net	512,590,833	459,580,691	53,010,142
Other noncurrent assets			
Restricted cash (Schedule G)	188,795,816	236,550,002	(47,754,186)
Investments (Schedule G)	53,394,313	41,042,038	12,352,275
Other Prepaid Expenses	714,934	551,128	163,806
Total other noncurrent assets	242,905,064	278,143,169	(35,238,105)
TOTAL ASSETS	848,142,414	833,772,271	14,370,143
Deferred outflows of resources:			
Debt defeasance due to bond refunding	13,443,317	1,695,981	11,747,336
Deferred outflows from pension	4,940,682	4,943,777	(3,095)
Total Assets and Deferred Outflows of Resources	**866,526,412**	**840,412,029**	**26,114,384**
LIABILITIES AND NET ASSETS			
Current Liabilities:			
Current maturities of long-term debt			
-Series 2010 Bond	1,725,000	1,725,000	-
-Series 2014 Refunding	3,475,000	3,475,000	-
-Series 2017 Refunding	295,000	-	295,000
-Notes Payable	3,145,406	3,037,569	107,837
Accounts Payable -Trade	4,342,284	5,390,256	(1,047,972)
Interest Payable	13,083,185	6,656,499	6,426,686
Accrued Payroll and Employee Benefits	1,728,748	2,604,471	(875,724)
Accrued Annual Leave	1,047,784	1,729,291	(681,507)
Current portion of employee annual leave	411,887	567,057	(155,170)
Contractors' Payable	9,094,542	13,950,287	(4,855,745)
Customer and Other Deposits	2,009,799	2,014,435	(4,636)
Other Liabilities	72,817	72,772	45
Total Current Liabilities	40,431,452	41,222,638	(791,186)
Long Term Debt, less current maturities			
Series 2010 Revenue Bond	3,695,000	112,800,000	(109,105,000)
Series 2013 Revenue Bond	172,630,000	172,630,000	-
Series 2014 Refunding	72,520,000	72,520,000	-
Series 2016 Revenue Bond	143,310,000	143,310,000	-
Series 2017 Refunding Bond	107,365,000	-	107,365,000
Unamortized Discount - Bond 2010	-	(1,867,525)	1,867,525
Unamortized Discount - Bond 2013	(1,300,426)	(1,338,751)	38,325
Unamortized Premium - Bond 2014	4,604,734	4,804,694	(199,960)
Unamortized Premium - Bond 2016	16,807,354	17,262,975	(455,621)
Unamortized Premium - Bond 2017	12,956,331	-	12,956,331
Notes Payable	3,157,989	5,533,918	(2,375,930)
Unfunded Ret Liability (GASB 67/68)	49,243,798	49,243,798	-
Employee Annual Leave, Less Current Portion	991,413	783,992	207,421
TOTAL LIABILITIES	626,412,644	616,905,739	9,506,905
Deferred inflows of resources:			
Deferred inflows from pension	268,091	564,514	(296,423)
Total Liabilities and Deferred Inflows of Resources	626,680,735	617,470,253	9,210,482
Net Assets	**239,845,678**	**222,941,776**	**16,903,902**
Total Liabilities, Deferred Inflows of Resources and Net Assets	**866,526,412**	**840,412,029**	**26,114,384**

GUAM WATERWORKS AUTHORITY
Statement of Operations and Retained Earnings (Unaudited) **SCHEDULE B**
Comparative Budget vs. Actual for the period ending June 30, 2018

	Month to Date		Variance
	Budget June-18	Actual (Unaudited) June-18	Favorable / (Unfavorable)
OPERATING REVENUES			
Water Revenues	5,743,160	5,242,430	(500,730)
Wastewater Revenues	3,228,257	3,119,241	(109,016)
Legislative Surcharge	291,896	255,565	(36,331)
Other Revenues	57,638	32,495	(25,144)
System Development Charge	46,136	32,218	(13,917)
Total Operating Revenues	9,367,087	8,681,948	(685,139)
OPERATING AND MAINTENANCE EXPENSES			
Water Purchases	721,113	758,606	(37,493)
Power Purchases	1,057,997	1,239,501	(181,504)
Total Utility Costs	1,779,110	1,998,108	(218,998)
Salaries and Wages	1,625,056	1,473,510	151,546
Pension and Benefits	584,558	483,256	101,302
Total Salaries and Benefits	2,209,614	1,956,766	252,848
Capitalized Labor and Benefits	(208,333)	(208,333)	(0)
Net Salaries and Benefits	2,001,281	1,748,433	252,848
Administrative and General Expenses			
Sludge removal	137,014	136,083	931
Chemicals	154,497	153,442	1,055
Materials & Supplies	237,400	283,114	(45,714)
Transportation	91,370	90,766	604
Communications	16,182	13,437	2,745
Claims	17,600	12,196	5,404
Insurance	77,757	77,626	131
Training & Travel	29,314	29,242	72
Advertising	28,910	28,408	502
Regulatory Expense	34,086	32,999	1,087
Bad Debts Provision	110,103	109,723	380
Miscellaneous	82,515	81,981	534
Total Administrative and General Expense	1,016,748	1,049,017	(32,269)
Depreciation Expense	1,528,175	1,528,175	(0)
Contractual Expense			
Audit & Computer Maint.	27,630	27,374	257
Building rental	37,955	36,262	1,693
Equipment rental	59,875	59,417	458
Legal	4,167	600	3,567
Laboratory	10,752	9,925	827
Other	288,363	288,305	58
Total Contractual Expense	428,741	421,883	6,858
Retiree Supp. Annuities and health care costs	240,008	247,607	(7,599)
Contribution to Government of Guam	49,500	49,833	(333)
Total Retiree Benefits	289,508	297,441	(7,932)
Total Operating Expenses	7,043,563	7,043,056	507
Earnings (Loss) from Operations	2,323,524	1,638,892	684,632
Interest Income-2010/13/14/16/17 Series Bond	15,727	287,012	271,285
Interest Income-Other Funds	2,935	52,729	49,794
Interest Income-SDC	2,414	9,767	7,353
Interest Expense- 2010/13/14/16/17 Series Bond	(2,625,587)	(2,180,531)	445,056
Interest Expense- ST BOG	(33,288)	(30,186)	3,102
Federal Expenditures	(51,332)	(69,983)	(18,651)
Loss on Asset Disposal	-	-	-
AFUDC	625,000	625,000	-
Amortization of Discount, Premium and Issuance Costs	(61,861)	(77,542)	(15,681)
Defeasance due to bond refunding	(15,218)	(12,444)	2,775
Deferred outflows from pension	(105,281)	32,592	137,873
Prior Year Adjustment	-	-	-
Total non-operating revenues (expenses)	(2,246,492)	(1,363,585)	882,907
Net Income (Loss) before capital contributions	77,032	275,307	198,275
Capital Contributions			
Grants from US Government	873,108	580,257	(292,851)
Grants from GovGuam & Others	-	-	-
Other Contributions	-	-	-
Total Capital Contributions	873,108	580,257	(292,851)
Change in Net Assets	950,140	855,564	(94,576)
Debt Service Calculation			
Earnings From Operations	2,323,524	1,638,892	
System Development Charge	(46,136)	(32,218)	
Retiree COLA	49,500	49,833	
Interest/Investment Income	2,935	52,729	
Depreciation	1,528,175	1,528,175	
Balance Available for Debt Service per Section 6.12	3,857,998	3,237,411	
Working Capital Reserve Available for Debt Service	932,265	935,321	
Transfer to Working Capital- Debt Service Reserve	(150,000)	-	
Transfer to Working Capital- O&M Reserve	(266,667)	-	
Balance Available for Debt Service inclusive of reserves	4,373,596	4,172,732	
Debt Service			
Principal	433,333	433,333	
Interest	2,063,402	1,794,910	
Total	2,496,736	2,228,243	
Debt Service Coverage (1.25X)- per Section 6.12 (Indenture)	1.55	1.45	
Debt Service Coverage (1.75X) inclusive of reserves (PUC)	1.75	1.87	

GUAM WATERWORKS AUTHORITY
Statement of Operations and Retained Earnings (Unaudited)
Comparative for the period ending June 30, 2018 and 2017

SCHEDULE C

	Month to Date		Variance
	Actual (Unaudited) June-18	Actual (Audited) June-17	Favorable / (Unfavorable)
OPERATING REVENUES			
Water Revenues	5,242,430	5,331,404	(88,974)
Wastewater Revenues	3,119,241	3,099,528	19,713
Legislative Surcharge	255,565	267,269	(11,704)
Other Revenues	32,495	36,293	(3,798)
System Development Charge	32,218	72,662	(40,444)
Total Operating Revenues	8,681,948	8,807,155	(125,207)
OPERATING AND MAINTENANCE EXPENSES			
Water Purchases	758,606	609,094	(149,513)
Power Purchases	1,239,501	1,006,355	(233,146)
Total Utility Costs	1,998,108	1,615,449	(382,659)
Salaries and Wages	1,473,510	1,413,608	(59,902)
Pension and Benefits	483,256	490,400	7,144
Total Salaries and Benefits	1,956,766	1,904,009	(52,758)
Capitalized Labor and Benefits	(208,333)	(262,516)	(54,183)
Net Salaries and Benefits	1,748,433	1,641,493	(106,940)
Administrative and General Expenses			
Sludge removal	136,083	140,487	4,404
Chemicals	153,442	174,001	20,559
Materials & Supplies	283,114	128,788	(154,326)
Transportation	90,766	53,744	(37,022)
Communications	13,437	10,884	(2,553)
Claims	12,196	22,151	9,955
Insurance	77,626	90,603	12,977
Training & Travel	29,242	23,055	(6,188)
Advertising	28,408	8,988	(19,420)
Regulatory Expense	32,999	24,134	(8,865)
Bad Debts Provision	109,723	109,700	(23)
Miscellaneous	81,981	71,997	(9,985)
Total Administrative and General Expense	1,049,017	858,530	(190,486)
Depreciation Expense	1,528,175	1,402,038	(126,137)
Contractual Expense			
Audit & Computer Maint.	27,374	76,901	49,527
Building rental	36,262	36,557	295
Equipment rental	59,417	59,374	(43)
Legal	600	414	(186)
Laboratory	9,925	10,627	702
Other	288,305	156,747	(131,558)
Total Contractual Expense	421,883	340,619	(81,264)
Retiree Supp. Annuities and health care costs	247,607	231,895	(15,712)
Contribution to Government of Guam	49,833	49,500	(333)
Total Retiree Benefits	297,441	281,395	(16,045)
Total Operating Expenses	7,043,056	6,139,525	(903,532)
Earnings (Loss) from Operations	1,638,892	2,667,630	(1,028,738)
Interest Income-2010/13/14/16/17 Series Bond	287,012	65,354	221,657
Interest Income-Other Funds	52,729	10,032	42,697
Interest Income-SDC	9,767	1,060	8,708
Interest Expense- 2010/13/14/16/17 Series Bond	(2,180,531)	(2,220,744)	40,213
Interest Expense- ST BOG	(30,186)	(43,736)	13,551
Federal Expenditures	(69,983)	(42,501)	(27,482)
Loss on Asset Disposal	-	(81,105)	81,105
AFUDC	625,000	1,172,241	(547,241)
Amortization of Discount, Premium and Issuance Costs	(77,542)	61,861	(139,403)
Defeasance due to bond refunding	(12,444)	(15,218)	2,775
Deferred outflows from pension	32,592	-	32,592
Prior Year Adjustment	-	(26,756)	26,756
Total non-operating revenues (expenses)	(1,363,585)	(1,119,512)	(244,073)
Net Income (Loss) before capital contributions	275,307	1,548,118	(1,272,811)
Capital Contributions			
Grants from US Government	580,257	1,815,921	(1,235,664)
Grants from GovGuam & Others	-	1,664	(1,664)
Other Contributions	-	-	-
Total Capital Contributions	580,257	1,817,586	(1,237,329)
Change in Net Assets	855,564	3,365,704	(2,510,140)
Debt Service Calculation			
Earnings From Operations	1,638,892	2,667,630	
System Development Charge	(32,218)	(72,662)	
Retiree COLA	49,833	49,500	
Interest/Investment Income	52,729	10,032	
Depreciation	1,528,175	1,402,038	
Balance Available for Debt Service per Section 6.12	3,237,411	4,056,538	
Working Capital Reserve Available for Debt Service	935,321	932,134	
Transfer to Working Capital- Debt Service Reserve	-	-	
Transfer to Working Capital- O&M Reserve	-	-	
Balance Available for Debt Service inclusive of reserves	4,172,732	4,988,672	
Debt Service			
Principal	433,333	420,000	
Interest	1,794,910	1,626,858	
Total	2,228,243	2,046,858	
Debt Service Coverage (1.25X)- per Section 6.12 (Indenture)	1.45	1.98	
Debt Service Coverage (1.75X) inclusive of reserves (PUC)	1.87	2.44	

GUAM WATERWORKS AUTHORITY
Statement of Operations and Retained Earnings (Unaudited) **SCHEDULE D**
Comparative Budget vs. Actual for the period ending June 30, 2018

	Year to Date			Variance
	Budget June-18	Encumbered June-18	Actual (Unaudited) June-18	Favorable / (Unfavorable)
OPERATING REVENUES				
Water Revenues	51,688,441		49,186,331	(2,502,110)
Wastewater Revenues	29,054,316		28,772,970	(281,346)
Legislative Surcharge	2,627,064		2,519,484	(107,581)
Other Revenues	518,742		338,107	(180,635)
System Development Charge	415,222		824,645	409,423
Total Operating Revenues	84,303,785		81,641,536	(2,662,249)
OPERATING AND MAINTENANCE EXPENSES				
Water Purchases	6,490,018		6,811,054	(321,036)
Power Purchases	9,521,972		10,931,010	(1,409,038)
Total Utility Costs	16,011,990		17,742,064	(1,730,074)
Salaries and Wages	14,625,503		12,488,306	2,137,197
Pension and Benefits	5,261,025		4,349,365	911,660
Total Salaries and Benefits	19,886,528		16,837,671	3,048,857
Capitalized Labor and Benefits	(1,875,000)		(1,989,280)	114,280
Net Salaries and Benefits	18,011,528		14,848,391	3,163,137
Administrative and General Expenses				
Sludge removal	1,570,626		1,006,993	563,632
Chemicals	1,844,971		1,790,869	54,103
Materials & Supplies	2,061,098	360,675	1,648,010	52,413
Transportation	496,334		494,381	1,953
Communications	145,637		135,398	10,240
Claims	99,900		75,501	24,399
Insurance	942,809		682,859	259,950
Training & Travel	196,328	16,567	118,081	61,680
Advertising	125,190		106,305	18,885
Regulatory Expense	198,777		182,326	16,451
Bad Debts Provision	513,924		987,260	(473,336)
Miscellaneous	874,639		781,726	92,913
Total Administrative and General Expense	9,070,233	377,242	8,009,708	683,283
Depreciation Expense	13,753,572		13,753,575	(3)
Contractual Expense				
Audit & Computer Maint.	722,673	188,385	499,104	35,184
Building rental	341,595		318,119	23,476
Equipment rental	656,371		654,340	2,032
Legal	37,500		5,400	32,100
Laboratory	567,764	147,391	312,148	108,225
Other	1,613,268	-	1,613,010	258
Total Contractual Expense	3,939,171	335,776	3,402,121	201,274
Retiree Supp. Annuities and health care costs	2,160,075		2,140,386	19,689
Contribution to Government of Guam	445,500		448,500	(3,000)
Total Retiree Benefits	2,605,575		2,588,886	16,689
Total Operating Expenses	63,392,070	713,018	60,344,745	2,334,307
Earnings (Loss) from Operations	20,911,716	(713,018)	21,296,792	(327,942)
Interest Income-2010/13/14/16/17 Series Bond	141,539		1,868,579	1,727,040
Interest Income-Other Funds	26,413		313,692	287,279
Interest Income-SDC	21,728		67,119	45,390
Interest Expense- 2010/13/14/16/17 Series Bond	(23,630,285)		(19,716,259)	3,914,026
Interest Expense- ST BOG	(299,594)		(273,483)	26,111
Federal Expenditures	(461,990)		(468,519)	(6,529)
Loss on Asset Disposal	-		-	-
AFUDC	5,625,000		5,625,000	-
Amortization of Discount, Premium and Issuance Costs	(556,747)		(279,669)	277,078
Defeasance due to bond refunding	(136,966)		(111,992)	24,973
Deferred outflows from pension	(947,525)		293,328	1,240,853
Prior Year Adjustment	-		45,808	45,808
Total non-operating revenues (expenses)	(20,218,427)	-	(12,636,397)	7,582,029
Net Income (Loss) before capital contributions	693,289	(713,018)	8,660,394	7,254,087
Capital Contributions				
Grants from US Government	7,857,974		8,243,507	385,533
Grants from GovGuam & Others	-		-	-
Other Contributions	-		-	-
Total Capital Contributions	7,857,974	-	8,243,507	385,533
Change in Net Assets	8,551,263	(713,018)	16,903,901	7,639,621
Debt Service Calculation				
Earnings From Operations	20,911,716		21,296,792	
System Development Charge	(415,222)		(824,645)	
Retiree COLA	445,500		448,500	
Interest/Investment Income	26,413		313,692	
Depreciation	13,753,572		13,753,575	
Balance Available for Debt Service per Section 6.12	34,721,978		34,987,913	
Working Capital Reserve Available for Debt Service	8,390,385		8,389,208	
Transfer to Working Capital- Debt Service Reserve	(1,350,000)		-	
Transfer to Working Capital- O&M Reserve	(2,400,000)		-	
Balance Available for Debt Service inclusive of reserves	39,362,363		43,377,121	
Debt Service				
Principal	3,900,000		3,900,000	
Interest	18,570,620		16,154,190	
Total	22,470,620		20,054,190	
Debt Service Coverage (1.25X)- per Section 6.12 (Indenture)	1.55		1.74	
Debt Service Coverage (1.75X) inclusive of reserves (PUC)	1.75		2.16	

GUAM WATERWORKS AUTHORITY
Statement of Operations and Retained Earnings (Unaudited)
Comparative for the period ending June 30, 2018 and 2017

SCHEDULE E

	Year to Date ACTUAL (Unaudited) June-18	ACTUAL (Audited) June-17	Variance Favorable / (Unfavorable)
OPERATING REVENUES			
Water Revenues	49,186,331	47,982,632	1,203,699
Wastewater Revenues	28,772,970	27,895,749	877,221
Legislative Surcharge	2,519,484	2,405,420	114,064
Other Revenues	338,107	326,636	11,471
System Development Charge	824,645	653,959	170,685
Total Operating Revenues	81,641,536	79,264,396	2,377,141
OPERATING AND MAINTENANCE EXPENSES			
Water Purchases	6,811,054	5,481,844	(1,329,210)
Power Purchases	10,931,010	9,057,197	(1,873,813)
Total Utility Costs	17,742,064	14,539,040	(3,203,024)
Salaries and Wages	12,488,306	12,722,476	234,170
Pension and Benefits	4,349,365	4,413,603	64,238
Total Salaries and Benefits	16,837,671	17,136,079	298,408
Capitalized Labor and Benefits	(1,989,280)	(2,362,642)	(373,362)
Net Salaries and Benefits	14,848,391	14,773,437	(74,953)
Administrative and General Expenses			
Sludge removal	1,006,993	1,264,381	257,388
Chemicals	1,790,869	1,566,010	(224,859)
Materials & Supplies	1,648,010	1,159,089	(488,921)
Transportation	494,381	483,699	(10,682)
Communications	135,398	97,954	(37,443)
Claims	75,501	199,359	123,858
Insurance	682,859	815,424	132,566
Training & Travel	118,081	207,491	89,410
Advertising	106,305	80,890	(25,416)
Regulatory Expense	182,326	217,210	34,884
Bad Debts Provision	987,260	987,297	37
Miscellaneous	781,726	647,969	(133,757)
Total Administrative and General Expense	8,009,708	7,726,774	(282,934)
Depreciation Expense	13,753,575	12,618,341	(1,135,234)
Contractual Expense			
Audit & Computer Maint.	499,104	692,109	193,005
Building rental	318,119	329,009	10,890
Equipment rental	654,340	534,365	(119,974)
Legal	5,400	3,726	(1,674)
Laboratory	312,148	95,639	(216,510)
Other	1,613,010	1,410,724	(202,286)
Total Contractual Expense	3,402,121	3,065,572	(336,549)
Retiree Supp. Annuities and health care costs	2,140,386	2,087,059	(53,327)
Contribution to Government of Guam	448,500	445,500	(3,000)
Total Retiree Benefits	2,588,886	2,532,559	(56,327)
Total Operating Expenses	60,344,745	55,255,723	(5,089,022)
Earnings (Loss) from Operations	21,296,792	24,008,673	(2,711,881)
Interest Income-2010/13/14/16/17 Series Bond	1,868,579	588,189	1,280,390
Interest Income-Other Funds	313,692	90,286	223,405
Interest Income-SDC	67,119	9,538	57,581
Interest Expense- 2010/13/14/16/17 Series Bond	(19,716,259)	(19,986,694)	270,434
Interest Expense- ST BOG	(273,483)	(393,626)	120,144
Federal Expenditures	(468,519)	(382,513)	(86,006)
Loss on Asset Disposal	-	(729,941)	729,941
AFUDC	5,625,000	10,550,169	(4,925,169)
Amortization of Discount, Premium and Issuance Costs	(279,669)	556,746	(836,416)
Defeasance due to bond refunding	(111,992)	(136,966)	24,973
Deferred outflows from pension	293,328	-	293,328
Prior Year Adjustment	45,808	(240,801)	286,609
Total non-operating revenues (expenses)	(12,636,397)	(10,075,612)	(2,560,785)
Net Income (Loss) before capital contributions	8,660,394	13,933,060	(5,272,666)
Capital Contributions			
Grants from US Government	8,243,507	16,343,293	(8,099,786)
Grants from GovGuam & Others	-	14,979	(14,979)
Other Contributions	-	-	-
Total Capital Contributions	8,243,507	16,358,273	(8,114,766)
Change in Net Assets	16,903,901	30,291,333	(13,387,432)
Debt Service Calculation			
Earnings From Operations	21,296,792	24,008,673	
System Development Charge	(824,645)	(653,959)	
Retiree COLA	448,500	445,500	
Interest/Investment Income	313,692	90,286	
Depreciation	13,753,575	12,618,341	
Balance Available for Debt Service per Section 6.12	34,987,913	36,508,841	
Working Capital Reserve Available for Debt Service	8,389,208	8,389,208	
Transfer to Working Capital- Debt Service Reserve	-	-	
Transfer to Working Capital- O&M Reserve	-	-	
Balance Available for Debt Service inclusive of reserves	43,377,121	44,898,048	
Debt Service			
Principal	3,900,000	3,780,000	
Interest	16,154,190	14,641,726	
Total	20,054,190	18,421,726	
Debt Service Coverage (1.25X)- per Section 6.12 (Indenture)	1.74	1.98	
Debt Service Coverage (1.75X) inclusive of reserves (PUC)	2.16	2.44	

SCHEDULE F

Bond Compliance		($$$) Per Indenture	As of 6/30/18 ($$$) Bond 2013/2014/2016/2017
• Operation and Maintenance Fund-BOG	*Equivalent to 55 days of the annual O&M budget less depreciation*	$10.5M	$10.5M
• Bond Reserve Fund - US Bank	*Fully funded- Principal and Interest (Bond Series 2010, 2013, 2014 Refunding and 2016)*	$34.9M	$34.9M
• Operation, Maintenance, Renewal and Replacement Reserve Fund-BOG Trust	*Equivalent to 1/4 of the annual O&M budget & CIP budget to be funded in 5 years ($2M/year)*	$17.4M	$17.4M
• Capital Improvement Fund	*Balance remaining in the Revenue Fund after the foregoing deposits*	$3.9K	$5.6K

GUAM WATERWORKS AUTHORITY
Restricted and Unrestricted Cash Summary
FY 2018

SCHEDULE G

Description	Unaudited June 30, 2018	Audited September 30, 2017	Increase (Decrease)
UNRESTRICTED			
Change Fund	2,000	2,000	-
Petty Cash	5,000	5,000	-
BOG - Deposit Accounts	1,792,133	4,866,275	(3,074,142)
Total Unrestricted	1,799,133	4,873,275	(3,074,142)
RESTRICTED			
Collection Accounts	174,566	163,466	11,100
BOG Deposit Accounts	7,525,543	6,051,064	1,474,479
BP Deposit Accounts	1,005,485	944,282	61,203
BOG Revenue Trust Fund	6,339,869	7,782,227	(1,442,358)
BOG O & M Reserve	13,613,725	13,516,540	97,184
BOG Debt Service Reserve	11,298,491	11,217,733	80,757
BOG CAPEX Fund	19,528,484	15,462,869	4,065,615
	59,486,162	55,138,182	4,347,980
BOG SDC Deposit	2,111,580	1,486,219	625,362
BOG SDC CDs	8,750,000	8,500,000	250,000
Total Restricted	70,347,742	65,124,400	5,223,342
Reserve Funds			
BOG Series 05 OMRRRF Fund	17,423,213	17,423,213	-
BOG Series 13 Construction Fund	42,931,804	74,461,765	(31,529,961)
BOG Series 14 Refunding Construction Fund	739,052	771,281	(32,229)
BOG Series 16 Construction Fund	120,014,245	132,811,449	(12,797,203)
BOG Series 16 Cap Int Fund	-	1,782,982	(1,782,982)
BOG Series 17 Refunding Construction Fund	7,687,502	9,299,311	(1,611,809)
Total Reserves - Held by Trustee	188,795,816	236,550,002	(47,754,186)
USB Series 2013 Debt Service Fund	4,685,886	2,336,754	2,349,132
USB Series 2013 Debt Service Reserve Fund	12,031,688	12,031,688	-
USB Series 2014 Refunding Debt Service Fund	5,345,907	1,796,559	3,549,349
USB Series 2014 Refunding Debt Service Reserve Fund	7,855,490	7,707,602	147,888
USB Series 2016 Debt Service Fund	3,591,204	130	3,591,074
USB Series 2016 Debt Service Reserve Fund	7,594,594	7,582,725	11,869
USB Series 2010 Debt Service Fund	1,861,213	2,020,121	(158,908)
USB Series 2017 Refunding Debt Service Reserve Fund	7,566,460	7,566,460	-
USB Series 2017 Debt Service Fund	2,861,872	-	2,861,872
Total Investments	53,394,313	41,042,038	12,352,275
Total Restricted and Unrestricted Cash	314,337,004	347,589,716	(33,252,711)

SCHEDULE H

Guam Waterworks Authority **Statement of Cash Flows (Unaudited)** **FY 2018**	**YTD** **Jun-18**
Increase (decrease) in cash	
Cash flows from operating activities:	
Cash received from trade and others	80,698,892
Cash payments to suppliers/contractors for goods and services	(30,713,510)
Cash payments to employees for services	(19,235,584)
Net cash provided by operating activities	30,749,797
Cash flows from capital and related financing activities:	
Contributed capital received (grants)	14,816,957
Acquisition of utility plant	(66,199,445)
Repayment of Long Term Debt	12,761,600
Interest expense	(15,883,673)
Net cash provided by (used in) capital and related financing activities	(54,504,561)
Cash flows from investing activities:	
Transfers from (to) restricted fund	18,431,232
Interest income received	2,249,390
Net cash provided by investing activities	20,680,622
Net increase (decrease) in cash	(3,074,141)
Unrestricted cash at beginning of the period	4,873,275
Unrestricted cash at end of period	1,799,133
Reconciliation of operating loss to net cash provided by operating activities:	
Operating Income (loss)	21,296,792
Adjustments to reconcile to net cash provided by operating activities:	
Depreciation expense	13,753,575
Other Expense/income	693,932
(Increase) decrease in assets:	
Accounts receivable	(938,053)
Materials and supplies inventory	(1,540,083)
Other Assets	(163,806)
Increase (decrease) in liabilities:	
Accounts payable, Contractors, Retention & Escrow Deposit	(842,988)
Accrued payroll	(1,504,980)
Customer deposits	(4,591)
Net cash provided by operating activities	30,749,797

Guam Waterworks Authority
Accounts Receivable - Government
As of June 30, 2018

SCHEDULE I

		AGING				
Customer Name	**No of Accounts**	**Current Balance**	**31-60 days**	**61-90 days**	**91-120 days**	**Over 120 days**	**Outstanding Bal.**
Guam Int'l Airport Authority	4	42,613	19,076	42,341	38,927	149,435	292,391
Guam Memorial Hospital Authority	3	35,244	38,480	36,415	-	-	110,138
Port Authority of Guam	3	43,219	42,051	4,824	-	-	90,094
Guam Community College	1	5,724	4,920	4,590	11,997	27,566	54,798
Guam Power Authority	23	42,013	-	-	-	-	42,013
University of Guam	2	12,983	-	-	-	-	12,983
Guam Housing & Urban Renewal Authority	6	1,556	-	-	-	-	1,556
Guam Housing Corporation	1	31	-	-	-	-	31
AUTONOMOUS AGENCIES	**43**	**183,384**	**104,527**	**88,170**	**50,924**	**177,001**	**604,005**
Department of Parks & Recreation	17	68,584	60,647	41,400	46,439	483,729	700,799
Department of Education	50	196,716	220,515	121,060	10,484	127,532	676,307
Department of Corrections	7	97,867	40,183	39,103	20,316	-	197,470
Department of Public Health & Social Services	5	2,473	1,505	635	2,481	101,190	108,284
Mayors' Council of Guam	44	11,144	7,761	123	-	-	19,028
Guam Fire Department	10	7,565	-	-	-	-	7,565
Department of Youth Affairs	2	78	23	23	650	3,247	4,022
Department of Agriculture	3	2,216	1,398	2	-	-	3,617
Guam Police Department	5	3,456	-	-	-	-	3,456
Sanctuary Inc.	1	2,917	-	-	-	-	2,917
Department of Public Works	11	2,372	-	-	-	-	2,372
Division of Senior Citizens, DPH&SS	2	353	164	159	28	-	703
Department of Mental Health & Substance Abuse	1	341	-	-	-	-	341
Guam Veterans' Affairs Office	2	262	-	-	-	-	262
Guam Public Library	4	229	-	-	-	-	229
The Office of the Dededo Mayor	1	208	-	-	-	-	208
Guam Energy Office	1	75	-	-	-	-	75
Merizo Mayor	1	30	24	-	-	-	54
Guam Solid Waste Authority	1	23	-	-	-	-	23
							-
LINE AGENCIES	**168**	**396,910**	**332,220**	**202,506**	**80,399**	**715,697**	**1,727,732**
TOTAL June 30, 2018	**211**	**580,294**	**436,747**	**290,676**	**131,323**	**892,698**	**2,331,737**
TOTAL September 30, 2017	**253**	**715,578**	**442,522**	**169,120**	**72,476**	**396,347**	**1,796,043**
% INCREASE/ (DECREASE)	**-17%**	**-19%**	**-1%**	**72%**	**81%**	**125%**	**30%**

GUAM WATERWORKS AUTHORITY
2013 Series Bond Project Status
As of June 30, 2018

SCHEDULE J

PROJECT NAME	ORIGINAL APPROVED PROJECT COST	Adjusted Project Cost	EXPENDITURES AS OF 06/30/18	OUTSTANDING ENCUMBRANCES	TOTAL EXPENDITURES AND ENCUMBRANCES	UNOBLIGATED PROJECT COST	Construction fund balance AS OF 06/30/18
Santa Rita Springs Booster Pump Rehab Phase II	$ 100,000	$ 100,000	90,163	9,837	$ 100,000	$ -	$ 9,837
"A" Series Well Transmission Line	$ 400,000	$ 400,000	369,846	(0)	$ 369,846	$ 30,154	$ 30,154
Water Booster Pump Station	$ 6,000,000	$ 1,861,000	1,656,428	23,536	$ 1,679,964	$ 181,036	$ 204,572
Meter Replacement Program		$ 999,000	996,532	-	$ 996,532	$ 2,468	$ 2,468
Barrigada Tank Repair/Replacement	$ 6,000,000	$ 4,987,000	4,924,959	62,041	$ 4,987,000	$ 0	$ 62,041
Leak Detection	$ 100,000	$ 20,000	16,916	-	$ 16,916	$ 3,084	$ 3,084
Potable Water System Planning	$ 800,000	$ 624,000	603,390	20,610	$ 624,000	$ -	$ 20,610
Implement Ground Water Rule	$ 1,000,000	$ 1,000,000	1,000,000	-	$ 1,000,000	$ -	$ -
Deep Well Rehabilitation	$ 800,000	$ 200,000	189,930	10,071	$ 200,000	$ (0)	$ 10,070
New Deep Wells at Down Hard	$ 2,000,000	$ 810,000			$ -	$ 810,000	$ 810,000
Master Meters	$ 4,000,000	$ 784,000	531,188	180,872	$ 712,060	$ 71,940	$ 252,812
Ugum Water Treatment Plant Intake	$ 1,000,000	$ 982,000	578,858	280,943	$ 859,801	$ 122,199	$ 403,142
Water Wells	$ 4,200,000	$ 4,200,000	2,284,474	745,555	$ 3,030,029	$ 1,169,971	$ 1,915,527
Water Distribution System	$ 12,000,000	$ 11,151,000	6,924,172	3,988,281	$ 10,912,453	$ 238,547	$ 4,226,828
Pressure Zone Realignment /	$ 1,000,000	$ 431,000	336,036	1,074	$ 337,110	$ 93,890	$ 94,964
Mechanical/Electrical Equipment	$ 430,000	$ 430,000	328,686	98,112	$ 426,798	$ 3,202	$ 101,314
Water Reservoir Internal/External	$ 800,000	$ -			$ -	$ -	$ -
Water System Reservoirs 2005 Improvements	$ 21,000,000	$ 13,878,000	10,897,321	2,980,680	$ 13,878,000	$ (0)	$ 2,980,679
Ugum Water Treatment Plant Reservoir	$ 7,000,000	$ 90,000			$ -	$ 90,000	$ 90,000
Agana Heights & Chaot Tanks	$ 4,500,000	$ 3,280,000	241,603	1,088,684	$ 1,330,287	$ 1,949,713	$ 3,038,397
Tank Major Repair Yigo#1 Mangilao#2 Agat#2	$ 13,500,000	$ 11,605,000	8,464,563	3,140,437	$ 11,605,000	$ 0	$ 3,140,437
Tank Major Repair Yigo#1 Mangilao#2 Agat#2	$ 8,000,000	$ -			$ -	$ -	$ -
Assessment of malojloj Elevetad & Yigo Elevated	$ 500,000	$ 485,117	461,813	23,304	$ 485,117	$ -	$ 23,304
Fire Hydrant Replacement Program	$ -	$ -			$ -	$ -	$ -
Wastewater System Planning	$ 800,000	$ 651,000	550,968	99,933	$ 650,900	$ 100	$ 100,032
Lift Station Upgrades	$ 5,000,000	$ 946,000	562,785	363	$ 563,149	$ 382,852	$ 383,215
Wastewater Collection System Repl/Rehab	$ 6,500,000	$ 780,000	578,438	81,875	$ 660,314	$ 119,687	$ 201,562
Baza Gardens STP Replacement		$ 3,114,883	1,712,862	1,402,007	$ 3,114,869	$ 15	$ 1,402,021
Facilities Plan/Design for Umatac-Merizo WWTP		$ 473,000	341,226	30,473	$ 371,699	$ 101,301	$ 131,774
Agat/Santa Rita STP Replacement	$ 19,000,000	$ 67,200,000	47,621,200	19,262,992	$ 66,884,192	$ 315,808	$ 19,578,800
Agana WWTP Interim Measures		$ 673,000	611,247	61,753	$ 673,000	$ (0)	$ 61,753
Umatac Merizo Replacement	$ 2,000,000	$ -			$ -	$ -	$ -
Wastewater Pump Station Electrical Upgrade	$ 620,000	$ 620,000	91,348	8,513	$ 99,861	$ 520,139	$ 528,652
Electrical Upgrade - Water Wells	$ 1,500,000	$ 1,500,000	1,480,769	19,230	$ 1,500,000	$ 0	$ 19,231
Electrical Upgrade - Water Booster	$ 325,000	$ 2,000			$ -	$ 2,000	$ 2,000
Electrical Upgrade -Water Booster	$ 350,000	$ 200,000	977	-	$ 977	$ 199,023	$ 199,023
Electrical Upgrade - Other Water	$ 250,000	$ 150,000	60,700	-	$ 60,700	$ 89,300	$ 89,300
SCADA Improvements – Phase 3	$ 1,850,000	$ 923,000	445,447	276,912	$ 722,359	$ 200,641	$ 477,553
SCADA Improvements – Phase 4	$ 500,000	$ -			$ -	$ -	$ -
Laboratory Modernization	$ 1,500,000	$ 1,173,000	1,163,037	8,428	$ 1,171,465	$ 1,535	$ 9,963
Land Survey	$ 2,000,000	$ 2,000	1,038	15	$ 1,053	$ 948	$ 963
General Plant Improvements / Water	$ 2,000,000	$ 2,600,000	1,265,043	1,176,695	$ 2,441,737	$ 158,263	$ 1,334,957
Allowance for COI							$ 275,005
Interest Earned							$ 715,759
Total Construction Fund (2013 Series Revenue Bond)	**$ 139,325,000**	**$ 139,325,000**	**$ 97,383,960**	**$ 35,083,227**	**$ 132,467,187**	**$ 6,857,813**	**$ 42,931,804**

PUC's Docket 14-04 dated February 25, 2014

GUAM WATERWORKS AUTHORITY
2014 Series Refunded Bond Project Status
As of June 30, 2018

SCHEDULE K

PROJECT NAME	ORIGINAL APPROVED PROJECT	ADJUSTED PROJECT COST	EXPENDITURES AS OF 06/30/18	OUTSTANDING ENCUMBRANCES	TOTAL EXPENDITURES AND ENCUMBRANCES	UNOBLIGATED PROJECT COST	20% PUC AS OF 06/30/18	Construction fund balance AS OF 06/30/18
Agana Treatment Plant	$ 10,475,000	$ 11,065,512	11,065,512	$ -	$ 11,065,512	$ (0)	$ 2,095,000	$ (0)
Agana Outfall	$ 5,030,000	$ 10,127,198	10,127,198	$ -	$ 10,127,198	$ 0	$ 1,006,000	$ 0
Northern District (Outfall)	$ 4,700,000	$ 10,251,423	10,251,423	$ -	$ 10,251,423	$ 0	$ 940,000	$ 0
Northern District WWTP Upgrade		$ 173,681	173,681		$ 173,681	$ -		$ -
Northern Treatment Plant		$ -	-		$ -	$ -		$ -
Baza Gardens Wastewater Treatment Plant Upgrade	$ 500,000	$ 297,177	297,177	$ -	$ 297,177	$ (0)	$ 100,000	$ (0)
Interim Disinfection Facilities	$ 581,000	$ 3,437,311	3,408,599	$ 28,712	$ 3,437,311	$ (0)	$ 116,200	$ 28,712
Electrical Protection	$ 1,000,000	$ 1,512,483	1,512,483.3	$ -	$ 1,512,483	$ (0)	$ 200,000	$ (0)
Well Vulnerability Reduction	$ 600,000	$ 185,522	185,522	$ -	$ 185,522	$ 0	$ 120,000	$ 0
Old Agat Wastewater Collection (I/I Reduction)	$ 2,155,000	$ 1,931,659	1,931,659	$ -	$ 1,931,659	$ (0)	$ 431,000	$ (0)
Chaot WW Pump Station/Collection System	$ 410,000	$ 399,120	399,120	$ -	$ 399,120	$ -	$ 82,000	$ -
Lift Station Upgrades	$ 230,000	$ 149,895	149,895	$ -	$ 149,895	$ 0	$ 46,000	$ 0
Collection Line Upgrades	$ 200,000	$ 62,755	62,755	$ -	$ 62,755	$ 0	$ 40,000	$ 0
"A" Well Transmission Line	$ 2,413,000	$ 3,833,175	3,818,088	$ 15,087	$ 3,833,175	$ (0)	$ 482,600	$ 15,087
Santa Rita Springs - Booster Pump Rehab.	$ 648,000	$ 306,841	306,841	-	$ 306,841	$ (0)	$ 129,600	$ (0)
Fena Bypass Transmission line		$ 160,913	160,913	$ -	$ 160,913	$ (0)	$ -	$ (0)
Storage Additions	$ 950,000	$ -			$ -	$ -	$ 190,000	$ -
Booster Station Upgrades	$ 390,000	$ 66,734	66,734	$ -	$ 66,734	$ -	$ 78,000	$ -
Mangilao Tank Repair	$ 800,000	$ 398,367	397,933	$ 434	$ 398,367	$ (0)	$ 160,000	$ 434
Ugum Tank Replacement	$ 2,500,000	$ -			$ -	$ -	$ 500,000	$ -
Ugum WTPlant Refurbishment ($1.724,970EPA)		$ 6,588,473	6,531,525	$ 56,949	$ 6,588,473	$ (0)		$ 56,948
Barrigada Tank Repair/Replacement	$ 3,000,000	$ 65,019	65,019	$ -	$ 65,019	$ 0	$ 600,000	$ 0
Water Reservoir Condition Assessment		$ 1,250,000	1,249,227.16	$ 772	$ 1,250,000	$ 0	$ -	$ 773
EarthTech Well Buyout	$ 5,000,000	$ 5,975,000	5,975,000	$ -	$ 5,975,000	$ -	$ 1,000,000	$ -
Water Wastewater Master Plan	$ 4,900,000	$ 4,881,308	4,881,308	$ -	$ 4,881,308	$ 0	$ 980,000	$ 0
Laboratory Modernization	$ 800,000	$ 135,055	135,055	$ -	$ 135,055	$ 0	$ 160,000	$ 0
Land Survey	$ 800,000	$ 577,836	576,134	$ 1,702	$ 577,836	$ 0	$ 160,000	$ 1,702
Ground Water Disinfection		$ -				$ -		$ -
GWUDI Study		$ 262,234	260,430	1,804	$ 262,234	$ -		$ 1,804
Contingency	$ 12,276,023	$ 154	-	$ -	$ -	$ -		$ 732
Vehicles	$ 1,100,000	$ 1,280,000	2,130,305	$ (850,305)	$ 1,280,000	$ -	$ 220,000	$ -
Generation Equipment	$ 700,000	$ 880,000	2,712	$ 877,288	$ 880,000	$ 0		$ 27,033
Leak Detection/Line Replacement	$ 8,200,000	$ 5,988,494	5,988,494	$ -	$ 5,988,494	$ -	$ 1,640,000	$ -
Automated Meter Reading	$ 12,572,063	$ 17,468,359	16,870,522	$ 537,157	$ 17,468,359.32	$ 0	$ 2,514,413	$ 597,837
Total Construction Fund (2014 Series Refunded Revenue Bond)	$ 82,930,086	$ 89,711,698	$ 88,981,263	$ 669,600	$ 89,711,543	$ 1	$ 13,990,813	$ 731,063
Interest Earned	$ 6,781,612	$ (0)				$ (0)		$ 7,989
Total Project Cost Funding	**$ 89,711,698**	**$ 89,711,698**	**$ 88,981,263**	**$ 669,600**	**$ 89,711,543**	**$ 1**	**$ 13,990,813**	**$ 739,052**

GUAM WATERWORKS AUTHORITY
2016 Series Bond Project Status
As of June 30, 2018

SCHEDULE L

PROJECT NAME	ORIGINAL APPROVED PROJECT COST	Adjusted Project Cost	EXPENDITURES AS OF 06/30/18	OUTSTANDING ENCUMBRANCES	TOTAL EXPENDITURES AND ENCUMBRANCES	UNOBLIGATED PROJECT COST	Construction fund balance AS OF 06/30/18
Water Booster Pump Station	$ 4,139,000	$ 4,139,000			$ -	$ 4,139,000	$ 4,139,000
Meter Replacement Program	$ 4,501,000	$ 4,501,000	64,531	85,469.44	$ 150,000	$ 4,351,000	$ 4,436,469
Barrigada Tank Repair/Replacement	$ 1,013,000	$ 1,013,000		-	$ -	$ 1,013,000	$ 1,013,000
Leak Detection	$ 1,180,000	$ 1,180,000		-	$ -	$ 1,180,000	$ 1,180,000
Potable Water System Planning	$ 2,276,000	$ 2,276,000	260,131	616,163.05	$ 876,294	$ 1,399,706	$ 2,015,869
Deep Well Rehabilitation	$ 250,000	$ 250,000		110,013.00	$ 110,013	$ 139,987	$ 250,000
New Deep Wells at Down Hard	$ 1,190,000	$ 1,190,000			$ -	$ 1,190,000	$ 1,190,000
Master Meters	$ 3,616,000	$ 3,616,000	151,539	-	$ 151,539	$ 3,464,461	$ 3,464,461
Ugum Water Treatment Plant Intake	$ 18,000	$ 18,000			$ -	$ 18,000	$ 18,000
Water Wells	$ 2,500,000	$ 2,500,000			$ -	$ 2,500,000	$ 2,500,000
Water Distribution System	$ 2,049,000	$ 49,000			$ -	$ 49,000	$ 49,000
Pressure Zone Realignment /	$ 1,141,000	$ 1,141,000		668,355.20	$ 668,355	$ 472,645	$ 1,141,000
Mechanical/Electrical Equipment	$ 100,000	$ 100,000			$ -	$ 100,000	$ 100,000
Water Reservoir Internal/External	$ 800,000	$ 800,000			$ -	$ 800,000	$ 800,000
Water System Reservoirs 2005 Improvements	$ 42,350,000	$ 28,350,000	2,008,486	12,741,864.67	$ 14,750,350	$ 13,599,650	$ 26,341,514
Ugum Water Treatment Plant Reservoir	$ 6,410,000	$ -			$ -	$ -	$ -
Water Audit Program & Water Loss Control Plan	$ 1,000,000	$ 1,000,000				$ 1,000,000	$ 1,000,000
Agana Heights & Chaot Tanks	$ 1,220,000	$ 1,220,000		500,000.00	$ 500,000	$ 720,000	$ 1,220,000
Tank Major Repair Yigo#1 Mangilao#2 Agat#2	$ 1,895,000	$ 1,895,000		1,822,132.80	$ 1,822,133	$ 72,867	$ 1,895,000
Tank Major Repair Yigo#1 Mangilao#2 Agat#2	$ 10,500,000	$ 7,409,830		7,300,000.00	$ 7,300,000	$ 109,830	$ 7,409,830
Fire Hydrant Replacement Program	$ 2,000,000	$ 2,000,000			$ -	$ 2,000,000	$ 2,000,000
Wastewater System Planning	$ 349,000	$ 349,000	193,899	119,084.26	$ 312,983	$ 36,017	$ 155,101
Lift Station Upgrades	$ 2,404,000	$ 2,404,000	222,568	42,186.67	$ 264,755	$ 2,139,245	$ 2,181,432
Wastewater Collection System Repl/Rehab	$ 2,920,000	$ 2,920,000	911	554,566.54	$ 555,478	$ 2,364,522	$ 2,919,089
Baza Gardens STP Replacement	$ 16,700,000	$ 29,400,170	11,310,394	17,895,388.58	$ 29,205,782	$ 194,388	$ 18,089,776
Facilities Plan/Design for Umatac-Merizo WWTP	$ 527,000	$ 527,000	239,045	13,060.42	$ 252,105	$ 274,895	$ 287,955
Agat/Santa Rita STP Replacement	$ 3,000,000	$ 3,000,000	1,077,404	467,684.07	$ 1,545,088	$ 1,454,912	$ 1,922,596
Agana WWTP Interim Measures	$ 827,000	$ 827,000			$ -	$ 827,000	$ 827,000
Umatac Merizo Replacement	$ 8,000,000	$ 20,800,000	3,548,815	17,053,439.69	$ 20,602,254	$ 197,746	$ 17,251,185
Wastewater Pump Station Electrical Upgrade	$ 100,000	$ 100,000			$ -	$ 100,000	$ 100,000
Electrical Upgrade - Water Wells	$ 650,000	$ 650,000			$ -	$ 650,000	$ 650,000
Electrical Upgrade - Water Booster	$ 323,000	$ 323,000			$ -	$ 323,000	$ 323,000
SCADA Improvements – Phase 3	$ 1,177,000	$ 1,177,000	18,000	599,496.51	$ 617,497	$ 559,503	$ 1,159,000
SCADA Improvements – Phase 4	$ 6,500,000	$ 6,500,000		2,883,117.85	$ 2,883,118	$ 3,616,882	$ 6,500,000
Laboratory Modernization	$ 1,127,000	$ 1,127,000	1,127,000	-	$ 1,127,000	$ -	$ -
Land Survey	$ 1,998,000	$ 1,998,000	130,370	1,130,153.37	$ 1,260,524	$ 737,476	$ 1,867,630
General Plant Improvements / Water	$ 2,769,463	$ 2,769,463	687,927	855,833.30	$ 1,543,760	$ 1,225,703	$ 2,081,536
Information Technology Integration Improvements	$ 500,000	$ 500,000	244,068	-	$ 244,068	$ 255,932	$ 255,932
Interest Earned		$ -					$ 1,279,868
Total Construction Fund (2016 Series Revenue Bond)	**$ 140,019,463**	**$ 140,019,463**	**$ 21,285,086**	**$ 65,458,009**	**$ 86,743,095**	**$ 53,276,368**	**$ 120,014,245**

GUAM WATERWORKS AUTHORITY
2010 Series Bond Project Status
As of June 30, 2018

SCHEDULE M

PROJECT NAME	ORIGINAL APPROVED PROJECT COST	Adjusted Project Cost	EXPENDITURES AS OF 06/30/18	OUTSTANDING ENCUMBRANCES	TOTAL EXPENDITURES AND ENCUMBRANCES	UNOBLIGATED PROJECT COST	Construction fund balance AS OF 06/30/18
Ground Water Disinfection	$ -	$ 500,000	$ 438,141	$ 61,859	$ 500,000	$ 0	$ 61,859
"A" Series Well Transmission Line	$ 600,000	$ 518,144	$ 474,434	$ 1,274	$ 475,709	$ 42,435	$ 43,710
Water Booster Pump Station	$ 500,000	$ 500,000	$ 418,844	$ 81,156	$ 500,000	$ (0)	$ 81,156
Meter Replacement Program	$ 2,500,000	$ 10,300,000	$ 10,255,079	$ 18,549	$ 10,273,628	$ 26,372	$ 44,921
Barrigada Tank Repair/Replacement	$ -	$ 5,450,000	$ 5,442,302	$ 7,698	$ 5,450,000	$ 0	$ 7,698
Leak Detection		$ 200,000	$ -	$ 200,000	$ 200,000	$ -	$ 200,000
Potable Water System Planning	$ 200,000	$ 200,000	$ 180,927	$ 19,073	$ 200,000	$ -	$ 19,073
Implement Ground Water Rule		$ 1,700,000	$ 1,499,464	$ 200,535	$ 1,700,000	$ 1	$ 200,536
Brigade II (Ugum Lift) BPS Upgrade	$ 1,200,000	$ 1,700,000	$ 251,134	$ 86,760	$ 337,895	$ 1,362,105	$ 1,448,866
Deep Well Rehabilitation	$ 548,000	$ 548,000	$ 548,000	$ -	$ 548,000	$ -	$ -
New Deep Wells at Down Hard	$ 3,773,000	$ 638,252	$ 485,743	$ -	$ 485,743	$ 152,509	$ 152,509
Rehabilitation of Asan Springs	$ 900,000	$ 900,000	$ 188,771	$ 152,068	$ 340,838	$ 559,162	$ 711,229
Master Meters	$ 1,600,000	$ 1,600,000	$ 1,421,267	$ 68,690	$ 1,489,957	$ 110,043	$ 178,733
Ugum Water Treatment Plant Intake	$ 3,670,000	$ 700,000	$ 543,615	$ 156,385	$ 700,000	$ -	$ 156,385
Water Wells	$ 2,000,000	$ -	$ -		$ -	$ -	$ -
Water Distribution System	$ 384,000	$ 3,174,748	$ 3,174,748	$ -	$ 3,174,748	$ (0)	$ (0)
Pressure Zone Realignment /	$ 3,550,000	$ -	$ -		$ -	$ -	$ -
Northern System Water Distribution	$ 2,725,000	$ -	$ -	$ -	$ -	$ -	$ -
Central Water Distribution System 2005	$ 1,200,000	$ 900,000	$ 730,182	$ 44,820	$ 775,002	$ 124,998	$ 169,818
Southern Water Distribution System	$ 1,800,000	$ -	$ -		$ -	$ -	$ -
Mechanical/Electrical Equipment	$ 1,360,000	$ 1,200,000	$ 1,079,495	$ 120,505	$ 1,200,000	$ (0)	$ 120,505
Water Reservoir Internal/External	$ 500,000	$ 2,000,000	$ 1,083,817	$ 425,567	$ 1,509,384	$ 490,616	$ 916,183
Water Reservoir Internal/External	$ 2,400,000	$ -	$ -		$ -	$ -	$ -
Water System Reservoirs 2005 Improvements	$ 11,697,000	$ 1,050,000	$ 1,050,000		$ 1,050,000	$ 0	$ 0
Distribution System Upgrades	$ 3,182,000	$ 474,160	$ 456,678	$ 17,481	$ 474,160	$ 0	$ 17,482
Ugum Water Treatment Plant Reservoir	$ 3,672,000	$ -	$ -		$ -	$ -	$ -
Water Audit Program & Water Loss Control Plan		$ 100,000	$ 15,031	$ 63,428	$ 78,459	$ 21,541	$ 84,970
Production Plan / Reduce Navy Purchases		$ 100,000	$ 94,286	$ 5,714	$ 100,000	$ -	$ 5,714
Hydraulic Asessment of Tank		$ 500,000	$ 497,004	$ 2,996	$ 500,000	$ -	$ 2,996
Agana Heights & Chaot Tanks		$ 4,700,000	$ 4,350,014	$ 349,986	$ 4,700,000	$ -	$ 349,986
Tank Major Repair Yigo#1 Mangilao#2 Agat#2		$ 1,900,000	$ 1,750,355	$ 97,659	$ 1,848,013	$ 51,987	$ 149,645
Tank Major Repair Yigo#1 Mangilao#2 Agat#2		$ -			$ -	$ -	$ -
Assessment of malojloj Elevetad & Yigo Elevated		$ 200,000	$ 200,000	$ -	$ 200,000	$ -	$ -
Public Water System Asser Inventory/Condition Assesment		$ 100,000	$ 98,414	$ 1,586	$ 100,000	$ -	$ 1,586
Public Water System GIS & Mapping		$ 50,000	$ 50,000	$ -	$ 50,000	$ -	$ -
Wastewater System Planning	$ 1,500,000	$ 1,500,000	$ 1,468,176	$ 5,824	$ 1,474,000	$ 26,000	$ 31,824
Wastewater Vehicles	$ 235,000	$ 235,000	$ 209,795	$ 25,205	$ 235,000	$ 0	$ 25,205
NDWWTP - Chlorine Tanks	$ 250,000	$ 250,000	$ 250,000		$ 250,000	$ -	$ -
Tumon Bay Sewer Upgrades	$ 100,000	$ -	$ -		$ -	$ -	$ -
Wastewater Collection System Repl/Rehab		$ 1,105,000	$ 723,591	$ 283,287	$ 1,006,878	$ 98,122	$ 381,409
Facilities Plan/Design for Baza Gardens WWTP	$ 1,250,000	$ 1,250,000	$ 1,245,244	$ 4,756	$ 1,250,000	$ -	$ 4,756
Facilities Plan/Design for Agat-Santa Rita WWTP	$ 900,000	$ 899,630	$ 891,702	$ 7,928	$ 899,630	$ -	$ 7,928
Priority 1 Sewer Upgrades – Baza Gardens WWTP	$ 650,000	$ -	$ -		$ -	$ -	$ -
Baza Gardens STP Replacement	$ 3,567,000	$ 1,301,947	$ 1,151,947	$ 314	$ 1,152,261	$ 149,686	$ 150,000
Facilities Plan/Design for Umatac Merizo WWTP		$ 900,000	$ 760,845	$ 93,013	$ 853,858	$ 46,142	$ 139,155
Agat/Santa Rita STP Replacement	$ 2,968,000	$ 2,218,000	$ 2,217,314	$ 387	$ 2,217,701	$ 300	$ 686
Northern District WWTP Primary Treatment Upgrades	$ -	$ 11,750,000	$ 11,532,253	$ 211,261	$ 11,743,514	$ 6,486	$ 217,747
Biosolids Management Plan		$ 200,000	$ 196,414	$ 3,586	$ 200,000	$ -	$ 3,586
Agana WWTP Interim Measures	$ -	$ 11,500,000	$ 11,254,925	$ 45,075	$ 11,300,000	$ 200,000	$ 245,075
I&I SSES Southern		$ 800,000	$ 794,722	$ 5,278	$ 800,000	$ (0)	$ 5,278
I&I SSES Central		$ 850,000	$ 794,325	$ 55,675	$ 850,000	$ -	$ 55,675
I&I SSES Northern		$ -			$ -	$ -	$ -
Umatac Merizo Replacement		$ 250,000	$ 247,431	$ 2,569	$ 250,000	$ -	$ 2,569
Northern District WWTP Secondary Treatment Upgrades		$ 1,000,000	$ -	$ 1,000,000	$ 1,000,000	$ -	$ 1,000,000
Well Electrical Protection	$ 26,000	$ -	$ -		$ -	$ -	$ -
SCADA Pilot Project	$ 300,000	$ 61,950	$ 19,812	$ 42,138	$ 61,950	$ (0)	$ 42,138
Electrical Upgrade - Water Wells	$ 3,000,000	$ 354,227	$ 339,948	$ 14,278	$ 354,227	$ 0	$ 14,279
Electrical Upgrade - Water Booster	$ 325,000	$ -	$ -		$ -	$ -	$ -
Electrical Upgrade -Water Booster	$ 350,000	$ -	$ -		$ -	$ -	$ -
Electrical Upgrade - Other Water	$ 250,000	$ -			$ -	$ -	$ -
SCADA Improvements – Phase 1	$ 250,000	$ 250,000	$ 194,849	$ 55,151	$ 250,000	$ -	$ 55,151
SCADA Improvements – Phase 2	$ 1,100,000	$ 1,056,986	$ 1,028,284	$ 28,702	$ 1,056,986	$ -	$ 28,702
SCADA Improvements – Phase 3	$ 2,500,000	$ 24,956	$ 24,956	$ -	$ 24,956	$ 0	$ 0
SCADA Improvements – Phase 4	$ 850,000	$ -	$ -		$ -	$ -	$ -
Laboratory Modernization	$ 1,200,000	$ -	$ -		$ -	$ -	$ -
Land Survey	$ 1,500,000	$ 500,000	$ 471,450	$ 28,237	$ 499,687	$ 313	$ 28,550
General Plant Improvements / Water	$ 14,370,000	$ 7,241,000	$ 7,241,000	$ 0	$ 7,241,000	$ 0	$ 0
Interest Earned							$ 122,230
Total Construction Fund (2010 Series Revenue Bond)	**$ 87,402,000**	**$ 87,402,000**	**$ 79,836,728**	**$ 4,096,454**	**$ 83,933,182**	**$ 3,468,818**	**$ 7,687,502**

1.) PUC's Docket 11-01 $29,000,000.00 dated
09/19/11authorized GWA for reallocation
2) PUC's Docket 11-01 Reallocation of $23,246,000.00 dated 07/30/12
3) PUC's Dockect Reallocation dated February 2013

GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUAHAN
P.O.BOX 2977 • AGANA, GUAM U.S.A. 96932-2977

Issues for Decision

Resolution No. GPA 2018-14 & GWA 38-FY2018:

Relative to CCU CYBERSECURITY POLICIES AND PROCEDURES

What is the project's objective and is it necessary and urgent?

The CCU instituted the Cybersecurity Committee in 2017 to serve as the advisory and oversight group regarding information technology, infrastructure, and cybersecurity. The committee's responsibilities include the Guam Power Authority and Guam Waterworks Authority (GPWA) information technology systems, which includes policies, controls, risk mitigation, and infrastructure asset protection. A network security assessment recommended that GPWA develop common objectives and controls by establishing common policies, procedures, and business processes to manage risks.

The Cybersecurity initiative resulted in the formation of guidelines to ensure consistency and adequate protection and safeguards to GPWA systems, and resulted in the Password Creation and Protection Policy, the Computer, Software, License, E-mail, Internet, and Standard of Conduct policy, and the Network and Data System Access Policy.

Where is it located or covers?

This will cover all GPWA infrastructure, assets and information technology systems.

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

GPA RESOLUTION NO. 2018-14
GWA RESOLUTION NO. 38-FY2018

CCU CYBERSECURITY POLICIES AND PROCEDURES

WHEREAS, the CCU instituted the Cybersecurity Committee in 2017 to serve as the advisory and oversight group regarding information technology, infrastructure, and cybersecurity. The committee's responsibilities include the Guam Power Authority and Guam Waterworks Authority (GPWA) information technology systems, which includes policies, controls, risk mitigation, and infrastructure asset protection; and

WHEREAS, a network security assessment recommended that GPWA develop common objectives and controls by establishing common policies, procedures, and business processes to manage risks; and

WHEREAS, the Cybersecurity initiative resulted in the formation of guidelines to ensure consistency and adequate protection and safeguards to GPWA systems, and resulted in the Password Creation and Protection Policy, the Computer, Software, License, E-mail, Internet, and Standard of Conduct policy, and the Network and Data System Access Policy.

NOW THEREFORE, BE IT RESOLVED, by the Consolidated Commission on Utilities, as follows:

1. The Guam Power Authority and Guam Waterworks Authority General Managers are hereby authorized to implement and update the Cybersecurity policies for GPWA as required.

RESOLVED, that the Chairman of the Commission certifies and the Secretary of the Commission attests the adoption of this Resolution.

DULY and REGULARLY ADOPTED this 24th day of July,2018.

Certified by: **Attested by:**

JOSEPH T. DUENAS
CHAIRMAN

J. GEORGE BAMBA
SECRETARY

I, J. GEORGE BAMBA, Secretary for the Consolidated Commission on Utilities do hereby certify that the foregoing is a full, true, and correct copy of the resolution duly adopted at a regular meeting of the members of Guam's Consolidated Commission on Utilities, duly and legally held at a place properly noticed and advertised at which meeting a quorum was present and the members who were present voted as follows:

Ayes: _____

Nays: _____

Absent: _____

Abstain: _____

GUAM WATERWORKS AUTHORITY
"Better Water. Better Lives."
Suite 200; Gloria B. Nelson Public Service Building | 688 Route 15, Mangilao, Guam 96913
P.O. Box 3010, Hagatna, Guam 96932
Tel. No. (671) 300-6846 Fax No. (671) 300-6896

Issues for Decision

Resolution No. 39-FY2018
Relative to the Creation of the Utility Laboratory Technician I, Utility Laboratory Technician II, Laboratory Technician Leader and Utility Laboratory Technician Supervisor positions at the Guam Waterworks Authority.

What is the project's objective and is it necessary and urgent?
The Guam Waterworks Authority (GWA) has determined a need to update the job standards for Laboratory Technician series positions to efficiently and effectively perform duties and functions of the GWA's Laboratory section. The creation of these positions is necessary to help direct and manage GWA's wide sampling activities in connection with water and wastewater operations.

The job specifications currently being utilized by GWA was initially created for use at the Government of Guam's line departments and agencies, established in 1980. Furthermore, the existing job standards are inconsistent with the updated and current operating procedures and practices of our laboratory technicians. GWA Laboratory technicians are unique in duties and responsibilities compared to other government of Guam agencies.

GWA laboratory technicians collect samples from shorelines, wastewater treatment plants, rivers, production wells, water treatment facilities and various locations within our distribution system and analyze water samples for various physical and chemical constituents (Calcium and Total Hardness, Chlorides, Alkalinity, Conductivity, pH, Temperature, Turbidity and Bacteria content) which makes it unique from other government of Guam agencies.

Where is the location?
The Utility Laboratory Technician series will be organizationally located within the Compliance and Safety Department, under the direction of the Monitoring Laboratory Services Administrator.

How much will it cost?
There is no cost to create positions. Upon approval of the proposed positions, GWA HR will conduct a classification review of the existing staff to ensure appropriate classification of the positions considered for approval. There will be no impact on the slotting to the updated implementation ranges based on the 10th market percentile (2017 market data) approved by the CCU.

When will it be completed?
Public Law 28-159, Section 7.0.3 (c) requires GPA and GWA to post a petition on their websites for ten (10) days (not including Saturdays, Sundays and government of Guam holidays). After the 10 days posting, the petition can then be forwarded to the CCU for their disposition at any regularly scheduled meeting. GWA has met the posting requirements.

Additionally, Guam law requires notice of such posting to each newspaper of general circulation and broadcasting station which airs regular news programs within Guam.

What is the funding source?
GWA will certify funding for the position available for the filling and retention of its certified, technical and professional newly created position. The funding of this position does not have an impact on the General Fund.

The RFP/BID responses (if applicable): N/A

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

RESOLUTION NO. 39-FY2018

RELATIVE TO THE CREATION OF THE UTILITY LABORATORY TECHNICIAN SERIES OF POSITIONS

WHEREAS, under 12 G.C.A. § 14105, the Consolidated Commission on Utilities ("CCU") has plenary authority over financial, contractual and policy matters relative to the Guam Waterworks Authority ("GWA"); and

WHEREAS, the Guam Waterworks Authority ("GWA") is a Guam Public Corporation established and existing under the laws of Guam; and

WHEREAS, the GWA General Manager requests the CCU to approve the creation of the Utility Laboratory Technician series of positions; and

WHEREAS, the GWA General Manager requests the CCU to approve the classification standards of the Utility Laboratory Technician series of positions in the classified status; and

WHEREAS, Public Law 28-112 and 4 GCA §6303 (d) authorizes the creation of positions in Autonomous Agencies and Public Corporations; and

WHEREAS, GWA Personnel Rules and Regulations as amended by Public Law 28-159 Section 3 (C) authorizes the CCU to amend, modify or add a position to the list of certified, technical and professional positions;

NOW BE IT THEREFORE RESOLVED, the Consolidated Commission on Utilities, as the Governing Body of the Guam Waterworks Authority, does hereby approve and authorize the following:

1. The recitals set forth above hereby constitute the findings of the CCU.
2. The creation and the job classification standards for the Utility Laboratory Technician series of positions in the classified status is hereby approved and attached herein as Exhibit A.
3. The Utility Laboratory Technician series of positions is hereby added to the certified, technical and professional list of positions at GWA.

RESOLVED, that the Chairman certified and the Board Secretary attests to the adoption of this Resolution.

DULY AND REGULARLY ADOPTED, this 24th day of July, 2018.

Certified by:	Attested by:
_____	_____
JOSEPH T. DUENAS	**J. GEORGE BAMBA**
Chairperson	Secretary

SECRETARY'S CERTIFICATE

I, **J. George Bamba**, Board Secretary of the Consolidated Commission on Utilities as evidenced by my signature above do hereby certify as follows:

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

AYES: _____

NAYS: _____

ABSTENTIONS: _____

ABSENT: _____

Exhibit A

UTILITY LABORATORY TECHNICIAN I

NATURE OF WORK:

Utility Laboratory Technician I performs routine technical laboratory duties after initial training and work under closer supervision on a variety of semi complex developmental assignments.

Employees in this class assist in the collection and perform routine analysis of water and wastewater samples for chemical and micro-biological content in accordance with Standard Methods for the Examination of water and wastewater, the Safe Drinking Water Act and the Clean Water Act.

ILLUSTRATIVE EXAMPLES OF WORK: (Any one position may not include all the duties listed, nor do the examples cover all the duties which may be performed)

Provides routine support and assistance to laboratory personnel in processing and field testing of various laboratory duties.

Prepares samples for field testing, sterilizes equipment, basic calibration of equipment as recommended and general cleaning duties.

Conducts routine maintenance work of equipment to ensure working order of equipment and ensures necessary supplies are available to perform field testing.

Performs routine work collecting samples from the distribution lines, deep well and surface water sources.

Performs routine work collecting water samples from customer complaints of dirty water, bad odor, or high chlorine contents.

Assists in disinfecting tankers and new water lines.

Performs routine work testing water for bacteriological contamination and chlorine residual.

Performs routine work collection of samples of off shore, shoreline, wastewater treatment plant influent/effluent and various rivers as well as any discharges into the rivers as required.

Conducts routine field tests on potable water samples for chemical analysis such as: Calcium and Total Hardness, Chlorides, Alkalinity, Conductivity, pH, Temperature, Turbidity and Bacteria content.

Conducts routine field tests on Settleable, Suspended and Total Solids, ph Fecal Coliform, E-Coli, Enterococci and Biochemical Oxygen Demand.

Logs data into assigned logbooks and inputs required information into the LIMS (Laboratory Information Management System) computer program daily, after initial training.

Creates work orders for daily assigned tasks.

Assists in minor repair of laboratory equipment.

Performs related duties as assigned.

MINIMUM KNOWLEDGE, ABILITIES AND SKILLS:

Knowledge of laboratory testing procedures, principles, techniques, terminology, protocols and equipment.

Knowledge of basic laboratory equipment maintenance, calibration and troubleshooting and sterilization.

Knowledge of laboratory safety protocols, including, but not limited to, use of personal protective equipment (PPE's), proper laboratory techniques, disposal of bio-hazard, etc.

Knowledge of basic of LIMS (Laboratory Information Management System) computer program.

Ability to learn and apply basic principles of the physical and biological sciences, as applied to particular laboratory assignment.

Ability to operate and conduct basic maintenance of laboratory equipment.

Ability to maintain records and prepare reports.

Ability to work effectively with the public and employees.

Ability to communicate effectively, orally and in writing.

Ability to follow specific procedures and observe and record results accurately.

Ability to work with computer systems and multiple software programs as required, according to company and departmental procedures.

MINIMUM EXPERIENCE AND TRAINING:

A. High School Diploma or successful completion of General Education Development (GED) test or any equivalent education high school program and successful completion of 18 credit hours in biology, chemistry, or closely related field and One (1) year of experience in a laboratory work; or

B) Any equivalent combination of experience and training which provides the minimum knowledge, abilities and skills.

ESTABLISHED: July 2018

PAYGRADE: MINIMUM: F3-A $30,811
MAXIMUM: F4-A $32,062

JOB EVALUATION POINTS: 469

JOSEPH T. DUENAS, CHAIRMAN
CONSOLIDATED COMMISSION ON UTILITIES

UTILITY LABORATORY TECHNICIAN II

NATURE OF WORK:

Utility Laboratory Technician II performs semi-complex technical laboratory duties independently after initial training and works under closer supervision on a variety of complex developmental assignments.

Employees in this class collect and perform semi-complex analysis of water and wastewater samples for chemical and micro-biological content in accordance with Standard Methods for the Examination of water and wastewater, the Safe Drinking Water Act and the Clean Water Act.

ILLUSTRATIVE EXAMPLES OF WORK: (Any one position may not include all the duties listed, nor do the examples cover all the duties which may be performed)

Provides semi-complex support and assistance in processing samples for analysis, sterilizes equipment, more intricate calibration of equipment as recommended.

Maintains working order of equipment and supplies necessary to perform analysis of samples to include minor repairs on laboratory equipment when needed.

Performs semi-complex work collecting samples from the distribution lines, deep well and surface water sources.

Collects semi-complex water samples from customer complaints of dirty water, bad odor, or high chlorine contents.

Disinfects tankers and new water lines to include determining the amount of chlorine needed to provide a certain dosage.

Performs semi-complex analysis water for bacteriological contamination and chlorine residue.

Collects semi-complex sample collection for off shore, shoreline, wastewater treatment plant influent/effluent and various rivers as well as any discharges into the rivers as required.

Performs semi-complex analysis of potable water samples and analyzes for chemical analysis such as: Calcium and Total Hardness, Chlorides, Alkalinity, Conductivity, pH, Temperature, Turbidity and Bacteria content.

Performs semi-complex analysis of Settleable, Suspended and Total Solids, ph Fecal Coliform, E-Coli, Enterococci and Biochemical Oxygen Demand.

Performs semi-complex, non-routine chemical, biological or physical test and analysis as required in control operations of water and sewage.

Maintains records of all analytical work according to Laboratory Quality Assurance (QA) and Quality Control (QC) Plans and Standard Operating Procedures. Ensures all data is in compliance with the requirements of pre-schedule intervals.

Maintains various laboratory records and prepares reports. Inputs required information into the LIMS (Laboratory Information Management System) computer program.

Creates work orders for daily assigned tasks.

Repairs laboratory equipment as needed.

Performs related duties as assigned.

MINIMUM KNOWLEDGE, ABILITIES AND SKILLS:

Knowledge of laboratory testing procedures, principles, techniques, terminology, protocols and equipment in a water utility.

Knowledge of laboratory equipment maintenance, calibration and troubleshooting and sterilization used in a water utility.

Knowledge of laboratory safety protocols, including, but not limited to, use of personal protective equipment (PPE's), proper laboratory techniques, disposal of bio-hazard, etc. in a water utility.

Knowledge of basic principles of the physical and biological sciences, as applied to particular laboratory assignment in a utility.

Knowledge of computer systems and multiple software programs as required, according to company and departmental procedures used in a water utility.

Knowledge of LIMS (Laboratory Information Mana

gement System) computer program.

Ability to maintain records and prepare reports.

Ability to work effectively with the public and employees.

Ability to communicate effectively, orally and in writing.

Ability to make decisions in accordance with appropriate program guidelines

Ability to follow specific standard operating procedures and observe and record results accurately.

MINIMUM EXPERIENCE AND TRAINING;

A. Graduation from a recognized college or university with an Associate's degree in science or water technology with courses in microbiology, chemistry or related natural science; ***and*** two (2) years of experience as a Utility Laboratory Technician I; or

B) Any equivalent combination of experience and training which provides the minimum knowledge, abilities and skills.

ESTABLISHED: July 2018

PAYGRADE: MINIMUM: I2-D $39,476
MAXIMUM: I3-D $41,079

JOB EVALUATION POINTS: 576

JOSEPH T. DUENAS, CHAIRMAN
CONSOLIDATED COMMISSION ON UTILITIES

UTILITY LABORATORY TECHNICIAN LEADER

NATURE OF WORK:

Utility Laboratory Technician Leader performs complex technical laboratory duties independently.

Employees in this class collect and analyze more complex analysis of water and wastewater samples for chemical and micro-biological content in accordance with Standard Methods for the Examination of water and wastewater, the Safe Drinking Water Act and the Clean Water Act.

Employees often serves as team or group leader over less experienced technical laboratory staff.

ILLUSTRATIVE EXAMPLES OF WORK: (Any one position may not include all the duties listed, nor do the examples cover all the duties which may be performed)

Leads the processing of samples for analysis, sterilizes equipment, more intricate calibration of equipment as recommended and general cleaning duties.

Maintains working order of equipment and supplies necessary to performs analysis for samples to include minor repairs on laboratory equipment when needed.

Schedules the use of equipment, washing of glassware and other instruments and preparation of media, solutions, and other materials.

Leads the collection of samples from the Distribution lines, deep well and surface water source.

Leads the collection of water samples from consumer's complaints of dirty water, bad odor, or high chlorine content.

Maintains inventory, establishes supply levels and orders chemicals, equipment, and supplies.

Assists with research or study involving use of various equipment.

Schedules all required QA/QC and safety checks as required.

Disinfects tankers and new water lines to include determining the amount of chlorine needed to provide a certain dosage.

Analyzes water for bacteriological contamination and chlorine residue.

Leads in the collection of sample for off shore, shoreline, wastewater treatment plant influent/effluent and various rivers as well as any discharges into the rivers as required.

Analyzes potable water samples and analyzes for chemical analysis such as: Calcium and Total Hardness, Chlorides, Alkalinity, Conductivity, pH, Temperature, Turbidity and Bacteria content.

Analyzes oil and grease, Settleable, Suspended and Total Solids, ph Fecal Coliform, E-Coli, Enterococci and Biochemical Oxygen Demand.

Performs complex analysis, non-routine chemical, biological or physical test and analysis as required in control operations of water and sewage.

Leads and conducts training of other lower laboratory technicians.

Maintains records of all analytical work according to the Laboratory Quality Assurance (QA) and Quality Control (QC) Plans and Standard Operating Procedures. Ensures all data is in compliance with the requirements of pre-schedule intervals.

Maintains various laboratory records and prepares reports. Inputs required information into the LIMS (Laboratory Information Management System) computer program.

Creates work orders for daily assigned tasks.

May assist and participate in the budget preparation process.

Leads in the repair of laboratory equipment as needed.

Performs related duties as assigned.

MINIMUM KNOWLEDGE, ABILITIES AND SKILLS:

Knowledge of laboratory testing procedures, principles, techniques, terminology, protocols and equipment of a variety of standardized laboratory tests.

Ability to perform difficult laboratory tests requiring some technical judgment in determining and using proper procedures and interpreting results.

Knowledge of laboratory equipment maintenance, calibration and troubleshooting and sterilization.

Knowledge of laboratory safety protocols, including, but not limited to, use of personal protective equipment (PPE's), proper laboratory techniques, disposal of bio-hazard, etc.

Knowledge of principles of the physical and biological sciences, as applied to particular laboratory assignment.

Knowledge of computer systems and various software/application programs as required, according to company and departmental procedures.

Knowledge of LIMS (Laboratory Information Management System) computer program.

Ability to maintain records and prepare reports.

Ability to lead the work of others.

Ability to work effectively with the public and employees.

Ability to communicate effectively, orally and in writing.

Ability to make decisions in accordance with appropriate program guidelines

Ability to follow specific procedures and observe and record results accurately.

MINIMUM EXPERIENCE AND TRAINING:

A. Graduation from a recognized college or university with an Associate's degree in science or water technology with courses in microbiology, chemistry or related natural science; ***and*** two (2) years of experience as a Utility Laboratory Technician II; or

B) Any equivalent combination of experience and training which provides the minimum knowledge, abilities and skills.

ESTABLISHED: July 2018

PAYGRADE: MINIMUM: J5-C $49,327
MAXIMUM: J6-C $51,330

JOB EVALUATION POINTS: 711

JOSEPH T. DUENAS, CHAIRMAN
CONSOLIDATED COMMISSION ON UTILITIES

PROPOSED

UTILITY LABORATORY TECHNICIAN SUPERVISOR

NATURE OF WORK:

Utility Laboratory Technician Supervisor performs supervisory laboratory work in the water and/or wastewater utility.

Employees in this class assesses complex techniques and methodologies in collecting and analyzing water and wastewater samples for chemical and micro-biological content in accordance with Standard Methods for the Examination of water and wastewater, the Safe Drinking Water Act and the Clean Water Act.

Employees in this class supervise a unit performing a variety of complex technical laboratory duties.

ILLUSTRATIVE EXAMPLES OF WORK: (Any one position may not include all the duties listed, nor do the examples cover all the duties which may be performed)

Supervises the laboratory personnel in processing and analysis of various laboratory duties in a water and/or wastewater utility.

Supervises the processing of samples for analysis, sterilizes of equipment and more intricate calibration of equipment and general cleaning duties in a water and/or wastewater utility.

Supervises the maintenance of equipment and supplies necessary to performs analysis for samples to include minor repairs on laboratory equipment when needed.

Supervises the collection of samples from the Distribution lines, deep well and surface water source.

Supervises the collection of samples from consumer complaints of dirty water, bad odor, or high chlorine content, etc.; diagnoses issues and coordinating with other divisions to help determine the cause and solve the problem.

Supervises the disinfection of tankers and new water lines to include determining the amount of chlorine needed to provide cartage dosage in a water and/or wastewater utility.

Supervises the analysis of water for bacteriological contamination and chlorine residue in a water and/or wastewater utility.

Supervises the collection of sample for off shore, shoreline, wastewater treatment plant influent/effluent and various rivers as well as any discharges into the rivers as required in a water and/or wastewater utility.

Supervises the analysis of potable water samples and analyzes for chemical analysis such as: Calcium and Total Hardness, Chlorides, Alkalinity, Conductivity, ph, Temperature, Turbidity and Bacteria content.

Supervises the analysis of Settleable, Suspended and Total Solids, ph Fecal Coliform, E-Coli, Enterococci and Biochemical Oxygen Demand.

Conducts research on new technologies or methods that might be beneficial or cost effective. This may include updating to new equipment and supplies necessary to perform analysis.

Conducts training of other lower level Utility Laboratory Technicians.

Maintains records of all analytical work according to Laboratory Quality Assurance (QA) and Quality Control (QC) Plans and Standard Operating Procedures. Ensures all data is in compliance with the requirements of pre-schedule intervals.

Reviews various laboratory records and reports into the LIMS (Laboratory Information Management System) computer program.

Reviews and validates daily chain of custody for field analysis in LIMS (Laboratory Information Management System) for water and wastewater.

Supervises the processes a number of procedures including samples for analysis, sterilizes equipment, calibration of equipment as recommended and general cleaning duties.

Supervises the schedules use of equipment, washing of glassware and other instruments and preparation of media, solutions, and other materials.

Supervises the work of lower level technicians performing various laboratory maintenance, preparation of media and specimens, and participates in performing standardized analysis.

Supervises the storage areas and dispenses of materials. Supervises the inventory and establishes supply levels and orders chemicals, equipment, and supplies.

Participates and submits recommendations in the section's budget process.

Participates in the research or study involving use of various equipment.

Supervises more complex, non-routine chemical, biological or physical test and analysis as required in control operations of water and sewage.

Performs related duties as assigned.

MINIMUM KNOWLEDGE, ABILITIES AND SKILLS:

Knowledge of laboratory testing procedures, principles, techniques, terminology, protocols and equipment of a variety of standardized laboratory tests.

Knowledge of laboratory equipment maintenance, calibration and troubleshooting and sterilization.

Knowledge of laboratory safety protocols, including, but not limited to, use of personal protective equipment (PPE's), proper laboratory techniques, disposal of bio-hazard, etc.

Knowledge of principles of the physical and biological sciences, as applied to particular laboratory assignment.

Extensive Knowledge of LIMS (Laboratory Information Management System) computer program.

Knowledge of computer systems and multiple software programs as required, according to company and departmental procedures.

Knowledge to perform complex laboratory tests requiring technical judgment in determining and using proper procedures and interpreting results.

Ability to maintain records and prepare reports.

Ability to supervise the work of others.

Ability to work effectively with the public and employees.

Ability to communicate effectively, orally and in writing.

Ability to make decisions in accordance with appropriate program guidelines

Ability to follow specific procedures and observe and record results accurately.

MINIMUM EXPERIENCE AND TRAINING:

Graduation from a recognized college or university with a Bachelor's degree in biology, chemistry, microbiology or closely related field; and 4 (four) years as a Utility Laboratory Technician Leader.

ESTABLISHED: July 2018

PAYGRADE: MINIMUM: K5-D $60,283
MAXIMUM: K6-D $62,731

JOB EVALUATION POINTS: 837

JOSEPH T. DUENAS, CHAIRMAN
CONSOLIDATED COMMISSION ON UTILITIES

PROPOSED

GUAM WATERWORKS AUTHORITY
"Better Water, Better Lives."
Gloria B. Nelson Public Service Building| 688 Route 15 | Mangilao, Guam 96913
Tel: (671) 300-6846

Issues for Decision

Resolution No. 40-FY2018
Relative to Approval of the Route 4 Relief Sewerline Rehabilitation and Replacement Construction Contract with ProPacific Builder Corporation and Insituform Technologies, LLC.

What is the project's objective and is it necessary and urgent?
The objective of this USEPA SRF project is to improve the sewer collection system, which included repairing and/or replacing sewer manholes and over 4,200 linear feet of gravity sewer line along Route 4 and Route 1 in the village of Hagatna. These sewer infrastructure elements have been identified by GWA, through an SSES investigation, to be subjected to either inactivity due to incomplete construction work or excessive infiltration and inflow (I&I). Successful completion of this project will result in proper maintenance and operation of the sewer collection system and USEPA agree that efforts to rehabilitate, repair or replace the sewer line are necessary.

Where is the project located?
This project is located along Route 4 and Route 1, from the area in front of Vons Chicken in Agana to the Agana Main Pump Station. Construction activities will be limited to the government easements of the sewer infrastructure elements.

How much will it cost?
The Invitation to Re-bid (IFB-04-ENG-2018) for the Route 4 Relief Sewer Line Rehabilitation and Replacement was structured in a manner wherein GWA could potentially acquire two separate construction companies for the necessary work. As such a lowest responsible and responsive bid from ProPacific Builder Corporation for Schedule A was received at a total of Three Million Four Hundred Seven Thousand Eight Hundred Forty-Eight Dollars **(**$3,407,848.00). Furthermore, a lowest responsive and responsible service bid from Insituform Technologies, LLC for Schedule B was received at a total of Three Million Nine Hundred Ninety-Eight Thousand Six Hundred Eighty-Eight Dollars **(**$3,998,688.00). These contract amounts, which is primarily based on unit pricing, includes the furnishing of all labor, tools, equipment and materials, and government agency coordination needed to complete the sewer infrastructure replacement in the aforementioned locations.

GWA management is also seeking a ten percent (10%) contingency of the total contract amount of Three Hundred Forty Thousand Seven Hundred Eighty-Four Dollars and Eighty Cents **(**$340,784.80) for Schedule A and Three Hundred Ninety-Nine Thousand Eight Hundred Sixty-Eight Dollars and Eighty Cents **(**$399,868.80) for Schedule B, which brings the total authorized funding amount to a maximum of Eight Million One Hundred Forty-Seven Thousand One Hundred Eighty-Nine Dollars and Sixty Cents ($8,147,189.60) for the project.

When will it be completed?
The construction contract length of this project is 450 calendar days for Schedule A and 450 calendar days for Schedule B. Estimated completion of construction is end of 2019.

What is the funding source?
The funding for this project will be from USEPA SRF Grant Funds and, if necessary, GWA Bond funds and System Development Charge Fund applicable to the project intent.

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

RESOLUTION NO. 40–FY2018

RELATIVE TO CONTRACTS APPROVAL FOR THE ROUTE 4 RELIEF SEWER LINE REHABILITATION AND REPLACEMENT PROJECT S15-006-EPA

WHEREAS, under 12 G.C.A. § 14105, the Consolidated Commission on Utilities ("CCU") has plenary authority over financial, contractual and policy matters relative to the Guam Waterworks Authority ("GWA"); and

WHEREAS, the Guam Waterworks Authority is a Guam Public Corporation established and existing under the laws of Guam; and

WHEREAS, GWA has received a grant from USEPA under the State Revolving Fund program to improve the sewer collection system, which included over 4,200 linear feet of gravity sewer line along Route 4 from the bottom of the hill in Agana to Route 1, and along Route 1 to the Agana Main Pump Station; and

WHEREAS, the gravity sewer line noted above has a section that has been inactive since its original installation due to incomplete construction work, and sections that are in need of repair due to high infiltration and inflow (I/I), and the intent of this project is to rehabilitate, repair or replace these sections along with associated roadway surface improvements; and

WHEREAS, GWA and USEPA agree that efforts to rehabilitate, repair or replace these sewer lines are necessary to provide sufficient capacity, and properly maintain and operate the sewer collection system, and the first step in doing so is through scope of services that includes general civil engineering, geotechnical engineering, and archeological investigation for wastewater collection system evaluation, analysis and design; and

WHEREAS, in July 2015 GWA Management began the procurement process to find a consulting engineering team to design the sewer rehabilitation and replacement, and via Resolution No. 16-FY2016, approved by the CCU in January 2016, GWA Management was authorized to enter into a contract with AECOM to design the sewer rehabilitation and replacement; and

WHEREAS, in February of 2016 GWA Management entered into a contract with AECOM to design the sewer rehabilitation and replacement, and in May of 2017 the final design was completed; and

WHEREAS, on August 25, 2017, GWA advertised the Invitation to Bid (IFB-10-ENG-2017) for the Route 4 Relief Sewer Line Rehabilitation and Replacement soliciting bid proposals from experienced and responsive bidders to repair and/or replace segments of gravity sewer lines and manholes subjected to I&I in the village of Hagatna, but ultimately GWA received no bids at that time; and

WHEREAS, following the initial Invitation to Bid, GWA discussed with contractors the challenges that may have prevented them from bidding, reviewed all the available information, and split the contract into two separate parts, a Schedule A and a Schedule B; and

WHEREAS, on March 23, 2018, GWA advertised another Invitation to Bid (IFB-04-ENG-2018) for the Route 4 Relief Sewer Line Rehabilitation and Replacement soliciting bid proposals from experienced and responsive bidders to repair and/or replace segments of gravity sewer lines and manholes subjected to I&I in the village of Hagatna; and

WHEREAS, this project consists of furnishing all labor, tools, equipment and materials, necessary to install, replace, and repair sewer along Rt.4 and Rt.1, including coordination with GWA Wastewater Operations, GWA Engineering, the Construction Manager, the project Design Engineer, GWA's Program Management Office and the Department of Public Works; and

WHEREAS, IFB packages were obtained by multiple interested parties, from which GWA received bid proposals from three (3) parties (SEE EXHIBIT A – Abstract of Bids) before

the bid proposal deadline, with one (1) party submitting a proposal for only Schedule A, one (1) party submitting a proposal for only Schedule B, and one (1) party submitting a proposal for both Schedule A and B; and

WHEREAS, the project Design Engineer, in conjunction with GWA, analyzed the bid proposals received (SEE EXHIBIT B – Evaluation) on June 8, 2018 and determined that the bid proposal submitted by ProPacific Builder Corporation (PPBC) (SEE EXHIBIT C – ProPacific Bid) for Schedule A, and the bid proposal submitted by Insituform Technologies, LLC (Insituform) (SEE EXHIBIT D – Insituform Bid) for Schedule B, were the lowest responsive and responsible bids and met all the bid requirements set forth by GWA; and

WHEREAS, GWA Management finds both PPBC's bid proposal for Schedule A, and Insituform's bid proposal for Schedule B acceptable; and

WHEREAS, for Schedule A, PPBC's bid proposal in the amount of Three Million Four Hundred Seven Thousand Eight Hundred Forty-Eight Dollars **(**$3,407,848.00), plus a ten percent (10%) contingency of Three Hundred Forty Thousand Seven Hundred Eighty-Four Dollars and Eighty Cents **(**$340,784.80) to bring the authorized funding amount for Schedule A to a total of Three Million Seven Hundred Forty-Eight Thousand Six Hundred Thirty-Two Dollars and Eighty Cents ($3,748,632.80); and

WHEREAS, for Schedule B, Insituform's bid proposal in the amount of Three Million Nine Hundred Ninety-Eight Thousand Six Hundred Eighty-Eight Dollars **(**$3,998,688.00), plus a ten percent (10%) contingency of Three Hundred Ninety-Nine Thousand Eight Hundred Sixty-Eight Dollars and Eighty Cents **(**$399,868.80) to bring the authorized funding amount for Schedule B to a total of Four Million Three Hundred Ninety-Eight Thousand Five Hundred Fifty-Six Dollars and Eighty Cents ($4,398,556.80); and

WHEREAS, GWA Management seeks CCU approval of PPBC's bid proposal plus the 10% contingency for Schedule A of Three Million Seven Hundred Forty-Eight Thousand Six Hundred Thirty-Two Dollars and Eighty Cents ($3,748,632.80), and Insituform's bid proposal plus contingency for Schedule B of Four Million Three Hundred Ninety-Eight Thousand Five

Hundred Fifty-Six Dollars and Eighty Cents ($4,398,556.80), to bring the total authorized funding amount to Eight Million One Hundred Forty-Seven Thousand One Hundred Eighty-Nine Dollars and Sixty Cents ($8,147,189.60); and

WHEREAS, funding for this project will be from the USEPA State Revolving Fund and, if necessary, GWA Bond funds and System Development Charge funds applicable to the project intent; and

NOW BE IT THEREFORE RESOLVED, the Consolidated Commission on Utilities does hereby approve the following:

1. The recitals set forth above hereby constitute the findings of the CCU.
2. The CCU finds that the terms and conditions set by GWA relative to commencement of work activities are fair and reasonable and serve as a measure of Quality Assurance/Quality Control (QA/QC).
3. The CCU hereby authorizes the management of GWA to accept the bid proposals from "ProPacific Builder Corporation" and "Insituform Technologies, LLC." (EXHIBITS C and D)
4. The CCU hereby further authorizes the management of GWA to enter into a contract with "ProPacific Builder Corporation" in the amount of Three Million Four Hundred Seven Thousand Eight Hundred Forty-Eight Dollars **(**$3,407,848.00).
5. The CCU hereby further authorizes the management of GWA to enter into a contract with "Insituform Technologies, LLC" in the amount of Three Million Nine Hundred Ninety-Eight Thousand Six Hundred Eighty-Eight Dollars **(**$3,998,688.00).
6. The CCU hereby further approves the funding total for Schedule A of Three Million Four Hundred Seven Thousand Eight Hundred Forty-Eight Dollars **(**$3,407,848.00), plus a ten percent (10%) contingency of Three Hundred Forty Thousand Seven Hundred Eighty-Four Dollars and Eighty Cents **(**$340,784.80), and for Schedule B of Three Million Nine Hundred Ninety-Eight Thousand Six Hundred Eighty-Eight Dollars ($3,998,688.00), plus a ten percent (10%) contingency of Three Hundred Ninety-Nine Thousand Eight Hundred Sixty-Eight

Dollars and Eighty Cents (**(**$399,868.80), for a total authorized funding amount of Eight Million One Hundred Forty-Seven Thousand One Hundred Eighty-Nine Dollars and Sixty Cents ($8,147,189.60).

7. The CCU hereby further approves the funding for this project will be from the USEPA State Revolving Fund and, if necessary, GWA Bond funds and System Development Charge Funds applicable to the project.
8. In the event funds other than SRF are used and they exceed One Million Dollars ($1,000,000.00), GWA is authorized to petition the PUC for approval.

RESOLVED, that the Chairman certified and the Board Secretary attests to the adoption of this Resolution.

DULY AND REGULARLY ADOPTED, this 24th day of July 2018.

Certified by: Attested by:

_____ _____
JOSEPH T. DUENAS **J. GEORGE BAMBA**
Chairperson Secretary

SECRETARY'S CERTIFICATE

I, J. George Bamba, Board Secretary of the Consolidated Commission on Utilities as evidenced by my signature above do hereby certify as follows:

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

AYES: _____

NAYS: _____

ABSTENTIONS: _____

ABSENT: _____

ORIGINAL

GUAM WATERWORKS AUTHORITY
ABSTRACT OF BIDS

Exhibit A (1 of 1)

Project Name: **ROUTE 4 RELIEF SEWERLINE REHABILITATION AND REPLACEMENT (RE-BID)**

Bid Opening Date: May 29, 2018
Time: 3:00 PM

Project Number: S15-006-EPA IFB NO.: IFB-04-ENG-2018

	Qualified Bidders Name	Section A-5 Bid Bond	CERTIFICATIONS											SCHEDULE A		SCHEDULE B		
										Addendum								
			QS	NCA	EEO	NSF	SOC	WBD	MSA	SIB	1	2	3	4	BASE BID	ADDITIVE BID	BASE BID	ADDITIVE BID NO. 1	ADDITIVE BID NO. 2
1.	PRO PACIFIC BUILDER CORP.	Endurance Assurance Corporation 15% of total bid amount	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	$3,407,848.00	$150,000.00	no bid submitted	no bid submitted	no bid submitted
2.	CANTON CONSTRUCTION CORP.	no bid submitted																	
3.	GIANT CONSTRUCTION CORP.	no bid submitted																	
4.	INSITUFORM	Travelers Casualty & Surety Company 15% of bid amount	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	no bid submitted	no bid submitted	$3,998,088.00	$1,296,700.00 ~~$5,245,388.00~~	$35,000.00 ~~$5,370,388.00~~
5.	GRANITE CONSTRUCTION COMPANY	no bid submitted																	
6.	INFRATECH INT'L. LLC	no bid submitted																	
7.	CHI CONSTRUCTION INC.	no bid submitted																	
8.	HES MICRONESIA	no bid submitted																	
9.	CORE TECH/HDCC GUAM, LLC	Fidelity & Deposit Company of Maryland 15% of bid amount	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	$6,191,463.28	$20,592.67	$7,570,573.71	$799,818.94	$20,583.15
10.	BME & SONS	no bid submitted																	
	GWA Estimate																		

Bids Opened and Read by:
GLORIA O. BENSAN
(Name and Signature)

Tabulated By:
Nicole Quan
(Name and Signature)

GWA Procurement Representative:
Victoria Heacock
(Name and Signature)

Witnesses:
EMPSCO
EMPSco
PPBC
CHL

AECOM
414 W. Soledad Avenue
Suite 708
Hagåtña, GU 96932
www.aecom.com

671 477 8326/7 tel
671 472 8324 fax

Exhibit B (1 of 1)

June 8, 2018

The Guam Waterworks Authority
Thomas F. Cruz, P.E., Chief Engineer
Engineering Division
Gloria B. Nelson Public Service Building
688 Route 15, Mangilao, GU 96913

Subject: Bid Review and Recommendation for the Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-bid) Project, GWA Project No. S15-006-EPA, IFB No. IFB-04-ENG-2018.

Håfa Adai Tom,

The bids for this project were opened on May 29, 2018. Out of 10 bidders who expressed interest in the project, only 3 bid proposals were received and included ProPacific Builder Corporation (ProPacific), Insituform Technologies, LLC (Insituform), and Core Tech/Hawaiian Dredging, LLC (CHL). Pro Pacific submitted a bid for only Schedule A. Insituform submitted a bid for only Schedule B. CHL submitted a bid for both schedules. A summary of the bids prices along with the Engineer's Opinion of Construction Cost Estimate are provided in the table below.

Bid Schedule	Engineer's Estimate	ProPacific	Insituform	CHL
SCHEDULE A - Base Bid	$ 2,701,217.00	$ 3,407,848.00	No Bid	$ 6,191,463.33
SCHEDULE A – Additive Bid No. 1	$ 7,000.00	$ 150,000.00	No Bid	$ 20,592.67
SCHEDULE A – Total	$ 2,708,217.00	$ 3,557,848.00	No Bid	$ 6,212,056.00
SCHEDULE B - Base Bid	$ 2,482,494.00	No Bid	$ 3,998,688.00	$ 7,570,573.65
SCHEDULE B – Additive Bid No. 1	$ 62,880.00	No Bid	$ 1,296,700.00	$ 799,818.94
SCHEDULE B – Additive Bid No. 2	$ 7,000.00	No Bid	$ 35,000.00	$ 20,583.15
SCHEDULE B – Total	$ 2,552,374.00	No Bid	$ 5,330,388.00	$ 8,390,975.74

It is understood that the bids are to be evaluated by each schedule separately and contract(s) awarded using the Base Bid. After contract award, GWA may consider adding items in the additive bids into the contract by change orders. If the bid is within the amount of funds available to finance the construction Contract, then the award will be made to the lowest responsive and responsible bidder. In the event all bids exceed the available budget, GWA may reject bids by individual line items until the individual line items fit within the available budget.

AECOM conducted an evaluation of the bids received and provide recommendations for award to the responsible Bidder submitting the lowest responsive Bid. The following is a brief summary of the bid evaluation:

- Overall, the CHL bid prices appeared to be excessive in comparison with the other bidders and the Engineer's Estimate for both bid schedules evaluated separately.
- For Schedule A – Base Bid, ProPacific's bid price was approximately 26% more than the Engineer's Estimate and is the lowest responsive bid. ProPacific's total bid including the bid additive was approximately 31% more than the Engineer's Estimate.
- For Schedule B – Base Bid, Insituform's bid price was approximately 61% more than the Engineer's Estimate and is the lowest responsive bid. Insituform's total bid including the bid additives was approximately double the Engineer's Estimate.

Based on the bid evaluation conducted, it is recommended that ProPacific be awarded a construction contract for Schedule A – Base Bid and Insituform be awarded a separate construction contract for Schedule B – Base Bid. It is also recommended that if needed, GWA can consider rejecting individual line items to fit within the available budget; particularly for all the bid additives.

Respectfully,

Agapito (Pete) Diaz, PE
Project Manager
671-477-8326/7
pete.diaz@aecom.com

Exhibit C (1 of 15)

GUAM WATERWORKS AUTHORITY

BID INVITATION NO.
IFB-04-ENG-2018
GWA Project No.: S15-006-EPA

Route 4 Relief Sewer Line Rehabilitation and Replacement

BID PROPOSAL

Submitted by:

PROPACIFIC BUILDER CORPORATION
(formerly Guam Yooshin Corporation)
750 Route 8 Suite 202 Hanam Plaza,
Barrigada, Guam 96913
T. 671.477.3109 | F. 671.477.7424 | jgyc@guam.net

Exhibit C (2 of 15)

Procurement Checklist

CHECKLIST OF FORMS AND DOCUMENTS REQUIRED TO BE SUBMITTED IN CONJUNCTION WITH BIDS

A.	Form or document that must be submitted with bid	Initial if Submitted:
1.	Bid Bond Equal to 15% of total amount of bid	
2.	Bidder Qualification Form	
3.	Bid Proposal and Bid Schedule	
4.	Non-Collusion Affidavit	
5.	Certification of Bidder Regarding Equal Employment Opportunity	
6.	Certification Regarding Non-Segregated Facilities	
7.	Sex Offender Certification	
8.	Wage and Benefit Determination	
9.	Major Shareholders Disclosure Affidavit	
10.	Special Instructions to Bidders	
11.	Proof of Licensure to Perform Work Called For by the Bid	
12.	Financial Statements	
13.	Proof of Status as Veteran (if applies)	N/A
14.	Forms or Documents Required by Bid or Bid Amendments not referred to above	

I, Jean Yeon Yu, a duly authorized representative of PPBC, do hereby certify, that the forms list above have in fact been submitted with my firm's bid. I acknowledge that, failure to submit any of the above documents will result in my firm being deemed non-responsive and having my firm's bid rejected.

Signed: _____

Date: 05/29/2018

Exhibit C (3 of 15)

BID FORM

ARTICLE 1 - BID RECIPIENT

1.01 This Bid is submitted to:

Guam Waterworks Authority
Engineering Division, Room 202
Gloria B. Nelson Public Service Building
688 Route 15
Mangilao, Guam 96913

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with Buyer in the form included in the Bidding Documents to furnish the Goods and Special Services as specified or indicated in the Bidding Documents, for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Buyer.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
Addendum No. 1	April 19, 2018
Addendum No. 2	April 26, 2018
Addendum No. 3	May 15, 2018
Addendum No. 4	May 18, 2018

B. Bidder has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided and become familiar with and is satisfied as to the observable local conditions that may affect cost, progress, or the furnishing of Goods and Special Services, if required to do so by the Bidding Documents, or if, in Bidder's judgment, any local condition may affect cost, progress, or the furnishing of Goods and Special Services.

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Exhibit C (4 of 15)

C. Bidder is familiar with and is satisfied as to all Laws and Regulations in effect as of the date of the Bid that may affect cost, progress, and the furnishing of Goods and Special Services.

D. Bidder has carefully studied, considered, and correlated the information known to Bidder; information commonly known to sellers of similar goods doing business in the locality of the Point of Destination and the site where the Goods will be installed or where Special Services will be provided; information and observations obtained from Bidder's visits, if any, to the Point of Destination and the site where the Goods will be installed or Special Services will be provided; and any reports and drawings identified in the Bidding Documents regarding the Point of Destination and the site where the Goods will be installed or where Special Services will be provided, with respect to the effect of such information, observations, and documents on the cost, progress, and performance of Seller's obligations under the Bidding Documents.

E. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution (if any) thereof by Engineer is acceptable to Bidder.

F. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing the Goods and Special Services for which this Bid is submitted.

ARTICLE 4 - BIDDER'S CERTIFICATIONS

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Buyer, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

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Exhibit C (5 of 15)

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process.

ARTICLE 5 - BASIS OF BID AND AWARD OF CONTRACTS

5.01 This contract is a multi-award contract through which more than one contract may be awarded through this solicitation. The Bid Schedule contains two schedules, Schedule A and Schedule B. Bidder will furnish the Goods and Special Services in accordance with the Contract Documents for the prices indicated under this article. The Bidder can elect to provide prices under Schedule A or Schedule B or both schedules. Bids must include all items under Schedule A or Schedule B, or both Schedule A and B. Each of Schedules A and B comprise Base Bid items and Additive Bid items. The Bidder shall provide base bid and additive bid(s) prices under each elected schedule.

Bids shall be evaluated by Schedule. Each of Schedules A and B shall be evaluated separately. The lowest responsive and responsible bidder shall be determined for each of Schedule A and Schedule B. Separate contracts will be awarded under Schedule A and Schedule B. One contract will be awarded to the lowest responsive and responsible bidder for Schedule A and one contract will be awarded to the lowest responsive and responsible bidder for Schedule B. If the same contractor is the lowest responsive and responsible bidder for both Schedules A and B, one contract for all the work under Schedules A and B will be awarded.

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Exhibit C (6 of 15)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
1	Mobilization and Demobilization	LS	$293,780.00	1	$ 293,780.00
2	Insurance and Bonds	LS	$132,201.00	1	$ 132,201.00
3	Permits	LS	$44,067.00	1	$ 44,067.00
4	12" PVC pipe, installed by open trench, including PVC pipe, fittings, warning/identification tape, cleaning, connections to manholes, adjustment existing channel and bench, testing, and all incidentals, in place complete.	LF	$1,500.00	22	$ 33,000.00
5	18" PVC pipe, installed by open trench, including PVC pipe, fittings, warning/identification tape, cleaning, connections to existing manholes, adjustment existing channel and bench, testing, and all incidentals, in place complete.	LF	$1,800.00	12	$ 21,600.00
6	30" PVC pipe, installed by open trench, including existing pipe removal, pipe, fittings, warning/identification tape, cleaning, manhole connections, testing, and all incidentals, in place complete.	LF	$2,000.00	461	$ 922,000.00
7	Unclassified Trench Excavation and Backfill, including protection of existing utilities if necessary, excavation, installation of sheet piles, cutting and removal of sheet piles, shoring, groundwater cutoff wall, dewatering and dewatering effluent disposal, muck handling and disposal, backfill, pipe bedding, CLSM, temporary erosion control measures, traffic control work, miscellaneous restoration work, and all incidentals required to complete the work.	CY	$600.00	913	$ 547,800.00
8	Precast Sewer Manhole, SMH-6901A and 493A, including reinforced concrete base, precast concrete riser and cone, flexible pipe seals and connectors, grade adjustment ring(s), frame and cover, epoxy-coating, channelized inverts, testing, CLSM, temporary erosion control measures, traffic control work, incidentals, and all necessary labor, materials and equipment, in place complete.	EA	$30,000.00	2	$ 60,000.00

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Exhibit C (7 of 15)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
9	Drop Precast Sewer Manhole, SMH-6908B, including demolition of existing SMH-10312, reinforced concrete base, precast concrete riser and cone, chimney, flexible pipe seals and connectors, grade adjustment ring(s), frame and cover, epoxy-coating, channelized inverts, testing, CLSM, temporary erosion control measures, traffic control work, incidentals, and all necessary labor, materials and equipment, in place complete.	EA	$ 30,000.00	1	$ 30,000.00
10	Rehabilitation of sewer manhole with epoxy coating, including cleaning, surface preparation, cementitious underlayment, concrete channel and bench construction, existing pipe cut & connection, plugging existing pipe, epoxy topcoat, grout injection for leak repair, traffic control work, and all incidentals, in place complete.	EA	$ 22,500.00	14	$ 315,000.00
11	Abandon existing sewer pipes including plugging and filling with CLSM, all incidentals, in place complete.	LF	$ 250.00	280	$ 70,000.00
12	Unplug 21" existing pipe, plug 15" existing SL-9650 and channel & bench reconstruction at SMH-6897	LS	$ 30,000.00	1	$ 30,000.00
13	Sewer Flow Control, including diversion and bypass pumping plan, temporary bypass piping and pumps, pipe plugs, bypassing at sewer laterals (including locating and exposing cleanouts), temporary trenches (including pavement demolition, excavation, backfill, trench covers, temporary and permanent asphalt concrete (AC) pavement, muck handling and disposal), electrical and standby power/pumps, monitoring, spill containment/mitigation, traffic control work, temporary erosion control measures, all related restoration work, in place complete.	LS	$ 300,000.00	1	$ 300,000.00
14	Removal of existing pavement including all necessary labor, materials and equipment, in place complete	SY	$ 50.00	2,867	$ 143,350.00

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Exhibit C (8 of 15)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
15	AC Pavement Resurfacing, including asphalt concrete base, cold planing, pavement transitions, prime coat, tack coat, traffic striping, miscellaneous restoration, and all necessary labor, materials and equipment, in place complete	SY	$ 150.00	2,867	$ 430,050.00
16	Pavement marking including all necessary labor, materials and equipment, in place complete	LS	$25,000.00	1	$ 25,000.00
17	As-Built drawings	LS	$10,000.00	1	$ 10,000.00
	SCHEDULE A – Base Bid (TOTAL Items 1 through 17, inclusive)				$ 3,407,848.00

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Additive Bid No. 1

Description of Work: Archaeological monitoring.

				SCHEDULE A – Additive Bid No. 1	
1	Archaeological and cultural resource services to add new laydown staging areas outside of the suggested areas or outside of the area of potential effect as defined the Archaeological Monitoring and Data Recovery Plan for the project and resubmit to the Department of Parks and Recreation, Guam Historic Resources Division/State Historic Preservation Office for approval and acceptance.	LS	$ 150,000.00	1	$ 150,000.00
	SCHEDULE A - Additive Bid No. 1 (TOTAL Items 1, inclusive)				$ 150,000.00

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Exhibit C (9 of 15)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
1	Mobilization and Demobilization	LS	$_____	1	$_____
2	Insurance and Bonds	LS	$_____	1	$_____
3	Permits	LS	$_____	1	$_____
4	Installation of cured in place pipe (CIPP) lining in existing 21" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$_____	674	$_____
5	Installation of cured in place pipe (CIPP) lining in existing 24" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$_____	723	$_____

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Exhibit C (10 of 15)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
6	Installation of cured in place pipe (CIPP) lining in existing 30" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$_____	1,590	$_____
7	Installation of cured in place pipe (CIPP) lining in existing 36" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$_____	798	$_____
8	Sewer Flow Control, including diversion and bypass pumping plan, temporary bypass piping and pumps, pipe plugs, bypassing at sewer laterals (including locating and exposing cleanouts), temporary trenches (including pavement demolition, excavation, backfill, trench covers, temporary and permanent AC pavement, muck handling and disposal), electrical and standby power/pumps, monitoring, spill containment/mitigation, traffic control work, temporary erosion control measures, all related restoration work, in place complete.	LS	$_____	1	$_____

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Exhibit C (11 of 15)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
	Schedule B – BASE BID (TOTAL Items 1 through 8, inclusive)				$_____

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B – Additive Bid No. 1

Description of Work: CIPP part-liner or chemical grouting to control infiltration/inflow prior to CIPP lining.

				Schedule B – Additive Bid No. 1	
1	CIPP part-liner or grouting to control infiltration on the existing 21" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$_____	70	$_____
2	CIPP part-liner or grouting to control infiltration on the existing 24" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$_____	80	$_____
3	CIPP part-liner or grouting to control infiltration on the existing 30" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$_____	160	$_____
4	CIPP part-liner or grouting to control infiltration on the existing 36" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$_____	160	$_____
	SCHEDULE B – Additive Bid No. 1 (TOTAL Items 1 through 4, inclusive)				$_____

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Exhibit C (12 of 15)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B - Additive Bid No. 2
Description of Work: Archaeological monitoring.

				SCHEDULE B – Additive Bid No. 2	
1	Archaeological and cultural resource services to add new laydown staging areas outside of the suggested areas or outside of the area of potential effect as defined the Archaeological Monitoring and Data Recovery Plan for the project and resubmit to the Department of Parks and Recreation, Guam Historic Resources Division/State Historic Preservation Office for approval and acceptance.	LS	$_____	1	$_____
SCHEDULE B - Additive Bid No. 2 (TOTAL Items 1, inclusive)					$_____

Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents. Bidder also acknowledges that each unit price includes an amount considered by Bidder to be adequate to cover Bidder's overhead and profit for each separately identified item.

ARTICLE 6 - TIME OF COMPLETION

6.01 Bidder agrees that the furnishing of Goods and Special Services will conform to the schedule set forth in Article 5 of the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid:

A. Required Bid security in the form of Bid Bond.

B. List of Proposed Major Suppliers;

C. Required Bidder Qualification Statement with Supporting Data.

ARTICLE 8 - DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

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Exhibit C (13 of 15)

ARTICLE 9 - BID SUBMITTAL

9.01 This Bid submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____

A Partnership

Partnership Name: _____ (SEAL)

By: _____
(Signature of general partner - attach evidence of authority to sign)

Name (typed or printed): _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____

A Corporation

Corporation Name: PROPACIFIC BUILDER CORPORATION

State of Incorporation: GUAM

Type (General Business, Professional, Service, other): General Contractor

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): Jean Yeon Yu

Title: President

(CORPORATE SEAL)

Attest _____
(Signature of Corporate Secretary)

Business address: 750 Route 8 Suite 202 Hanam Plaza, Barrigada, GU 96913

_____

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Exhibit C (14 of 15)

Phone: 671-477-3109 Facsimile: 671-477-7424
E-mail address: jgyc@guam.net

A Limited Liability Company (LLC)

LLC Name: _____
State in which organized: _____

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____
Title: _____
Business address: _____
_____
Phone: _____ Facsimile: _____
E-mail address: _____

A Joint Venture

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____
Title: _____
Business address: _____
_____
Phone: _____ Facsimile: _____
E-mail address: _____
Second Joint Venturer Name: _____(SEAL)

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____
Title: _____
Business address: _____
_____
Phone: _____ Facsimile: _____
E-mail address: _____

Phone and Facsimile Number, and Address for receipt of official communications to Joint Venture:__
_____
_____

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Exhibit C (15 of 15)

(Each joint venturer must sign. The manner of signing for each individual, partnership, corporation, and limited liability company that is a party to the joint venture should be in the manner indicated above.)

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Exhibit D (1 of 17)

AEGION
Stronger. Safer. Infrastructure.™

Insituform

SEALED BID FOR: ROUTE 4 RELIEF SEWER LINE REHABILITATION AND REPLACEMENT (RE-BID)

BIDDER: INSITUFORM TECHNOLOGIES, LLC
17988 EDISON AVE
CHESTERFIELD, MO 63005

GWA PROJECT NO. S15-006-EPA

CLOSING DATE AND TIME
~~5/25/2018~~ 5/29/2018
3:00 PM

ATTENTION: **GUAM WATERWORKS AUTHORITY**
GLORIA B. NELSON PUBLIC SERVICES BUILDING
688 ROUTE 15
MANGILAO, GUAM 96913

Vol. 1 of 2

Exhibit D (2 of 17)

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Exhibit D (3 of 17)

BID FORM

ARTICLE 1 - BID RECIPIENT

1.01 This Bid is submitted to:

Guam Waterworks Authority
Engineering Division, Room 202
Gloria B. Nelson Public Service Building
688 Route 15
Mangilao, Guam 96913

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with Buyer in the form included in the Bidding Documents to furnish the Goods and Special Services as specified or indicated in the Bidding Documents, for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Buyer.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
1	April 19, 2018
2	April 24, 2018
3	May 15, 2018
4	May 18, 2018

EJD

B. Bidder has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided and become familiar with and is satisfied as to the observable local conditions that may affect cost, progress, or the furnishing of Goods and Special Services, if required to do so by the Bidding Documents, or if, in Bidder's judgment, any local condition may affect cost, progress, or the furnishing of Goods and Special Services.

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C. Bidder is familiar with and is satisfied as to all Laws and Regulations in effect as of the date of the Bid that may affect cost, progress, and the furnishing of Goods and Special Services.

D. Bidder has carefully studied, considered, and correlated the information known to Bidder; information commonly known to sellers of similar goods doing business in the locality of the Point of Destination and the site where the Goods will be installed or where Special Services will be provided; information and observations obtained from Bidder's visits, if any, to the Point of Destination and the site where the Goods will be installed or Special Services will be provided; and any reports and drawings identified in the Bidding Documents regarding the Point of Destination and the site where the Goods will be installed or where Special Services will be provided, with respect to the effect of such information, observations, and documents on the cost, progress, and performance of Seller's obligations under the Bidding Documents.

E. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution (if any) thereof by Engineer is acceptable to Bidder.

F. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing the Goods and Special Services for which this Bid is submitted.

ARTICLE 4 - BIDDER'S CERTIFICATIONS

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Buyer, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

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Exhibit D (5 of 17)

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process.

ARTICLE 5 - BASIS OF BID AND AWARD OF CONTRACTS

5.01 This contract is a multi-award contract through which more than one contract may be awarded through this solicitation. The Bid Schedule contains two schedules, Schedule A and Schedule B. Bidder will furnish the Goods and Special Services in accordance with the Contract Documents for the prices indicated under this article. The Bidder can elect to provide prices under Schedule A or Schedule B or both schedules. Bids must include all items under Schedule A or Schedule B, or both Schedule A and B. Each of Schedules A and B comprise Base Bid items and Additive Bid items. The Bidder shall provide base bid and additive bid(s) prices under each elected schedule.

Bids shall be evaluated by Schedule. Each of Schedules A and B shall be evaluated separately. The lowest responsive and responsible bidder shall be determined for each of Schedule A and Schedule B. Separate contracts will be awarded under Schedule A and Schedule B. One contract will be awarded to the lowest responsive and responsible bidder for Schedule A and one contract will be awarded to the lowest responsive and responsible bidder for Schedule B. If the same contractor is the lowest responsive and responsible bidder for both Schedules A and B, one contract for all the work under Schedules A and B will be awarded.

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Exhibit D (6 of 17)

No bid on Schedule A

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
1	Mobilization and Demobilization	LS	$_____	1	$_____
2	Insurance and Bonds	LS	$_____	1	$_____
3	Permits	LS	$_____	1	$_____
4	12" PVC pipe, installed by open trench, including PVC pipe, fittings, warning/identification tape, cleaning, connections to manholes, adjustment existing channel and bench, testing, and all incidentals, in place complete.	LF	$_____	22	$_____
5	18" PVC pipe, installed by open trench, including PVC pipe, fittings, warning/identification tape, cleaning, connections to existing manholes, adjustment existing channel and bench, testing, and all incidentals, in place complete.	LF	$_____	12	$_____
6	30" PVC pipe, installed by open trench, including existing pipe removal, pipe, fittings, warning/identification tape, cleaning, manhole connections, testing, and all incidentals, in place complete.	LF	$_____	461	$_____
7	Unclassified Trench Excavation and Backfill, including protection of existing utilities if necessary, excavation, installation of sheet piles, cutting and removal of sheet piles, shoring, groundwater cutoff wall, dewatering and dewatering effluent disposal, muck handling and disposal, backfill, pipe bedding, CLSM, temporary erosion control measures, traffic control work, miscellaneous restoration work, and all incidentals required to complete the work.	CY	$_____	913	$_____
8	Precast Sewer Manhole, SMH-6901A and 493A, including reinforced concrete base, precast concrete riser and cone, flexible pipe seals and connectors, grade adjustment ring(s), frame and cover, epoxy-coating, channelized inverts, testing, CLSM, temporary erosion control measures, traffic control work, incidentals, and all necessary labor, materials and equipment, in place complete.	EA	$_____	2	$_____

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No bid on Schedule A

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
9	Drop Precast Sewer Manhole, SMH-6908B, including demolition of existing SMH-10312, reinforced concrete base, precast concrete riser and cone, chimney, flexible pipe seals and connectors, grade adjustment ring(s), frame and cover, epoxy-coating, channelized inverts, testing, CLSM, temporary erosion control measures, traffic control work, incidentals, and all necessary labor, materials and equipment, in place complete.	EA	$_____	1	$_____
10	Rehabilitation of sewer manhole with epoxy coating, including cleaning, surface preparation, cementitious underlayment, concrete channel and bench construction, existing pipe cut & connection, plugging existing pipe, epoxy topcoat, grout injection for leak repair, traffic control work, and all incidentals, in place complete.	EA	$_____	14	$_____
11	Abandon existing sewer pipes including plugging and filling with CLSM, all incidentals, in place complete.	LF	$_____	280	$_____
12	Unplug 21" existing pipe, plug 15" existing SL-9650 and channel & bench reconstruction at SMH-6897	LS	$_____	1	$_____
13	Sewer Flow Control, including diversion and bypass pumping plan, temporary bypass piping and pumps, pipe plugs, bypassing at sewer laterals (including locating and exposing cleanouts), temporary trenches (including pavement demolition, excavation, backfill, trench covers, temporary and permanent asphalt concrete (AC) pavement, muck handling and disposal), electrical and standby power/pumps, monitoring, spill containment/mitigation, traffic control work, temporary erosion control measures, all related restoration work, in place complete.	LS	$_____	1	$_____
14	Removal of existing pavement including all necessary labor, materials and equipment, in place complete	SY	$_____	2,867	$_____

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Exhibit D (8 of 17)

No Bid Schedule A

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
15	AC Pavement Resurfacing, including asphalt concrete base, cold planing, pavement transitions, prime coat, tack coat, traffic striping, miscellaneous restoration, and all necessary labor, materials and equipment, in place complete	SY	$_____	2,867	$_____
16	Pavement marking including all necessary labor, materials and equipment, in place complete	LS		1	
17	As-Built drawings	LS		1	
	SCHEDULE A – Base Bid (TOTAL Items 1 through 17, inclusive)				$_____

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Additive Bid No. 1

Description of Work: Archaeological monitoring.

				SCHEDULE A – Additive Bid No. 1	
1	Archaeological and cultural resource services to add new laydown staging areas outside of the suggested areas or outside of the area of potential effect as defined the Archaeological Monitoring and Data Recovery Plan for the project and resubmit to the Department of Parks and Recreation, Guam Historic Resources Division/State Historic Preservation Office for approval and acceptance.	LS	$_____	1	$_____
	SCHEDULE A - Additive Bid No. 1 (TOTAL Items 1, inclusive)				$_____

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
1	Mobilization and Demobilization	LS	$800,000	1	$800,000
2	Insurance and Bonds	LS	$100,000	1	$100,000
3	Permits	LS	$34,300	1	$34,300
4	Installation of cured in place pipe (CIPP) lining in existing 21" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$310.00	674	$208,940
5	Installation of cured in place pipe (CIPP) lining in existing 24" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$412.00	723	$297 876

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Exhibit D (10 of 17)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
6	Installation of cured in place pipe (CIPP) lining in existing 30" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$667.00	1,590	$1,060,530
7	Installation of cured in place pipe (CIPP) lining in existing 36" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$929.00	798	$741,342
8	Sewer Flow Control, including diversion and bypass pumping plan, temporary bypass piping and pumps, pipe plugs, bypassing at sewer laterals (including locating and exposing cleanouts), temporary trenches (including pavement demolition, excavation, backfill, trench covers, temporary and permanent AC pavement, muck handling and disposal), electrical and standby power/pumps, monitoring, spill containment/mitigation, traffic control work, temporary erosion control measures, all related restoration work, in place complete.	LS	$755,700	1	$755,700

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Exhibit D (11 of 17)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
	Schedule B – BASE BID (TOTAL Items 1 through 8, inclusive)				$3,998,688

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B – Additive Bid No. 1

Description of Work: CIPP part-liner or chemical grouting to control infiltration/inflow prior to CIPP lining.

				Schedule B – Additive Bid No. 1	
1	CIPP part-liner or grouting to control infiltration on the existing 21" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$2330.00	70	$163,100.00
2	CIPP part-liner or grouting to control infiltration on the existing 24" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$2330.00	80	$186,400.00
3	CIPP part-liner or grouting to control infiltration on the existing 30" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$2960.00	160	$473,600.00
4	CIPP part-liner or grouting to control infiltration on the existing 36" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$2960	160	$473,600.00
	SCHEDULE B – Additive Bid No. 1 (TOTAL Items 1 through 4, inclusive)				$5,295,388.00

$1,296,700

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Exhibit D (12 of 17)

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B - Additive Bid No. 2
Description of Work: Archaeological monitoring.

				SCHEDULE B – Additive Bid No. 2	
1	Archaeological and cultural resource services to add new laydown staging areas outside of the suggested areas or outside of the area of potential effect as defined the Archaeological Monitoring and Data Recovery Plan for the project and resubmit to the Department of Parks and Recreation, Guam Historic Resources Division/State Historic Preservation Office for approval and acceptance.	LS	$35,000	1	$35,000
			SCHEDULE B - Additive Bid No. 2 (TOTAL Items 1, inclusive)		$5,330,388.00

Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents. Bidder also acknowledges that each unit price includes an amount considered by Bidder to be adequate to cover Bidder's overhead and profit for each separately identified item.

ARTICLE 6 - TIME OF COMPLETION

6.01 Bidder agrees that the furnishing of Goods and Special Services will conform to the schedule set forth in Article 5 of the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid:

A. Required Bid security in the form of bidder's bond.

B. List of Proposed Major Suppliers;

C. Required Bidder Qualification Statement with Supporting Data.

ARTICLE 8 - DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

$35,000

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Exhibit D (13 of 17)

Insituform® Technologies, LLC

World HQ: 17988 Edison Avenue 636-530-8000
Chesterfield MO 63005 Fax: 636-530-8701

Local Off: 9654 Titan Court 303-791-7199
Littleton CO 80125 Fax: 303-791-7399

GWA Route 4 Releif Sewer Line Rehabilitation and Replacement, Project No. S15-006-EPA

LIST OF SUBCONTRACTORS Selection for Insituform

1. CCTV/CLEARING - MOCON
2. BYPASS - MOCON
3. _____
4. _____
5. _____
6. _____

Exhibit D (14 of 17)

Insituform® Technologies, LLC

World HQ: 17988 Edison Avenue Chesterfield MO 63005 636-530-8000 Fax: 636-530-8701

Local Off: 9654 Titan Court Littleton CO 80125 303-791-7199 Fax: 303-791-7399

GWA Route 4 Releif Sewer Line Rehabilitation and Replacement, Project No. S15-006-EPA

LIST OF Suppliers Selection for Insituform

1. CIPP—Insituform
2. _____
3. _____
4. _____
5. _____

Exhibit D (15 of 17)

ARTICLE 9 - BID SUBMITTAL

9.01 This Bid submitted by:

If Bidder is:

An Individual

Name (typed or printed): N/A

By: _____
(Individual's signature)

Doing business as: _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____

A Partnership

Partnership Name: N/A (SEAL)

By: _____
(Signature of general partner - attach evidence of authority to sign)

Name (typed or printed): _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____

A Corporation

Corporation Name: N/A

State of Incorporation: _____

Type (General Business, Professional, Service, other): _____

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(CORPORATE SEAL)

Attest _____
(Signature of Corporate Secretary)

Business address: _____

_____

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Phone: _____ Facsimile: _____

E-mail address: _____

A Limited Liability Company (LLC)

LLC Name: Insituform Technologies, LLC

State in which organized: Delaware

By: Whittney Schulte

(Signature - attach evidence of authority to sign)

Name (typed or printed): Whittney Schulte

Title: Contracting & Attesting Officer

Business address: 17988 Edison Avenue
Chesterfield, MO 63005

Phone: 636-530-8000 Facsimile: 636-530-8701

E-mail address: WSchulte@Aegion.com

A Joint Venture

First Joint Venturer Name: N/A (SEAL)

By: _____

(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business address: _____

Phone: _____ Facsimile: _____

E-mail address: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____

(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business address: _____

Phone: _____ Facsimile: _____

E-mail address: _____

Phone and Facsimile Number, and Address for receipt of official communications to Joint Venture: _____

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Exhibit D (17 of 17)

INSITUFORM TECHNOLOGIES, LLC

PRESIDENT APPOINTMENT OF OFFICERS

Pursuant to the authority set forth in the Limited Liability Company Agreement of Insituform Technologies, LLC (the "Company"), I hereby determine that:

1. Christlanda Adkins, Laura M. Andreski, Janet Hass, Jana Lause, Diane Partridge, Whittney Schulte, and Ursula Youngblood are appointed as Contracting and Attesting Officers of the Company, each with the authority, individually and in the absence of the others, subject to the control of the Board of Managers of the Company, (i) to certify and to attest the signature of any officer of the Company, (ii) to enter into and to bind the Company to perform pipeline rehabilitation activities of the Company and all matters related thereto, including the maintenance of one or more offices and facilities of the Company, (iii) to execute and to deliver documents on behalf of the Company, and (iv) to take such other action as is or may be necessary and appropriate to carry out the project, activities and work of the Company; and

2. All other Contracting and Attesting Officers of the Company appointed by the President of the Company prior to the date of this appointment are hereby removed from office.

Dated: September 20, 2017

Frank R. Firsching
President

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671) 648-3002 | guamccu.org

Regular Board Meeting
CCU Conference Room, Gloria B. Nelson Public Service Building
5:30 p.m., June 6, 2018

MINUTES

1. CALL TO ORDER

The Chairman called the CCU regular meeting of May 22, 2018 to order at 5:33 p.m. He said all five (5) Commissioners were present. Others in attendance include:

Commissioners:

Joseph T. Duenas	CCU Chairman
Francis Santos	CCU Vice Chairman
George Bamba	CCU Secretary
Judith P. Guthertz	CCU Treasurer
Simon A. Sanchez	CCU Member

Executive Mgmt.:

John Benavente	GM / GPA
Miguel Bordallo	GM / GWA
Melinda Mafnas	AGMO / GPA
John Cruz	AGMET / GPA
Tricee Limtiaco	AGMA / GPA
John Kim	CFO / GPA
Gilda Mafnas	CFO (A) / GPA
Graham Botha	Staff Attorney / GPA
Kelly Clark	Staff Attorney / GWA

Management & Staff:

Paul Kemp	AGM Compliance & Safety / GWA
Tom Cruz	Chief Engineer / GWA
Cora Montellano	Asst. CFO / GPA
Dave Fletcher	GWA
Art Perez	Communications / GPA
Patti Diego	Communications / GPA
Vincent Pangelinan	GWA
Frankie Meno	GWA
Heidi Ballendorf	Communications / GWA
Rick Peredo	IT / GPA
Ann Borja	Mgmt. Analyst / GWA Ex. Office
Lou Sablan	Board Secretary / CCU

Guest:

John S. Aguon	Adztech-GCA
Angela Perez	AM Insurance
Annmarie Muna	AM Insurance
Charlene Calvo	IPE
Dan Del Priore	GFT
Fred Horecky	PUC

2. APPROVAL OF MINUTES

The Minutes of May 22, 2018 was presented for approval.

Comm. Bamba motioned to approve the Minutes subject to verification and written correction; second by Comm. Guthertz. There was no further discussion or objection and the motion passed.

3. COMMUNICATIONS

3.1 Public Comments - none

4. NEW BUSINESS

4.1 GWA

4.1.1 GM Report

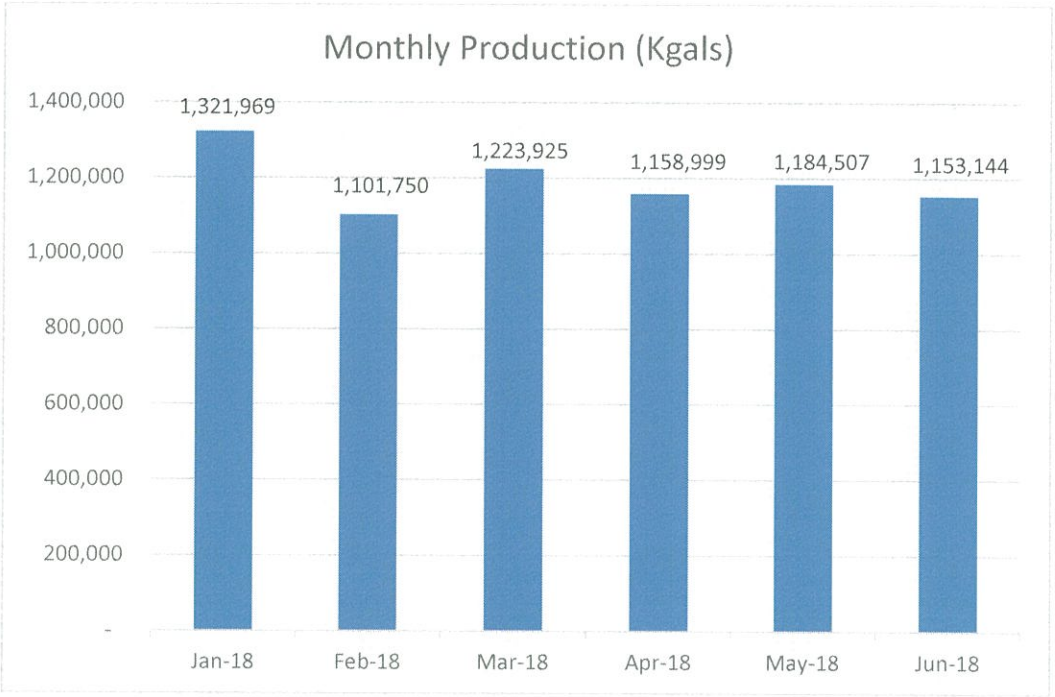
There was nothing new to report from the report given at the GWA work session. Some highlights are noted below. A full set of the GM Report is available upon request:

Operations Update

Production

Monthly Production Summary - May 2018					
Deep Wells				35.2	MGD
	Active wells =	95	of 120		
	Avg days in operation =	31.00	days		
	Total Production =	1,089,902	Kgals		
Springs				0.00	MGD
	Avg days in operation =	0	days	*placed on standby	
	Total Production =	0	Kgals		
Ugum Surface Water Plant				2.0	MGD
	Avg days in operation =	31	days		
	Total Production =	61,545	Kgals		
Tumon Maui Well				1.07	MGD
	Avg days in operation =	31	days		
	Total Production =	33,060	Kgals		
		1,184,507	Kgals	38.2	MGD

Monthly Production Summary - June 2018					
Deep Wells				35.4	MGD
	Active wells =	94	of 120		
	Avg days in operation =	30.00	days		
	Total Production =	1,062,758	Kgals		
Springs				0.00	MGD
	Avg days in operation =	0	days	*placed on standby	
	Total Production =	0	Kgals		
Ugum Surface Water Plant				1.9	MGD
	Avg days in operation =	30	days		
	Total Production =	58,373	Kgals		
Tumon Maui Well				1.03	MGD
	Avg days in operation =	30	days		
	Total Production =	32,013	Kgals		
		1,153,144	Kgals	38.4	MGD



Distribution

Monthly Distribution Summary - May 2018					
Water Booster Pump Stations					
	District	No. of Stations	Total Pumps	Pumps Operating	% Operationa
	Northern	11	21	20	95.2%
	Central	7	15	13	86.7%
	Southern	7	15	14	93.3%
		25	51	47	92.2%

Monthly Distribution Summary - June 2018					
Water Booster Pump Stations					
	District	No. of Stations	Total Pumps	Pumps Operating	% Operational
	Northern	11	21	20	95.2%
	Central	7	15	13	86.7%
	Southern	7	15	15	100.0%
		25	51	48	94.1%

Wastewater Collections

Monthly Collections Summary - May 2018					
Wastewater Pump Stations					
	District	No. of Stations	Total Pumps	Pumps Operating	% Operational
	Northern	22	52	45	86.5%
	Central	29	63	54	85.7%
	Southern	27	54	43	79.6%
		78	169	142	84.0%

Monthly Collections Summary - June 2018					
Wastewater Pump Stations					
	District	No. of Stations	Total Pumps	Pumps Operating	% Operational
	Northern	22	52	44	84.6%
	Central	29	63	45	71.4%
	Southern	27	54	41	75.9%
		78	169	130	76.9%

Wastewater Treatment

Monthly Wastewater Treatment Summary - May 2018				
WW Treatment Plants - Flows				
	Facility	**Avg. Daily Flows**	**Sludge (lbs)**	**Sludge Disp. ($)**
	Hagatna	4.93	583,080	$ 52,477
	Northern	5.32	786,700	$ 70,803
	Agat	0.63		
	Baza	0.25		
	Umatac	0.30		
	Inarajan	0.07		
		11.50	1,369,780	$ 123,280

Monthly Wastewater Treatment Summary - June 2018				
WW Treatment Plants - Flows				
	Facility	**Avg. Daily Flows**	**Sludge (lbs)**	**Sludge Disp. ($)**
	Hagatna	4.67	717,120	$ 64,541
	Northern	5.78	836,600	$ 75,294
	Agat	0.86		
	Baza	0.25		
	Umatac	0.30		
	Inarajan	0.06		
		11.92	1,553,720	$ 139,835

OPERATIONAL ISSUES

Production & Distribution

- Leak repair
  - Crews maintaining performance - As of June 30th, there were less than 40 pending repairs
    - 88% reduction from 2017-2018 Maximum of 283 pending
    - 80% reduction from 2018 Maximum of 179 pending
  - IFB for advanced remote leak detection services should be advertised next month
- WSCC –
  - SCADA FAT completed
  - Coordination of WSCC – PSCC layout on-going
  - SCADA equipment and installation requirements on-going
- Pump and motor inventories okay; additional orders for recent replacements are being made
- GWA Crane Repair –new cable installation pending; load testing completed.

Wastewater Collection & Treatment

- CCTV & Collections System:
  - Planning department assisting CCTV Crews to revise completed reports to meet appropriate industry standards
  - SSES and CCTV-based repairs to collection lines and SMHs are being conducted by Ops personnel
- Pump stations
- Facility maintenance efforts have been completed
- Minimum pump and motor inventory levels being established (similar to effort with deep-wells)
- Critical spares and replacements procurement is on-going

Treatment Plants

- Hagatna WWTP
  - Effluent pumps back up
  - Centrifuges: one operational, repairs to 2nd are almost complete.
- Northern WWTP
  - Both centrifuges back in operation
- Agat-Santa Rita WWTP
  - Solids process commissioning (GBTs, Centrifuges) to be completed in the next 2 weeks
  - With that, critical process facilities all operating and substantially complete
- U-M WWTP
  - Work on-going at the site
  - Significant delays have occurred because of USF&W / EPA permitting issues
- Baza Gardens
  - Work on-going for all 3 phases
  - Anticipated completion is now Sep 30th
  - Delay letter has been sent to USEP

Marbo (Andy-South) Wells – Status

- Involuntary reversion appears imminent; GWA Counsel transmitted draft easement documents to GSA for consideration with DoD
- No updates - Waiting on response from GSA

One Guam Update

- Santa Rosa Tank:
  - GWA and DOD are finalizing the design of the Intertie. All the property maps were completed and submitted to DOD.
  - Once the maps are completed, the letter to General Cox will be finalized for the temporary easement.
  - The After-Action Report format is being reviewed.
  - The Standard Operation Procedure (SOP) and MOU are being reviewed by DOD.
- Agat-Santa Rita WWTP
  - Compensation for the Agat-Santa Rita easement is still under discussion. Waiting on Navy Real Estate
- Date Sharing MOU has been drafted – under review and comment
  - This MOU will outline the standards for GIS, hydraulic and other data to be shared between DOD and GWA.

OEA Grant Summary

- NDWWTP Upgrades
  - 60% design submittal scheduled for Sep 24th.
  - Sitework bid package to be issued Sep 12th
  - Vertical bid package planned for issuance Mar 2019
- Outfall Diffuser:
  - Re-bid package under review by GWA
  - To be advertised by end of July
  - Bids expected in September
- Sewer Line Interceptor Design-Build
  - Contract Award / NTP pending insurance requirements
  - Design and prep work is set to start
  - Construction start expected in January
- NGLA Observation wells – Design work completed
  - Bid package drawings and specs under review by GWA
  - Permitting issues being resolved and permits being obtained by PM/CM
  - Bid package to be issued once permits approved – expected in Mar 2019

NRW – Update

- Water Loss Control Program activities are on-going
  - Latest water audit results reviewed by Technical Consultant under EPA grant. Scope

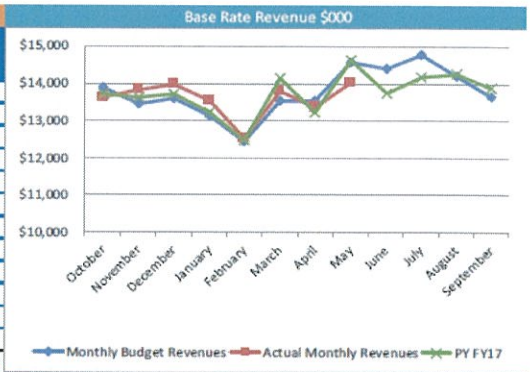
- modifications being proposed for Consultant due to GWA's progress on refining audit results
- Production meter replacement program is under design for 65 well sites. Portable flow meter is being procured to calibrate existing meters.
- District Metering Areas are currently being developed for pilot project. Locations have been identified. Grant application was submitted for this pilot project
- DOI Grant application has been approved for training and equipment.

4.1.2 Financials

There was nothing new to add to financials as previously reported at the GPA Work Session. Some highlights are noted here. A full copy of the report is available upon request.

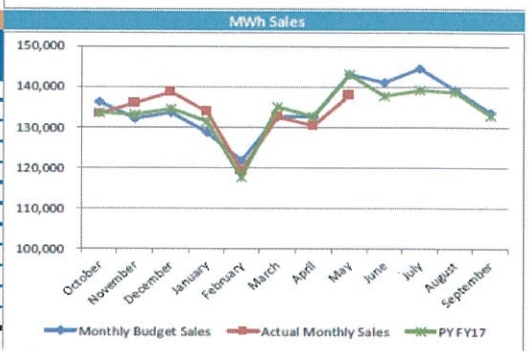
Base Rate Through May 31, 2018

$000	Monthly Budget Revenues	Actual Monthly Revenues	Variance		PY FY17	CY vs PY Variance	
October	$ 13,873	$ 13,625	$ (248)	↓	$ 13,702	$ (77)	↓
November	13,451	13,827	$ 376	↑	13,622	$ 205	↑
December	13,599	13,968	$ 369	↑	13,695	$ 273	↑
January	13,114	13,534	$ 420	↑	13,220	$ 314	↑
February	12,422	12,522	$ 100	↑	12,454	$ 68	↑
March	13,534	13,776	$ 242	↑	14,123	$ (347)	↓
April	13,525	13,351	$ (174)	↓	13,224	$ 127	↑
May	14,568	14,011	$ (557)	↓	14,617	$ (606)	↓
June	14,386				13,722		
July	14,759				14,151		
August	14,183				14,244		
September	13,651				$ 13,874		
Total	$ 165,064	$ 108,614	$ 529		$ 164,649	$ (44)	



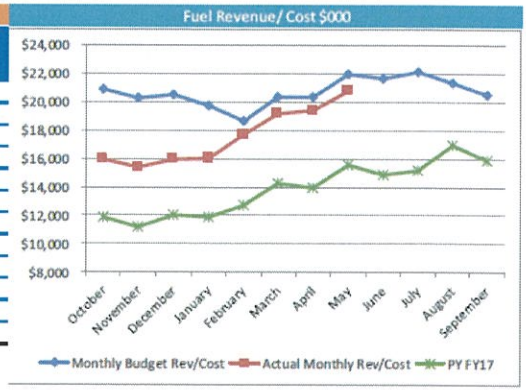
Mwh Sales Through May 31, 2018

	Monthly Budget Sales	Actual Monthly Sales	Variance		PY FY17	CY vs PY Variance	
October	136,219	133,262	(2,957)	↓	133,620	(358)	↓
November	132,132	136,044	3,912	↑	133,235	2,809	↑
December	133,625	138,587	4,962	↑	134,634	3,953	↑
January	128,711	133,882	5,170	↑	131,461	2,421	↑
February	121,668	119,241	(2,426)	↓	117,617	1,624	↑
March	132,587	132,693	106	↑	135,131	(2,438)	↓
April	132,532	130,565	(1,967)	↓	132,587	(2,022)	↓
May	142,956	138,085	(4,871)	↓	143,013	(4,928)	↓
June	141,064				137,777		
July	144,404				139,227		
August	139,093				138,797		
September	133,658				132,993		
Total	1,618,650	1,062,360	1,930		1,610,093	1,061	



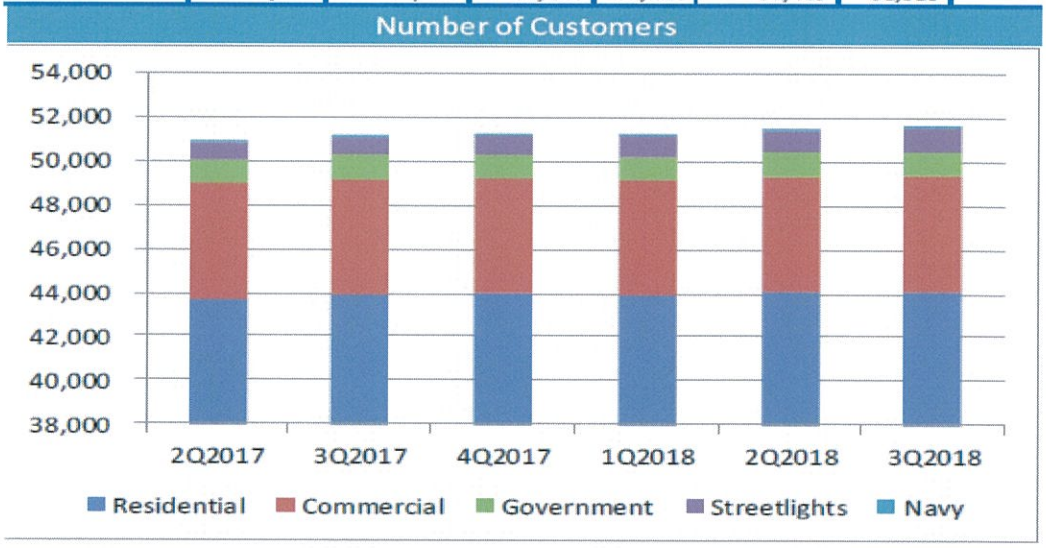
Fuel Revenue Through May 31, 2018

$000	Monthly Budget Rev/Cost	Actual Monthly Rev/Cost	Variance		PY FY17	CY vs PY Variance	
October	$ 20,928	$ 15,936	$ (4,992)	↓	$ 11,894	$ 4,042	↑
November	20,300	15,400	$ (4,899)	↓	11,215	$ 4,185	↑
December	20,529	16,007	$ (4,522)	↓	12,036	$ 3,971	↑
January	19,774	16,036	$ (3,738)	↓	11,867	$ 4,169	↑
February	18,692	17,763	$ (930)	↓	12,751	$ 5,012	↑
March	20,370	19,180	$ (1,190)	↓	14,248	$ 4,932	↑
April	20,361	19,441	(920)	↓	13,940	5,500	↑
May	21,963	20,854	(1,109)	↓	15,596	5,258	↑
June	21,672				14,859		
July	22,185				15,175		
August	21,369				16,947		
September	20,534				15,895		
Total	$ 248,677	$ 140,617	$ (22,300)		$ 166,425	$ 37,069	

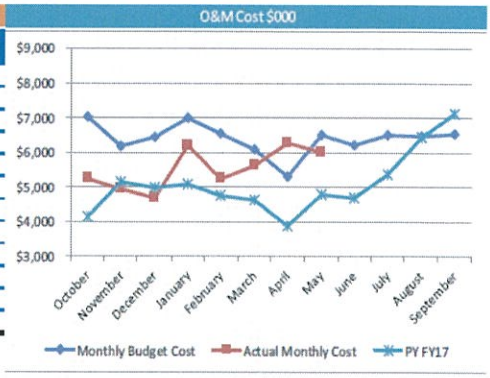


- Under recovery of LEAC - $10.6 million

Number of Customers Through May 31, 2018							
	2Q2017	3Q2017	4Q2017	1Q2018	2Q2018	3Q2018	
Residential	43,718	43,902	43,991	43,898	44,065	44,086	
Commercial	5,236	5,252	5,226	5,231	5,262	5,281	
Government	1,077	1,071	1,073	1,076	1,086	1,088	
Streetlights	800	824	823	908	1,005	1,059	
Navy	1	1	1	1	1	1	
	50,832	51,050	51,114	51,114	51,419	51,515	



O&M Cost Through May 31, 2018							
$000	Monthly Budget Cost	Actual Monthly Cost	Variance		PY FY17	CY vs PY Variance	
October	$ 7,040	5,239	1,801	↑	4,135	(1,103)	↓
November	6,182	4,941	1,240	↑	5,158	217	↑
December	6,428	4,694	1,735	↑	4,966	273	↑
January	7,001	6,204	797	↑	5,092	(1,112)	↓
February	6,522	5,252	1,270	↑	4,748	(504)	↓
March	6,091	5,638	453	↑	4,612	(1,026)	↓
April	5,320	6,269	(949)	↓	3,892	(2,378)	↓
May	6,495	6,005	491	↑	4,772	(1,233)	↓
June	6,221				4,702		
July	6,508				5,385		
August	6,462				6,445		
September	6,526				7,138		
Total	$ 76,796	$ 44,242	$ 6,838		$ 61,045	$ (6,866)	



- DSC greater than target of 1.75

Debt service coverage (DSC) calculation-indent	2013	2014	2015	2016	2017	YTD May 2018
Senior lien coverage	3.36	3.16	3.62	3.28	2.65	2.68
Aggregate debt service coverage	1.88	1.98	2.62	3.28	2.65	2.68
Debt service coverage (DSC) calculation-IPP as O&M						
Senior lien coverage	2.16	2.25	2.56	2.45	1.79	1.80
Aggregate debt service coverage	1.21	1.41	1.85	2.45	1.79	1.80

4.1.3 Resolution No. 34-FY2018/GPA Resolution No. 2018-13 Change Order for the GPWA SCADA System Contract to Include the Ugum Surface Water Treatment Plant SCADA integration Upgrade

If approved, this resolution will allow the upgrade / integration of the Ugum SWTP to the new GPWA SCADA System. The upgrades need to be performed first to integrate the Ugum SWTP SCADA system to the new GPWA SCADA System. The upgrades include major replacements and improvements on the Main Programmable Logic Controller, SCADA Server, SCADA client workstations, Profibus cabling and integration of the remote raw water pump station to the plant, software upgrades and motor control drives.

The upgrades shall correct the following issues, which does not include all issues described in the Siemens assessment report:

- The Ugum SCADA System consists of a SCADA Server with 2 client workstations but only the SCADA Server is operational. The SCADA Server is also running on Windows Server 2003 which is obsolete and no longer supported by Microsoft. Data trending is not archived properly resulting in loss of data. The Raw Water Pump Station, where the treatment process begins, is not visible in the control system. The Main PLC consists of a Read Access Memory (RAM) that will lose the program and all stored information in event of a momentary power loss and failure of the backup batteries which can cause the plant to shut down. The backwash for Cell #1 is not working properly; the cause has not been found.

- The Ugum SWTP is the major water source to the villages of Talofofo, Malojloj, Inarajan, Merizo and Umatac. The change order is necessary and urgent to ensure continual operation of the plant to deliver reliable water service to these areas. SCADA integration is necessary to allow the operations of Ugum SWTP to be visible to GWA Systems Control Center and key Water personnel to better coordinate and manage the water operations. Additionally, the change order is necessary to address the Ugum SWTP's cyber security vulnerabilities that have been identified in the Ernest and Young's vulnerability and cyber security assessment.

The total amount of the change order proposal is Six Hundred Eighty-Seven Thousand Five Hundred Six Dollars and Twenty-Five Cents ($687,506.25). The funding will come from 2016 CIP funds. It will take about 126 calendar days to complete the project.

Comm. Bamba motioned to approve GWA Resolution 34-FY2018 / GPA Resolution 2018-13 second by Comm. Santos. There was no further discussion or objection and the motion passed.

4.1.4 Resolution No. 35-FY2018 MOU for the Renewal of the GWA / GFT Collective Bargaining Agreement

The objective is to renew the effectivity of the expiring Collective Bargaining Agreement between Guam Waterworks Authority (GWA) and its employees (represented by Guam Federation of Teachers Union or GFTU), in compliance to Guam's laws. Effective date is upon the approval of the Consolidated Commission on Utilities and signature by the General Manager.

In discussion it was mentioned this process is an annual review - GFT reviews and renews every year. Sixty-three (63) GWA employees are members of this union

Comm. Guthertz motioned to approve Resolution 35-FY2018 second by Comm. Bamba. There was no further discussion or objection and the motion passed.

4.1.5 Resolution No. 36-FY2018 Design Services for the Pressure Zone Realignment and Tank Repair/Replacement Contract

The design for the Pressure Zone Realignment and Tank Repair/Replacement project is based on work required to accomplish zone realignment and system improvements in the draft 2017 Water Resource Master Plan. Twenty (20) firms RFP picked up and five (5) firms submitted. GHD was recommended for the award.

The key elements of this project are divided into several tasks:

1. Pressure zone realignment
2. Zone metering
3. Hydraulic modeling
4. Tank repair/replacement/modification and site upgrades
5. Water audit and trial district metering areas
6. Limited construction management services for pressure zone construction work

This project is necessary in order for GWA to have a properly functioning water system, which includes proper pressure zoning, metering, working facilities (tanks, bps, and all other critical facilities).

The project encompasses the entire island. The pressure zone areas (22) include the following:

1	Yigo North	12	Harmon Industrial
2	Yigo South	13	Tumon/Tamuning/Hagatna North
3	Astumbo	14	Tumon/Tamuning/Hagatna Central
4	Route 15	15	Tiyan
5	Barrigada	16	Mangilao
6	Barrigada Subzone	17	Ordot/Sinajana
7	Hyundai	18	Pago Bay
8	Hyundai Subzone	19	Santa Ana Lower
9	Mangilao North	20	Santa Ana Upper
10	Mangilao Central	21	Chalan Palaun
11	Kaiser	22	Santa Rita

The tanks (10) include the following:

1	Umatac Subdivision	6	Agat No. 1
2	Windward Hills	7	Malojloj
3	Umatac No. 1	8	Upper Nimitz
4	Kaiser	9	Lower Nimitz
5	Pigua	10	Agat No. 2

The fee proposal from the A/E is for Two Million Five Hundred Thirty-Nine Thousand Nine Hundred Ninety-One Dollars ($2,539,991.00). With a ten percent (10%) contingency in the amount of Two Hundred Fifty-Three Thousand Nine Hundred Ninety-Nine Dollars and Ten Cents ($253,999.10) included, the total authorized funding requested is Two Million Seven Hundred Ninety-Three Thousand Nine Hundred Ninety Dollars and Ten Cents ($2,793,990.10). The funding source is multi-faceted: PW 09-04: Pressure Zone Realignment/Development 2005 Improvements, PW 09-10: Water Reservoir Internal/External Corrosion Rehabilitation Program, PW 09-11: Water System Reservoirs 2005 Improvements and PW 12-01: Water Audit Program and Water Loss Control Plan

GWA expects to complete all design within 18 months; however, project duration may extend depending on property issues or acquisition. The A/E is aware that the project may extend.

Comm. Bamba motioned to approve Resolution 36-FY2018 second by Comm. Guthertz, There was no further discussion or objection and the motion passed.

4.1.6 Resolution No. 37-FY2018 Approval of Expenditures for Security Services Contract in Excess of the General Manager's Authority

There is an ongoing need to maintain the existing security services at several GWA facilities including the GWA Upper Tumon Facility and the main building and inside the customer service area, the laboratory, customer parking lot, and warehouse and FMES areas.

The service will cost approximately Two Hundred Thirty Thousand Dollars ($230,000.00) per year based on previous expenditures and will be funded by revenue funds. The contract extends to the end of FY 2018 and a new procurement will be initiated and a contract will be in place prior to the expiration.

Comm. Bamba motioned to approve Resolution 37-FY2018 second by Comm. Guthertz. There was no further discussion or objection and the motion passed.

ACTION: GWA Master Plan - the Chairman asked GM Bordallo to give status update on public outreach to the CCU by email and to schedule Agat village on June 26

4.2 GPA

4.2.1 GM Report

4.2.1.1 Update

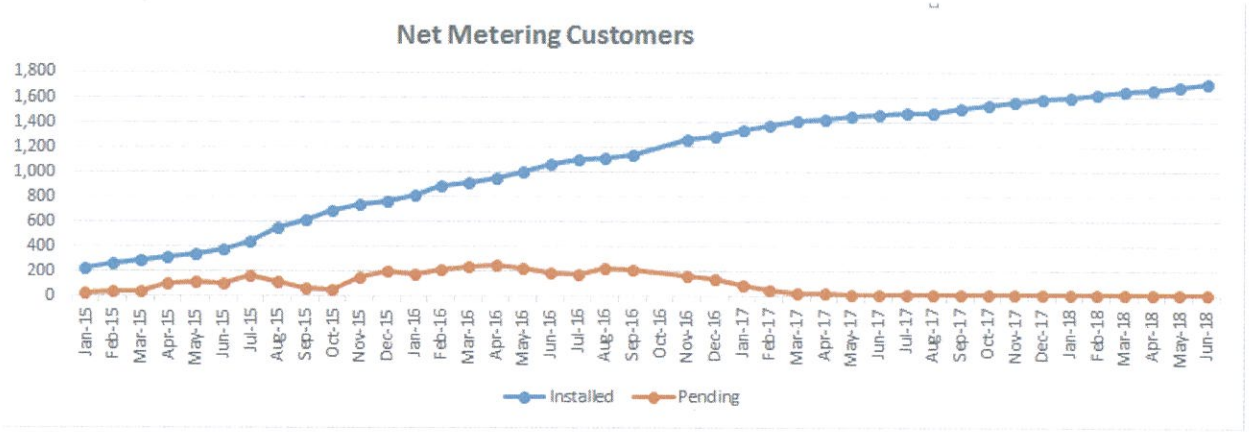
GM Benavente gave his usual GM update. Below are some highlights; a copy the entire report is available upon request.

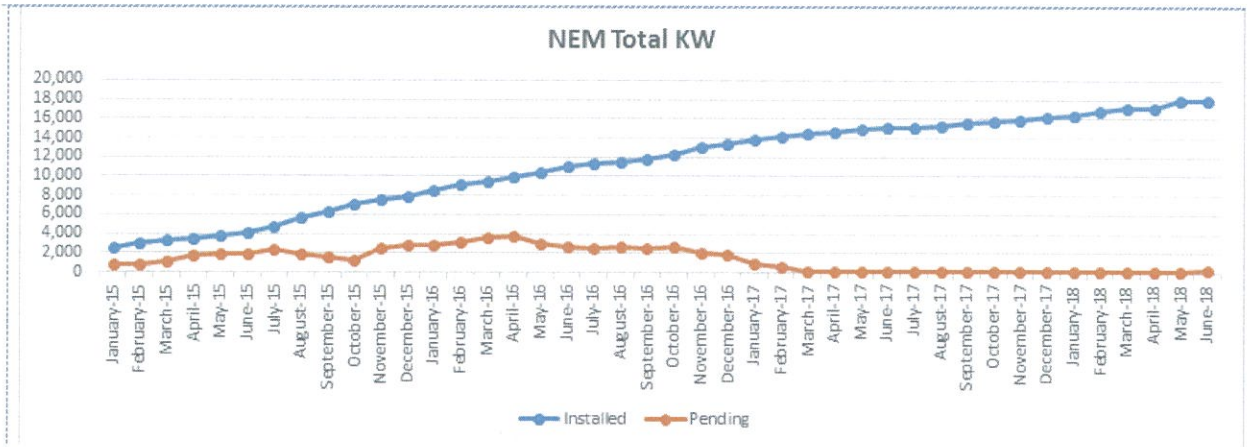
The following summarizes the expected generation capacity projection for July 2018. All base load units are expected to be in operation for the month. The Cabras steam units are currently limited to 50 MW each to minimize the potential for boiler tube leaks which is a common occurrence for them.

July 2018 Projected Capacity:	**360 MW**
July 2018 Projected Demand	**250 MW**
Projected Reserve Margin	**110 MW**

2. Net Metering Summary Ending June 2018:

Description:	Count	Kw	
Active	**1,710**	**16,849**	
Pending	20	129	
Totals:	1,730	16,978	
Service:	**Count**	**KW**	**Kw/Customer**
Residential	1,620	14,806	9.1
Others	90	2,043	22.7
Total:	1,710	16,849	9.9
% Residential	**94.7%**	**87.9%**	
Estimated 12 Months Revenue Impact:	**$3,360,697**		





3. Demand Side Management (DSM) Program Expenses Thru June 2018.

All Expenses – Fiscal Year

Description	FY16	FY17	FY18 as of June 30	Total to Date
Regular/OT Pay	$11,348.80	$22,256.00	$17,423.89	$51,028.69
Other Contractual	$28,278.50	$73,010.05	$38,992.25	$152,820.80
Bank Fees	$155.00	$1,032.06	$315.00	1,502.06
Paid Rebates–Split AC	$154,700.00	$557,275.00	$854,875.00	$1,566,850.00
Paid Rebates–Central AC	$3,400.00	$8,200.00	$1,300.00	$12,900.00
Paid Rebates–Washer/Dryer	$2,800.00	$7,425.00	$20,000.00	$30,225.00
Total Expenses	$200,682.30	$669,198.11	$932,906.14	$1,815,326.55

SUMMARY

DESCRIPTION	AMOUNT
Initial DSM Budget FY'16	$1,806,014.00
Interest Income as of June 18	$4,231.57
Total Expense	**$1,815,326.55**
Ending Balance as of June 18	$(5,080.98)
Addtl. Budget: Approved (FY'18)	$1,139,189.00
Total Ending Balance as of June 18:	**$1,134,108.02**

1. **Net Metering Customer Credit Recommendation:** GPA has schedule a public hearing for Wednesday July 18th at 5:30pm here at Fadian. The public hearing is for GPA to present its recommendation which it made to the CCU on the phased reduction of net metering credits. GPA will report to the CCU on July 24th the results of the public hearing and any changes it desires to make based on the public's input. Once the CCU approves GPA's recommendation, GPA could petition the PUC for their approval.

2. **PUC Dockets: The PUC approved the recommendation to hold LEAC at its current rate thru January 31, 2019.**

3. **New Power Plant Procurement:**

    - GPA completed the transaction for the Ukudu land on Friday July 13, 2018. GPA now owns the 60 acres.
    - Multi-Step Bid Invitation No. 034-18 qualified bidder list has been established and consist of seven (7) proponents. These proponents will be provided the bid specifications once CCU approves the package subject to PUC approval.

4. **Supervisory Control and Data Acquisition (SCADA) Commissioning:** The installation of the new SCADA system is now underway. The targeted commissioning date is October 2018. The SCAWA system is designed for Power, Water and Wastewater operations.

5. **Liberation Day Parade:** The parade is this weekend, Saturday July 21, 2018. GPWA is participating in the parade and will also have a food tent in Hagatna across the entrance to the Hagatna Waste Water treatment Plant. Please join us for this celebration.

6. **Apprentice Graduation:** The graduation ceremony for fifteen (15) apprentices occurred on Friday July 13, 2018 and received excellent media coverage. The next cycle of twenty (20) apprentices mostly in the T&D area is targeted to begin in October 2018. There are 314 qualified applicants vying for the program.

7. **Tropical Storm Maria:** The storm passed over Guam on July 5th, 2018. Storm blacked out the island for about half an hour. All customers were restored within two days. The estimated damage is about $234K.

8. **Senator Nelson Informational Hearing:** GPA provided an informational hearing to Senator Nelson on July 12, 2018. The informational briefing focused on LEAC, New Power Plant, and System Status. The presentation is attached for your perusal.

9. **GMH Main Electrical Panel Maintenance:** GPA has completed its task of conducting preventive maintenance on the GMH electrical panels. The maintenance was done between 6am to 2pm this past Sunday, July 15, 2018. GMH operated on standby generator power during the outage and there was no interruption of power to GMH. GPA has now completed its work with GMH. GPA is preparing a standard operating procedure for GMH for use in the event of an emergency. Please see the attached presentation of the work done.

10. **Key Performance Indicators** – the GM provided graphs not included here but available upon request.

4.2.1.2 Net Metering Credits

The GM presented managements proposal relative to the Net Metering issue. The presentation highlighted different factors that directly and indirectly influenced management's recommendation and included an overview of net metering policies in various states in the country that I've included here.

There are Thirty Eight (38) States, Washington D.C., and Four (4) Territories Offer Net Metering and utilities in two additional states (Idaho and Texas that adopted Net Metering (Full Retail Credit). Arizona, Georgia, Hawaii, Indiana, Maine and Mississippi have compensation other than net metering. The Value of Solar (VOS) is an alternative to net metering. Customers buy from the grid at retail rate and sell to the grid at an established VOS rate. Only Minnesota and Austin Energy (Texas) has adopted a VOS rate.

Guam's NEM Program was mandated in 2004. Guam has been crediting NEM customers full retail rate over the past 13 years. Excess credit carried over or paid out annually at full retail rate.
PUC to evaluate program and credits provided when GPA has 1,000 NEM Customers which occurred in June 2016.
As of April 2018, GPA has 1,658 NEM Customers (94.8% Residential), with 17,218 KW of capacity. The revenue impact on non-NEM ratepayers is estimated at $3.1M annually. CCU/GPA conducted its first public hearing on NEM in August 2016 to gather input from stakeholders in order to prepare its filing to the PUC for changes in rate credits in order to achieve parity amongst all ratepayers. A total of five (5) other public meetings were held since to continue to discuss and gather input from stakeholders.

Sone key points from the Public Meetings:

- The B&V report provides all the gain to GPA and did not represent true value of solar
- NEM Owner wants to recover his investment. Asked for grandfathering until he does so. He said it will take 7 years to recover his $60K investment
- NEM not meant to be money making business but a fair exchange of trade energy...some customers making money from units sized beyond their needs
- The applicability of NEM program to 3rd party providers need to be clarified
- PV provider wants NEM program to continue up to 20% penetration similar to Hawaii
- PV provider wanted more time to provide a report on Value of Solar and bring to GPA for information. Report was conducted and presented by Clean Power Research on April 18, 2018
- Provider commented the NEM energy saves the utility cost on:
    - Maintenance cost for generations, poles, labor, lines, substations, transformers, etc.
    - Reduction of line losses because energy is near customers
    - Costs associated with fuel and fuel shipments
    - Helps GPA achieve energy portfolio reducing need for more renewable projects
    - Savings to environment; lessens carbon foot print

- Provider-GPA should consider subsidies for home energy storage systems
- Provider-GPA should consider grandfathering NEM customers through a phased approach

The GM further presented various solar PV energy production characteristics to include what Utility scale PV output looks like, NEM customer profiles & variations, the correlation of PV NEM for different locations. After several studies and reviews, its managements opinion that solar PV on Guam without adequate energy storage capacity does not reduce peak demand and does not eliminate conventional capacity needs.

At the end of this segment of his presentation GM Benavente pointed out some policy issues and the value of the grid to NEM customers shared here:

Value of Solar (VOS) Policy Issues:

- Replacement for Net Metering Program
- Grandfathering existing registered NEM customers
  - Allow customers who own system to recover investment
  - Phase in VOS rates over an extended time period
- GPA files for PUC approval:
  - Reassessed VOS rates each LEAC for Avoided Energy Value
  - Reassessed VOS rates for other VOS components
    - Annually
    - Periodically over a set number of years
    - When GPA's generation mix changes

Value of the Grid to NEM Customers:

- NEM customers receive services from the grid including:
  - Use the grid to sell power (get credit at full retail rate for excess production)
  - Use the grid to energize their homes at night
  - Frequency regulation absorbed by grid for intermittencies
  - Reactive power supply
  - Voltage regulation
  - Stand-by power on overcast days when the sun does not shine
- Monthly fixed charge of $15 does not recover cost to serve from grid
  - Most of GPA fixed cost is recovered in the energy use (kWh) rate component which is typically zero for NEM customers

GPA Value of Solar from an Avoided Cost Perspective

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Cost Category	FY 2017	Cost per kWh Sold	GPA Avoided Cost ($/kWh)
Generation + IPP Costs			
Other Production - Fixed O&M	$ 17,783,917	$ 0.0110	
IPP Costs - Fixed O&M	$ 16,958,770	$ 0.0105	
IPP Costs - Variable O&M	$ 2,976,564	$ 0.0018	$ 0.0018
Transmission & Distribution	$ 11,703,969	$ 0.0073	
Admin and General			
Payroll, benefits, retirement	$ 12,862,412	$ 0.0080	
Insurance	$ 7,252,304	$ 0.0045	
Contracts	$ 4,024,943	$ 0.0025	
Utilities	$ 1,817,009	$ 0.0011	
Office supplies & Others	$ 844,549	$ 0.0005	
Customer Accounting	$ 4,756,215	$ 0.0030	
Debt Service	$ 56,937,000	$ 0.0354	
DIPs/Others	$ 26,731,628	$ 0.0166	
Total (Base Rate Revenues)	$ 164,648,289	$ 0.1023	
Fuel Costs	$ 181,688,906	$ 0.1128	
Fuel Consumption, plus the under recovery of $15.3 M)	$ 165,692,714	$ 0.1029	$ 0.1029
Fuel Handling	$ 7,128,512	$ 0.0044	
Renewables	$ 8,862,280	$ 0.0055	
Total	346,332,795	$ 0.2151	
Energy losses at 3.5%		$ 0.0054	$ 0.0054
Environmental cost		$ 0.000089	$ 0.000089
Total Avoided Cost			$ 0.1102
Average cost in 2017 per kWh		$ 0.2151	$ 0.2151
Credit Beyond Avoided Cost			$ 0.1049

Based on the illustration above the overpayment that GPA pays to NEM customers translates to $3M per year over and above the avoided cost based on what GPA currently pays NEM customers ($.21 vs. $.1049)

The GM also talked about energy storage. GPA will soon have new 40MW energy storage system that will be commissioned in Oct. 2019. GPA can provide energy storage at the cost illustrated below:

FY2019	
Total KWH Sales Projected:	1,610,093,011
ESS Annual Debt Service & O&M:	$ 2,829,348
$/kWh:	$0.0018

In summary Net Metering was established 13 years ago in 2004. Substantial Changes has occurred on GPA delivery cost and more changes expected by 2022. Customer Owned NEM System recovers its investment within 5 to 8 years from installation at GPA full Retail Rate Credit. Customer Owned NEM System recovers its investment within 8 to 16 years from installation at GPA LEAC Avoided Cost Rate Credit. It appears Zero Down Customers with 2.9% escalators will incur higher cost over the life of their 25 year contract

Managements recommendation includes:
1. CCU approve a GPA filing as shown herein at its July/August 2018 Meeting
2. Recommend an implementation plan for billing NEM customers on net billing: Buy All/Sell All or similar billing models
3. GPA files with GPUC for adjustment of net metering credits from retail to avoided cost
4. For existing NEM Customers, implement a Grandfather phase-in approach over 5 to 8 years to the GPA avoided cost credit. Adjustments for LEAC, line loss and variable cost changes done annually.
5. For future NEM customers, credit set at GPA avoided cost

In discussion it was determined to have another NEM work session to present management's recommendation to the public allowing them an opportunity to ask clarifying questions.

ACTION: The Chairman asked GM Benavente to have a public meeting at beginning of July before the work sessions. He suggested to put a link to GPA's recommendation in all 44,000 customers billing statement in July and to have the recommendation in the website.

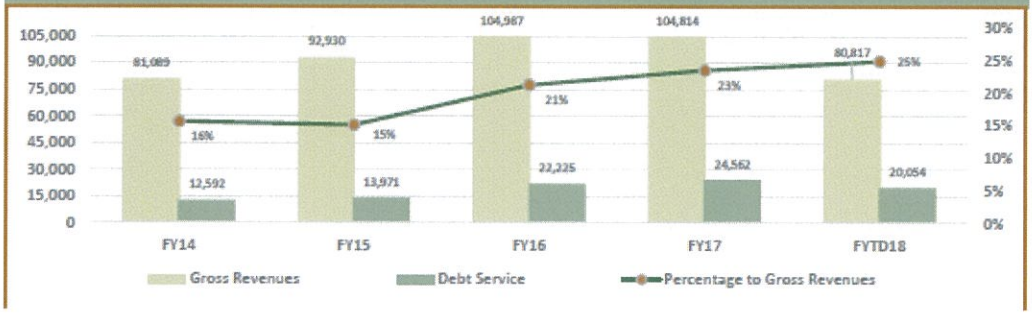
4.2.2 Financials

FYTD June 2018 Budget vs Actual ($000)

Category	Description	Budget FYTD18	Actual FYTD18	Variance
Rate Based Revenues	Water	$53,474	$50,921	($2,552)
	Wastewater	29,896	29,557	(339)
	Total	83,370	80,479	(2,891)
Operations & Maintenance	Salaries & Benefits	18,012	14,849	(3,163)
	Power	9,522	10,931	1,409
	Water Purchases	6,490	6,811	321
	A&G	9,070	8,010	(1,061)
	Contractual	3,939	3,402	(537)
	Total	$63,392	$60,345	($3,047)

Key Financial Ratios ($000)		
Category	**FY18**	**FY17**
Accounts Payable $$/Days	$4,342 / 46 days	$5,390 / 59 days
Accounts Receivable $$/Days	$15,848 / 59 days	$15,451 / 51 days
Days Cash On Hand	156 days	184 days
Annual Debt Service (Revenue Bonds)	$26,739	$24,563
Debt Service Coverage (Bond/PUC)	1.74 / 2.16	1.98 / 2.44

Debt as a Percent to Gross Revenue

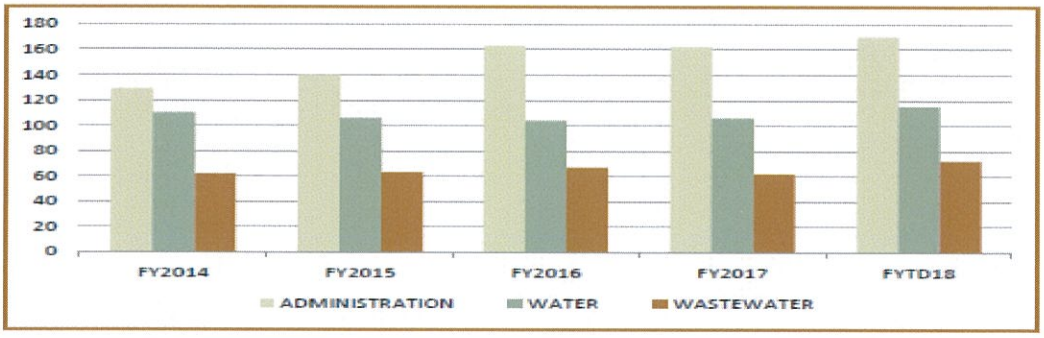


Top Ten Largest Water and Wastewater Customers – June 2018

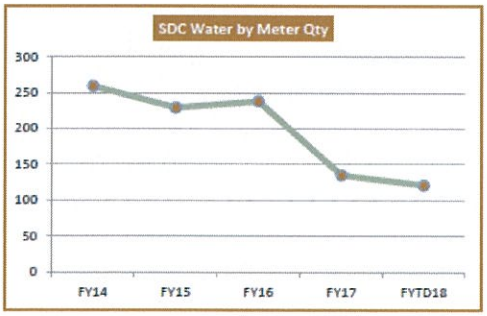
Water			Wastewater		
Customer Name	FYTD18 Revenues	% of Total	Customer Name	FYTD18 Revenues	% of Total
1) MDI GUAM CORPORATION/LEOPALACE	$985,874	1.94%	1) AIR FORCE DOD	$2,700,025	9.12%
2) PACIFIC ISLANDS CLUB	909,167	1.79%	2) NAVY DOD	1,755,393	5.93%
3) HOTELS OF THE MARIANAS INC	739,619	1.45%	3) HOTELS OF THE MARIANAS INC	790,900	2.67%
4) HYATT	669,134	1.31%	4) HYATT	716,318	2.42%
5) HOTEL NIKKO GUAM	631,022	1.24%	5) HOTEL NIKKO GUAM	674,248	2.28%
6) GUAM REEF HOTEL INC	615,987	1.21%	6) GUAM REEF HOTEL INC	659,228	2.23%
7) SHERATON LAGUNA GUAM RESORT	569,039	1.12%	7) SHERATON LAGUNA GUAM RESORT	608,798	2.06%
8) MDI GUAM CORPORATION/WESTIN	494,833	0.97%	8) MDI GUAM CORPORATION/WESTIN	529,088	1.79%
9) OUTRIGGER GUAM RESORT	478,263	0.94%	9) OUTRIGGER GUAM RESORT	512,420	1.73%
10) GOODWIND DEVELOPMENT CORP	466,501	0.92%	10) GOODWIND DEVELOPMENT CORP	497,524	1.68%
Total	$6,559,440	12.89%	Total	$9,443,943	31.91%

FTE by Major Division

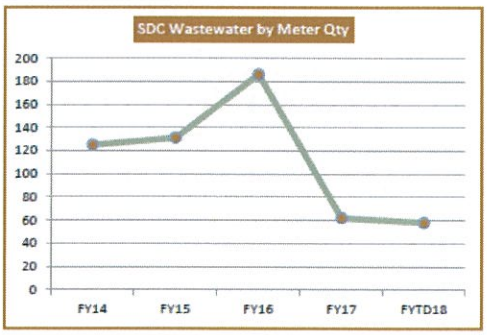
DIVISION	FY2014	FY2015	FY2016	FY2017	FYTD18
ADMINISTRATION	129	140	163	162	170
WATER	110	106	104	106	115
WASTEWATER	62	63	67	62	72
TOTAL NUMBER OF STAFF	301	309	334	330	357
Gross Salaries & Wages (5000)	15,585	17,590	16,008	16,963	12,488
Water Customers	41,702	41,274	41,858	42,181	42,863
Staff to Customers Ratio	0.72%	0.75%	0.80%	0.78%	0.83%



SDC Water & Wastewater (Meter Quantity)



Actual Meter Sizes (Inches)	FY 2014	FY 2015	FY 2016	FY 2017	FYTD18
5/8 x 3/4	248	220	239	129	113
1	5	5	7	2	1
1 1/2	1	1	1	1	3
2	3	2	4	2	3
3	1	-	1	-	-
4	-	1	-	-	1
6	-	-	-	1	-
8	1	-	-	-	-
10	-	-	-	-	-
Total SDC by Water	259	229	252	135	121



Actual Meter Sizes (Inches)	FY 2014	FY 2015	FY 2016	FY 2017	FYTD18
5/8 x 3/4	115	124	179	58	50
1	4	3	2	-	1
1 1/2	1	1	1	1	3
2	3	2	3	2	3
3	1	-	1	-	-
4	-	1	-	-	1
6	-	-	-	1	-
8	1	-	-	-	-
10	-	-	-	-	-
Total SDC by Wastewater	125	131	186	62	58

4.2.3 Relative to Generation Financing

Relative to the financing of the new 180MW power plant, the Chairman said the current policy as adopted is to build, operate and transfer (BOT) with an IPP and the GM is moving forward with this concept in the bid specs so the Commission cannot let this matter go unresolved much longer. At the July meeting the CCU will meet (with exception of Comm. Bamba, who has recused himself), and debate / resolve this matter at that time.

4.2.4 Resolution 2018-11 Levelized Energy Adjustment Clause (LEAC)

The objective of the Levelized Energy Adjustment Clause (LEAC) rate is to recover the cost of fuel and authorized fuel related expenses to the extent that it does not cause extraordinary hardships on GPA customers. In the upcoming LEAC period, we are proposing not to change the current LEAC rate of $0.154242/kWh, however if the price of fuel increased above the estimated $77.13 per barrel, GPA will petition PUC for a new LEAC rate effective November 1, 2018.

The projected under-recovery for the LEAC period with no change to the rate is $10.1M by the end of the LEAC period between August 1, 2018 to January 31, 2019. The funding source is the LEAC surcharge imposed on all ratepayers with the exception of the Navy. The Navy is billed on actual fuel cost basis each month.

Leaving the rate as is means GPA will delay some planned project. The reason for not increasing rate is to try to mitigate some of the impact. It is not a free ride and cannot go on forever and the public needs to understand this. Chairman Sanchez said historically under recovery has been greater than 10M. GPA can tolerate this for now and is willing to hold the rate status quo between now and January 31st.

Comm. Bamba motioned to approve Resolution 2018-22 second by Comm. Guthertz. There was no further discussion or objection and the motion passed unanimously.

4.2.5 Resolution 2018-12 Relative to Hyundai RFO Fuel Contract Extension

The Guam Power Authority's current contract for the Supply of Residual Fuel Oil No.6 is expiring in August 31, 2018. Solicitation for a new supplier is in progress and award of the contract is anticipated to be in September 2018.

An extension of the current contract for 3 months is necessary to allow the supplier for the new contract sufficient time for mobilization. Residual Fuel Oil No.6 will be supplied to the baseload plants - Cabras 1&2 and MEC 8&9. The 3-month contract extension shall commence on or September 01, 2018 and will expire on November 30, 2018. **It is** estimated to exceed $1.5M requiring prior approval from the PUC and will be funded by fuel revenue funds. The IFB solicitation is in progress. Award of contract is anticipated to be in August 2018.

Comm. Sanchez motioned to approve Resolution 2018-12 second by Comm. Guthertz. There was no further discussion or objection and the motion passed.

4.2.6 Resolution 2018-13/GWA Resolution No. 34-FY2018 Change Order for the GPWA SCADA System Contract to Include the Ugum Surface Water Treatment Plant SCADA integration Upgrade

Resolution 2018-13 / GWA Resolution 34-FY2018 was discussed and voted upon under GWA Section 4.1.3 of these Minutes. For the record, the vote was repeated accordingly:

Comm. Bamba motioned to approve GWA Resolution 34-FY2018 / GPA Resolution 2018-13 second by Comm. Santos. There was no further discussion or objection and the motion passed.

5. OLD BUSINESS - None

6. ANNOUNCEMENTS

6.1 Next CCU Meetings

The Chairman announced that the next meeting would be the GWA work session on July 17, GPA work session on July 19 and the regular monthly CCU meeting on July 24.

He also mentioned that Legal Counsel Botha has recommended an item for discussion in Executive Session and asked for a motion.

Comm. Bamba motioned to move the meeting to Executive Session second by Comm. Guthertz. There was no objection and the meeting moved to executive session.

The Chairman called for a 5-minute break. It was 6:58 p.m.

7. EXECUTIVE SESSION

Executive Session began at 7:06 p.m.

7.1 Personnel Matter

This matter was discussed.

8. ADJOURNMENT

With no further business to discuss, the meeting adjourned at 8:00 p.m.

\\s\\
bls
Attested:

JOSEPH T. DUENAS, Chairman

J. GEORGE BAMBA, Secretary

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

GPA RESOLUTION NO. 2018-14
GWA RESOLUTION NO. 38-FY2018

CCU CYBERSECURITY POLICIES AND PROCEDURES

WHEREAS, the CCU instituted the Cybersecurity Committee in 2017 to serve as the advisory and oversight group regarding information technology, infrastructure, and cybersecurity. The committee's responsibilities include the Guam Power Authority and Guam Waterworks Authority (GPWA) information technology systems, which includes policies, controls, risk mitigation, and infrastructure asset protection; and

WHEREAS, a network security assessment recommended that GPWA develop common objectives and controls by establishing common policies, procedures, and business processes to manage risks; and

WHEREAS, the Cybersecurity initiative resulted in the formation of guidelines to ensure consistency and adequate protection and safeguards to GPWA systems, and resulted in the Password Creation and Protection Policy, the Computer, Software, License, E-mail, Internet, and Standard of Conduct policy, and the Network and Data System Access Policy.

NOW THEREFORE, BE IT RESOLVED, by the Consolidated Commission on Utilities, as follows:

1. The Guam Power Authority and Guam Waterworks Authority General Managers are hereby authorized to implement and update the Cybersecurity policies for GPWA as required, and keep the CCU Commissioners informed at all times.

RESOLVED, that the Chairman of the Commission certifies and the Secretary of the Commission attests the adoption of this Resolution.

DULY and REGULARLY ADOPTED this 24th day of July,2018.

Certified by:

JOSEPH T. DUENAS
CHAIRMAN

Attested by:

J. GEORGE BAMBA
SECRETARY

I, J. GEORGE BAMBA, Secretary for the Consolidated Commission on Utilities do hereby certify that the foregoing is a full, true, and correct copy of the resolution duly adopted at a regular meeting of the members of Guam's Consolidated Commission on Utilities, duly and legally held at a place properly noticed and advertised at which meeting a quorum was present and the members who were present voted as follows:

Ayes: 5

Nays: 0

Absent: 0

Abstain: 0



GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUAHAN
P.O.BOX 2977 • AGANA, GUAM U.S.A. 96932-2977

Issues for Decision

Resolution No. GPA 2018-14 & GWA 38-FY2018:

Relative to CCU CYBERSECURITY POLICIES AND PROCEDURES

What is the project's objective and is it necessary and urgent?

The CCU instituted the Cybersecurity Committee in 2017 to serve as the advisory and oversight group regarding information technology, infrastructure, and cybersecurity. The committee's responsibilities include the Guam Power Authority and Guam Waterworks Authority (GPWA) information technology systems, which includes policies, controls, risk mitigation, and infrastructure asset protection. A network security assessment recommended that GPWA develop common objectives and controls by establishing common policies, procedures, and business processes to manage risks.

The Cybersecurity initiative resulted in the formation of guidelines to ensure consistency and adequate protection and safeguards to GPWA systems, and resulted in the Password Creation and Protection Policy, the Computer, Software, License, E-mail, Internet, and Standard of Conduct policy, and the Network and Data System Access Policy.

Where is it located or covers?

This will cover all GPWA infrastructure, assets and information technology systems.

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

RESOLUTION NO. 39-FY2018

RELATIVE TO THE CREATION OF THE UTILITY LABORATORY TECHNICIAN SERIES OF POSITIONS

WHEREAS, under 12 G.C.A. § 14105, the Consolidated Commission on Utilities ("CCU") has plenary authority over financial, contractual and policy matters relative to the Guam Waterworks Authority ("GWA"); and

WHEREAS, the Guam Waterworks Authority ("GWA") is a Guam Public Corporation established and existing under the laws of Guam; and

WHEREAS, the GWA General Manager requests the CCU to approve the creation of the Utility Laboratory Technician series of positions; and

WHEREAS, the GWA General Manager requests the CCU to approve the classification standards of the Utility Laboratory Technician series of positions in the classified status; and

WHEREAS, Public Law 28-112 and 4 GCA §6303 (d) authorizes the creation of positions in Autonomous Agencies and Public Corporations; and

WHEREAS, GWA Personnel Rules and Regulations as amended by Public Law 28-159 Section 3 (C) authorizes the CCU to amend, modify or add a position to the list of certified, technical and professional positions;

NOW BE IT THEREFORE RESOLVED, the Consolidated Commission on Utilities, as the Governing Body of the Guam Waterworks Authority, does hereby approve and authorize the following:

1. The recitals set forth above hereby constitute the findings of the CCU.
2. The creation and the job classification standards for the Utility Laboratory Technician series of positions in the classified status is hereby approved and attached herein as Exhibit A.
3. The Utility Laboratory Technician series of positions is hereby added to the certified, technical and professional list of positions at GWA.

RESOLVED, that the Chairman certified and the Board Secretary attests to the adoption of this Resolution.

DULY AND REGULARLY ADOPTED, this 24th day of July, 2018.

Certified by:

JOSEPH T. DUENAS
Chairperson

Attested by:

J. GEORGE BAMBA
Secretary

SECRETARY'S CERTIFICATE

I, **J. George Bamba**, Board Secretary of the Consolidated Commission on Utilities as evidenced by my signature above do hereby certify as follows:

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

AYES: 5

NAYS: 0

ABSTENTIONS: 0

ABSENT: 0

UTILITY LABORATORY TECHNICIAN I

NATURE OF WORK:

Utility Laboratory Technician I performs routine technical laboratory duties after initial training and work under closer supervision on a variety of semi complex developmental assignments.

Employees in this class assist in the collection and perform routine analysis of water and wastewater samples for chemical and micro-biological content in accordance with Standard Methods for the Examination of water and wastewater, the Safe Drinking Water Act and the Clean Water Act.

ILLUSTRATIVE EXAMPLES OF WORK: (Any one position may not include all the duties listed, nor do the examples cover all the duties which may be performed)

Provides routine support and assistance to laboratory personnel in processing and field testing of various laboratory duties.

Prepares samples for field testing, sterilizes equipment, basic calibration of equipment as recommended and general cleaning duties.

Conducts routine maintenance work of equipment to ensure working order of equipment and ensures necessary supplies are available to perform field testing.

Performs routine work collecting samples from the distribution lines, deep well and surface water sources.

Performs routine work collecting water samples from customer complaints of dirty water, bad odor, or high chlorine contents.

Assists in disinfecting tankers and new water lines.

Performs routine work testing water for bacteriological contamination and chlorine residual.

Performs routine work collection of samples of off shore, shoreline, wastewater treatment plant influent/effluent and various rivers as well as any discharges into the rivers as required.

Conducts routine field tests on potable water samples for chemical analysis such as: Calcium and Total Hardness, Chlorides, Alkalinity, Conductivity, pH, Temperature, Turbidity and Bacteria content.

Conducts routine field tests on Settleable, Suspended and Total Solids, ph Fecal Coliform, E-Coli, Enterococci and Biochemical Oxygen Demand.

Logs data into assigned logbooks and inputs required information into the LIMS (Laboratory Information Management System) computer program daily, after initial training.

Creates work orders for daily assigned tasks.

Assists in minor repair of laboratory equipment.

Performs related duties as assigned.

MINIMUM KNOWLEDGE, ABILITIES AND SKILLS:

Knowledge of laboratory testing procedures, principles, techniques, terminology, protocols and equipment.

Knowledge of basic laboratory equipment maintenance, calibration and troubleshooting and sterilization.

Knowledge of laboratory safety protocols, including, but not limited to, use of personal protective equipment (PPE's), proper laboratory techniques, disposal of bio-hazard, etc.

Knowledge of basic of LIMS (Laboratory Information Management System) computer program.

Ability to learn and apply basic principles of the physical and biological sciences, as applied to particular laboratory assignment.

Ability to operate and conduct basic maintenance of laboratory equipment.

Ability to maintain records and prepare reports.

Ability to work effectively with the public and employees.

Ability to communicate effectively, orally and in writing.

Ability to follow specific procedures and observe and record results accurately.

Ability to work with computer systems and multiple software programs as required, according to company and departmental procedures.

MINIMUM EXPERIENCE AND TRAINING;

A. High School Diploma or successful completion of General Education Development (GED) test or any equivalent education high school program and successful completion of 18 credit hours in biology, chemistry, or closely related field and One (1) year of experience in a laboratory work; or

B) Any equivalent combination of experience and training which provides the minimum knowledge, abilities and skills.

ESTABLISHED: July 2018

PAYGRADE: MINIMUM: F3-A $30,811
MAXIMUM: F4-A $32,062

JOB EVALUATION POINTS: 469

JOSEPH T. DUENAS, CHAIRMAN
CONSOLIDATED COMMISSION ON UTILITIES

UTILITY LABORATORY TECHNICIAN II

NATURE OF WORK:

Utility Laboratory Technician II performs semi-complex technical laboratory duties independently after initial training and works under closer supervision on a variety of complex developmental assignments.

Employees in this class collect and perform semi-complex analysis of water and wastewater samples for chemical and micro-biological content in accordance with Standard Methods for the Examination of water and wastewater, the Safe Drinking Water Act and the Clean Water Act.

ILLUSTRATIVE EXAMPLES OF WORK: (Any one position may not include all the duties listed, nor do the examples cover all the duties which may be performed)

Provides semi-complex support and assistance in processing samples for analysis, sterilizes equipment, more intricate calibration of equipment as recommended.

Maintains working order of equipment and supplies necessary to perform analysis of samples to include minor repairs on laboratory equipment when needed.

Performs semi-complex work collecting samples from the distribution lines, deep well and surface water sources.

Collects semi-complex water samples from customer complaints of dirty water, bad odor, or high chlorine contents.

Disinfects tankers and new water lines to include determining the amount of chlorine needed to provide a certain dosage.

Performs semi-complex analysis water for bacteriological contamination and chlorine residue.

Collects semi-complex sample collection for off shore, shoreline, wastewater treatment plant influent/effluent and various rivers as well as any discharges into the rivers as required.

Performs semi-complex analysis of potable water samples and analyzes for chemical analysis such as: Calcium and Total Hardness, Chlorides, Alkalinity, Conductivity, pH, Temperature, Turbidity and Bacteria content.

Performs semi-complex analysis of Settleable, Suspended and Total Solids, ph Fecal Coliform, E-Coli, Enterococci and Biochemical Oxygen Demand.

Performs semi-complex, non-routine chemical, biological or physical test and analysis as required in control operations of water and sewage.

Maintains records of all analytical work according to Laboratory Quality Assurance (QA) and Quality Control (QC) Plans and Standard Operating Procedures. Ensures all data is in compliance with the requirements of pre-schedule intervals.

Maintains various laboratory records and prepares reports. Inputs required information into the LIMS (Laboratory Information Management System) computer program.

Creates work orders for daily assigned tasks.

Repairs laboratory equipment as needed.

Performs related duties as assigned.

MINIMUM KNOWLEDGE, ABILITIES AND SKILLS:

Knowledge of laboratory testing procedures, principles, techniques, terminology, protocols and equipment in a water utility.

Knowledge of laboratory equipment maintenance, calibration and troubleshooting and sterilization used in a water utility.

Knowledge of laboratory safety protocols, including, but not limited to, use of personal protective equipment (PPE's), proper laboratory techniques, disposal of bio-hazard, etc. in a water utility.

Knowledge of basic principles of the physical and biological sciences, as applied to particular laboratory assignment in a utility.

Knowledge of computer systems and multiple software programs as required, according to company and departmental procedures used in a water utility.

Knowledge of LIMS (Laboratory Information Mana

gement System) computer program.

Ability to maintain records and prepare reports.

Ability to work effectively with the public and employees.

Ability to communicate effectively, orally and in writing.

Ability to make decisions in accordance with appropriate program guidelines

Ability to follow specific standard operating procedures and observe and record results accurately.

MINIMUM EXPERIENCE AND TRAINING:

A. Graduation from a recognized college or university with an Associate's degree in science or water technology with courses in microbiology, chemistry or related natural science; ***and*** two (2) years of experience as a Utility Laboratory Technician I; or

B) Any equivalent combination of experience and training which provides the minimum knowledge, abilities and skills.

ESTABLISHED: July 2018

PAYGRADE: MINIMUM: I2-D $39,476
MAXIMUM: I3-D $41,079

JOB EVALUATION POINTS: 576

JOSEPH T. DUENAS, CHAIRMAN
CONSOLIDATED COMMISSION ON UTILITIES

UTILITY LABORATORY TECHNICIAN LEADER

NATURE OF WORK:

Utility Laboratory Technician Leader performs complex technical laboratory duties independently.

Employees in this class collect and analyze more complex analysis of water and wastewater samples for chemical and micro-biological content in accordance with Standard Methods for the Examination of water and wastewater, the Safe Drinking Water Act and the Clean Water Act.

Employees often serves as team or group leader over less experienced technical laboratory staff.

ILLUSTRATIVE EXAMPLES OF WORK: (Any one position may not include all the duties listed, nor do the examples cover all the duties which may be performed)

Leads the processing of samples for analysis, sterilizes equipment, more intricate calibration of equipment as recommended and general cleaning duties.

Maintains working order of equipment and supplies necessary to performs analysis for samples to include minor repairs on laboratory equipment when needed.

Schedules the use of equipment, washing of glassware and other instruments and preparation of media, solutions, and other materials.

Leads the collection of samples from the Distribution lines, deep well and surface water source.

Leads the collection of water samples from consumer's complaints of dirty water, bad odor, or high chlorine content.

Maintains inventory, establishes supply levels and orders chemicals, equipment, and supplies.

Assists with research or study involving use of various equipment.

Schedules all required QA/QC and safety checks as required.

Disinfects tankers and new water lines to include determining the amount of chlorine needed to provide a certain dosage.

Analyzes water for bacteriological contamination and chlorine residue.

Leads in the collection of sample for off shore, shoreline, wastewater treatment plant influent/effluent and various rivers as well as any discharges into the rivers as required.

Analyzes potable water samples and analyzes for chemical analysis such as: Calcium and Total Hardness, Chlorides, Alkalinity, Conductivity, pH, Temperature, Turbidity and Bacteria content.

Analyzes oil and grease, Settleable, Suspended and Total Solids, ph Fecal Coliform, E-Coli, Enterococci and Biochemical Oxygen Demand.

Performs complex analysis, non-routine chemical, biological or physical test and analysis as required in control operations of water and sewage.

Leads and conducts training of other lower laboratory technicians.

Maintains records of all analytical work according to the Laboratory Quality Assurance (QA) and Quality Control (QC) Plans and Standard Operating Procedures. Ensures all data is in compliance with the requirements of pre-schedule intervals.

Maintains various laboratory records and prepares reports. Inputs required information into the LIMS (Laboratory Information Management System) computer program.

Creates work orders for daily assigned tasks.

May assist and participate in the budget preparation process.

Leads in the repair of laboratory equipment as needed.

Performs related duties as assigned.

MINIMUM KNOWLEDGE, ABILITIES AND SKILLS:

Knowledge of laboratory testing procedures, principles, techniques, terminology, protocols and equipment of a variety of standardized laboratory tests.

Ability to perform difficult laboratory tests requiring some technical judgment in determining and using proper procedures and interpreting results.

Knowledge of laboratory equipment maintenance, calibration and troubleshooting and sterilization.

Knowledge of laboratory safety protocols, including, but not limited to, use of personal protective equipment (PPE's), proper laboratory techniques, disposal of bio-hazard, etc.

Knowledge of principles of the physical and biological sciences, as applied to particular laboratory assignment.

Knowledge of computer systems and various software/application programs as required, according to company and departmental procedures.

Knowledge of LIMS (Laboratory Information Management System) computer program.

Ability to maintain records and prepare reports.

Ability to lead the work of others.

Ability to work effectively with the public and employees.

Ability to communicate effectively, orally and in writing.

Ability to make decisions in accordance with appropriate program guidelines

Ability to follow specific procedures and observe and record results accurately.

MINIMUM EXPERIENCE AND TRAINING:

A. Graduation from a recognized college or university with an Associate's degree in science or water technology with courses in microbiology, chemistry or related natural science; ***and*** two (2) years of experience as a Utility Laboratory Technician II; or

B) Any equivalent combination of experience and training which provides the minimum knowledge, abilities and skills.

ESTABLISHED: July 2018

PAYGRADE: MINIMUM: J5-C $49,327
MAXIMUM: J6-C $51,330

JOB EVALUATION POINTS: 711

JOSEPH T. DUENAS, CHAIRMAN
CONSOLIDATED COMMISSION ON UTILITIES

UTILITY LABORATORY TECHNICIAN SUPERVISOR

NATURE OF WORK:

Utility Laboratory Technician Supervisor performs supervisory laboratory work in the water and/or wastewater utility.

Employees in this class assesses complex techniques and methodologies in collecting and analyzing water and wastewater samples for chemical and micro-biological content in accordance with Standard Methods for the Examination of water and wastewater, the Safe Drinking Water Act and the Clean Water Act.

Employees in this class supervise a unit performing a variety of complex technical laboratory duties.

ILLUSTRATIVE EXAMPLES OF WORK: (Any one position may not include all the duties listed, nor do the examples cover all the duties which may be performed)

Supervises the laboratory personnel in processing and analysis of various laboratory duties in a water and/or wastewater utility.

Supervises the processing of samples for analysis, sterilizes of equipment and more intricate calibration of equipment and general cleaning duties in a water and/or wastewater utility.

Supervises the maintenance of equipment and supplies necessary to performs analysis for samples to include minor repairs on laboratory equipment when needed.

Supervises the collection of samples from the Distribution lines, deep well and surface water source.

Supervises the collection of samples from consumer complaints of dirty water, bad odor, or high chlorine content, etc.; diagnoses issues and coordinating with other divisions to help determine the cause and solve the problem.

Supervises the disinfection of tankers and new water lines to include determining the amount of chlorine needed to provide cartage dosage in a water and/or wastewater utility.

Supervises the analysis of water for bacteriological contamination and chlorine residue in a water and/or wastewater utility.

Supervises the collection of sample for off shore, shoreline, wastewater treatment plant influent/effluent and various rivers as well as any discharges into the rivers as required in a water and/or wastewater utility.

Supervises the analysis of potable water samples and analyzes for chemical analysis such as: Calcium and Total Hardness, Chlorides, Alkalinity, Conductivity, ph, Temperature, Turbidity and Bacteria content.

Supervises the analysis of Settleable, Suspended and Total Solids, ph Fecal Coliform, E-Coli, Enterococci and Biochemical Oxygen Demand.

Conducts research on new technologies or methods that might be beneficial or cost effective. This may include updating to new equipment and supplies necessary to perform analysis.

Conducts training of other lower level Utility Laboratory Technicians.

Maintains records of all analytical work according to Laboratory Quality Assurance (QA) and Quality Control (QC) Plans and Standard Operating Procedures. Ensures all data is in compliance with the requirements of pre-schedule intervals.

Reviews various laboratory records and reports into the LIMS (Laboratory Information Management System) computer program.

Reviews and validates daily chain of custody for field analysis in LIMS (Laboratory Information Management System) for water and wastewater.

Supervises the processes a number of procedures including samples for analysis, sterilizes equipment, calibration of equipment as recommended and general cleaning duties.

Supervises the schedules use of equipment, washing of glassware and other instruments and preparation of media, solutions, and other materials.

Supervises the work of lower level technicians performing various laboratory maintenance, preparation of media and specimens, and participates in performing standardized analysis.

Supervises the storage areas and dispenses of materials. Supervises the inventory and establishes supply levels and orders chemicals, equipment, and supplies.

Participates and submits recommendations in the section's budget process.

Participates in the research or study involving use of various equipment.

Supervises more complex, non-routine chemical, biological or physical test and analysis as required in control operations of water and sewage.

Performs related duties as assigned.

MINIMUM KNOWLEDGE, ABILITIES AND SKILLS:

Knowledge of laboratory testing procedures, principles, techniques, terminology, protocols and equipment of a variety of standardized laboratory tests.

Knowledge of laboratory equipment maintenance, calibration and troubleshooting and sterilization.

Knowledge of laboratory safety protocols, including, but not limited to, use of personal protective equipment (PPE's), proper laboratory techniques, disposal of bio-hazard, etc.

Knowledge of principles of the physical and biological sciences, as applied to particular laboratory assignment.

Extensive Knowledge of LIMS (Laboratory Information Management System) computer program.

Knowledge of computer systems and multiple software programs as required, according to company and departmental procedures.

Knowledge to perform complex laboratory tests requiring technical judgment in determining and using proper procedures and interpreting results.

Ability to maintain records and prepare reports.

Ability to supervise the work of others.

Ability to work effectively with the public and employees.

Ability to communicate effectively, orally and in writing.

Ability to make decisions in accordance with appropriate program guidelines

Ability to follow specific procedures and observe and record results accurately.

MINIMUM EXPERIENCE AND TRAINING;

Graduation from a recognized college or university with a Bachelor's degree in biology, chemistry, microbiology or closely related field; and 4 (four) years as a Utility Laboratory Technician Leader.

ESTABLISHED: July 2018

PAYGRADE: MINIMUM: K5-D $60,283
MAXIMUM: K6-D $62,731

JOB EVALUATION POINTS: 837

JOSEPH T. DUENAS, CHAIRMAN
CONSOLIDATED COMMISSION ON UTILITIES

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

RESOLUTION NO. 40–FY2018

RELATIVE TO CONTRACTS APPROVAL FOR THE ROUTE 4 RELIEF SEWER LINE REHABILITATION AND REPLACEMENT PROJECT S15-006-EPA

WHEREAS, under 12 G.C.A. § 14105, the Consolidated Commission on Utilities ("CCU") has plenary authority over financial, contractual and policy matters relative to the Guam Waterworks Authority ("GWA"); and

WHEREAS, the Guam Waterworks Authority is a Guam Public Corporation established and existing under the laws of Guam; and

WHEREAS, GWA has received a grant from USEPA under the State Revolving Fund program to improve the sewer collection system, which included over 4,200 linear feet of gravity sewer line along Route 4 from the bottom of the hill in Agana to Route 1, and along Route 1 to the Agana Main Pump Station; and

WHEREAS, the gravity sewer line noted above has a section that has been inactive since its original installation due to incomplete construction work, and sections that are in need of repair due to high infiltration and inflow (I/I), and the intent of this project is to rehabilitate, repair or replace these sections along with associated roadway surface improvements; and

WHEREAS, GWA and USEPA agree that efforts to rehabilitate, repair or replace these sewer lines are necessary to provide sufficient capacity, and properly maintain and operate the sewer collection system, and the first step in doing so is through scope of services that includes general civil engineering, geotechnical engineering, and archeological investigation for wastewater collection system evaluation, analysis and design; and

WHEREAS, in July 2015 GWA Management began the procurement process to find a consulting engineering team to design the sewer rehabilitation and replacement, and via Resolution No. 16-FY2016, approved by the CCU in January 2016, GWA Management was authorized to enter into a contract with AECOM to design the sewer rehabilitation and replacement; and

WHEREAS, in February of 2016 GWA Management entered into a contract with AECOM to design the sewer rehabilitation and replacement, and in May of 2017 the final design was completed; and

WHEREAS, on August 25, 2017, GWA advertised the Invitation to Bid (IFB-10-ENG-2017) for the Route 4 Relief Sewer Line Rehabilitation and Replacement soliciting bid proposals from experienced and responsive bidders to repair and/or replace segments of gravity sewer lines and manholes subjected to I&I in the village of Hagatna, but ultimately GWA received no bids at that time; and

WHEREAS, following the initial Invitation to Bid, GWA discussed with contractors the challenges that may have prevented them from bidding, reviewed all the available information, and split the contract into two separate parts, a Schedule A and a Schedule B; and

WHEREAS, on March 23, 2018, GWA advertised another Invitation to Bid (IFB-04-ENG-2018) for the Route 4 Relief Sewer Line Rehabilitation and Replacement soliciting bid proposals from experienced and responsive bidders to repair and/or replace segments of gravity sewer lines and manholes subjected to I&I in the village of Hagatna; and

WHEREAS, this project consists of furnishing all labor, tools, equipment and materials, necessary to install, replace, and repair sewer along Rt.4 and Rt.1, including coordination with GWA Wastewater Operations, GWA Engineering, the Construction Manager, the project Design Engineer, GWA's Program Management Office and the Department of Public Works; and

WHEREAS, IFB packages were obtained by multiple interested parties, from which GWA received bid proposals from three (3) parties (SEE EXHIBIT A – Abstract of Bids) before

the bid proposal deadline, with one (1) party submitting a proposal for only Schedule A, one (1) party submitting a proposal for only Schedule B, and one (1) party submitting a proposal for both Schedule A and B; and

WHEREAS, the project Design Engineer, in conjunction with GWA, analyzed the bid proposals received (SEE EXHIBIT B – Evaluation) on June 8, 2018 and determined that the bid proposal submitted by ProPacific Builder Corporation (PPBC) (SEE EXHIBIT C – ProPacific Bid) for Schedule A, and the bid proposal submitted by Insituform Technologies, LLC (Insituform) (SEE EXHIBIT D – Insituform Bid) for Schedule B, were the lowest responsive and responsible bids and met all the bid requirements set forth by GWA; and

WHEREAS, GWA Management finds both PPBC's bid proposal for Schedule A, and Insituform's bid proposal for Schedule B acceptable; and

WHEREAS, for Schedule A, PPBC's bid proposal in the amount of Three Million Four Hundred Seven Thousand Eight Hundred Forty-Eight Dollars ($3,407,848.00), plus a ten percent (10%) contingency of Three Hundred Forty Thousand Seven Hundred Eighty-Four Dollars and Eighty Cents ($340,784.80) to bring the authorized funding amount for Schedule A to a total of Three Million Seven Hundred Forty-Eight Thousand Six Hundred Thirty-Two Dollars and Eighty Cents ($3,748,632.80); and

WHEREAS, for Schedule B, Insituform's bid proposal in the amount of Three Million Nine Hundred Ninety-Eight Thousand Six Hundred Eighty-Eight Dollars ($3,998,688.00), plus a ten percent (10%) contingency of Three Hundred Ninety-Nine Thousand Eight Hundred Sixty-Eight Dollars and Eighty Cents ($399,868.80) to bring the authorized funding amount for Schedule B to a total of Four Million Three Hundred Ninety-Eight Thousand Five Hundred Fifty-Six Dollars and Eighty Cents ($4,398,556.80); and

WHEREAS, GWA Management seeks CCU approval of PPBC's bid proposal plus the 10% contingency for Schedule A of Three Million Seven Hundred Forty-Eight Thousand Six Hundred Thirty-Two Dollars and Eighty Cents ($3,748,632.80), and Insituform's bid proposal plus contingency for Schedule B of Four Million Three Hundred Ninety-Eight Thousand Five

Hundred Fifty-Six Dollars and Eighty Cents ($4,398,556.80), to bring the total authorized funding amount to Eight Million One Hundred Forty-Seven Thousand One Hundred Eighty-Nine Dollars and Sixty Cents ($8,147,189.60); and

WHEREAS, funding for this project will be from the USEPA State Revolving Fund and, if necessary, GWA Bond funds and System Development Charge funds applicable to the project intent; and

NOW BE IT THEREFORE RESOLVED, the Consolidated Commission on Utilities does hereby approve the following:

1. The recitals set forth above hereby constitute the findings of the CCU.
2. The CCU finds that the terms and conditions set by GWA relative to commencement of work activities are fair and reasonable and serve as a measure of Quality Assurance/Quality Control (QA/QC).
3. The CCU hereby authorizes the management of GWA to accept the bid proposals from "ProPacific Builder Corporation" and "Insituform Technologies, LLC." (EXHIBITS C and D)
4. The CCU hereby further authorizes the management of GWA to enter into a contract with "ProPacific Builder Corporation" in the amount of Three Million Four Hundred Seven Thousand Eight Hundred Forty-Eight Dollars ($3,407,848.00).
5. The CCU hereby further authorizes the management of GWA to enter into a contract with "Insituform Technologies, LLC" in the amount of Three Million Nine Hundred Ninety-Eight Thousand Six Hundred Eighty-Eight Dollars ($3,998,688.00).
6. The CCU hereby further approves the funding total for Schedule A of Three Million Four Hundred Seven Thousand Eight Hundred Forty-Eight Dollars ($3,407,848.00), plus a ten percent (10%) contingency of Three Hundred Forty Thousand Seven Hundred Eighty-Four Dollars and Eighty Cents ($340,784.80), and for Schedule B of Three Million Nine Hundred Ninety-Eight Thousand Six Hundred Eighty-Eight Dollars ($3,998,688.00), plus a ten percent (10%) contingency of Three Hundred Ninety-Nine Thousand Eight Hundred Sixty-Eight

Dollars and Eighty Cents ($399,868.80), for a total authorized funding amount of Eight Million One Hundred Forty-Seven Thousand One Hundred Eighty-Nine Dollars and Sixty Cents ($8,147,189.60).

7. The CCU hereby further approves the funding for this project will be from the USEPA State Revolving Fund and, if necessary, GWA Bond funds and System Development Charge Funds applicable to the project.
8. In the event funds other than SRF are used and they exceed One Million Dollars ($1,000,000.00), GWA is authorized to petition the PUC for approval.

RESOLVED, that the Chairman certified and the Board Secretary attests to the adoption of this Resolution.

DULY AND REGULARLY ADOPTED, this 24th day of July 2018.

Certified by:

JOSEPH T. DUENAS
Chairperson

Attested by:

J. GEORGE BAMBA
Secretary

SECRETARY'S CERTIFICATE

I, J. George Bamba, Board Secretary of the Consolidated Commission on Utilities as evidenced by my signature above do hereby certify as follows:

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

AYES: 5

NAYS: 0

ABSTENTIONS: 0

ABSENT: 0

GUAM WATERWORKS AUTHORITY
ABSTRACT OF BIDS

Exhibit A (1 of 1)

ORIGINAL

Project Name: **ROUTE 4 RELIEF SEWERLINE REHABILITATION AND REPLACEMENT (RE-BID)**

Bid Opening Date: May 29, 2018
Time: 3:00 PM

Project Number: S15-006-EPA IFB NO.: IFB-04-ENG-2018

	Qualified Bidders Name	Section A-5 Bid Bond	CERTIFICATIONS								Addendum				SCHEDULE A		SCHEDULE B		
			QS	NCA	EEO	NSF	SOC	WBD	MSA	SIB	1	2	3	4	BASE BID	ADDITIVE BID	BASE BID	ADDITIVE BID NO. 1	ADDITIVE BID NO. 2
1.	PRO PACIFIC BUILDER CORP.	Endurance Assurance Corporation 15% of total bid amount	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	$3,407,848.00	$150,000.00	no bid submitted	no bid submitted	no bid submitted
2.	CANTON CONSTRUCTION CORP.	no bid submitted																	
3.	GIANT CONSTRUCTION CORP.	no bid submitted																	
4.	INSITUFORM	Travelers Casualty & Surety Company 15% of bid amount	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	no bid submitted	no bid submitted	$3,998,688.00	$1,296,700.00 ~~$5,295,388.00~~	$35,000.00 ~~$5,330,388.00~~
5.	GRANITE CONSTRUCTION COMPANY	no bid submitted																	
6.	INFRATECH INT'L. LLC	no bid submitted																	
7.	CHI CONSTRUCTION INC.	no bid submitted																	
8.	HES MICRONESIA	no bid submitted																	
9.	CORE TECH/HDCC GUAM, LLC	Fidelity & Deposit Company of Maryland 15% of bid amount	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	$6,191,462.28	$20,542.67	$7,570,573.71	$799,818.94	$20,583.15
10.	BME & SONS	no bid submitted																	
	GWA Estimate																		

Bids Opened and Read by:
GLORIA O. BENSAN
(Name and Signature)

Tabulated By:
Nicole Quan
(Name and Signature)

GWA Procurement Representative:
Victoria Heacock
(Name and Signature)

Witnesses:
EMPSCO
Faustoto Tagam
EMPSco
PP&C

CTI
CHL

AECOM
414 W. Soledad Avenue
Suite 708
Hagåtña, GU 96932
www.aecom.com

671 477 8326/7 tel
671 472 8324 fax

Exhibit B (1 of 1)

June 8, 2018

The Guam Waterworks Authority
Thomas F. Cruz, P.E., Chief Engineer
Engineering Division
Gloria B. Nelson Public Service Building
688 Route 15, Mangilao, GU 96913

Subject: Bid Review and Recommendation for the Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-bid) Project, GWA Project No. S15-006-EPA, IFB No. IFB-04-ENG-2018.

Håfa Adai Tom,

The bids for this project were opened on May 29, 2018. Out of 10 bidders who expressed interest in the project, only 3 bid proposals were received and included ProPacific Builder Corporation (ProPacific), Insituform Technologies, LLC (Insituform), and Core Tech/Hawaiian Dredging, LLC (CHL). Pro Pacific submitted a bid for only Schedule A. Insituform submitted a bid for only Schedule B. CHL submitted a bid for both schedules. A summary of the bids prices along with the Engineer's Opinion of Construction Cost Estimate are provided in the table below.

Bid Schedule	Engineer's Estimate	ProPacific	Insituform	CHL
SCHEDULE A - Base Bid	$ 2,701,217.00	$ 3,407,848.00	No Bid	$ 6,191,463.33
SCHEDULE A – Additive Bid No. 1	$ 7,000.00	$ 150,000.00	No Bid	$ 20,592.67
SCHEDULE A – Total	$ 2,708,217.00	$ 3,557,848.00	No Bid	$ 6,212,056.00
SCHEDULE B - Base Bid	$ 2,482,494.00	No Bid	$ 3,998,688.00	$ 7,570,573.65
SCHEDULE B – Additive Bid No. 1	$ 62,880.00	No Bid	$ 1,296,700.00	$ 799,818.94
SCHEDULE B – Additive Bid No. 2	$ 7,000.00	No Bid	$ 35,000.00	$ 20,583.15
SCHEDULE B – Total	$ 2,552,374.00	No Bid	$ 5,330,388.00	$ 8,390,975.74

It is understood that the bids are to be evaluated by each schedule separately and contract(s) awarded using the Base Bid. After contract award, GWA may consider adding items in the additive bids into the contract by change orders. If the bid is within the amount of funds available to finance the construction Contract, then the award will be made to the lowest responsive and responsible bidder. In the event all bids exceed the available budget, GWA may reject bids by individual line items until the individual line items fit within the available budget.

AECOM conducted an evaluation of the bids received and provide recommendations for award to the responsible Bidder submitting the lowest responsive Bid. The following is a brief summary of the bid evaluation:

- Overall, the CHL bid prices appeared to be excessive in comparison with the other bidders and the Engineer's Estimate for both bid schedules evaluated separately.
- For Schedule A – Base Bid, ProPacific's bid price was approximately 26% more than the Engineer's Estimate and is the lowest responsive bid. ProPacific's total bid including the bid additive was approximately 31% more than the Engineer's Estimate.
- For Schedule B – Base Bid, Insituform's bid price was approximately 61% more than the Engineer's Estimate and is the lowest responsive bid. Insituform's total bid including the bid additives was approximately double the Engineer's Estimate.

Based on the bid evaluation conducted, it is recommended that ProPacific be awarded a construction contract for Schedule A – Base Bid and Insituform be awarded a separate construction contract for Schedule B – Base Bid. It is also recommended that if needed, GWA can consider rejecting individual line items to fit within the available budget; particularly for all the bid additives.

Respectfully,

Agapito (Pete) Diaz, PE
Project Manager
671-477-8326/7
pete.diaz@aecom.com

Exhibit C (1 of 15)

GUAM WATERWORKS AUTHORITY

BID INVITATION NO.
IFB-04-ENG-2018
GWA Project No.: S15-006-EPA

Route 4 Relief Sewer Line Rehabilitation and Replacement

BID PROPOSAL

Submitted by:

PROPACIFIC BUILDER CORPORATION

(formerly Guam Yooshin Corporation)

750 Route 8 Suite 202 Hanam Plaza,
Barrigada, Guam 96913
T. 671.477.3109 | F. 671.477.7424 | jgyc@guam.net

Exhibit C (2 of 15)

Procurement Checklist

CHECKLIST OF FORMS AND DOCUMENTS REQUIRED TO BE SUBMITTED IN CONJUNCTION WITH BIDS

A.	Form or document that must be submitted with bid	Initial if Submitted:
1.	Bid Bond Equal to 15% of total amount of bid	
2.	Bidder Qualification Form	
3.	Bid Proposal and Bid Schedule	
4.	Non-Collusion Affidavit	
5.	Certification of Bidder Regarding Equal Employment Opportunity	
6.	Certification Regarding Non-Segregated Facilities	
7.	Sex Offender Certification	
8.	Wage and Benefit Determination	
9.	Major Shareholders Disclosure Affidavit	
10.	Special Instructions to Bidders	
11.	Proof of Licensure to Perform Work Called For by the Bid	
12.	Financial Statements	
13.	Proof of Status as Veteran (if applies)	N/A
14.	Forms or Documents Required by Bid or Bid Amendments not referred to above	

I, Jean Yeon Yu, a duly authorized representative of PPBC, do hereby certify, that the forms list above have in fact been submitted with my firm's bid. I acknowledge that, failure to submit any of the above documents will result in my firm being deemed non-responsive and having my firm's bid rejected.

Signed: _____

Date: 05/29/2018

BID FORM

ARTICLE 1 - BID RECIPIENT

1.01 This Bid is submitted to:

Guam Waterworks Authority
Engineering Division, Room 202
Gloria B. Nelson Public Service Building
688 Route 15
Mangilao, Guam 96913

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with Buyer in the form included in the Bidding Documents to furnish the Goods and Special Services as specified or indicated in the Bidding Documents, for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Buyer.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
Addendum No. 1	April 19, 2018
Addendum No. 2	April 26, 2018
Addendum No. 3	May 15, 2018
Addendum No. 4	May 18, 2018

B. Bidder has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided and become familiar with and is satisfied as to the observable local conditions that may affect cost, progress, or the furnishing of Goods and Special Services, if required to do so by the Bidding Documents, or if, in Bidder's judgment, any local condition may affect cost, progress, or the furnishing of Goods and Special Services.

EJCDC P-400, Suggested Bid Form for Procurement Contracts.
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C. Bidder is familiar with and is satisfied as to all Laws and Regulations in effect as of the date of the Bid that may affect cost, progress, and the furnishing of Goods and Special Services.

D. Bidder has carefully studied, considered, and correlated the information known to Bidder; information commonly known to sellers of similar goods doing business in the locality of the Point of Destination and the site where the Goods will be installed or where Special Services will be provided; information and observations obtained from Bidder's visits, if any, to the Point of Destination and the site where the Goods will be installed or Special Services will be provided; and any reports and drawings identified in the Bidding Documents regarding the Point of Destination and the site where the Goods will be installed or where Special Services will be provided, with respect to the effect of such information, observations, and documents on the cost, progress, and performance of Seller's obligations under the Bidding Documents.

E. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution (if any) thereof by Engineer is acceptable to Bidder.

F. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing the Goods and Special Services for which this Bid is submitted.

ARTICLE 4 - BIDDER'S CERTIFICATIONS

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Buyer, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

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4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process.

ARTICLE 5 - BASIS OF BID AND AWARD OF CONTRACTS

5.01 This contract is a multi-award contract through which more than one contract may be awarded through this solicitation. The Bid Schedule contains two schedules, Schedule A and Schedule B. Bidder will furnish the Goods and Special Services in accordance with the Contract Documents for the prices indicated under this article. The Bidder can elect to provide prices under Schedule A or Schedule B or both schedules. Bids must include all items under Schedule A or Schedule B, or both Schedule A and B. Each of Schedules A and B comprise Base Bid items and Additive Bid items. The Bidder shall provide base bid and additive bid(s) prices under each elected schedule.

Bids shall be evaluated by Schedule. Each of Schedules A and B shall be evaluated separately. The lowest responsive and responsible bidder shall be determined for each of Schedule A and Schedule B. Separate contracts will be awarded under Schedule A and Schedule B. One contract will be awarded to the lowest responsive and responsible bidder for Schedule A and one contract will be awarded to the lowest responsive and responsible bidder for Schedule B. If the same contractor is the lowest responsive and responsible bidder for both Schedules A and B, one contract for all the work under Schedules A and B will be awarded.

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
1	Mobilization and Demobilization	LS	$293,780.00	1	$ 293,780.00
2	Insurance and Bonds	LS	$132,201.00	1	$ 132,201.00
3	Permits	LS	$44,067.00	1	$ 44,067.00
4	12" PVC pipe, installed by open trench, including PVC pipe, fittings, warning/identification tape, cleaning, connections to manholes, adjustment existing channel and bench, testing, and all incidentals, in place complete.	LF	$1,500.00	22	$ 33,000.00
5	18" PVC pipe, installed by open trench, including PVC pipe, fittings, warning/identification tape, cleaning, connections to existing manholes, adjustment existing channel and bench, testing, and all incidentals, in place complete.	LF	$1,800.00	12	$ 21,600.00
6	30" PVC pipe, installed by open trench, including existing pipe removal, pipe, fittings, warning/identification tape, cleaning, manhole connections, testing, and all incidentals, in place complete.	LF	$2,000.00	461	$ 922,000.00
7	Unclassified Trench Excavation and Backfill, including protection of existing utilities if necessary, excavation, installation of sheet piles, cutting and removal of sheet piles, shoring, groundwater cutoff wall, dewatering and dewatering effluent disposal, muck handling and disposal, backfill, pipe bedding, CLSM, temporary erosion control measures, traffic control work, miscellaneous restoration work, and all incidentals required to complete the work.	CY	$600.00	913	$ 547,800.00
8	Precast Sewer Manhole, SMH-6901A and 493A, including reinforced concrete base, precast concrete riser and cone, flexible pipe seals and connectors, grade adjustment ring(s), frame and cover, epoxy-coating, channelized inverts, testing, CLSM, temporary erosion control measures, traffic control work, incidentals, and all necessary labor, materials and equipment, in place complete.	EA	$30,000.00	2	$ 60,000.00

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
9	Drop Precast Sewer Manhole, SMH-6908B, including demolition of existing SMH-10312, reinforced concrete base, precast concrete riser and cone, chimney, flexible pipe seals and connectors, grade adjustment ring(s), frame and cover, epoxy-coating, channelized inverts, testing, CLSM, temporary erosion control measures, traffic control work, incidentals, and all necessary labor, materials and equipment, in place complete.	EA	$ 30,000.00	1	$ 30,000.00
10	Rehabilitation of sewer manhole with epoxy coating, including cleaning, surface preparation, cementitious underlayment, concrete channel and bench construction, existing pipe cut & connection, plugging existing pipe, epoxy topcoat, grout injection for leak repair, traffic control work, and all incidentals, in place complete.	EA	$ 22,500.00	14	$ 315,000.00
11	Abandon existing sewer pipes including plugging and filling with CLSM, all incidentals, in place complete.	LF	$ 250.00	280	$ 70,000.00
12	Unplug 21" existing pipe, plug 15" existing SL-9650 and channel & bench reconstruction at SMH-6897	LS	$ 30,000.00	1	$ 30,000.00
13	Sewer Flow Control, including diversion and bypass pumping plan, temporary bypass piping and pumps, pipe plugs, bypassing at sewer laterals (including locating and exposing cleanouts), temporary trenches (including pavement demolition, excavation, backfill, trench covers, temporary and permanent asphalt concrete (AC) pavement, muck handling and disposal), electrical and standby power/pumps, monitoring, spill containment/mitigation, traffic control work, temporary erosion control measures, all related restoration work, in place complete.	LS	$ 300,000.00	1	$ 300,000.00
14	Removal of existing pavement including all necessary labor, materials and equipment, in place complete	SY	$ 50.00	2,867	$ 143,350.00

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
15	AC Pavement Resurfacing, including asphalt concrete base, cold planing, pavement transitions, prime coat, tack coat, traffic striping, miscellaneous restoration, and all necessary labor, materials and equipment, in place complete	SY	$ 150.00	2,867	$ 430,050.00
16	Pavement marking including all necessary labor, materials and equipment, in place complete	LS	$25,000.00	1	$ 25,000.00
17	As-Built drawings	LS	$10,000.00	1	$ 10,000.00
				SCHEDULE A – Base Bid (TOTAL Items 1 through 17, inclusive)	$ 3,407,848.00

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Additive Bid No. 1

Description of Work: Archaeological monitoring.

				SCHEDULE A – Additive Bid No. 1	
1	Archaeological and cultural resource services to add new laydown staging areas outside of the suggested areas or outside of the area of potential effect as defined the Archaeological Monitoring and Data Recovery Plan for the project and resubmit to the Department of Parks and Recreation, Guam Historic Resources Division/State Historic Preservation Office for approval and acceptance.	LS	$ 150,000.00	1	$ 150,000.00
				SCHEDULE A - Additive Bid No. 1 (TOTAL Items 1, inclusive)	$ 150,000.00

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
1	Mobilization and Demobilization	LS	$_____	1	$_____
2	Insurance and Bonds	LS	$_____	1	$_____
3	Permits	LS	$_____	1	$_____
4	Installation of cured in place pipe (CIPP) lining in existing 21" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$_____	674	$_____
5	Installation of cured in place pipe (CIPP) lining in existing 24" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$_____	723	$_____

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
6	Installation of cured in place pipe (CIPP) lining in existing 30" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$_____	1,590	$_____
7	Installation of cured in place pipe (CIPP) lining in existing 36" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$_____	798	$_____
8	Sewer Flow Control, including diversion and bypass pumping plan, temporary bypass piping and pumps, pipe plugs, bypassing at sewer laterals (including locating and exposing cleanouts), temporary trenches (including pavement demolition, excavation, backfill, trench covers, temporary and permanent AC pavement, muck handling and disposal), electrical and standby power/pumps, monitoring, spill containment/mitigation, traffic control work, temporary erosion control measures, all related restoration work, in place complete.	LS	$_____	1	$_____

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
	Schedule B – BASE BID (TOTAL Items 1 through 8, inclusive)				$_____

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B – Additive Bid No. 1

Description of Work: CIPP part-liner or chemical grouting to control infiltration/inflow prior to CIPP lining.

				Schedule B – Additive Bid No. 1	
1	CIPP part-liner or grouting to control infiltration on the existing 21" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$_____	70	$_____
2	CIPP part-liner or grouting to control infiltration on the existing 24" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$_____	80	$_____
3	CIPP part-liner or grouting to control infiltration on the existing 30" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$_____	160	$_____
4	CIPP part-liner or grouting to control infiltration on the existing 36" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$_____	160	$_____
	SCHEDULE B – Additive Bid No. 1 (TOTAL Items 1 through 4, inclusive)				$_____

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid) **SCHEDULE B - Additive Bid No. 2** **Description of Work:** Archaeological monitoring.					
				SCHEDULE B – Additive Bid No. 2	
1	Archaeological and cultural resource services to add new laydown staging areas outside of the suggested areas or outside of the area of potential effect as defined the Archaeological Monitoring and Data Recovery Plan for the project and resubmit to the Department of Parks and Recreation, Guam Historic Resources Division/State Historic Preservation Office for approval and acceptance.	LS	$_____	1	$_____
SCHEDULE B - Additive Bid No. 2 (TOTAL Items 1, inclusive)					$_____

Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents. Bidder also acknowledges that each unit price includes an amount considered by Bidder to be adequate to cover Bidder's overhead and profit for each separately identified item.

ARTICLE 6 - TIME OF COMPLETION

6.01 Bidder agrees that the furnishing of Goods and Special Services will conform to the schedule set forth in Article 5 of the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid:

A. Required Bid security in the form of Bid Bond.

B. List of Proposed Major Suppliers;

C. Required Bidder Qualification Statement with Supporting Data.

ARTICLE 8 - DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

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ARTICLE 9 - BID SUBMITTAL

9.01 This Bid submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____ _____

A Partnership

Partnership Name: _____ (SEAL)

By: _____
(Signature of general partner - attach evidence of authority to sign)

Name (typed or printed): _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____

A Corporation

Corporation Name: PROPACIFIC BUILDER CORPORATION

State of Incorporation: GUAM

Type (General Business, Professional, Service, other): General Contractor

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): Jean Yeon Yu

Title: President

(CORPORATE SEAL)

Attest _____
(Signature of Corporate Secretary)

Business address: 750 Route 8 Suite 202 Hanam Plaza, Barrigada, GU 96913

_____

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Phone: 671-477-3109 Facsimile: 671-477-7424
E-mail address: jgyc@guam.net

A Limited Liability Company (LLC)

LLC Name: _____
State in which organized: _____

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____
Title: _____
Business address: _____

_____

Phone: _____ Facsimile: _____
E-mail address: _____

A Joint Venture

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____
Title: _____
Business address: _____

_____

Phone: _____ Facsimile: _____
E-mail address: _____
Second Joint Venturer Name: _____ (SEAL)

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____
Title: _____
Business address: _____

_____

Phone: _____ Facsimile: _____
E-mail address: _____

Phone and Facsimile Number, and Address for receipt of official communications to Joint Venture:

_____

_____

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(Each joint venturer must sign. The manner of signing for each individual, partnership, corporation, and limited liability company that is a party to the joint venture should be in the manner indicated above.)

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SEALED BID FOR: ROUTE 4 RELIEF SEWER LINE REHABILITATION AND REPLACEMENT (RE-BID)

BIDDER: INSITUFORM TECHNOLOGIES, LLC
17988 EDISON AVE
CHESTERFIELD, MO 63005

GWA PROJECT NO. S15-006-EPA

CLOSING DATE AND TIME
~~5/25/2018~~ 5/29/2018
3:00 PM

ATTENTION: GUAM WATERWORKS AUTHORITY
GLORIA B. NELSON PUBLIC SERVICES BUILDING
688 ROUTE 15
MANGILAO, GUAM 96913

Vol. 1 of 2

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BID FORM

ARTICLE 1 - BID RECIPIENT

1.01 This Bid is submitted to:

Guam Waterworks Authority
Engineering Division, Room 202
Gloria B. Nelson Public Service Building
688 Route 15
Mangilao, Guam 96913

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with Buyer in the form included in the Bidding Documents to furnish the Goods and Special Services as specified or indicated in the Bidding Documents, for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Buyer.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
1	April 19, 2018
2	April 24, 2018
3	May 15, 2018
4	May 18, 2018

SP

B. Bidder has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided and become familiar with and is satisfied as to the observable local conditions that may affect cost, progress, or the furnishing of Goods and Special Services, if required to do so by the Bidding Documents, or if, in Bidder's judgment, any local condition may affect cost, progress, or the furnishing of Goods and Special Services.

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C. Bidder is familiar with and is satisfied as to all Laws and Regulations in effect as of the date of the Bid that may affect cost, progress, and the furnishing of Goods and Special Services.

D. Bidder has carefully studied, considered, and correlated the information known to Bidder; information commonly known to sellers of similar goods doing business in the locality of the Point of Destination and the site where the Goods will be installed or where Special Services will be provided; information and observations obtained from Bidder's visits, if any, to the Point of Destination and the site where the Goods will be installed or Special Services will be provided; and any reports and drawings identified in the Bidding Documents regarding the Point of Destination and the site where the Goods will be installed or where Special Services will be provided, with respect to the effect of such information, observations, and documents on the cost, progress, and performance of Seller's obligations under the Bidding Documents.

E. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution (if any) thereof by Engineer is acceptable to Bidder.

F. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing the Goods and Special Services for which this Bid is submitted.

ARTICLE 4 - BIDDER'S CERTIFICATIONS

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Buyer, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

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4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process.

ARTICLE 5 - BASIS OF BID AND AWARD OF CONTRACTS

5.01 This contract is a multi-award contract through which more than one contract may be awarded through this solicitation. The Bid Schedule contains two schedules, Schedule A and Schedule B. Bidder will furnish the Goods and Special Services in accordance with the Contract Documents for the prices indicated under this article. The Bidder can elect to provide prices under Schedule A or Schedule B or both schedules. Bids must include all items under Schedule A or Schedule B, or both Schedule A and B. Each of Schedules A and B comprise Base Bid items and Additive Bid items. The Bidder shall provide base bid and additive bid(s) prices under each elected schedule.

Bids shall be evaluated by Schedule. Each of Schedules A and B shall be evaluated separately. The lowest responsive and responsible bidder shall be determined for each of Schedule A and Schedule B. Separate contracts will be awarded under Schedule A and Schedule B. One contract will be awarded to the lowest responsive and responsible bidder for Schedule A and one contract will be awarded to the lowest responsive and responsible bidder for Schedule B. If the same contractor is the lowest responsive and responsible bidder for both Schedules A and B, one contract for all the work under Schedules A and B will be awarded.

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Exhibit D (6 of 17)

No bid on Schedule A

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
1	Mobilization and Demobilization	LS	$_____	1	$_____
2	Insurance and Bonds	LS	$_____	1	$_____
3	Permits	LS	$_____	1	$_____
4	12" PVC pipe, installed by open trench, including PVC pipe, fittings, warning/identification tape, cleaning, connections to manholes, adjustment existing channel and bench, testing, and all incidentals, in place complete.	LF	$_____	22	$_____
5	18" PVC pipe, installed by open trench, including PVC pipe, fittings, warning/identification tape, cleaning, connections to existing manholes, adjustment existing channel and bench, testing, and all incidentals, in place complete.	LF	$_____	12	$_____
6	30" PVC pipe, installed by open trench, including existing pipe removal, pipe, fittings, warning/identification tape, cleaning, manhole connections, testing, and all incidentals, in place complete.	LF	$_____	461	$_____
7	Unclassified Trench Excavation and Backfill, including protection of existing utilities if necessary, excavation, installation of sheet piles, cutting and removal of sheet piles, shoring, groundwater cutoff wall, dewatering and dewatering effluent disposal, muck handling and disposal, backfill, pipe bedding, CLSM, temporary erosion control measures, traffic control work, miscellaneous restoration work, and all incidentals required to complete the work.	CY	$_____	913	$_____
8	Precast Sewer Manhole, SMH-6901A and 493A, including reinforced concrete base, precast concrete riser and cone, flexible pipe seals and connectors, grade adjustment ring(s), frame and cover, epoxy-coating, channelized inverts, testing, CLSM, temporary erosion control measures, traffic control work, incidentals, and all necessary labor, materials and equipment, in place complete.	EA	$_____	2	$_____

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No bid on Schedule A

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
9	Drop Precast Sewer Manhole, SMH-6908B, including demolition of existing SMH-10312, reinforced concrete base, precast concrete riser and cone, chimney, flexible pipe seals and connectors, grade adjustment ring(s), frame and cover, epoxy-coating, channelized inverts, testing, CLSM, temporary erosion control measures, traffic control work, incidentals, and all necessary labor, materials and equipment, in place complete.	EA	$_____	1	$_____
10	Rehabilitation of sewer manhole with epoxy coating, including cleaning, surface preparation, cementitious underlayment, concrete channel and bench construction, existing pipe cut & connection, plugging existing pipe, epoxy topcoat, grout injection for leak repair, traffic control work, and all incidentals, in place complete.	EA	$_____	14	$_____
11	Abandon existing sewer pipes including plugging and filling with CLSM, all incidentals, in place complete.	LF	$_____	280	$_____
12	Unplug 21" existing pipe, plug 15" existing SL-9650 and channel & bench reconstruction at SMH-6897	LS	$_____	1	$_____
13	Sewer Flow Control, including diversion and bypass pumping plan, temporary bypass piping and pumps, pipe plugs, bypassing at sewer laterals (including locating and exposing cleanouts), temporary trenches (including pavement demolition, excavation, backfill, trench covers, temporary and permanent asphalt concrete (AC) pavement, muck handling and disposal), electrical and standby power/pumps, monitoring, spill containment/mitigation, traffic control work, temporary erosion control measures, all related restoration work, in place complete.	LS	$_____	1	$_____
14	Removal of existing pavement including all necessary labor, materials and equipment, in place complete	SY	$_____	2,867	$_____

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No Bid Schedule A

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Base Bid

Description of Work: Work consists of replacing 24" Spirolite pipe with 30" PVC pipe, installation of new 18" PVC pipe intertie, construction of precast concrete manholes, sewer manhole rehabilitation with epoxy coating, channel construction, disconnection and re-connection of lateral sewer pipes, abandoning existing sewer pipes and providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				SCHEDULE A – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
15	AC Pavement Resurfacing, including asphalt concrete base, cold planing, pavement transitions, prime coat, tack coat, traffic striping, miscellaneous restoration, and all necessary labor, materials and equipment, in place complete	SY	$_____	2,867	$_____
16	Pavement marking including all necessary labor, materials and equipment, in place complete	LS		1	
17	As-Built drawings	LS		1	
			SCHEDULE A – Base Bid (TOTAL Items 1 through 17, inclusive)		$_____

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE A – Additive Bid No. 1

Description of Work: Archaeological monitoring.

				SCHEDULE A – Additive Bid No. 1	
1	Archaeological and cultural resource services to add new laydown staging areas outside of the suggested areas or outside of the area of potential effect as defined the Archaeological Monitoring and Data Recovery Plan for the project and resubmit to the Department of Parks and Recreation, Guam Historic Resources Division/State Historic Preservation Office for approval and acceptance.	LS	$_____	1	$_____
			SCHEDULE A - Additive Bid No. 1 (TOTAL Items 1, inclusive)		$_____

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
1	Mobilization and Demobilization	LS	$800,000	1	$800,000
2	Insurance and Bonds	LS	$100,000	1	$100,000
3	Permits	LS	$34,300	1	$34,300
4	Installation of cured in place pipe (CIPP) lining in existing 21" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$310.00	674	$208,940
5	Installation of cured in place pipe (CIPP) lining in existing 24" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$412.00	723	$297 876

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
6	Installation of cured in place pipe (CIPP) lining in existing 30" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$667.00	1,590	$1,060,530
7	Installation of cured in place pipe (CIPP) lining in existing 36" sewer line, including all labor, materials, supplies, equipment, tools, and incidentals for the complete installation of the liner, cleaning, wet out, preparation, leak repair, transition sections, removal and restoration of sewer manhole cone (if required for access), restoration of pavement and landscaping, removal of protruding laterals, liner termination at manholes, reworking manhole inverts and benches, testing of installed liner, Closed Circuit Television (CCTV) inspection for pre- and post- rehabilitation, traffic control work, and for all other related work.	LF	$929.00	798	$741,342
8	Sewer Flow Control, including diversion and bypass pumping plan, temporary bypass piping and pumps, pipe plugs, bypassing at sewer laterals (including locating and exposing cleanouts), temporary trenches (including pavement demolition, excavation, backfill, trench covers, temporary and permanent AC pavement, muck handling and disposal), electrical and standby power/pumps, monitoring, spill containment/mitigation, traffic control work, temporary erosion control measures, all related restoration work, in place complete.	LS	$755,700	1	$755,700

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B –Base Bid

Description of Work: CIPP lining 21", 24", 30" and 36" existing sewer pipes, providing temporary bypass and traffic control as necessary to complete the rehabilitation and replacement work.

				Schedule B – Base Bid	
Item No.	Description	Unit	Unit Price	Qty	Bid Amount
	Schedule B – BASE BID (TOTAL Items 1 through 8, inclusive)				$3,998,688

Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid)

SCHEDULE B – Additive Bid No. 1

Description of Work: CIPP part-liner or chemical grouting to control infiltration/inflow prior to CIPP lining.

				Schedule B – Additive Bid No. 1	
1	CIPP part-liner or grouting to control infiltration on the existing 21" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$2330.00	70	$163,100.00
2	CIPP part-liner or grouting to control infiltration on the existing 24" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$2330.00	80	$186,400.00
3	CIPP part-liner or grouting to control infiltration on the existing 30" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$2960.00	160	$473,600.00
4	CIPP part-liner or grouting to control infiltration on the existing 36" sewer line, where approved by the Owner, including full compensation for all labor, materials, supplies, equipment, tools, and all incidentals for completed work.	LF	$2960	160	$473,600.00
	SCHEDULE B – Additive Bid No. 1 (TOTAL Items 1 through 4, inclusive)				$5,295,388.00

$1,296,700

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Route 4 Relief Sewer Line Rehabilitation and Replacement (Re-Bid) **SCHEDULE B - Additive Bid No. 2** **Description of Work:** Archaeological monitoring.					
				SCHEDULE B – Additive Bid No. 2	
1	Archaeological and cultural resource services to add new laydown staging areas outside of the suggested areas or outside of the area of potential effect as defined the Archaeological Monitoring and Data Recovery Plan for the project and resubmit to the Department of Parks and Recreation, Guam Historic Resources Division/State Historic Preservation Office for approval and acceptance.	LS	$35,000	1	$35,000
SCHEDULE B - Additive Bid No. 2 (TOTAL Items 1, inclusive)					$5,330,388.00

Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents. Bidder also acknowledges that each unit price includes an amount considered by Bidder to be adequate to cover Bidder's overhead and profit for each separately identified item.

ARTICLE 6 - TIME OF COMPLETION

6.01 Bidder agrees that the furnishing of Goods and Special Services will conform to the schedule set forth in Article 5 of the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid:

A. Required Bid security in the form of bidder's bond.

B. List of Proposed Major Suppliers;

C. Required Bidder Qualification Statement with Supporting Data.

ARTICLE 8 - DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

$35,000

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Exhibit D (13 of 17)

Insituform® Technologies, LLC

World HQ: 17988 Edison Avenue, Chesterfield MO 63005 — 636-530-8000, Fax: 636-530-8701

Local Off: 9654 Titan Court, Littleton CO 80125 — 303-791-7199, Fax: 303-791-7399

GWA Route 4 Releif Sewer Line Rehabilitation and Replacement, Project No. S15-006-EPA

LIST OF SUBCONTRACTORS Selection for Insituform

1. CCTV/CLEARING - MOCON
2. BYPASS - MOCON
3. _____
4. _____
5. _____
6. _____

Insituform® Technologies, LLC

World HQ: 17988 Edison Avenue Chesterfield MO 63005 636-530-8000 Fax: 636-530-8701

Local Off: 9654 Titan Court Littleton CO 80125 303-791-7199 Fax: 303-791-7399

GWA Route 4 Releif Sewer Line Rehabilitation and Replacement, Project No. S15-006-EPA

LIST OF Suppliers Selection for Insituform

1. CIPP—Insituform
2. _____
3. _____
4. _____
5. _____

ARTICLE 9 - BID SUBMITTAL

9.01 This Bid submitted by:

If Bidder is:

An Individual

Name (typed or printed): N/A

By: _____
(Individual's signature)

Doing business as: _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____ _____

A Partnership

Partnership Name: N/A (SEAL)

By: _____
(Signature of general partner - attach evidence of authority to sign)

Name (typed or printed): _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____

A Corporation

Corporation Name: N/A

State of Incorporation: _____

Type (General Business, Professional, Service, other): _____

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(CORPORATE SEAL)

Attest _____
(Signature of Corporate Secretary)

Business address: _____

_____

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Phone: _____ Facsimile: _____

E-mail address: _____

A Limited Liability Company (LLC)

LLC Name: Insituform Technologies, LLC

State in which organized: Delaware

By: Whittney Schulte

(Signature - attach evidence of authority to sign)

Name (typed or printed): Whittney Schulte

Title: Contracting & Attesting Officer

Business address: 17988 Edison Avenue
Chesterfield, MO 63005

Phone: 636-530-8000 Facsimile: 636-530-8701

E-mail address: WSchulte@Aegion.com

A Joint Venture

First Joint Venturer Name: N/A (SEAL)

By: _____

(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____

(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business address: _____

_____

Phone: _____ Facsimile: _____

E-mail address: _____

Phone and Facsimile Number, and Address for receipt of official communications to Joint Venture:

_____

_____

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Exhibit D (17 of 17)

INSITUFORM TECHNOLOGIES, LLC

PRESIDENT APPOINTMENT OF OFFICERS

Pursuant to the authority set forth in the Limited Liability Company Agreement of Insituform Technologies, LLC (the "Company"), I hereby determine that:

1. Christlanda Adkins, Laura M. Andreski, Janet Hass, Jana Lause, Diane Partridge, Whitney Schulte, and Ursula Youngblood are appointed as Contracting and Attesting Officers of the Company, each with the authority, individually and in the absence of the others, subject to the control of the Board of Managers of the Company, (i) to certify and to attest the signature of any officer of the Company, (ii) to enter into and to bind the Company to perform pipeline rehabilitation activities of the Company and all matters related thereto, including the maintenance of one or more offices and facilities of the Company, (iii) to execute and to deliver documents on behalf of the Company, and (iv) to take such other action as is or may be necessary and appropriate to carry out the project, activities and work of the Company; and

2. All other Contracting and Attesting Officers of the Company appointed by the President of the Company prior to the date of this appointment are hereby removed from office.

Dated: September 20, 2017

Frank R. Firsching
President

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

GPA RESOLUTION NO. 2018-14
GWA RESOLUTION NO. 38-FY2018

CCU CYBERSECURITY POLICIES AND PROCEDURES

WHEREAS, the CCU instituted the Cybersecurity Committee in 2017 to serve as the advisory and oversight group regarding information technology, infrastructure, and cybersecurity. The committee's responsibilities include the Guam Power Authority and Guam Waterworks Authority (GPWA) information technology systems, which includes policies, controls, risk mitigation, and infrastructure asset protection; and

WHEREAS, a network security assessment recommended that GPWA develop common objectives and controls by establishing common policies, procedures, and business processes to manage risks; and

WHEREAS, the Cybersecurity initiative resulted in the formation of guidelines to ensure consistency and adequate protection and safeguards to GPWA systems, and resulted in the Password Creation and Protection Policy, the Computer, Software, License, E-mail, Internet, and Standard of Conduct policy, and the Network and Data System Access Policy.

NOW THEREFORE, BE IT RESOLVED, by the Consolidated Commission on Utilities, as follows:

1. The Guam Power Authority and Guam Waterworks Authority General Managers are hereby authorized to implement and update the Cybersecurity policies for GPWA as required, and keep the CCU Commissioners informed at all times.

RESOLVED, that the Chairman of the Commission certifies and the Secretary of the Commission attests the adoption of this Resolution.

DULY and REGULARLY ADOPTED this 24th day of July,2018.

Certified by:

JOSEPH T. DUENAS
CHAIRMAN

Attested by:

J. GEORGE BAMBA
SECRETARY

I, J. GEORGE BAMBA, Secretary for the Consolidated Commission on Utilities do hereby certify that the foregoing is a full, true, and correct copy of the resolution duly adopted at a regular meeting of the members of Guam's Consolidated Commission on Utilities, duly and legally held at a place properly noticed and advertised at which meeting a quorum was present and the members who were present voted as follows:

Ayes: 5

Nays: 0

Absent: 0

Abstain: 0



GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUAHAN
P.O.BOX 2977 • AGANA, GUAM U.S.A. 96932-2977

Issues for Decision

Resolution No. GPA 2018-14 & GWA 38-FY2018:

Relative to CCU CYBERSECURITY POLICIES AND PROCEDURES

What is the project's objective and is it necessary and urgent?

The CCU instituted the Cybersecurity Committee in 2017 to serve as the advisory and oversight group regarding information technology, infrastructure, and cybersecurity. The committee's responsibilities include the Guam Power Authority and Guam Waterworks Authority (GPWA) information technology systems, which includes policies, controls, risk mitigation, and infrastructure asset protection. A network security assessment recommended that GPWA develop common objectives and controls by establishing common policies, procedures, and business processes to manage risks.

The Cybersecurity initiative resulted in the formation of guidelines to ensure consistency and adequate protection and safeguards to GPWA systems, and resulted in the Password Creation and Protection Policy, the Computer, Software, License, E-mail, Internet, and Standard of Conduct policy, and the Network and Data System Access Policy.

Where is it located or covers?

This will cover all GPWA infrastructure, assets and information technology systems.

CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

RESOLUTION NO. 2018-015

AUTHORIZING THE MANAGEMENT OF THE GUAM POWER AUTHORITY (GPA) TO PETITION THE PUBLIC UTILITES COMMISSION FOR THE APPROVAL OF THE MULTI-STEP BID BOT SPECIFICATION FOR NEW 120-180MW GENERATION CAPACITY

WHEREAS, on November 30, 2017, the PUC approved (Docket 18-02) a multi-step procurement process and authorized GPA to issue the Request for Qualifications for the 120-180MW new power plant; and

WHEREAS, on January 16, 2018 GPA issued Multi-Step Bid GPA-034-18 for Build, Own/Operate & Transfer Contract for 120-180MW of New Generation Capacity; and

WHEREAS, in June 2018, GPA selected seven (7) firms to establish a Qualified Bidders list that will participate in the next phases of the multi-step bid which includes the development and submittal of a technical proposal and a price proposal; and

WHEREAS, GPA has completed the technical specification documents for of the 120-180MW New Generation Capacity bid which address the following:

- Build, Own/Operate and Transfer (BOT) contract
- Specifications for 120MW – 180MW flexible generation to meet renewable integration requirements
- Specifications for dual firing units for ultra-low sulfur diesel and natural gas
- Architectural requirements and GPA involvement during design process
- Federal and Local Environmental and Safety requirements
- GPA Employee Hiring Opportunity
- Bond & Security Requirements during bid and construction periods
- PUC approval 1 day in 4.5 years reliability criteria
- GPA minimum reliability requirements
- Lowest present value cost as basis for award
- Draft contract; and

WHEREAS, PUC Docket 18-02 requires GPA to submit and obtain approval of the technical bid documents from PUC; and

NOW THEREFORE, BE IT RESOLVED, by the Consolidated Commission on Utilities, subject to the review and approval of the Public Utilities Commission, as follows:

1. The Technical Bid documents for Multi-Step Bid GPA-034-18 for the Build, Own/Operate & Transfer (BOT) Contract for 120-180MW of New Generation Capacity is hereby approved.
2. GPA shall obtain CCU approval of the final contract upon completion of the bid.

RESOLVED, that the Chairman of the Commission certifies and the Secretary of the Commission attests the adoption of this Resolution.

DULY and REGULARLY ADOPTED this 24th day of July, 2018.

Certified by:

JOSEPH T. DUENAS
CHAIRMAN

Attested by:

J. GEORGE BAMBA
SECRETARY

I, J. GEORGE BAMBA, Secretary for the Consolidated Commission on Utilities do hereby certify that the foregoing is a full, true, and correct copy of the resolution duly adopted at a regular meeting of the members of Guam's Consolidated Commission on Utilities, duly and legally held at a place properly noticed and advertised at which meeting a quorum was present and the members who were present voted as follows:

Ayes:	3
Nays:	1
Absent:	0
Abstain:	1

GUAM POWER AUTHORITY
TERRITORY OF GUAM