THE JAMAICA PUBLIC SERVICE CO. LTD.

ANNUAL TARIFF ADJUSTMENT

SUBMISSION FOR 2007

APRIL 2, 2007

Preamble

This submission is made in relation to the annual Performance-Based Rate-Making (PBRM) tariff adjustment filing for 2007, 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, 2007]. 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 2007 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 third annual tariff adjustment under the new regulatory framework, which became effective June 1, 2004 and the second year in which a 2.72% productivity gain will be passed on to our customers. This productivity gain will be applied as an offset to the annual inflation adjustments for the remaining tariff period (2007-2009).

Accordingly, the result is, that, while there is a 6.76% weighted average increase in inflation under the annual tariff adjustment mechanism, this will be offset by the 2.72% productivity factor, resulting in an effective increase of 4.04% in the non-fuel tariffs in June 2007. Of this 4.04% increase, 3.51% is attributable to the resetting of the base exchange rate, so the actual increase in non-fuel rates on average for customers would be 0.53%, since the foreign exchange component is already reflected in customer bills under the foreign exchange adjustment line each month.

While JPS did not experience any hurricane storm damage during 2006, we have proposed to commence the process of recovering the undisputed amount of the 2004 Hurricane Ivan claim approved by the OUR, while awaiting the hearing of the matter by the Appeals Tribunal. This will result in an additional charge to the non-fuel rates of 14.6¢ per kWh which would have a total bill impact of approximately 1% for the typical residential customer.

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. 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 sinking fund reserve.

Preamble (Cont'd)

JPS remains committed to the long-term development of Jamaica under the regulatory guidance of the OUR. Consequently, JPS has submitted its latest ten year least cost expansion plan to the OUR with a view to providing future generation expansion capacity which facilitates lower electricity costs while also providing a better diversification in our fuel stock. Based on our current demand forecast, this generation expansion plan requires an increase in generation capacity of approximately 420 MW by 2013 with an estimated investment requirement of approximately US$1 billion.

At the same time, JPS remains committed to improving its productivity and tackling the issue of system losses (specifically the theft of electricity). Electricity loss reduction continues to be a challenge. We introduced a number of successful initiatives in 2006, but these have not resulted in the reduction in losses that we anticipated. JPS has incurred an increase in system losses from 21.2% on average in 2005 to 22.9% in 2006. System losses have an unavoidable cost component relating to technical losses which are estimated to be approximately 9%. The avoidable costs (i.e. non-technical losses) amounted to approximately J$4.1 billion in 2006, of which J$1.8 billion was recovered through the tariffs.

In light of this, JPS has intensified its efforts to reduce the theft of electricity. However, we wish to note that the resolution of this matter also requires a national commitment to reducing crime. We cannot tolerate the criminal act of stealing electricity by any individual or business, as this has significant impact on the company, our shareholders and our customers. In 2006, we carried out 138 arrests and 13,000 account audits; removed over 7,000 throw-ups; and recovered approximately 9 GWh or J$101 million in retroactive and forward billing. The investigations and analyses done during the year, as well as the Customer/Feeder Mapping project, have also set the stage for a more intense loss reduction programme in 2007. Our Focus for 2007 will be on: Intelligence & Analysis, Region Operations, Systems Integrity & Controls and Public Involvement & Education Campaign.

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)

PBRM	-	Performance Based Rate-Making Mechanism
RDC	-	Required Dependable Capacity
REP	-	Rural Electrification Programme Limited
RPD	-	Revenue Protection Department
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

Contents

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 ± X ± Q ± 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's proposals in relation to the components of dPCI and its application to the non-fuel tariffs.

The application of the above formula results in an inflation adjustment factor of 6.76%, derived using the following factors:

- The Jamaican twelve month point to point inflation rate to February 28, 2007 of 6.19%, derived from the most recent CPI data[1] (see Appendix I);
- The U.S. twelve month point to point inflation rate to February 28, 2007 of 2.42%, derived from the U.S. Department of Labor statistical data[2] (see Appendix I); and
- The resetting of the base exchange rate from J$65:US$1 to J$68:US$1

Table 1.1 below sets out the details to the escalation factor (dI only) which amounts to 6.76% for 2007. Of this 6.76% increase, 3.51% is attributable to the resetting of the base exchange rate, so the actual increase in total non-fuel rates for customers would be 3.25%, given that the foreign exchange component is already reflected in customer bills under the foreign exchange adjustment line each month. The details of the X-factor reduction to the annual escalator factor are provided in section 1.4.

[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 (dI) (Cont'd)

Table 1.1

Escalation Factor (dI)

Line	Description	Formula	Value
	Base Exchange Rate		
L1	Current		**65**
L2	Proposed		**68**
	Jamaica Inflation Index[3]		
L3	CPI @ Feb 2007		**2,437.2**
L4	CPI @ Feb 2006		**2,295.1**
	U.S. Inflation Index[3]		
L5	CPI @ Feb 2007		**203.5**
L6	CPI @ Feb 2006		**198.7**
L7	Exchange Rate Factor	(L2-L1)/L1	**4.62%**
L8	Jamaican Inflation Factor	(L3-L4)/L4	**6.19%**
L9	U.S. Inflation Factor	(L5-L6)/L6	**2.42%**
	Escalation Factor	0.76*L7*(1+0.922*L9)+0.76*0.922*L9+0.24*L8	**6.76%**

1.3 Application of the Annual Inflation Adjustment Factor (dI)

Based on Table 1.1 above, an annual adjustment factor of 6.76% 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 2006 billing determinants and the approved non-fuel tariffs for 2006 (see Table 1.4 for the approved 2006 tariffs).

Table 1.2

Total Non-Fuel Tariff Basket

Class		Block/ Rate Option	Customer Charge Revenue (J$'000)	Energy Revenue (J$'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	0-100 kWh	13,962	1,930,664						1,944,626
Rate 10	LV	> 100 kWh	25,997	6,317,527						6,343,524
Rate 20	LV		10,212	5,238,861						5,249,073
Rate 40A	LV		954	304,381	115,606				115,606	420,941
Rate 40	LV	STD	2,391	1,051,759	1,455,034				1,455,034	2,509,184
Rate 40	LV	TOU	330	324,371		15,447	160,924	173,007	349,378	674,079
Rate 50	MV	STD	180	505,543	597,820				597,820	1,103,543
Rate 50	MV	TOU	66	218,622		14,917	148,204	145,534	308,654	527,343
Rate 60	LV		200	628,517						628,717
Total			54,292	16,520,245	2,168,460	30,364	309,128	318,541	2,826,492	19,401,030

[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	Demand Charge				Total
				Std.	Off-Peak	Part-Peak	On-Peak	
Rate 10	0-100 kWh	0.1%	10.0%	0.0%	0.0%	0.0%	0.0%	10.0%
Rate 10	>100 kWh	0.1%	32.6%	0.0%	0.0%	0.0%	0.0%	32.7%
Rate 20	LV	0.1%	27.0%	0.0%	0.0%	0.0%	0.0%	27.1%
Rate 40A	LV	0.0%	1.6%	0.6%	0.0%	0.0%	0.0%	2.2%
Rate 40	LV - Std	0.0%	5.4%	7.5%	0.0%	0.0%	0.0%	12.9%
Rate 40	LV - TOU	0.0%	1.7%	0.0%	0.1%	0.8%	0.9%	3.5%
Rate 50	MV - Std	0.0%	2.6%	3.1%	0.0%	0.0%	0.0%	5.7%
Rate 50	MV - TOU	0.0%	1.1%	0.0%	0.1%	0.8%	0.8%	2.7%
Rate 60	LV	0.0%	3.2%	0.0%	0.0%	0.0%	0.0%	3.2%
Total		0.3%	85.2%	11.2%	0.2%	1.6%	1.6%	100.0%

The non-fuel base rates approved in the 2006 Annual Tariff Adjustment, which were used to derive the 2006 non-fuel tariff basket, are shown in Table 1.4 below.

Table 1.4

Approved Non-Fuel Tariffs for 2006

Class		Block/ Rate Option	Customer Charge J$/ Month	Energy Charge J$/kWh	Demand Charge J$/KVA			
					Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	LV	0-100 kWh	78	5.083				
Rate 10	LV	>100 kWh	78	8.932				
Rate 20	LV		179	7.843				
Rate 40A	LV		2,486	4.894	317			
Rate 40	LV - Std		2,486	2.002	811			
Rate 40	LV - TOU		2,486	2.002		33	353	452
Rate 50	MV - Std		2,486	1.804	729			
Rate 50	MV - TOU		2,486	1.804		30	318	407
Rate 60	STREET-LIGHTS		651	9.379				
Rate 60	TRAFFIC-LIGHTS		651	6.321				

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 2006. Accordingly, the annual adjustment factor for 2007/8 which reflects dI – X would be 4.04% (i.e. 6.76% - 2.72%).

Table 1.5 below shows how JPS proposes to apply the annual adjustment factor of 4.04% 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)	Demand Charge (J$/KVA)			
				Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	0-100 kWh	5.00%	3.275%				
Rate 10	>100 kWh	5.00%	3.275%				
Rate 20	LV	5.00%	4.044%				
Rate 40A	LV	5.00%	7.50%	3.50%			
Rate 40	LV - Std	5.00%	7.50%	3.50%			
Rate 40	LV - TOU	5.00%	7.50%		3.50%	3.50%	3.50%
Rate 50	MV - Std	5.00%	7.50%	3.50%			
Rate 50	MV - TOU	5.00%	7.50%		3.50%	3.50%	3.50%
Rate 60	STREET-LIGHTS	5.00%	3.275%				
Rate 60	TRAFFIC-LIGHTS	5.00%	3.275%				

Given the anticipated 4.62% currency depreciation reflected in the resetting of the base exchange rate from J$65:US$1 to J$68:US$1, of which 3.51% would already be reflected on customer bills through the foreign exchange adjustment clause, the above tariff increase actually reflects a real rate reduction in US$ terms for residential and small commercial customers. We believe this is noteworthy given the level of currency depreciation (4.62%) and U.S. inflation (2.42%). This adjustment also compares favourably against the Jamaican inflation recorded for the period of 6.19%.

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 done in Appendix IV (as mentioned at the end of section 1.5 of this document).

As per the June 2004 OUR determination, the weighted annual adjustment factor proposed by JPS should equate to the annual adjustment factor of 4.04%. 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)	Demand Charge (J$/KVA)				Total
				Std.	Off-Peak	Part Peak	On-Peak	
Rate 10	0 - 100 kWh	0.00%	0.33%	0.00%				0.33%
Rate 10	>100 kWh	0.01%	1.07%	0.00%				1.07%
Rate 20	LV	0.00%	1.09%	0.00%				1.09%
Rate 40A	LV	0.00%	0.12%	0.02%				0.14%
Rate 40	LV - Std	0.00%	0.41%	0.26%				0.67%
Rate 40	LV - TOU	0.00%	0.13%		0.00%	0.03%	0.03%	0.19%
Rate 50	MV - Std	0.00%	0.20%	0.11%				0.30%
Rate 50	MV - TOU	0.00%	0.08%		0.00%	0.03%	0.03%	0.14%
Rate 60	LV	0.00%	0.11%	0.00%				0.11%
Total		0.01%	3.54%	0.39%	0.00%	0.06%	0.06%	4.04%

It is worth noting that 3.51% of the 4.04% increase in the non-fuel tariffs is the result of resetting the base exchange rate from 65:1 to 68:1 (refer to Table 1.1). Accordingly, the actual increase in non-fuel tariffs would be 0.53% on average, ignoring the affects of the tariff rebalancing, and before the application of the Z-factor adjustment.

Table 1.7 below shows the proposed rates after application of both the inflation factor and the X-factor (i.e. dI – X), based on the 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	Demand Charge J$/KVA			
					Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	LV	0-100 kWh	82	5.249				
Rate 10	LV	>100 kWh	82	9.225				
Rate 20	LV		188	8.160				
Rate 40A	LV		2,610	5.261	328			
Rate 40	LV - Std		2,610	2.152	839			
Rate 40	LV - TOU		2,610	2.152		34	366	468
Rate 50	MV - Std		2,610	1.940	755			
Rate 50	MV - TOU		2,610	1.940		31	329	421
Rate 60	STREET-LIGHTS		684	9.687				
Rate 60	TRAFFIC-LIGHTS		684	6.527				

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

The final tariff for 2007/2008 would be derived by adjusting the rates shown in Table 1.7 above, which represent the inflation and X-factor adjusted rates (i.e. dI – X), to account for the proposed Z-factor adjustment. The complete details of the Z-factor adjustment are presented in Section 2 of this document. Section 2.4 demonstrates that the total Z-factor impact equates to an adjustment of 14.635¢ per kWh which 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 2007/2008 Non-Fuel Tariffs (dI - X ± Q + Z)

Class		Block/ Rate Option	Customer Charge J$/Month	Energy Charge J$/kWh	Demand Charge J$/KVA			
					Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	LV	0-100 kWh	82	5.264				
Rate 10	LV	>100 kWh	82	9.239				
Rate 20	LV		188	8.175				
Rate 40A	LV		2,610	5.276	328			
Rate 40	LV - Std		2,610	2.167	839			
Rate 40	LV - TOU		2,610	2.167		34	366	468
Rate 50	MV - Std		2,610	1.954	755			
Rate 50	MV - TOU		2,610	1.954		31	329	421
Rate 60	STREET-LIGHTS		684	9.701				
Rate 60	TRAFFIC-LIGHTS		684	6.542				

It is important to note that the proposed increase to the customer, energy and demand charges is expected to have a total combined impact on non-fuel rates of between 0.03% for JPS's typical residential customer to 2.13% for JPS's typical large commercial customer. Of course, the total bill impact would be approximately half this amount given the current fuel & IPP rate. The details of the increase in the various non-fuel rates and the estimated bill impact for JPS's typical customer in each rate class is summarized in appendix IV.

Finally, based on the data provided on the quality of service performance for 2006 in Section 3 of this document, you will see that the Q-factor adjustment is 0%. That is to say, the quality of service performance in 2006, compared to the benchmark data for 2005, 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. Accordingly, table 1.8 above represents the complete proposed tariff adjustment (dI - X ± Q + Z).

Section 2: Exogenous Shocks: The Z-Factor

2.1 Background

In September 2004, Hurricane Ivan passed in close proximity to Jamaica and affected the island with hurricane force winds ranging from category 1 (up to 90 mph) in the east to category 3 (about 125 mph) in the south and west. As a result, the electricity service provided by JPS island-wide was interrupted and JPS suffered damages to its assets. It took approximately ten weeks to fully restore service to customers across the island.

Against this background, JPS included in its submission for its Annual Rate Adjustment in April 2005 a claim for the recovery of costs incurred for the restoration of service in the aftermath of the hurricane. The claim, which was for J$1,465.6 million, identified three distinct components of costs – (i) hurricane restoration costs, (ii) loss of revenue and (iii) the opportunity costs of funds associated with the restoration effort and revenues losses.

The JPS claim was made on the basis that:

- It was unable to secure conventional insurance coverage for its transmission and distribution (T&D) network;
- The Self-Insurance scheme approved by the OUR in its June 2004 determination on tariffs had accumulated funds that amounted to less than 5% of the restoration cost and revenue impairment sustained;
- The All-Island Electricity Licence (2001) includes a provision in the price cap mechanism for a price escalator (Z-factor) to reflect special circumstances outside the utility's control which impact cost.

It is JPS's fundamental position that the costs included in this claim are the result of risks that are outside of its managerial control; and that JPS operates under a regulatory framework which sets its allowed return on investment and monitors its O&M costs after properly contemplating appropriate operational risks which JPS should address, as well as providing protection in the form of a Z-factor clause against unavoidable residual risks.

2.2 OUR Z-factor Determination (Elec 2005/05)

In respect of the Claim made by JPS to recovery J$1,465.6 million under the Z-component of PBRM in relation to (i) hurricane restoration costs, (ii) loss of revenue and (iii) opportunity costs, the OUR has determined that:

1. Only T&D costs are relevant in this matter and the claim for J$188.4 million of Non-T&D expenditure has been disallowed.
2. Of the J$560.6 million T&D expenditure claimed only J$365.8 million represents restoration cost. The remaining J$194.8 million reflects enhancements to the plant which is to be capitalized.

2.2 OUR Z-factor Determination (Elec 2005/05) Cont'd

3. The component of the claim for revenue losses of J$420.6 million is invalid under the Z-Factor provision and therefore not recoverable.

4. The component of the claim for opportunity cost is reasonable under the provisions of the Z-Factor. However, the claim for J$285 million has been reduced to J$91.6 million to reflect the adjustments made by the Office to the restoration cost and revenue losses components of the claim.

5. The company may recover costs incurred as a consequence of the passage of Hurricane Ivan of J$457.5 million through the tariff and as such an additional charge of J$0.0729 /kWh will be allowed in the tariff to enable recovery over 24 months commencing with bills prepared on October 1, 2005. The charge which is to be clearly identifiable on the monthly statements issued to customers will be removed once full recovery has been attained.

2.3 Request to recover hurricane Ivan costs

Since the OUR's Z-factor determination, JPS has not attempted to recover any portion of the J$457.5 million award. This was due primarily to: (i) the good-faith dispute between JPS and the OUR in relation to the basis (and quantum) of the reward; and (ii) JPS's concern about the timing of the implementation of the award in light of the significant increase in oil prices during 2004-5 and the economic shock which it created for Jamaica. However, JPS does not believe it prudent to delay the implementation of the recovery any further given that:

- the economy has now recovered from the economic shock of the increase in world oil prices, as evidenced by the relatively low inflation in 2006;
- oil prices have stabilized somewhat in the last twelve months and there is little expectation of any significant reduction in the near future;
- the delay in implementing the J$457.5 million Z-factor recovery creates undue financial distress for JPS; and
- the implementation by JPS of the amount awarded by the OUR would in no way affect the outcome of JPS's appeal.

Given that the original award of J$457.5 million was based on an assumed 24 month recovery period, it included J$91.7 million as the opportunity cost of capital using an interest rate of 11.38%. JPS now proposes to recover this award over 12 months and accordingly has reduced the opportunity cost from J$91.7 million to J$67.2 million using the same financial principles applied by the OUR in its determination. This results in a reduction to the OUR award from J$457.5 million to J$433.0 million.

Accordingly, JPS now requests the OUR's consent to recover J$433.0 million without prejudice to the ongoing appeal. JPS believes this request to be prudent under the circumstances.

2.4 Proposed recovery mode

The Z-factor claim may be recovered through the non-fuel tariffs in a manner similar to the current treatment for IPP costs (as per page 14 of the OUR's Determination Notice). This methodology would require that:

- The Z-factor claim is embedded in the non-fuel energy charge only;
- The actual energy rate per kWh will be derived based on forecast sales for the twelve month period June 1, 2007 to May 31, 2008 of 3,245,000 kWh;
- The amount to be recovered will be based on Base Exchange rate at the time of the award (J$62:US$1) and appropriately adjusted for foreign currency movements;
- A monthly computation would be done similar to the IPP surcharge, where any under or over recovery is adjusted through the fuel rate each month; and
- A Reconciliation would be done at the end of the twelve-month period to show that JPS has adequately recovered its costs through the embedded energy rate and refunded or recovered the difference, if any, through the monthly fuel & IPP rates.

Given that the adjusted award by the OUR is J$432,989,353 (or US$6,983,699 at a Base Exchange rate of J$62:US$1), the appropriate amount to be recovered as of June 1, 2007 translates into a Z-factor adjustment of 14.635¢ per kWh at a Base Exchange rate of J$68:US$1 (or 0.2152 US ¢/kWh), i.e.:

$$\text{Z-factor} = \frac{\text{Allowed Recovery Cost}}{\text{Projected Sales}}$$

$$= \frac{\text{US\$6,983,699}}{\text{3,245,000 kWh}}$$

$$= \text{US } 0.2152¢ \text{ per kWh}$$

or 14.635¢ per kWh (at the proposed billing exchange rate of J$68:US$1)

As stated in the OUR's Z-factor determination (Elec 2005/5) " A 100% foreign exchange adjustment factor shall be applied in the recovery of the Z-factor on customer bills since it is assumed that the restoration cost was met by a US$-denominated loan"

The recovery of the Z-factor award (US$6.98 million) over a twelve month period is considered appropriate in light of the 2006 non-fuel tariff basket of J$19.4 billion (as per Table 1.2) and the 4.04% 2007/8 annual tariff adjustment factor. This Z-factor adjustment would result in an average increase in non-fuel tariffs of 2.35% and the 14.635¢ per kWh amount is included in Table 1.8. Considering the current fuel rates, which account for approximately 48.5% of residential customer's bills, the total bill impact from this increase would be approximately 0.95% for the typical residential customer. A typical residential customer consuming 250 kWh of energy, would see an increase of approximately J$36.59 per month in their bill due to the recovery of the Z-factor costs over twelve months.

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's 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 2006 relative to the 2005 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	$SAIDI_{2006}*(1 - 0.02)$	$SAIFI_{2006}*(1 - 0.02)$	$CAIDI_{2006}*(1 - 0.02)$
2008	$SAIDI_{2006}*(1 - 0.05)$	$SAIFI_{2006}*(1 - 0.05)$	$CAIDI_{2006}*(1 - 0.05)$
2009	$SAIDI_{2006}*(1 - 0.08)$	$SAIFI_{2006}*(1 - 0.08)$	$CAIDI_{2006}*(1 - 0.08)$

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 2006 performance on SAIDI, SAIFI and CAIDI

Table 3.3 below outlines JPS's performance for 2006 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 2005 customer base of 555,548, as provided in Appendix III. It shows a peak in SAIDI and SAIFI in July, which is the month when JPS experienced a total system shutdown.

3.3 2006 performance on SAIDI, SAIFI and CAIDI (Cont'd)

Table 3.3: JPS 2006 performance on SAIDI, SAIFI and CAIDI

JPS Outage Data			
Month	***SAIDI***	***SAIFI***	***CAIDI***
January	130.01	1.49	87.26
February	116.23	1.10	105.66
March	118.70	1.35	87.93
April	181.82	2.03	89.57
May	314.15	3.70	84.91
June	412.53	3.34	123.51
July	638.12	5.96	107.07
August	287.48	2.57	111.86
September	334.96	3.42	97.94
October	462.90	5.09	90.94
November	289.52	2.14	135.29
December	149.89	1.69	88.69
Grand Total	**3,436**	**33.88**	**101.43**

The target for 2006 is based on the data supplied in the 2006 Annual tariff adjustment submission, which was 3,428 for SAIDI; 36.65 for SAIFI; and 93.52 for CAIDI.

JPS's performance in 2006 would be classified into the dead band performance range when compared to the 2006 benchmark target, as noted in table 3.4 below:

Table 3.4: Actual 2006 Q-factor performance vs. the 2006 Target

SAIDI	worsened by	0.24%	equalling	0 Quality Points
SAIFI	improved by	7.56%	equalling	0 Quality Points
CAIDI	worsened by	8.46%	equalling	0 Quality Points

Since the sum of the quality points on SAIDI, SAIFI and CAIDI is 0, then Q = 0 in the 2007 annual tariff adjustment submission.

The performance targets for 2007 shall be based on the 2006 benchmark adjusted for 2% improvement for each of the indices (SAIDI, SAIFI and CAIDI) as noted previously in Table 3.1. The actual performance targets for 2007 are shown in table 3.5 below:

Table 3.5: Setting the 2007 Q-factor performance benchmark

	2006 Target	**Adjustment factor**		**2007 Target**
SAIDI	3,428	* (1 – 0.02)	=	3,359
SAIFI	36.65	* (1 – 0.02)	=	35.92
CAIDI	93.52	* (1 – 0.02)	=	91.65

Additionally, please note that the 2006 customer count, which will be used as the basis for the calculation of the 2007 indices, is provided in Appendix II. It reflects a customer base of 572,086.

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 is 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 fourth quarter of 2005. This facilitates the easy counting of all customers on a feeder basis. A concise database was created which incorporates this new customer data into the CIS and the Outage Management System.

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 the fourth quarter of 2006. 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. Currently, the number of customers served on a secondary circuit have 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 February 2007 and is expected to be completed during the third quarter of 2007. This phase involves the GPS mapping of all pole mounted and pad mounted transformer locations and their associated secondary dead-end points. This data provides information on the extent of any transformer secondary circuit. As a result, at the end of this phase, the number of customers served via any transformer will be known. 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.

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 2008 and thus do not anticipate being able to reset the benchmark for 2007 as was suggested as one possibility last year.

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[4]. 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, is estimated to be approximately US$3 million. Additionally, JPS plans to spend an additional US$6 million during 2007-9 installing smart meters (AMI) at 5,000 plus commercial and industrial customer locations to augment its ability to detect outages at the sub-feeder level on some secondary circuits. However, additional resources are likely to be required as it relates to measuring MAIFI which no doubt is something JPS and the OUR will have to discuss in much further detail.

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 time-frame. 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.

[4] 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 interruptions due to permanent trips in the Outage Database at the System Control Centre. These include interruptions due to under-frequency, planned and forced transmission and distribution outages. Some of these interruptions are less than 5 minutes in duration and will be added to MAIFI.

JPS also stores on the SCADA historian, all the recloser cycling for substations that are monitored. This data will also be used to compute MAIFI. However, not all the substations are on SCADA and recloser cycling for such substations will not be available for MAIFI computation. 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 also requires the OUR to state how far downstream into the distribution system they require the collection of momentary interruptions; specifically to fuse cutout switches. This will guide the assessment as to additional infrastructure equipment required by JPS to ensure compliance with the OUR's request and the resulting additional capital requirements.

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's primary focus has been in relation to improving the customer count information and that project will be completed in 2007 as mentioned previously.

Generally, the primary industry cause of momentary outages is classified as unknown. This is typically the nature of intermittent faults, as they are difficult to detect and without classification it makes analysis and strategies to attack the problem resource intensive which may not necessarily lead to a reduction of MAIFI.

The other major contributor to recloser cycling is inclement weather (lightning, heavy wind and/or rain) and because JPS's distribution system is overhead it is exposed to the elements. These momentary interruptions will generally pass with the weather system and efforts to reduce MAIFI prove resource intensive and may not result in a permanent solution.

If these two conditions continue to be the main drivers of MAIFI for JPS then improvement in MAIFI may not be feasible and JPS may not be properly incentivised under a Q-factor type adjustment for MAIFI.

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.

JPS's 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 proposes that the 2005 baseline data be examined to ascertain the extent to which *Force Majeure* type events have contributed. To the extent that these events have been incorporated in the baseline data, JPS proposes that any application for *Force Majeure* exclusion must be evaluated against this baseline norm taking into consideration the number of customers and the impact of the event.