THE JAMAICA PUBLIC SERVICE CO. LTD.

ANNUAL TARIFF ADJUSTMENT

SUBMISSION FOR 2008

MARCH 31, 2008

Preamble

This submission is made in relation to the annual Performance-Based Rate-Making (PBRM) tariff adjustment filing for 2008, in accordance with the All Island Electric Licence 2001 (the Licence), Schedule 3, section 4, which states:

> "The Licensee shall make annual filings to *the Office* at least sixty (60) days prior to the Adjustment Date [June 1, 2008]. These filings shall include the support for the performance indices, the CPI indices, and the proposed Non-Fuel Base Rates for electricity, and other information as may be necessary to support such filings…."

In accordance with the Licence and the OUR's June 25, 2004 Determination Notice, the 2008 annual non-fuel tariff adjustment will incorporate changes in relation to inflation, foreign exchange movement and adjustments for the X, Q and Z factors.

This represents the fourth annual tariff adjustment under the PBRM regulatory framework that became effective on June 1, 2004 and the final such adjustment prior to the 2009 rate case reset. This year, once again, includes a 2.72% productivity gain that will be passed on to our customers as an offset to the annual inflation adjustment. The 2009 rate case reset will provide the basis for a complete tariff review by the OUR, which includes, among other things, a review of operating costs, the rate base (i.e. the total net asset values of the company), the cost of funding the business and the theoretical target return which the company should be allowed to achieve given the risk of conducting its utility business in Jamaica.

The total bill impact of the increase in non-fuel tariffs for 2008 will be less than 2% for most customers given that fuel now represents more than 60% of the total customer bill. The result of the annual PBRM adjustment is, that, while there is an 11.66% weighted average increase in inflation under the annual tariff adjustment mechanism, this will be offset by the 2.72% productivity factor, resulting in an increase of 8.94% in the base non-fuel tariffs in July 2008. Of this 8.94% increase, 3.91% is attributable to the resetting of the base exchange rate, so the effective increase in non-fuel rates will be 5.03% on average for customers, since the foreign exchange component is already reflected in customer bills under the foreign exchange adjustment line each month.

2007 represents the third year, in the past four years of the PBRM framework, in which JPS experienced hurricane storm damage, with the damage from hurricane Dean amounting to approximately J$1.2 billion, which is not included in the tariffs. This is particularly concerning given that there is still a significant amount of disputed storm damage costs in relation to the 2004 Hurricane Ivan claim (approximately J$973 million) that is still awaiting a hearing date to come before the Appeals Tribunal. Additionally, there is an outstanding claim in relation to hurricane storm damage that occurred during the 2005 hurricane season amounting to approximately J$193 million. It is extremely important for the matter of the Hurricane Recovery to be heard by the Appeals Tribunal, given its significance and the need for closure. The lengthy delay in resolving this good-faith dispute has far-reaching implications for all parties concerned.

Preamble (Cont'd)

JPS believes that the Licence appropriately contemplates events such as hurricanes under the Z-factor, with the overall view of providing the correct set of incentives to JPS to ensure that it operates efficiently, continues to improve its productivity, and remains financially viable so as to attract the necessary financing that is required on an ongoing basis in this highly capital intensive business. This is fundamental to ensuring that JPS is able to meet its service obligations under the Licence and that it operates in an efficient manner. JPS wishes to resolve this matter in the shortest possible time and to finalize the regulatory policy and procedures in relation to all aspects of hurricane storm damage claims and the operation of the hurricane self insurance fund (i.e. the sinking fund).

JPS remains committed to improving its productivity and tackling the issue of system losses (specifically the theft of electricity). While electricity loss reduction continues to be a challenge, a number of initiatives introduced over the past two years have started to bear fruit as 2007 represents the first year in the past 5 years that losses did not increase notably amidst significant increases in world oil prices. The last quarter of 2007, in particular, was very encouraging as the company, through its investigatory arm, made several notable breakthroughs in its loss reduction efforts as evidenced by two of the largest findings ever. While the system losses for 2007 was 23.2%, up marginally from 22.9% in 2006 (which compares favourably to the average 1% increase annually in system losses over the previous 5 years), Q4'07 reflected system losses of 22.8% compared to 23.4% for Q4'06. System losses have an unavoidable cost component relating to technical losses that are estimated to be approximately 10%. The avoidable costs (i.e. non-technical losses) amounted to approximately J$4.8 billion in 2007 (2006: J$4.1 billion), of which J$2 billion (2006: J$1.8 billion) was recovered through the tariffs.

JPS will be continuing with and intensifying its loss reduction efforts in 2008 as this is one of its chief business goals. However, we wish to reiterate that the resolution of this matter requires a national commitment to reducing crime. We cannot tolerate the criminal act of stealing electricity by any individual or business, as this has a significant impact on all stakeholders. In 2007, we carried out 134 (2006: 138) arrests and 15,000 (2006: 13,000) account audits; removed over 25,000 (2006: 7,000) throw-ups; and recovered approximately 49 (2006: 9) GWh or J$494 (2006: J$101) million in retroactive and forward billing. The investigations and analyses done during the past year, as well as the Customer/Feeder Mapping project, have also set the stage for a more intense loss reduction program in 2008. Our Focus for 2008 will be on: Intelligence & Analysis, Systems Integrity & Controls and Public Involvement & Education Campaign. . To this end, JPS is implementing an Advanced Metering Infrastructure program for priority commercial customers. The first phase, to be completed in April 2008, involves the installation of 1,700 smart meters along with the necessary infrastructure at a cost of approximately J$100 million. The second phase, to be completed over the next two years, involves the installation of 4,300 meters. This will result in the introduction of automatic metering for JPS' top 6,000 commercial customers that account for approximately half of all energy consumption. This will significantly improve the company's ability to monitor customer consumption on the national grid on a real time basis thereby significantly improving our ability to detect non-technical losses.

Glossary

ABNF	-	Adjusted Non-fuel base rate
AMI	-	Automatic Metering Infrastructure
ADC	-	Average Dependable Capacity
CAPM	-	Capital Asset Pricing Model
CAIDI	-	Customer Average Interruption Duration Index
CIS	-	Customer Information System
CML	-	Customer Minutes Lost
CPI	-	Consumer Price Index
CRP	-	Country Risk Premium
CT	-	Current Transformer
CWIP	-	Construction Work in Progress
DCF	-	Discounted Cash Flow
DEA	-	Data Envelope Analysis
EFLOP	-	Equivalent Full Load Provision
EMS	-	Environmental Management System
GDP	-	Gross Domestic Product
GOJ	-	Government of Jamaica
GPS	-	Global Position Satellite
GWh	-	Gigawatt-hours
IPP	-	Independent Power Purchase
IVR	-	Interactive Voice Response
kVA	-	Kilo Volt Amperes
kWh	-	Kilowatt-hours
Licence	-	The All Island Electric Licence 2001
MAIFI	-	Momentary Average Interruption Frequency Index
MVA	-	Mega Volt Amperes
MW	-	Megawatt
MWh	-	Megawatt-hours
NWC	-	National Water Commission
O&M	-	Operating and Maintenance

Glossary (Cont'd)

OCC	-	Opportunity Cost of Capital
PBRM	-	Performance Based Rate-Making Mechanism
RDC	-	Required Dependable Capacity
REP	-	Rural Electrification Programme Limited
RPD	-	Revenue Protection Department
SIF	-	Self Insurance Fund
SAIDI	-	System Average Interruption Duration Index
SAIFI	-	System Average Interruption Frequency Index
SCADA	-	Supervisory Control and Data Acquisition
SFA	-	Stochastic Frontier Analysis
PT	-	Potential Transformer
T&D	-	Transmission & Distribution
TFP	-	Total Factor Productivity
TOU	-	Time of Use
WACC	-	Weighted Average Cost of Capital

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Section 1: PBRM Annual Adjustment

1.1 Overview

According to Exhibit 1 in the Licence:

"The Non-Fuel Base Rate for each customer class shall be adjusted on an annual basis, commencing June 1, 2004, *(Adjustment Date)*, pursuant to the following formula:

$ABNFy = ABNFy_{-1} (1 + dPCI)$

Where:

$ABNF_y$ = Adjusted Non-Fuel Base Rate for Year "y"

$ABNF_{y-1}$ = Non-Fuel Base Rate prior to adjustment

dPCI = Annual rate of change in the non-fuel electricity prices as defined below

PCI = Non-fuel Electricity Pricing Index

"The annual PBRM filing will follow the general framework where the annual rate of change in non-fuel electricity prices (dPCI) will be determined through the following formula:

$dPCI = dI \pm X \pm Q \pm Z$

Where:

dI = the annual growth rate in an inflation and devaluation measure;

X = the offset to inflation (annual real price increase or decrease) resulting from productivity changes in the electricity industry;

Q = the allowed price adjustment to reflect changes in the quality of service provided to the customers; and

Z = the allowed rate of price adjustment for special reasons not captured by the other elements of the formula.

The dPCI above was modified on page 13 of the OUR's June 25, 2004 Determination Notice as follows:

"The price cap will be applied on a global basis. Specifically, the annual adjustment factor (1 + dPCI) will be applied to the tariff basket instead of the individual tariff. The adjustment in each tariff will be weighted by an associated quantity for each element. The weighted average increase of the tariff basket must not exceed the price adjustment factor (1 + dPCI)."

1.1 Overview (Cont'd)

The OUR's Determination Notice further states that:

> "The inflation adjustment formula (dI) to be used during the 2004 – 2009 tariff period has been changed to more accurately reflect the inflation costs incurred on JPS. The base non-fuel tariffs shall be adjusted annually, as follows:
>
> $$\mathbf{b_1 = b_0 [1 + dI]}$$
>
> $$\mathbf{dI = [0.76 * e + 0.76 * 0.922 * e*i_{US} + 0.76 * 0.922 * i_{US} + 0.24 * i_j}$$
>
> where:
>
> b_0 = Base non-fuel tariff at time period t = 0
>
> b_1 = Base non-fuel tariff at time period t = 1
>
> e = Percentage change in the Base Exchange Rate
>
> i_{US} = U.S. inflation rate (as defined in the Licence)
>
> i_j = Jamaican inflation rate (as defined in the Licence)
>
> 0.76 = U.S. factor
>
> 0.24 = Local (Jamaica) factor

1.2 Details of the current year annual inflation adjustment (dI)

The annual adjustment allows JPS to adjust its rates to reflect general movements in prices, improvements in productivity, changes in service quality and unforeseen occurrences beyond management control not captured in the other elements of the PBRM. The following outlines JPS' proposals in relation to the components of the dPCI and its application to the non-fuel tariffs .

The application of the above formula results in an inflation adjustment factor of 11.66%, derived using the following factors:

- The Jamaican twelve month point to point inflation rate to February 29, 2008 of 19.92%, derived from the most recent CPI data[1] (see Appendix I);
- The U.S. twelve month point to point inflation rate to February 29, 2008 of 4.03%, derived from the U.S. Department of Labor statistical data[2] (see Appendix I); and
- The resetting of the base exchange rate from J$68:US$1 to J$71.5:US$1.

Table 1.1 below sets out the details of the escalation factor adjustment (dI only) that amounts to 11.66% for 2008. Of this 11.66% increase, 3.91% is attributable to the resetting of the base exchange rate. Additionally, the actual increase in the non-fuel tariffs for 2008 will be net of a 2.72% X-factor reduction (as detailed in section 1.4), so the real adjustment to tariffs on average is expected to be 5.03% (i.e. 11.66% - 3.91%-2.72%).

[1] Obtained from the Statistical Institute of Jamaica.
[2] Obtained from U.S. Bureau of Labor Statistics website, http://data.bls.gov/cgi-bin/surveymost

1.2 Details of the current year annual inflation adjustment (Cont'd)

Table 1.1

Escalation Factor (dI)

Line	Description	Formula	Value
	Base Exchange Rate		
L1	Current		**68**
L2	Proposed		**71.5**
	Jamaica Inflation Index[3]		
L3	CPI @ Feb 2008		**121.50**
L4	CPI @ Feb 2007		**101.32**
	U.S. Inflation Index[3]		
L5	CPI @ Feb 2008		**211.7**
L6	CPI @ Feb 2007		**203.5**
L7	Exchange Rate Factor	(L2-L1)/L1	**5.15%**
L8	Jamaican Inflation Factor	(L3-L4)/L4	**19.92%**
L9	U.S. Inflation Factor	(L5-L6)/L6	**4.03%**
L10	Escalation Factor (dI)	0.76*L7*(1+0.922*L9) +0.76*0.922*L9 + 0.24*L8	**11.66%**

1.3 Application of the Annual Inflation Adjustment Factor (dI)

Based on Table 1.1 above, an annual adjustment factor of 11.66% can be applied to the total tariff basket. The adjustment in each tariff will be weighted, thus the adjustment across rates will be dependent on their relative weights in relation to the total tariff basket. The tariff basket, shown in Table 1.2 below, is derived using the 2007 billing determinants and the approved non-fuel tariffs for 2007 (see Table 1.4 for the approved 2007 tariffs).

Table 1.2

Total Non-Fuel Tariff Basket

Class		Block/ Rate Option	Customer Charge Revenue (J$'000)	Energy Revenue (J$'000)	Hurricane Recovery Charge (J$'000)	Demand (KVA) Revenue (J$'000)				Total Demand Revenue (J$'000)	Total Revenues (J$'000)
						Std.	Off-Peak	Part-Peak	On-Peak		
Rate 10	LV	< 100 kWh	15,109	2,034,417	28,720						2,078,247
Rate 10	LV	> 100 kWh	28,060	6,640,108	53,337						6,721,505
Rate 20	LV		11,570	5,931,145	53,860						5,996,576
Rate 40A	LV		694	338,447	4,767	91,852				91,852	435,761
Rate 40	LV	STD	3,103	1,262,422	43,469	1,921,784				1,921,784	3,230,779
Rate 40	LV	TOU	360	341,510	11,759		16,996	179,025	181,975	377,996	731,626
Rate 50	MV	STD	222	613,481	23,432	795,158				795,158	1,432,293
Rate 50	MV	TOU	68	277,791	10,610		16,669	169,666	178,455	364,789	653,258
Rate 60	LV		243	669,170	5,119						674,532
Total			59,430	18,108,493	235,074	2,808,795	33,665	348,691	360,430	3,551,581	21,954,577

[3] See Appendix I for details of CPI indices.

1.3 Application of the Annual Inflation Adjustment Factor (dI) (Cont'd)

The weights of each tariff, relative to the total tariff basket shown in Table 1.2, are shown in Table 1.3 below.

Table 1.3

Non-Fuel Tariff Basket Weights

Class	Block/ Rate Option	Customer Charge	Energy Charge	Hurricane Recovery Charge	Demand Charge				Total
					Std.	Off-Peak	Part-Peak	On-Peak	
Rate 10	< 100 kWh	0.1%	9.3%	0.1%	0.0%	0.0%	0.0%	0.0%	9.5%
Rate 10	>100 kWh	0.1%	30.2%	0.2%	0.0%	0.0%	0.0%	0.0%	30.5%
Rate 20	LV	0.1%	27.0%	0.2%	0.0%	0.0%	0.0%	0.0%	27.3%
Rate 40A	LV	0.0%	1.5%	0.0%	0.4%	0.0%	0.0%	0.0%	1.9%
Rate 40	LV - Std	0.0%	5.8%	0.2%	8.8%	0.0%	0.0%	0.0%	14.8%
Rate 40	LV - TOU	0.0%	1.6%	0.1%	0.0%	0.1%	0.8%	0.8%	3.4%
Rate 50	MV - Std	0.0%	2.8%	0.1%	3.6%	0.0%	0.0%	0.0%	6.5%
Rate 50	MV - TOU	0.0%	1.3%	0.0%	0.0%	0.1%	0.8%	0.8%	3.0%
Rate 60	LV	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%
Total		0.3%	82.5%	0.9%	12.8%	0.2%	1.6%	1.6%	100.0%

The non-fuel base rates approved in the 2007 Annual Tariff Adjustment, which were used to derive the 2007 non-fuel tariff basket, are shown in Table 1.4 below.

Table 1.4

Approved Non-Fuel Tariffs for 2007

Class	Block/ Rate Option	Customer Charge (J$/ Month)	Energy Charge (J$/kWh)	Hurricane Recovery Charge (J$/kWh)	Demand Charge (J$/KVA)			
					Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	<100 kWh	82	5.249	0.074				
Rate 10	>100 kWh	82	9.225	0.074				
Rate 20	LV	188	8.16	0.074				
Rate 40A	LV	2,610	5.261	0.074	328			
Rate 40	LV - Std	2,610	2.152	0.074	839			
Rate 40	LV - TOU	2,610	2.152	0.074		34	366	468
Rate 50	MV - Std	2,610	1.94	0.074	755			
Rate 50	MV - TOU	2,610	1.94	0.074		31	329	421
Rate 60	STREET-LIGHTS	684	9.687	0.074				
Rate 60	TRAFFIC-LIGHTS	684	6.527	0.074				

1.4 Application of the Annual Inflation Adjustment Factor (dI - X)

Schedule 3 Exhibit 1 of the Licence defines the X-factor as follows:

> "The X-factor is based on the expected productivity gains of the Licensee's Business. The X-factor is to be set to equal the difference in the expected total factor productivity growth of the Licensed Business and the general total factor productivity growth of firms whose price index of outputs reflect the escalation measure 'dI'."

In the June 25, 2004 Determination Notice by the OUR, the X-factor was set at 2.72%, being a reduction to the annual inflation adjustment, to be applied as of 2007. Accordingly, the annual adjustment factor for 2008/9 that reflects dI – X would be 8.94% (i.e. 11.66% - 2.72%).

Table 1.5 below shows how JPS proposes to apply the annual adjustment factor of 8.94% to the individual tariffs, with some level of tariff rebalancing between the rate classes.

Table 1.5

Annual Non-Fuel Inflation Adjustment per tariff, net of X (dI - X)

Class	Block/ Rate Option	Customer Charge (J$/ Month)	Energy Charge (J$/kWh)	Hurricane Recovery Charge (J$/kWh)	Demand Charge (J$/KVA)			
					Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	0 - 100 kWh	10.00%	8.66%	0.00%				
Rate 10	>100 kWh	10.00%	8.66%	0.00%				
Rate 20	LV	10.00%	8.94%	0.00%				
Rate 40A	LV	10.00%	14.00%	0.00%	8.94%			
Rate 40	LV - Std	10.00%	10.00%	0.00%	8.94%			
Rate 40	LV - TOU	10.00%	10.00%	0.00%		8.94%	8.94%	8.94%
Rate 50	MV - Std	10.00%	10.00%	0.00%	8.94%			
Rate 50	MV - TOU	10.00%	10.00%	0.00%		8.94%	8.94%	8.94%
Rate 60	STREET-LIGHTS	10.00%	8.94%	0.00%				
Rate 60	TRAFFIC-LIGHTS	10.00%	8.94%	0.00%				

Given the 5.15% currency depreciation reflected in the resetting of the base exchange rate from J$68:US$1 to J$71.5:US$1, of which 3.91% would already be reflected on customer bills through the foreign exchange adjustment clause, the above non-fuel tariff increases actually reflect a real rate reduction in J$ terms for residential and commercial customers. We believe this is noteworthy in the context of applicable point to point Jamaican inflation recorded for the period of 19.92%.

Please note that a detailed analysis of the non-fuel tariff increase and the bill impact for the typical JPS customer in each rate class has been provided in Appendix VI.

As per the June 2004 OUR determination, the weighted annual adjustment factor proposed by JPS should equate to the annual adjustment factor of 8.94%. Proof of this is shown in table 1.6 below.

1.4 Application of the Annual Inflation Adjustment Factor (dI - X) (Cont'd)

Table 1.6

Weighted Non-Fuel Inflation Adjustment (dI - X)

Class	Block/ Rate Option	Customer Charge (J$/Month)	Energy Charge (J$/kWh)	Hurricane Recovery Charge (J$/kWh)	Demand Charge (J$/KVA)				Total
					Std.	Off-Peak	Part Peak	On-Peak	
Rate 10	< 100 kWh	0.01%	0.81%	0.00%	0.00%	0.00%	0.00%	0.00%	0.82%
Rate 10	>100 kWh	0.01%	2.61%	0.00%	0.00%	0.00%	0.00%	0.00%	2.62%
Rate 20	LV	0.01%	2.41%	0.00%	0.00%	0.00%	0.00%	0.00%	2.42%
Rate 40A	LV	0.00%	0.21%	0.00%	0.04%	0.00%	0.00%	0.00%	0.25%
Rate 40	LV - Std	0.00%	0.58%	0.00%	0.79%	0.00%	0.00%	0.00%	1.37%
Rate 40	LV - TOU	0.00%	0.16%	0.00%	0.00%	0.01%	0.07%	0.07%	0.31%
Rate 50	MV - Std	0.00%	0.28%	0.00%	0.32%	0.00%	0.00%	0.00%	0.60%
Rate 50	MV - TOU	0.00%	0.13%	0.00%	0.00%	0.01%	0.07%	0.07%	0.28%
Rate 60	LV	0.00%	0.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.27%
Total		0.03%	7.46%	0.00%	1.15%	0.02%	0.14%	0.14%	8.94%

It is worth noting that 3.91% of the 8.94% increase in the non-fuel tariffs is the result of resetting the base exchange rate from 68:1 to 71.5:1 (refer to Table 1.1). Accordingly, the actual increase in non-fuel tariffs would be 5.03% on average, ignoring the effects of the tariff rebalancing and before the application of any Z-factor adjustment.

Table 1.7 below shows the proposed rates after resetting the base exchange rate and after application of both the inflation and the X-factors (i.e. dI – X), based on the proposed non-fuel tariff percentage increases shown in Table 1.5.

Table 1.7

Inflation and X-Factor Adjusted Rates (dI - X)

Class	Block/ Rate Option	Customer Charge (J$/Month)	Energy Charge (J$/kWh)	Hurricane Recovery Charge (J$/kWh)	Demand Charge (J$/KVA)			
					Std.	Off-Peak	Part- Peak	On-Peak
Rate 10	< 100 kWh	90	5.703	0.078				
Rate 10	>100 kWh	90	10.024	0.078				
Rate 20	LV	207	8.890	0.078				
Rate 40A	LV	2,871	5.998	0.078	357			
Rate 40	LV - Std	2,871	2.367	0.078	914			
Rate 40	LV - TOU	2,871	2.367	0.078		37	399	510
Rate 50	MV - Std	2,871	2.134	0.078	822			
Rate 50	MV - TOU	2,871	2.134	0.078		34	358	459
Rate 60	STREET-LIGHTS	752	10.553	0.078				
Rate 60	TRAFFIC-LIGHTS	752	7.111	0.078				

1.5 Application of the Z-Factor to the annual adjustment (dI - X + Z ± Q)

The final tariff for 2008/2009 is be derived by adjusting the rates shown in Table 1.7 above, that represent the inflation and X-factor adjusted rates (i.e. dI – X), to account for any Q-factor and/or Z-factor adjustments.

Based on the data provided on the quality of service performance for 2007 in Section 3 of this document, you will see that the Q-factor adjustment is actually 0% for 2008. That is to say, the quality of service performance in 2007, compared to the benchmark data for 2006, results in no reward or penalty to the annual PBRM adjustment for this year. The complete details of the performance in the specified quality of service measures (viz. SAIDI, SAIFI and CAIDI) are provided in Section 3.

Similarly, the complete details of the Z-factor adjustment are presented in Section 2 of this document. JPS is not actually requesting an increase in tariffs as a direct result of the 2007 hurricane season and its impact on the Company. Instead, in Section 2.3, the Company has recommended that the annual sinking fund be increased from US$3 million to US$5 million per annum, in line with the findings of the OUR's 2006 Rate Determination, section 4.1 "Providing for an adequate Sinking Fund". This increased savings would require an adjustment of 4.41¢ per kWh and would be applied to the energy charge only (i.e. no impact on customer and demand charges). Accordingly, the full impact of the annual PBRM on the non-fuel rates after including the Z-factor adjustment in the energy charge is shown in Table 1.8 below.

Table 1.8

Summary of Proposed 2008/2009 Non-Fuel Tariffs (dI - X ± Q + Z)

Class	Block/ Rate Option	Customer Charge (J$/Month)	Energy Charge (J$/kWh)	Hurricane Recovery Charge (J$/kWh)	Demand Charge (J$/KVA)			
					Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	<100 kWh	90	5.747	0.078				
Rate 10	>100 kWh	90	10.068	0.078				
Rate 20	LV	207	8.934	0.078				
Rate 40A	LV	2,871	6.042	0.078	357			
Rate 40	LV - Std	2,871	2.411	0.078	914			
Rate 40	LV - TOU	2,871	2.411	0.078		37	399	510
Rate 50	MV - Std	2,871	2.178	0.078	822			
Rate 50	MV - TOU	2,871	2.178	0.078		34	358	459
Rate 60	STREET-LIGHTS	752	10.597	0.078				
Rate 60	TRAFFIC-LIGHTS	752	7.155	0.078				

It is important to note that the proposed increase the non-fuel charges is expected to have a total bill impact of 1.91% for JPS' typical residential customer and 1.53% for JPS' typical large commercial customer. The details of the increase in the various non-fuel rates and the estimated bill impact for JPS' typical customer in each rate class is summarized in Appendix VI.

Section 2: Exogenous Shocks: The Z-Factor

2.1 Background

On August 19, 2007, Hurricane Dean, a category 4 hurricane, passed in close proximity to Jamaica affecting the island with hurricane force winds ranging from category 1 (up to 90 mph) in the northern regions to category 3 (about 125 mph) in the southern regions of the island. As a result, the electricity service provided island-wide by JPS was interrupted and JPS suffered damages to its assets. It took approximately five weeks to fully restore service to customers across the island.

As documented, JPS is not able to obtain conventional insurance coverage in relation to its T&D assets. As a result, the OUR approved the commencement of a self-insurance sinking fund effective June 2004 in conjunction with the regulatory protection provided under the Z-factor clause of the Licence.

JPS is required to file for recovery of the relevant costs under the Z-factor, as defined in Schedule 3 (Exhibit 1) of the Licence:

"The Z-factor is the allowed percentage increase in the price cap index due to events that:

a) affect the Licensee's costs;
b) are not due to the Licensee's managerial decisions; and
c) are not captured by the other elements in the price cap mechanism."

The Z-factor claim, as outlined in detail in section 2.2, relates to hurricane storm damage suffered by JPS' in 2007. This claim has been quantified based on the total cash flow impact of the hurricane storm damage on the company. This is consistent with section 1.2, of the OUR's June 24, 2004, Determination Notice, where the OUR states:

> "It is therefore the objective of the Office to ensure that the tariff determination will:
>
> - further improve upon customer service and service reliability;
> - provide the correct set of incentives for JPS to operate efficiently and to continue improving its productivity;
> - provide a fair return to investors; and
> - ensure that, while the price cap regime imposes a constraint on the company to pass on excessive costs to the customers, it does not unfairly impose upon the company risks that are outside of managerial control."

We believe the above describes a PBRM revenue cap framework which, when properly developed, allows the company the ability to meet its costs, which includes its routine operating costs, the cost of capital invested by its shareholders and to ensure the company is able to attract further capital when required. This framework restrains the annual price adjustment that the company is allowed to charge to customers, to inflation less imposed allowances for productivity efficiency gains and quality of service targets.

It is JPS' fundamental position that the costs included in this claim are the result of risks that are outside of its managerial control and that to deny recovery of such costs would be to unfairly impose upon the company risks that are outside of managerial control.

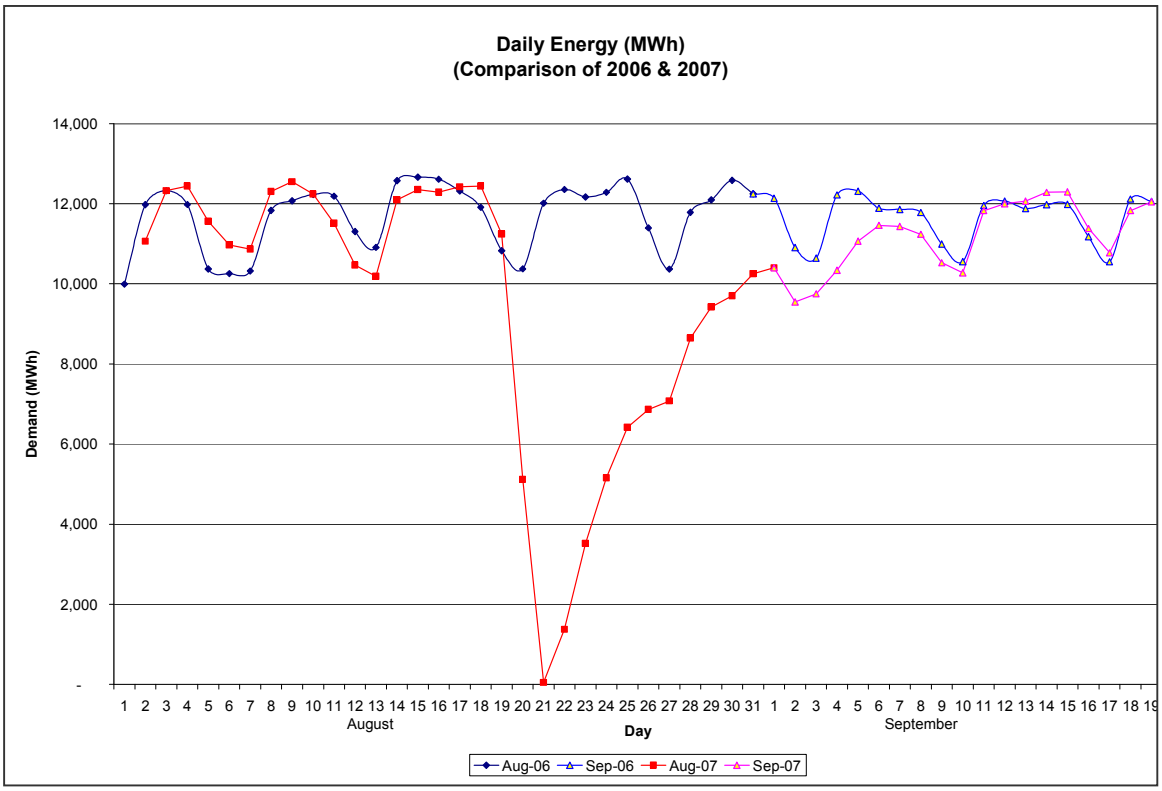
2.2 Z-factor impact on JPS

2.2.1 Financial Considerations

Hurricane Dean had numerous affects on the Company from a financial and operational point of view. JPS was forced to suspend routine operations for approximately four to five weeks to focus its attention and resources on restoring electricity to its customers expeditiously. Notably, the company suspended all of its field service activities, including meter reading and revenue protection activities, as these resources were redeployed to the hurricane restoration effort.

In addition to the unplanned expenditure incurred as part of the restoration effort (as outlined in more detail in section 2.2.2), JPS also experienced a significant fall in energy sales during the hurricane restoration period as evidenced by the gross daily energy production chart show in Table 2.1 below.

Table 2.1 Gross daily energy production



This fall in energy sales caused a significant fall in collections and resulted in an inability of JPS to recover fixed costs embedded in the Company's revenue requirement. Further details on the fall out in energy sales and the resulting inability to recover normal operating costs are provided in section 2.2.3 (fixed cost recovery).

As a result of all of the above, JPS had to secure a US$10 million short-term loan facility from First Caribbean International Bank Limited on September 14, 2007 and a US$5 million facility from the sinking fund reserve on September 21, 2007. These facilities were necessary to ensure that the Company could meet its normal financial obligations.

2.2 Z-factor impact on JPS (Cont'd)

2.2.2 Restoration Costs

The hurricane restoration costs have been appropriately disclosed in JPS' financial statements and reviewed by the independent auditing firm KPMG, as part of that firm's statutory audit of JPS' financial statements. The costs reflected in the financial statements relate to incremental costs incurred directly as a result of the hurricane restoration costs. No embedded costs (e.g. basic salaries of employees working on the restoration project) have been included in the hurricane restoration costs shown in Table 2.2 below.

The costs included in the financial statements were based on expenditure up to December 31, 2007, as evidenced by appropriate duly authorized supporting documentation (e.g. third party invoices for contractor services, duly authorized overtime forms for labour charges and duly authorized materials requisition forms for materials issued from inventories). KPMG reviewed this expenditure as a part of the overall statutory audit to ensure that the expenditure incurred was properly authorized and appropriately classified. A summary of these incremental costs subjected to audit are noted in Table 2.2 below:

Table 2.2 Hurricane restoration costs

	J$000's
Generation System	45,434
Transmission System	49,081
Distribution System	522,176
Others	71,846
Total	688,538

A more detailed review will be conducted by KPMG based upon a terms of reference which is approved by the OUR to provide an appropriate level of assurance to the OUR.

The complete details of the restoration costs incurred by parish and by major expense classification are included in Appendix III.

2.2.3 Fixed cost recovery

A Z-factor adjustment is also required to recover prudently incurred costs which, due to events that meet the criteria stated in the Z-factor, cannot otherwise be recovered under the PBRM regulatory framework. The recovery of fixed costs is of extreme importance, as JPS has significant operating costs which do not reduce with sales, notably, payroll, insurance and debt servicing costs (to highlight a few) and the recovery of these costs (which form a significant part of JPS' approved revenue requirement) represents the company's basic ability to pay for approved operating costs under the PBRM framework. Therefore, JPS' approach to the Z-factor claim is to:

(i) claim for all appropriately incurred incremental costs (i.e. costs directly associated with the hurricane restoration effort) and not attempt to include any fully embedded costs to the incremental cost claim (e.g. regular salaries for employees); and

(ii) claim for appropriate embedded costs in the non-fuel revenue requirement which were under-recovered in the energy sales (i.e. sales lost as a result of the hurricane).

2.2 Z-factor impact on JPS (Cont'd)

2.2.3 Fixed cost recovery (Cont'd)

While JPS is fully cognizant of the normal sales risk it faces and its ability to recover operating costs, it should not be penalised for energy sales that are not realised as a direct result of a hurricane. The foregone energy sales in this context have the direct result of causing the under-recovery of normal operating costs that would otherwise be recovered in the PBRM formula. The company cannot avoid such fixed costs during the hurricane period, yet one of the affects of the hurricane itself is to prevent the normal recovery of such costs. Since the Z-factor is designed to address special reasons not captured under other elements of the PBRM formula, it is appropriate for the Z-factor to recover such costs.

As it relates to the energy sales performance, the sales forecast for 2006/7 was 3,245,000 mWh[4] and this was expected to grow by 4% for 2007/8. A review of the actual billed sales for the three month period prior to hurricane Dean in August reveals that sales were in line with that forecast as per Table 2.3 below.

Table 2.3

Comparison of pre-Hurricane Sales vs Forecast

	May-07	Jun-07	Jul-07	TOTAL
Actual Sales	266,691	280,620	274,815	822,126
Forecast sales				822,067
Actual Sales excess over forecast				0.01%

Accordingly, any sales shortfall experienced during the immediate months following the hurricane (i.e. August to October 2008) relative to the applicable sales forecast noted above is deemed to be the result of hurricane Dean, as shown in Table 2.4.

The embedded non-fuel costs are based on the OUR-approved revenue requirement, adjusted to exclude costs that are not considered appropriate for these purposes. The items excluded relate to the revenue requirement for IPP costs, sinking fund costs and the revenue components associated with the demand charge and customer charge. These items have been excluded for the following reasons:

(i) there can be no under-recovery of IPP costs due to the IPP surcharge methodology;
(ii) there is not likely to be any notable under-recovery on the demand charge because of lower than planned energy sales, due to the nature of the demand charge;
(iii) there is not likely to be any notable under-recovery in customer charges; and
(iv) there is no necessity to recoup the sinking fund component of the revenue requirement lost to lower than planned energy sales.

Based on the actual energy sales for the three month period August to October 2007, compared to the expected sales for a comparable period derived from the 2006/7 annual sales forecast of 3,245,000 mWh adjusted for 4% sales growth, the value of the operating costs embedded in the non-fuel revenue requirement which were under-recovered as a result of hurricane Dean is J$410.46M, as reflected in Table 2.4 below.

[4] Refer to section 3.42 of the OUR's 2007 Determination Notice.

2.2 Z-factor impact on JPS (Cont'd)

2.2.3 Fixed cost recovery (Cont'd)

Table 2.4

Non-fuel revenues lost to Hurricane Dean

	J$000's
Approved revenue requirement	17,298,260
Less:	
- IPP costs	(3,002,542)
- Sinking fund	(122,000)
Adjusted revenue requirement	$14,173,718

Billing determinants - proportions (2007)	
Energy charge	82.50%
Customer charge	0.30%
Z-factor charge	0.90%
Demand charge	16.30%
	100.00%

Adjusted revenue requirement	J$000's
for energy charge only (82.50%)	$11,693,317
Forecast sales (mWh) in 2004	3,075,800
Average per Kwh energy rate (2004)	$3.80
Cumalative rate adjustments	
from 2005 to 2007	18.02%
Adjusted Avg per Kwh energy rate	$4.49
Billed sales Aug-Oct'07 (mWh)	752,215
Expected sales Aug-Oct'07 (mWh)	
based on 4% growth on 3,245,000	843,700
Deemed sales short-fall due	
to hurricane Dean (10.8%)	91,485
Estimated Short-fall	$410,459

2.2.4 Opportunity Cost of Capital (OCC)

The Z-factor impact on the company is two-fold in terms of its negative effect on working capital. JPS incurred additional expenditure of approximately J$688.54M while also experiencing an under-recovery of fixed costs amounting to J$410.46M, making the total cash impact on the company J$1,099M.

As mentioned under Section 2.2.1 Financial Considerations, JPS funded the hurricane restoration effort primarily through debt financing, which includes a US$5M (or J$355M) advance from the sinking fund. Accordingly, JPS believes that the opportunity cost of capital (OCC) should be calculated using the company's average cost of debt provided that the J$355M portion advanced from the sinking fund is treated as interest-free. Accordingly, the OCC will only be calculated on J$744M (i.e. J$1,099M - J$355M).

Based on an assumed two year recovery period of the J$744M in equal monthly instalments, a six month moratorium[5], the cost of debt of 11%[6] and assuming interest on the reducing balance basis, the total OCC on J$744M would be J$135.0M.

Based on all of the above, the total cash impact of hurricane Dean on the Company in relation to restoration costs, under-recovered fixed costs and the opportunity cost of capital was J$1,234.0M, of which J$355M has been received as an advance from the sinking fund, leaving a balance of J$879M to be recovered.

[5] That is to say, if the debt was assumed to be incurred at year end and the first recovery does not start until July 1, then there would be a 6 month moratorium before recovery.

[6] Based on the weighted average 'all in' cost of debt as at December 31, 2007.

2.3 Leveraging the Self Insurance Fund

The sinking fund, or self insurance fund (SIF), currently has a balance of approximately US$4M as at March 31, 2008 (Mar-31-07: US$6M), which is partly due to the US$5M advance granted from the SIF by the OUR (without prejudice) in relation to damages incurred as a result of Hurricane Dean. This advance was considered to be in the best interest of all stakeholders, since the interest being earned by the SIF investments was less than 5% p.a. compared to the company's average cost of borrowing of 11%.

The current annual funding rate for the self insurance fund is US$3M per annum, as of June 2006, up from US$2M per annum previously. However, we note that in section 4.1 "Providing for an adequate Sinking Fund" of the OUR's 2006 Determination Notice, that, consideration was being given to increasing the funding rate to US$5M per annum. This increased level of funding was based on the increased hurricane activity in the region and the desire to achieve a target savings of US$20M in the SIF.

At the same time, JPS also recognizes the need to maximize the effectiveness of the SIF as a means to offsetting damages as a result of Acts of God, thereby mitigating the need to utilize the Z-factor adjustment under the annual PBRM. In this regard, JPS entered into negotiations with several financial institutions (locally and internationally), with the OUR's knowledge, to discuss leveraging (or collateralizing) the annual savings of the SIF so as to obtain increased protection for the SIF during its infancy stage. Our discussions to date have been very encouraging and have revealed that with a US$5M annual funding rate that the company would be able to obtain US$30M in immediate SIF protection[7]. This should allow a reasonable level of protection in relation to future and pending claims as the result of Acts of God. Additionally, this approach would allow us to continue focussing on building up the SIF to the US$20M target while also benefiting from the additional upside protection in case we experience significant damage as a result of an Act of God prior to reaching to the desired goal.

The full details of how this collateralizing would be arranged, along with the pertinent financial information, will be provided to the OUR in short order, to help inform the OUR of the viability of this planned approach. However, early indications suggest that this strategy will certainly provide access to cheaper sources of financing than that which is currently available to JPS taken as a whole and that it will be on an unsecured basis for tenures which are consistent with our expectations. The end result being an arrangement that helps to mitigate the potential for rate shock and the need to implement Z-factor adjustments under the annual PBRM.

We believe the hurricane experience in 2007 reinforces the need to increase the funding rate to US$5M per annum and accordingly request that the OUR grants approval to do so.

This additional savings of US$2M (J$143M at the base exchange rate of $71.5) would translate into an additional energy charge of 4.41¢ per kWh using a forecast energy sales of 3,245,000 mWh. This additional charge is proposed in Table 1.8 of section 1.5.

[7] Negotiations are in fairly advanced stages. Once certain necessary clarification is obtained from the OUR, JPS should be able to have the facilities in place prior to the start of the 2008 hurricane season (i.e. June 2008).

2.4 Proposed recovery mode

2.4.1 Interim recovery of the 2007 Z-factor claim

Having regard to the pending Tribunal hearing over the 2004 Z-factor claim, in the event that it is determined by the OUR that any of the claims, as set out at in section 2.2 above, are not recoverable in full or in part, JPS asks the OUR to make a determination that JPS be allowed to effect recovery of any item determined recoverable, whether in full or in part, in a manner to be determined by OUR (i.e. whether through the self insurance fund or through additional energy rates).

Additionally, JPS requests a determination that the recovery of any sum, in accordance with our request in the paragraph above, be effected without prejudice to the company's right of appeal against any determination(s) that any item of the claim or any portion thereof, as set out in section 2.2, is not recoverable by JPS.

This request is made to prevent undue accumulation of any Z-factor claim amounts. Any delay in recovery will necessarily result in a higher level of recovery for past events while leaving exposure for future events including the upcoming 2008 hurricane season. This is clearly an undesirable situation that increases the risk exposure of the company.

In accordance with the foregoing, JPS has provided a pro forma adjustment in Table 2.5 to its current Z-factor claim of J$1,234.0M. These pro forma adjustments are made based on the guidance provided by the OUR in its 2004 ruling and subsequent letter (dated September 9, 2005) provided to JPS. In relation to the 2004 Z-factor claim the OUR argued as follows, the OUR was of the opinion that:

- the recovery of revenue losses was inappropriate;
- the inclusion of claims in relation to generation assets was inappropriate;
- there were enhancement costs to the system which should be treated as capital improvements and deferred for recovery until the 2009 rate case review; and
- the principle of the opportunity cost of capital was correct.

Applying the OUR principles above, the JPS claim could be adjusted as follows:

Table 2.5

Pro forma Adjustments to JPS' Z-factor claim based on OUR principles

{Amounts in J$ millions}	J$M
Total claim per JPS	1,234.00
Adjustments to exclude:	
- Lost revenues	(410.50)
- Damage to Generation assets	(45.40)
- OCC per JPS	(135.00)
Sub-total of Allowed costs (see Table 2.6)	643.10
Further adjustments to exclude:	
- Enhancement costs (see Table 2.6)	(217.65)
Add: OCC per OUR principles[8]	12.77
Undisputed portion of claim	438.22

[8] Using the OUR principles, the applicable costs to charge the OCC on would be the allowed costs in Table 2.5 above less the capital enhancement costs, less the $355M advance from the self-insurance fund.

2.4 Proposed recovery mode (Cont'd)

2.4.1 Interim recovery of the 2007 Z-factor claim (Cont'd)

Table 2.6

Pro forma determination of enhancement cost based on OUR principles

	Allowed Cost (J$'000)	Dep'n Factor (%)	Enhancement Cost (J$'000)	Restoration Cost (J$'000)
Payroll & Wage costs	90,643	0	0	90,643
Labour Expense	29,702	0	0	29,702
Third Party Contractors	161,819	33	53,400	108,419
Material & Equipment	328,505	50	164,253	164,252
Office Expenses	15,078	0	0	15,078
Building & Misc. Expenses	16,405	0	0	16,405
Transportation expenses	951	0	0	951
Total	**643,103**		**217,653**	**425,450**

2.4.2 Recovery through the sinking fund or through additional energy charges

We will ask the OUR to determine what it considers to be the appropriate method for recovering the 2007 hurricane costs, whether such costs should be recovered:

(i) through the self insurance fund (SIF) on a leveraged basis, in which case the annual funding rate would need to be increased to US$5M per annum, which in turn would require an additional charge of 4.41¢ per kWh; or

(ii) directly under the Z-factor clause as an additional per kWh charge, resulting in an additional charge of 6.62¢ per kWh, as per the calculations provided below:

$$Z = \frac{J\$438.22M}{6{,}619{,}800} = 6.62¢ \text{ per kWh}$$

Where:

Z = the embedded Z-factor rate denoted in Jamaican cents.

J$438.22M = the total 2007 hurricane impact on a pro forma basis.

6,619,800 = sales forecast (kWh) for the twenty-four month period Jul'08 – Jun'09.

Both methods have unique pros and cons but the SIF provides the opportunity for faster recovery of costs since such recovery would not depend on each annual tariff reset. In fact, the leveraged SIF approach would make up to US$30M available immediately to resolve past and future Z-factor claims. This is an important consideration given the quantum of the current Appeal and the likelihood that the Appeal will be resolved well in advance of the next tariff adjustment in June 2009. Please note that any further undue delay in the Appeal process, compounded with the potential for another event during the 2008 hurricane season, with the SIF at very low levels, could jeopardize the ability of the company to meet its service obligations. Accordingly, leveraging the SIF (and resolving the outstanding claims) appears to be the best option for all stakeholders concerned.

Section 3: Ensuring Quality of Service: The Q-Factor

3.1 Introduction

The third element under the PBRM is the Q-factor, i.e., the allowed price adjustment to reflect changes in the quality of service provided to customers. Specifically:

$$dPCI = dI \pm X \pm Q \pm Z$$

JPS and the OUR have agreed in principle that the Q-factor should meet the following criteria:

- The Q-factor should provide the proper financial incentive to encourage JPS to continually improve service quality. It is important that random variations should not be the source of reward or punishment;
- The measurement and calculation of the Q-factor should be accurate and transparent without undue cost of compliance;
- It should provide fair treatment for factors affecting performance that are outside of JPS' control, such as those due to disruptions by the independent power producers; natural disasters; and other *Force Majeure* events, as defined under the licence; and
- It should be symmetrical in application, as stipulated in the License.

In the 2004 Tariff Review Determination the OUR stipulated that the Q-factor should be based on three quality indices:

- SAIFI—this index is designed to give information about the average frequency of sustained interruptions per customer over a predefined area.

$$SAIFI = \frac{\text{Total number of customer interruptions}}{\text{Total number of customers served}}$$

(expressed in number of interruptions per year)

- SAIDI—this index is commonly referred to as customer minutes of interruption and is designed to provide information about the average time that customers are interrupted.

$$SAIDI = \frac{(\Sigma \text{ Customer interruption durations})}{\text{Total number of customers served}}$$

(expressed in minutes)

- CAIDI— this index represents the average time required to restore service to the average customer per sustained interruption. It is the result of dividing the duration of the average customer's sustained outages (SAIDI) by the frequency of outages for that average customer (SAIFI).

$$CAIDI = \frac{(\Sigma \text{ Customer interruption durations})}{\text{Total number of interruptions}}$$

(expressed in minutes per interruption)

3.2 The Benchmark SAIDI, SAIFI and CAIDI

The OUR has determined that until the next price review that the verified set of SAIFI, SAIDI and CAIDI indices for 2005 will be used as the benchmark quality level. Furthermore, the OUR determined that SAIFI, SAIDI and CAIDI should be improving by 2% in 2007 relative to the 2006 performance level and by 3%, relative to the 2005 performance level, in each subsequent year until 2009. Accordingly, the target set by the OUR is shown in Table 3.1 below.

Table 3.1: The OUR Targets for the Q-factor 2006 – 2009

Year	Target SAIDI	Target SAIFI	Target CAIDI
2006	$SAIDI_{2005}$	$SAIFI_{2005}$	$CAIDI_{2005}$
2007	$SAIDI_{2005}*(1 - 0.02)$	$SAIFI_{2005}*(1 - 0.02)$	$CAIDI_{2005}*(1 - 0.02)$
2008	$SAIDI_{2005}*(1 - 0.05)$	$SAIFI_{2005}*(1 - 0.05)$	$CAIDI_{2005}*(1 - 0.05)$
2009	$SAIDI_{2005}*(1 - 0.08)$	$SAIFI_{2005}*(1 - 0.08)$	$CAIDI_{2005}*(1 - 0.08)$

The OUR has stated, that, generally in PBRM, penalties are increased as performance worsens and are capped when a maximum penalty is reached and further, that, rewards for good reliability can be implemented in a similar manner. The OUR is of the view that this would provide an incentive for JPS to enact reliability improvement measures even after they have surpassed the poor reliability threshold for a year, before the year ends.

The OUR has determined that the quality of service performance should be classified into three categories, with the following point system:

- Above Average Performance (greater than 10% above benchmark) — would be worth 3 Quality Points on either SAIFI, SAIDI, or CAIDI;
- Dead Band Performance (+ or – 10%) — would be worth 0 Quality Points on either SAIFI, SAIDI, or CAIDI; and
- Below Average Performance (more than 10% below target) — would be worth -3 Quality Points on either SAIFI, SAIDI, or CAIDI.

The OUR further stated, that, if the sum of Quality Points for:

- SAIFI, SAIDI, and CAIDI is 9, then Q = +0.50%
- SAIFI, SAIDI, and CAIDI is 6, then Q = +0.40%
- SAIFI, SAIDI, and CAIDI is 3, then Q = +0.25%
- SAIFI, SAIDI, and CAIDI is 0, then Q = 0.00%
- SAIFI, SAIDI, and CAIDI is -3, then Q = -0.25%
- SAIFI, SAIDI, and CAIDI is -6 then Q = -0.40%
- SAIFI, SAIDI, and CAIDI is -9 then Q = -0.50%

3.2 The Benchmark SAIDI, SAIFI and CAIDI (Cont'd)

Since the performance in each of the three performance measures can either be above target, below target or on target (dead band) there are twenty-five (25) possible outcomes as shown in Table 3.2 below:

Table 3.2 Possible Q-factor scores

SAIDI	SAIFI	CAIDI	TOTAL	ADJUSTMENT FACTOR
3	3	3	9	0.50%
3	3	0	6	0.40%
3	0	3	6	0.40%
0	3	3	6	0.40%
3	0	0	3	0.25%
0	0	3	3	0.25%
0	3	0	3	0.25%
3	3	-3	3	0.25%
-3	3	3	3	0.25%
3	-3	3	3	0.25%
0	0	0	0	0.00%
3	0	-3	0	0.00%
-3	3	0	0	0.00%
0	-3	3	0	0.00%
-3	0	3	0	0.00%
0	0	-3	-3	-0.25%
0	-3	0	-3	-0.25%
-3	0	0	-3	-0.25%
3	-3	-3	-3	-0.25%
-3	-3	3	-3	-0.25%
-3	3	-3	-3	-0.25%
-3	0	-3	-6	-0.40%
0	-3	-3	-6	-0.40%
-3	-3	0	-6	-0.40%
-3	-3	-3	-9	-0.50%

This design of the Q-factor adjustment as a component of the PBRM is symmetrical and all possible outcomes are properly defined based on the PBRM point system. The design is balanced as it provides equal opportunity for either a positive or negative adjustment to the PBRM.

3.3 2007 performance on SAIDI, SAIFI and CAIDI

Table 3.3 below outlines JPS' performance for 2007 in the three main quality of service measures: SAIDI, SAIFI and CAIDI. The data shown here is for the complete system performance and includes interruptions due to generation, transmission and distribution outages. Additionally, the distribution interruptions include both feeder level and sub-feeder level outages. All the computations are based on the 2006 customer base of 572,086, as provided in Appendix III. The computations show a peak in all three indices in July, which is the month when JPS experienced a total system shutdown.

3.3 2007 performance on SAIDI, SAIFI and CAIDI (Cont'd)

Table 3.3: JPS 2007 performance on SAIDI, SAIFI and CAIDI

JPS Outage Data			
Month	***SAIDI***	***SAIFI***	***CAIDI***
January	152.21	1.63	93.13
February	146.18	1.75	83.39
March	191.92	1.94	98.81
April	93.01	0.90	103.85
May	224.36	1.65	135.73
June	367.64	3.37	109.24
July	620.58	3.43	181.01
August	192.46	1.64	117.09
September	355.50	2.22	160.44
October	259.01	2.22	116.70
November	227.36	1.56	146.14
December	177.36	1.59	111.90
Grand Total	**3,008**	**23.89**	**125.88**

The 2007 target is based on data supplied in Table 3.5 of the 2007 Annual tariff submission, which was 3,359 for SAIDI; 35.92 for SAIFI; and 91.65 for CAIDI.

JPS' performance in 2007 would be classified into the dead band performance range when compared to the 2007 benchmark target, as noted in table 3.4 below:

Table 3.4: Actual 2007 Q-factor performance vs. the 2007 Target

SAIDI was	10%	better than target	equalling	0 Quality Points
SAIFI was	33%	better than target	equalling	3 Quality Points
CAIDI was	37%	worse than target	equalling	-3 Quality Points

Since the sum of the quality points on SAIDI, SAIFI and CAIDI is 0, then Q = 0 in the 2008 annual tariff adjustment submission.

The performance targets for 2008 shall be based on the 2006 benchmark adjusted for 5% improvement for each of the indices (SAIDI, SAIFI and CAIDI) as noted previously in Table 3.1. The actual performance targets for 2008 are shown in table 3.5 below:

Table 3.5: Setting the 2008 Q-factor performance benchmark

	2006 Target	**Adjustment factor**		**2008 Target**
SAIDI	3,428	* (1 – 0.05)	=	3,257
SAIFI	36.65	* (1 – 0.05)	=	34.82
CAIDI	93.52	* (1 – 0.05)	=	88.84

Additionally, please note that the 2007 customer count, which may be used as the basis for the calculation of the 2008 indices, is provided in Appendix IV. It reflects a customer base of 581,056.

3.4 Performance measurement 2006 - 2009

Planned improvements in data collection

As mentioned previously, JPS commenced a geographic information system (GIS) project to establish and maintain a more accurate customer count on each distribution feeder, and in particular, the customer count on each branch circuit. This will be achieved by the GPS mapping of all the customer meters, which will be superimposed on the GIS feeder route and the GPS position of the line switches, fuses and pole mounted transformers will be recorded and mapped in a similar way. This will facilitate the easy counting of all customers on a feeder basis down to the level of secondary circuits.

When all phases of this project are complete, which includes the development of a Distribution Work Management System, JPS will be able to accurately measure customer count for outages anywhere on its T&D system.

The project is divided into three phases as described below:

Phase I – Map All Customer Meters

Phase I involved the GPS mapping of all customer meters. This phase was completed in the Q4'05 and facilitates the easy counting of all customers on a feeder basis. A concise database was created incorporating this new data into the CIS and the Outage Database.

Phase II – Map All Line Switches (Isolating and Interrupting Device) Locations

Phase II involved the GPS mapping of all switch locations, with the exception of transformer switches, on each feeder. This phase was completed in Q4'06. This allows JPS to effectively log unique switch locations relating to any section outage apart from those involving transformer switches. Information from Phase I and Phase II are sufficient to compute the actual number of customers served beyond each switch location. At this stage, the number of customers served on secondary circuits has to be estimated until the pole mounted transformers and secondary circuits are also mapped, hence the need for phase III.

Phase III – Map All Transformer Locations Including Secondary Dead-End Points

Phase III commenced in February 2007 and was completed during the Q3'07. This phase involved the GPS mapping of all pole mounted and pad mounted transformer locations and their associated secondary dead-end points. This data provides information needed to determine the extent of any transformer secondary circuit. With this information, customers can be linked to transformers and transformers to switch locations. The extent of outages will be more accurately known as well as the number of customers affected.

The above-mentioned phases were completed at the end of November 2007. Since then JPSCo has undertaken the creation of an electrical geometric network. This geometric network will use as input the data collected in all three phases and allow the modelling of the entire distribution system from the substation to service locations. This geometric network will form the information backbone for the Outage Management/Reliability System and Distribution Work Management System. The geometric network is expected to be completed in Q3'08.

3.4 Performance measurement 2006 – 2009 (Cont'd)

As a result of the above, we do not anticipate being able to improve the current measurement process until 2009 and thus do not anticipate being able to reset the current benchmarks as was forecasted in previous submissions.

Additionally, we wish to note that JPS will still not be able to automatically measure the **duration** of outages at the sub-feeder level. This would require a significant investment in distribution automation equipment across approximately 36,000 secondary circuits. The end and start times for outages at the sub-feeder level will be determined in accordance with the methodology for data collection and storage previously outlined by JPS[9]. JPS continues to research for cost effective technologies to facilitate automated logging of outage durations at the sub-feeder/secondary level and will make proposals to the OUR as they come about.

We wish to note that JPS is investing a significant amount of resources in its efforts to improve its data collection capabilities. The combined spend on the GIS project, along with the acquisition of additional SCADA and communication system upgrades to ensure proper monitoring of all substations, will cost approximately US$3 million. Additionally, JPS will spend an additional US$6 million during 2007-9 installing smart meters (AMI) at approximately 6,000 priority commercial and industrial customer locations to augment its ability to detect outages at the sub-feeder level on some secondary circuits.

3.5 Inclusion of MAIFI as a Reliability Index

MAIFI is an industry-defined term that attempts to identify the frequency of all momentary outages that a customer will experience during a given timeframe. It is calculated by summing all customer interruptions for momentary outages (those of durations of 5 minutes or less) and dividing by all customers served within the affected area.

$$\text{MAIFI} = \frac{\text{Total Number of Momentary Customer Interruptions}}{\text{Total Number of Customers Served}}$$

This index represents the frequency of momentary interruptions seen by the customer.

Momentary interruptions are defined in IEEE Std. 1366 as those that result from each single operation of an interrupting device such as a recloser.

MAIFI measures data on "momentary" interruptions that result in a zero voltage. For example, two circuit breaker open operations equals two momentary interruptions. In JPS, obtaining the momentary information accurately will sometimes be quite difficult because some reclosers and distribution breakers are not equipped with SCADA and during times when there is communication failure to that recloser no data will be captured.

[9] Refer to section 3.5.1 in the Annual Tariff Adjustment Submission for 2005.

3.6 Current data collection systems for MAIFI

JPS collects all feeder level interruptions due to permanent trips at monitored substations in the Outage Database at the System Control Centre. These include interruptions due to under-frequency, planned and forced T&D outages. Some of these interruptions are less than 5 minutes in duration and can be used in the calculation of MAIFI.

JPS also stores on the SCADA historian, all the recloser cycling for substations that are monitored. This data can also be used presently to compute MAIFI. However, not all substations are currently monitored by SCADA and recloser cycling for such substations will not be available for MAIFI computations. Similarly, whenever there is a break in communication to a substation the recloser cycling operation is not captured.

JPS requires the OUR to state whether recloser cycling operation is to be included in MAIFI. JPS would then be required to invest in communication equipment and relay/breaker upgrades to equip the substations that are not currently monitored. Likewise, ongoing investment in the communication infrastructure will be required to ensure 100% availability and no data loss.

JPS is presently embarking on a 100% visibility project that will see all substations being enabled with SCADA visibility. This project should be completed by end of the first quarter of 2009. However, JPS still would not have a 100% redundant system and the accurate calculations of MAIFI would still be subject to the full availability of the communication and monitoring systems.

3.7 Challenges for JPS with MAIFI

Recognizing that less sensitive time measurement systems are required for the computation of SAIFI, SAIDI, and CAIDI, as compared to MAIFI, and that it was not originally included in the determination of Q, JPS' primary focus has been in relation to improving the customer count information as outlined in Section 3.4 above.

JPS has noted the OUR's response ("Determination Notice – JPS Annual Tariff Adjustment 2007") on its assessment of the driving factors behind the majority of momentary outages on electric systems. While we accept that some of these outages are restored automatically, this does not negate the fact that the customer has experienced a momentary outage. It is JPS' view that the basis of including MAIFI should not be only to measure the severity of the problem but act as an incentive to mitigate or reduce its occurrence and in this respect is likely to require above normal additional resources to effect any such solution.

Since a major contributor to recloser cycling continues to be "Force Majeure" type events like inclement weather (lightning, heavy wind and/or rain) and because JPS' distribution system is overhead it is exposed to the elements. JPS is keen to engage the OUR in a discussion on how the benchmark for MAIFI will be set and how these Force Majeure drivers will be treated.

Likewise, JPS wishes to also indicate that the present policy and current discussions on spinning reserve margin requirements and the under-frequency scheme will influence benchmark and future MAIFI performance and must be properly treated and accounted for in the proposed benchmarking and measurement proposal for MAIFI.

3.7 Challenges for JPS with MAIFI (Cont'd)

JPS also takes note of the following response ("Determination Notice – JPS Annual Tariff Adjustment 2007") of the OUR that:

Information can vary across countries due to:

- The capability of different utility businesses to collect different data on the network;
- The cost of gathering some information captured with the benefits of having detailed data;
- Historical availability of data; and
- Policy decisions on the appropriateness of including different extreme events

JPS will continue to collect data using its available resources while making itself open to further discussions with the OUR on this matter.

3.8 Force Majeure and Major Events

The OUR agrees with JPS that Force Majeure and major events outside of the reasonable control of JPS should be excluded from the reliability indices calculation. However, in order to ensure proper treatment of the Force Majeure and major events, the OUR intends to introduce a regime that would require that JPS:

- divides the entire T&D system into geographical or operational areas and should report reliability indices for each defined area as well as for the total system;
- formally requests exclusion of service interruptions for reporting purposes by proving that an outage qualifies as a Force Majeure event in a particular area; and
- in its application to the OUR for the declaration that an event can be classified as Force Majeure should indicate the actual timeframe in which the major event began and ended.

The above requirements are geared to complement the following safeguards for which JPS is prohibited:

- Combining of separate events as a major event
- Excluding outage data from all geographical or operational areas when the major event that has occurred is localized to one geographical or operational area.
- Excluding all outages that took place on any day in which a major event took place, regardless of the actual timeframe in which the major event began and ended.

3.8 Force Majeure and Major Events (Cont'd)

JPS' response on Force Majeure

JPS proposes that the network be divided into electrical/operational areas as opposed to geographical areas. Each network element can be associated with a specific number of customers downstream based on the cause and effect principle. JPS would seek exclusion from the calculation of reliability indices in relation to the customer set associated with the electrical/operational failure only. This would be a more logical approach than attempting to zone customers by geographical location since outages would likely cut across geographic zones partially affecting certain zones. For example, should there be a loss of a power transformer at a substation due to a lightning strike, several distribution circuits may be affected across different geographical zones. However based on the electric/operational equipment which are affected we could ascertain the associated customer group affected by the outage. Similarly, a generation outage that results in an under-frequency operation, could affect circuits in many different zones. Again, it would be more appropriate for JPS to identify the specific operation area and equipment affected by the outage and the associated customers on the affected circuits. JPS would apply for exclusion based on the primary network element and the associated affected customers and indicate the beginning and ending time of the event.

JPS eagerly awaits the OUR's response on the determination and application of a transparent principle of Force Majeure as it relates to the determination of the Q Factor.