

# **Guyana Power & Light Inc.**



## **OPERATING STANDARDS AND PERFORMANCE TARGETS**

**2017**

# Customer Interruptions



Category	Analysis and Projections				
Customer Interruptions	The System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) are:				
	$\text{SAIFI} = \frac{\text{Total Number of Customer Interruptions}}{\text{Total Customers Served}}$				
	$\text{SAIDI} = \frac{\text{Total Customer Hours of Interruptions}}{\text{Total Customers Served}}$				
		2017 Target	2017 Achievement	2016 Achievement	
	SAIFI	75	128.4	118.6	
	SAIDI	85	133.2	125.8	

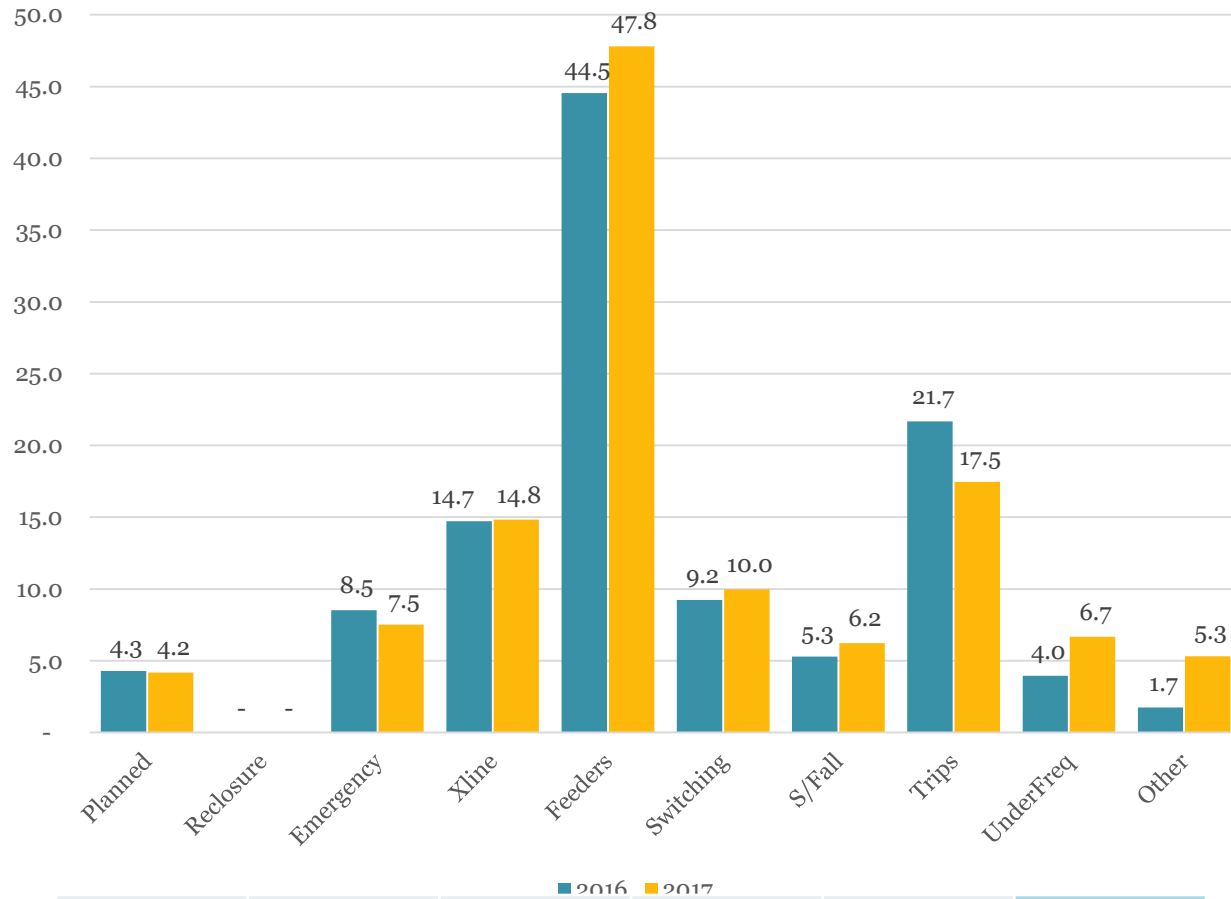
# Major Incidents in 2017



- Premature defects on three (3) 6.9 MW Generators
- DG 2 at Kingston 1 Plant unavailable from April to October
- 5 of 8 major overhauls on Wartsila generators taking place within the same period
- Defects in breakers for Station Service Transformers at Kingston II Plant

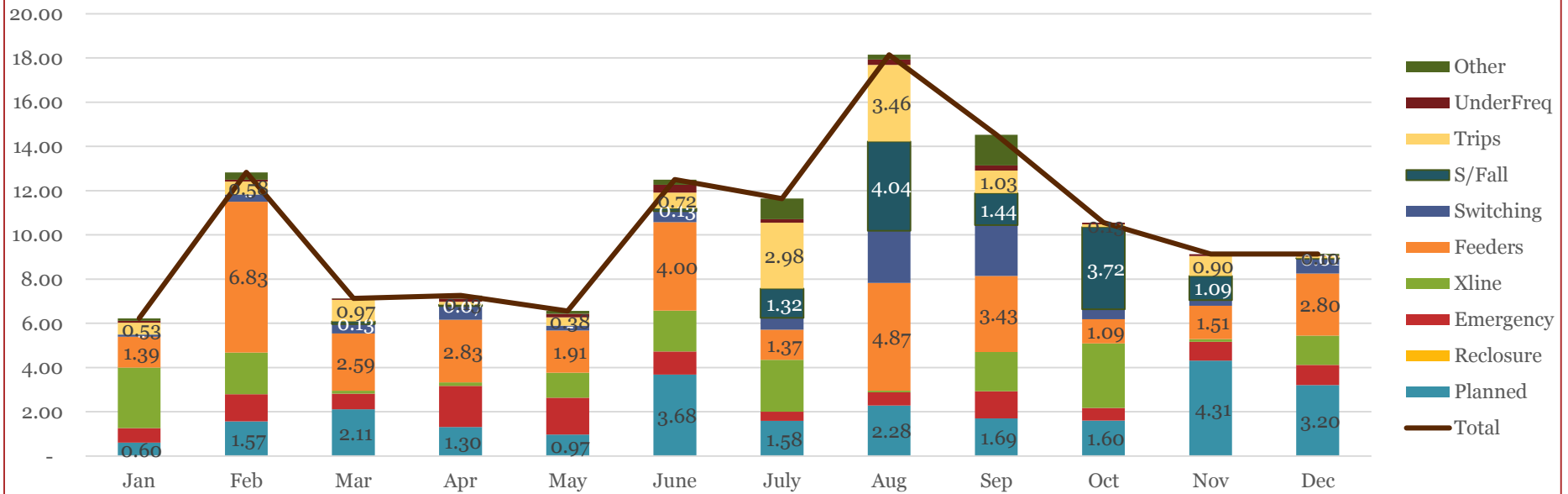
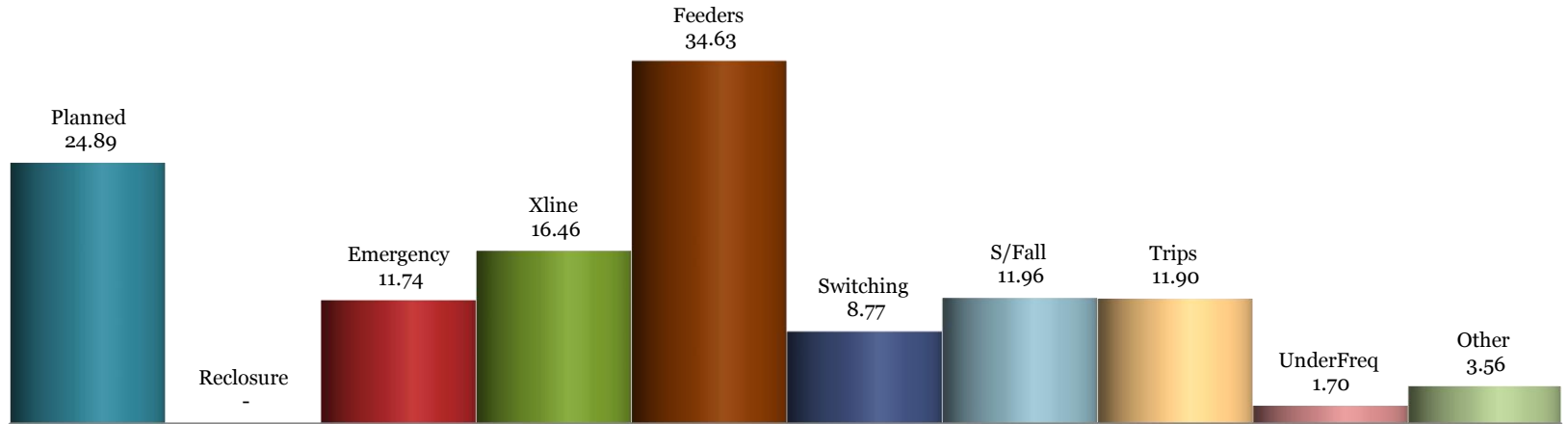


## COMPARISON OF 2016 & 2017 CONTRIBUTORS TO SAIFI

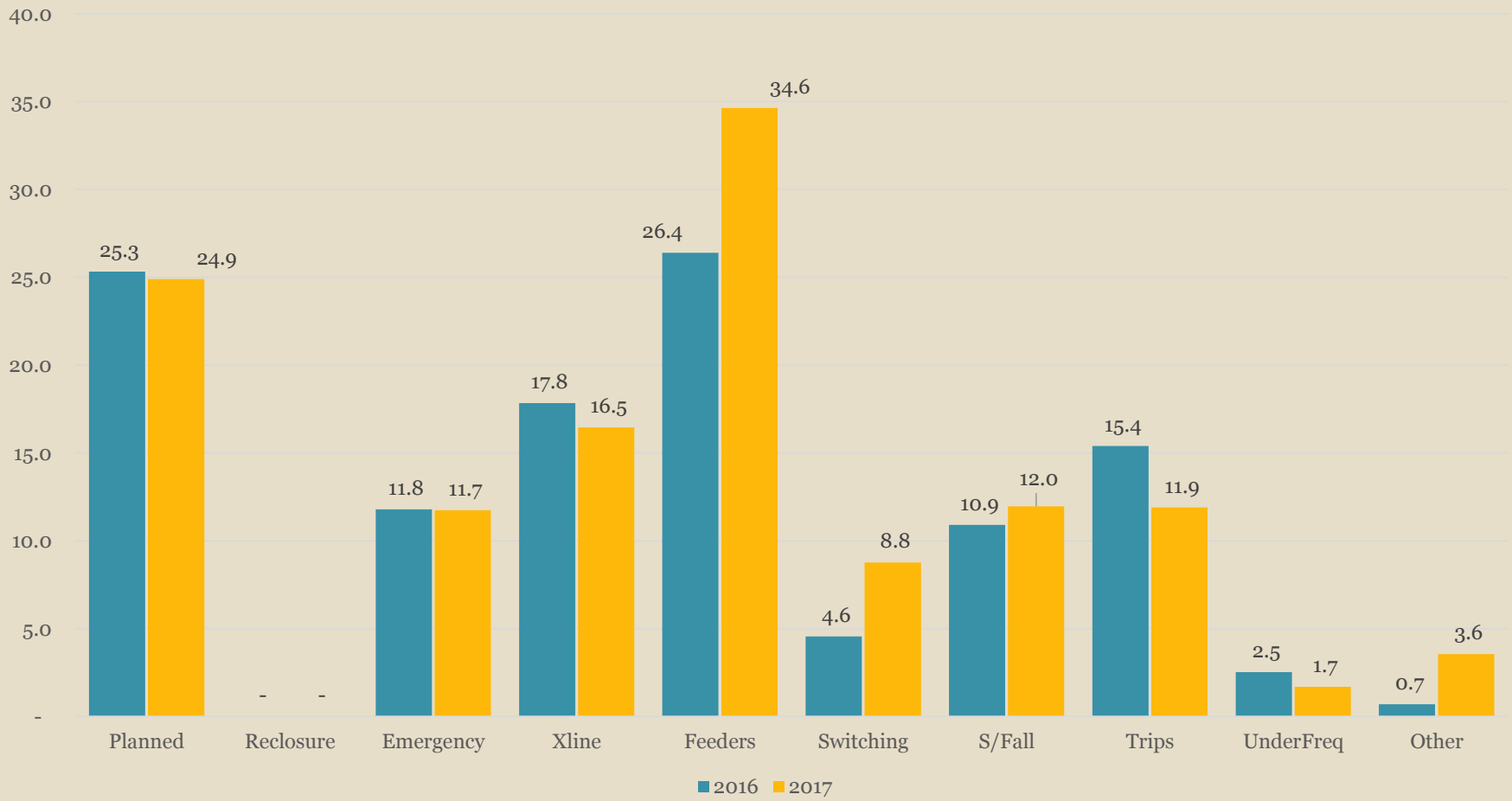


	Other	T + D	Generation	Total	TOTAL OUTAGES
2016	1.7	81.2	31.0	113.9	13
2017	5.3	84.3	30.4	120.0	25

# DBIS SAIDI

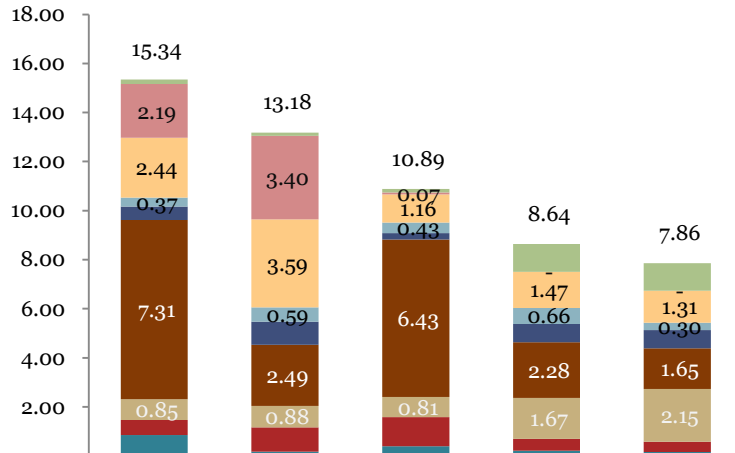


# COMPARISON OF 2016 & 2017 CONTRIBUTORS TO SAIDI



# FEEDER ANALYSIS

## Major Contributors to DBIS SAIFI



Other	0.18	0.13	0.15	1.13	1.13
UnderFreq	2.19	3.40	0.07	-	-
Trips	2.44	3.59	1.16	1.47	1.31
S/Fall	0.37	0.59	0.43	0.66	0.30
Switching	0.55	0.93	0.25	0.74	0.74
Feeders	7.31	2.49	6.43	2.28	1.65
Xline	0.85	0.88	0.81	1.67	2.15
Emergency	0.61	0.99	1.19	0.48	0.42
Reclosure	-	-	-	-	-
Planned	0.85	0.17	0.40	0.21	0.17
<b>Total</b>	<b>15.34</b>	<b>13.18</b>	<b>10.89</b>	<b>8.64</b>	<b>7.86</b>

### AREA

D2c

D27

D24d-g

B5

B7

D25a&b

### FEEDER

G/HOPE B1F4

F2 SOP.

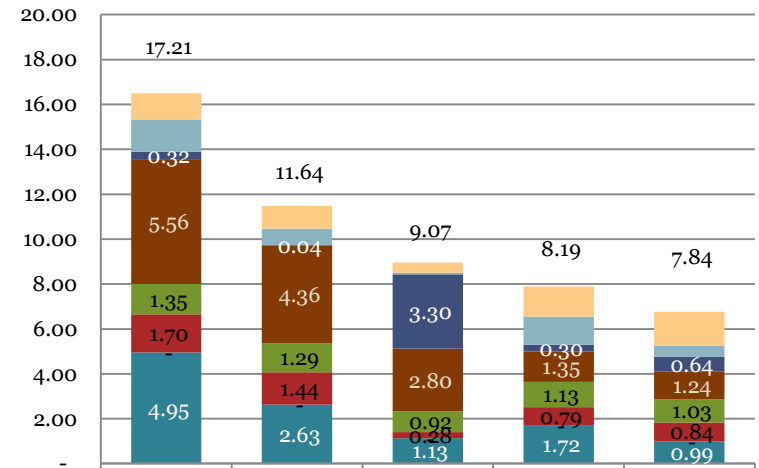
E/BURG B1F2

Can - B5F3

#53 - B4F2

V/HOOP B1F1

## MAJOR CONTRIBUTORS TO DBIS SAIDI



Trips	1.17	1.01	0.45	1.35	1.51
S/Fall	1.43	0.71	0.08	1.24	0.51
Switching	0.32	0.04	3.30	0.30	0.64
Feeders	5.56	4.36	2.80	1.35	1.24
Xline	1.35	1.29	0.92	1.13	1.03
Emergency	1.70	1.44	0.28	0.79	0.84
Reclosure	-	-	-	-	-
Planned	4.95	2.63	1.13	1.72	0.99
UnderFreq	0.51	0.02	-	-	0.92
Other	0.21	0.14	0.11	0.30	0.15
<b>Total</b>	<b>17.21</b>	<b>11.64</b>	<b>9.07</b>	<b>8.19</b>	<b>7.84</b>

### CUSTOMERS

9,900

8,300

9,000

9,600

7,500

6,200



# Voltage Regulation



## Category Analysis and Projections

### Voltage Regulation

The nominal voltage and frequency levels are indicated in paragraph 3.6 of the Standard Terms & Conditions.  
 GPL will seek to maintain, in stable conditions voltages, of  $\pm 5\%$  of the nominal voltage and  $\pm 10\%$  following a system disturbance. Since it is difficult to monitor the voltage delivered to each customer the Standard is based on number of voltage complaints and the time taken to resolve them.

	2017 Target	2017 Achievement	2016 Achievement
100% of customer voltage complaints due to network reconfiguration, vegetation, upgrade of lines, additional transformer, etc.	100% in 30 days	89% in 30 days	96.9% in 30 days

# Measures to Monitor Performance against Actual Standard



- Utilizing Smart Meter Technology will allow monitoring of voltage levels at individual consumers.
  - Evident within GPL's Pilot Zone
- Over the next 3 years, about 80,000 smart meters with supporting infrastructure will be installed under the PUUP and GPL internal meter replacement program
- Meanwhile, AMI meters capable of utilizing radio frequency to transmit data to be installed at relevant points in the network

# Average Availability



## Category Analysis and Projections

Average Availability	<p>The Availability Target is based on the ratio of declared capacity and available hours to installed capacity and hours in the period.</p> $\text{Availability} = \frac{\text{Available capacity} \times \text{Total Available Hours}}{\text{Installed capacity} \times \text{Hours in the period}}$			
		2017 Target	2017 Achievement	2016 Achievement
	Availability	80%	78.24%	84%

# Measures to Address Issues



- Rehab of Distribution Network through PUUP  $\approx$  640 km
- Construction of Express Feeders from Edinburg, Vreed-en-Hoop and Onverwagt substations
- Capital Projects to improve on SAIFI/SAIDI including
  - Reconfiguration of feeders ex Kingston Plant
  - Construction of substation at Kingston
  - Installation of auto-reclosers on 13.8 kV circuits
- Addition of one 5.5MW Set at Canefield
- Commissioning of new Generating Plants at Anna Regina and Bartica
- Improved vegetation management program
- Implementation of “hot line” maintenance
- Improved protection coordination arising from ongoing modelling of system

# Meter Readings



## Category Analysis and Projections

### Meter Readings

Large Consumers – Maximum Demand Consumers (Tariffs C & D)  
 Produce Ninety-Seven percent (97%) of Maximum Demand Bills based on actual meter readings  
 Domestic and Small Business Consumers (Tariffs A & B)  
 Produce Ninety percent (90%) of non Maximum Demand Bills based on actual meter readings.

	2017 Target	2017 Achievement	2016 Achievement
MD Cons.	97%	91%	94%
Non MD	90%	88%	88%

# Measures to Address Issues



## **Maximum Demand**

### Challenges

- Handheld failure to retrieve readings remotely (RF frequency) & short window for corrective action
- delay in replacing defective meters (meter supply shortage)

### **Corrective measures**

- Change defective meters within required timelines
- We have invited the ITRON supplier to inspect and test handhelds to ascertain causes of intermittent reads during the 2<sup>nd</sup> Qtr
- Continuous monitoring of IT meters for readings

# Meter Reading -Corrective Measures



## **Non Maximum Demand**

- Inability to access meters
- Backlog of defective meters

## **Corrective measures**

- Sending letters to customers whose meters are inaccessible
- Encourage the use of technology (Whatsapp feature) to retrieve actual readings
- Closely monitor reports of failures and defects and corrective actions

# Issuance of Bills



## Category

## Analysis and Projections

Issuance of bills

**Large Consumers – Maximum Demand Consumers (Tariffs B, C & D – average monthly consumption in excess of 1000KWhs)**

Issue bills within seven (7) days of reading the meter

**Domestic and Small Business Consumers (Tariffs A & B)**

Issue bills within ten (10) days of reading the meter

	2017 Target	2017 Achievement	2016 Achievement
MD Cons.	7	5	6
Non MD	10	8	8



# Accounts Receivables & Payables Days



## Category

## Analysis and Projections

Accounts  
Receivables

The status of GPL accounts receivable is stated in its audited annual financial statements. The quoted figures are net of provision for doubtful debts. The AR days reported below are from the date of the issuance of the bill.

2017  
Target

2017  
Achievement

2016  
Achievement

Days

30

35

37

Accounts  
Payables

While most of GPL's Creditors offer 30 days credit some of the largest ones offer up to sixty days. The determination of this target is from the invoice date.

2017  
Target

2017  
Achievement

2016  
Achievement

Days

26

26

25

# Losses



## Category Analysis and Projections

### Losses

The total projected losses as a percent of dispatched power is shown below, along with the estimated split between Technical and Non-Technical:

	2017 Target	2017 Achievement	2016 Achievement
Technical (%)	13.6	15.5	15.2
Non-Technical (%)	14.0	14.1	14.0
Overall (%)	27.6	29.6	29.2

# Measures to Improve Performance



The reduction of losses continues to be one of the key challenges facing the GPL. Total losses as at December 2017 was 29.6% which is an increase when compared with 2016 (29.2%). The shortage of materials to support internal Loss Reduction programs along with the delayed implementation of the PUUP, largely contributed to this non improvement in Losses.

The Company is however, very optimistic of significant improvements during 2018 and beyond, resulting from full implementation of the PUUP and Internal Loss Reduction Programs.

The Company projects the overall impact by Loss Reduction core activities to be implemented during 2018, to be about 2%, reducing losses to down to 27.7% at the end of 2018.

# Measures to Improve Performance



Performance will improve significantly in 2018 as a result of :

## 1. Adequate inventory

- Critical items required for Loss Reduction Programs (meters and cables) being available. Items were purchased in 2017, and delivered to stores during the period December 2017 to January 2018.
- Revised Procurement Policy

## 2. Replacement of Meters

- Replacement of about 12,000 Tampered/Aged/Defective meters with Smart meters under GPL Internal Program.
- Replacement of about 20,000 Aged/Defective meters with Smart meters Under the PUUP.

# Measures to Improve Performance



## 3. Large Customers

- Comprehensive Field Audit of all Maximum Demand and Small Business Installations, including downloading and interpreting of meter logs and complete site analysis for CT/PT rated meters.
- Upgrading of Maximum Demand Installations from AMR to AMI (Meter Replacement and Expanding of Infrastructure).

## 4. Meter Reading Route Audit

- Comprehensive Field Audit of all meter reading routes to improve customer account records and significantly reduce estimated bill computations.

# Measures to Improve Performance



## 5. Power Utility Upgrade Program

- Upgrading of over 300 km of low voltage and Primary network, to improve technical efficiency.
- Load Balancing on low voltage and primary network, to improve technical efficiency.
- Installing of more secure network to safeguard against electricity diversion through:
  - ✦ The use of concentric conductor service wire,
  - ✦ Placement of meters on intermediate pole within customer fence line.
  - ✦ The use of bundled conductor on secondary network.
  - ✦ The use of secured service distribution boxes.

# Guyana Power & Light Inc.



THANK YOU