
Office of Utilities Regulation

Jamaica Public Service Company Limited Annual Tariff Adjustment 2015

Determination Notice



OFFICE OF UTILITIES REGULATION

2015 September 01

DOCUMENT TITLE AND APPROVAL PAGE

DOCUMENT NUMBER: Ele 2015/ELE/007DET.001

DOCUMENT TITLE: Jamaica Public Service Company Limited Annual Tariff Adjustment 2015 - Determination Notice

PURPOSE OF DOCUMENT:

This document sets out the Office's decisions on issues related to the annual price adjustment (2015) under the price control regime that became effective on January 07, 2015 for the Tariff Review for the Period 2014-2019.

ANTECEDENT DOCUMENTS:

| | | |
|----------------------|--|-------------------|
| 2014/ELE/008/DET.004 | Jamaica Public Service Company Limited Tariff Review for Period 2014 - 2019: Determination Notice | January 7, 2015 |
| 2015/ELE/003/ADM.001 | Jamaica Public Service Company Limited Tariff Review for Period 2014 - 2019: Determination Notice – Addendum 1 | February 27, 2015 |
| | | |

APPROVAL:

This document is approved by the Office of Utilities Regulation and this Determination becomes effective as of 2015 September 03

On behalf of the Office:



Albert Gordon
Director General

2015 September 03

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Acronyms and Abbreviations

| | | |
|------------|---|--|
| ABNF | - | Adjusted Base-rate Non-Fuel |
| CAIDI | - | Customer Average Interruption Duration Index |
| CIS | - | Customer Information System |
| CPI | - | Consumer Price Index |
| CT | - | Current Transformer |
| dI | - | The annual growth rate in an inflation and devaluation measure |
| EGS | - | Electricity Guaranteed Standard |
| EOS | - | Electricity Overall Standard |
| GCT | - | General Consumption Tax |
| GDP | - | Gross Domestic Product |
| GOJ | - | Government of Jamaica |
| GIS | - | Geographic Information System |
| IPP | - | Independent Power Producer |
| JEP | - | Jamaica Energy Partners Limited |
| JPS/JPS Co | - | Jamaica Public Service Company Limited |
| KVA | - | Kilo Volt Amperes |
| KWh | - | Kilowatt-hours |
| LC | - | Letter of Credit |
| Licence | - | The Amended and Restated All-Island Electric Licence 2011 |
| MAIFI | - | Momentary Average Interruption Frequency Index |
| MVA | - | Mega Volt Amperes |
| MW | - | Megawatt |
| MWh | - | Megawatt-hours |
| OCC | - | Opportunity Cost of Capital |

| | | |
|-------|---|---|
| O&M | - | Operating and Maintenance |
| OUR | - | Office of Utilities Regulation |
| PPA | - | Power Purchase Agreement |
| PBRM | - | Performance Based Rate-Making Mechanism |
| PCI | - | Non-fuel Electricity Pricing Index |
| SAIDI | - | System Average Interruption Duration Index |
| SAIFI | - | System Average Interruption Frequency Index |
| T&D | - | Transmission & Distribution |
| TFP | - | Total Factor Productivity |
| TOU | - | Time of Use |
| WKPP | - | West Kingston Power Plant |
| WT | - | Wholesale Tariff |

Introduction

The electricity utility company, Jamaica Public Service Company Limited (“JPS”) is regulated by the Office of Utilities Regulation (“OUR”) based on a price cap regime introduced through the Amended and Restated All-Island Electric Licence, 2011 (the “Licence”). Under the price cap regime the non-fuel base rates are set once every five (5) years. The regime also allows for the non-fuel base rates to be adjusted annually by a component to incorporate a Performance Based Rate-making Mechanism (PBRM). A monthly rate adjustment is also allowed to account for movements in the monetary exchange rate between the United States dollar and the Jamaican dollar.

In the JPS Tariff Review for Period 2014 – 2019 Determination Notice (Document No. 2014/ELE/008/DET.004), which came into effect on January 07, 2015 (“2014 – 2019 Determination Notice”) and the subsequent JPS Tariff Review for Period 2014 – 2019 Determination Notice – Addendum 1 (Document No. 2015/ELE/003/ADM.001) which came into effect on March 01, 2015 (“Addendum 1”), the Office established the average base non-fuel rate at J\$14.42/kWh.

The requested annual adjustment resulting from changes in the inflation offset index including efficiency gains and changes in quality of service is to be applied to the tariff basket instead of the individual tariffs. JPS is allowed to adjust the tariffs for each rate class on such a basis that the weighted average increase of the tariff basket does not exceed the price adjustment. The adjusted tariffs should also accord with the 2014 - 2019 Determination Notice and Addendum 1 whereby JPS is allowed to recover its revenue requirement by 23% fixed charges and 77% variable charges.

The annual adjustment calculates the movement in the base rates charged by JPS. Given that JPS is allowed to make interim monthly adjustments to take into account movements in the foreign exchange rate, the effective change in rate at the annual adjustment for the average customer would therefore be the value of the annual adjustment of the base rate less the accumulated value of the foreign exchange adjustments over the preceding time period.

1. Legislative and Regulatory Framework

This Determination is being issued pursuant to Sections 11 and 12 of the Office of Utilities Regulation Act, 1995 (the “OUR Act”) and Condition 15 and Schedule 3 of the Licence.

Sections 11 and 12 of the OUR Act provide as follows:

“11. Power to fix rates

11. (1) Subject to subsection (3), the Office may, either of its own motion or upon application made by a licensee or specified organization (whether pursuant to subsection (1) of section 12 or not) or by any person, by order published in the Gazette prescribe the rates or fares to be charged by a licensee or specified organization in respect of its prescribed utility services.

(2) For the purposes of this section, the Office may conduct such negotiations as it considers desirable with a licensee or specified organization, industrial, commercial or consumer interests, representatives of the Government and such other persons or organizations as the Office thinks fit.

(3) The provisions of subsections (1) and (2) shall not apply in any case where an enabling instrument specifies the manner in which rates may be fixed by a licensee or specified organization.

12. Application by approved organization to fix rates.

12. (1) Subject to subsection (2), an application may be made to the Office by a licensee or specified organization by way of a proposed tariff specifying the rates or fares which the licensee or specified organization proposes should be charged in respect of its prescribed utility services and the date (not being earlier than the expiration of thirty days after the making of the application) on which it is proposed that such rates should come into force (hereinafter referred to as the specified date).

(2) Where an application by way of a proposed tariff is made under subsection (1) notice of such application and, if so required by the Office, a copy of such tariff, shall be published in the Gazette and in such other manner as the Office may require.

(3) A notice under subsection (3) shall specify the time (not being less than fourteen days after the publication of the notice in the Gazette) within which objections may be made to the Office in respect of the proposed tariff to which the notice relates.

(4) Subject to the provisions of this Act, the Office may, after the expiration of the time specified in the notice under subsection (3), make an order either -

(a) confirming the proposed tariff without modifications or with such modifications as may be specified in the order; or

(b) rejecting the proposed tariff.

(5) If, after publication of notice of an application in accordance with subsection [3], no order under subsection (5) has been made prior to the specified date, the proposed tariff shall come into force on the specified date.

(6) An order confirming a proposed tariff shall not bring into operation any rates or fares on a date prior to the date of such order."

Condition 2, paragraph 3 of the Licence provides as follows:

"Subject to the provisions of this Licence the Licensee shall provide an adequate, safe and efficient service based on modern standards, to all parts of the island of Jamaica at reasonable rates so as to meet the demands of the island and to contribute to economic development."

Condition 15 of the Licence provides as follows:

"Condition 15: Price Controls

- (1) The Licensee is subject to the conditions in Schedule 3.*
- (2) The prices to be charged by the Licensee in respect of the Supply of electricity shall be subject to such limitation as may be imposed from time to time by the Office."*

Schedule 3, paragraph 2 (A) (B) and (C) of the Licence provides as follows:

"..(A) The rates for electric power shall consist of the following components:

- (i) A Non-Fuel Base Rate ("Non-Fuel Base Rate") which is adjusted annually by a component to incorporate a PBRM.*
- (ii) A Fuel Rate which is adjusted monthly to reflect fluctuations in fuel costs.*
- (iii) Both (i) and (ii) above are adjusted monthly to account for movement in the monetary exchange rate between the US Dollar and Jamaican Dollar.*
- (iv) Other extraordinary costs related to Government imposed obligations.*

(B) Initial Non-Fuel Rates from the Effective Date through May 31, 2004

Prices will be controlled and fixed by the tariff regime which effective February 1, 2001; with the proviso that –

- (i) The Office will annually review the efficiency level (system losses and heat rate) and where appropriate adjust these in the tariff.*

- (ii) *The Licensee co-operates with the Office to conduct a cost of service study, the results of which will form the basis for rebalancing the tariffs in order to remove cross subsidies across rate classes.*

(C) Rates Post May 31, 2004

Non-Fuel Base Rate: *The Licensee shall submit a filing with the Office no later than March 1, 2004 and thereafter on each succeeding fifth anniversary, with an application for the recalculation of the Non-Fuel Base Rates. The new Non-Fuel Base Rate will become effective ninety (90) days after acceptance of the filing by the Office. This filing shall include an annual non-fuel revenue requirement calculation and specific rate schedules by customer class. The revenue requirement shall be based on a test year in which the new rates will be in effect and shall include efficient non-fuel operating costs, depreciation expenses, taxes, and a fair return on investment. The components of the revenue requirement which are ultimately approved for inclusion will be those which are determined by the Office to be prudently incurred and in conformance with the OUR Act, the Electric Lighting Act and subsequent implementing rules and regulations. The revenue requirement shall be calculated using the following formula unless such formula is modified in accordance with the rules and regulations prescribed by the Office*

Non-Fuel Revenue Requirement = non-fuel operating costs + depreciation + taxes + return on investment...”

The Test Year is defined in the said Schedule 3 of the Licence as comprising:

“... the latest twelve months of operation for which there are audited accounts and the results of the test year adjusted to reflect:

- (i) Normal operational conditions, if necessary;*
- (ii) Such changes in revenues and costs as are known and measurable with reasonable accuracy at the time of filing and which will become effective within twelve months of the time of filing. Costs, as used in this paragraph, shall include depreciation in relation to plant in service during the last month of the test period at the rates of depreciation specified in the Schedule to this Licence. Extraordinary or Exceptional items as defined by The Institute of Chartered Accountants of Jamaica shall be apportioned over a reasonable number of years not exceeding five years; and*
- (iii) Such changes in accounting principles as may be recommended by the independent auditors of the Licensee.”*

Schedule 3, paragraph 4 of the Licence provides as follows:

“4. Annual Performance-Based Rate-making Filings for Electric Tariffs

The process to be used by the Office in the implementation and management of the incentive regulation process is set out in detail in Exhibit 1

The Licensee shall make annual filings to the Office at least sixty (60) days prior to the Adjustment Date. 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. The annual data for the performance indices will be reflective of the twelve (12) months ending sixty (60) days prior to the Adjustment Date. In the absence of an order from the Office upon the expiry of sixty (60) days of the filing by the Licensee -

- (a) rejecting the rates proposed by the Licensee on the merits;*
- (b) approving the rates proposed by the Licensee; OR*

if the Office issues an order rejecting or modifying any portion of the Licensee' proposed rates, then upon the occurrence of any of the said events, the Licensee may refer the matter to the Appeal Tribunal as established under Condition 32 to finally settle and the parties hereby agree to be bound by the decision of the Tribunal.

In the event that the Tribunal rules in favour of the Licensee in any of the three events the decision of the Tribunal shall become effective on the day of the Tribunal's ruling.

Exhibit 1 of Schedule 3 of the Licence provides as follows:

“Annual Growth Rate for Non-Fuel Base Rates

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:

$$ABNF_y = ABNF_{y-1} (1 + dPCI)$$

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 non-fuel electricity prices as defined below

$PCI = \text{Non-fuel Electricity Pricing Index}$

*The Annual Performance-Based Rate Making (PBRM) filing follow the general framework where the **annual rate of change in non-fuel base electricity prices (dPCI)** will be determined through the following formula:*

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

Where:

$dPCI =$ *annual rate of change in non-fuel base electricity prices;*

$dI =$ *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."*

JPS submitted its annual tariff adjustment application for the recalculation of the Non-Fuel Base Rates to the Office on May 29, 2015 with a replacement version dated June 01, 2015.

Upon review, the OUR determined that the June 01, 2015 JPS submission was not in conformance with the provisions of the Licence, the 2014 - 2019 Determination Notice and Addendum 1 and the rates published in the Jamaica Gazette on March 01, 2015. JPS was so advised and the company withdrew the June 01, 2015 submission and replaced same with submission dated June 22, 2015 which addressed the issues raised in the Office's letter of June 11, 2015.

Pursuant to the 2014 – 2019 Determination Notice and Addendum 1, the Price Index (PCI) is to be adjusted utilizing the following formula:

$$PCI_y = PCI_{y-1}(1 + dPCI)$$

The adjusted tariffs should accord with the 2014 - 2019 Determination Notice and Addendum 1 whereby JPS is allowed to recover its revenue requirement by 23% fixed charges and 77% variable charges.

At any time the actual price index (API) must be less than PCI.

The 2014 – 2019 Determination Notice specifies the inflation adjustment formula to be used during the 2014 - 2019 tariff period as follows:

$$dI = USP * \left(\frac{EX_n - EX_b}{EX_b} \right) (1 + USAF * INF_{US}) + (USP * USAF * INF_{US} + (1-USP) * INF_J)$$

Where:

dI = annual growth rate in inflation and devaluation.

INF_{US} = the US Inflation rate

INF_J = the Jamaica Inflation rate

EX_n = the new Base Exchange rate

EX_b = the Base Exchange rate

USP = **0.80**, the Foreign Exchange Adjustment Factor

$USAF$ = **0.45**, the US Adjustment Factor (USAF), which represents that portion of the US component of the total non-fuel expenses that is subject to US inflation adjustment.”

In accordance with Sections 11 and 12 of the OUR Act as well as Condition 15 and Schedule 3 of the Licence, the Office has made the **DETERMINATIONS summarized below.**

2. Executive Summary

2.1. Annual Inflation and Devaluation Growth Rate (dI)

In making the annual filings to the Office, JPS requested and provided support for adjustments to the following consumer price indices:

- The Jamaican twelve-month point-to-point inflation rate to February 28, 2015 of **4.53%**, derived from the most recent CPI data¹ (i_j)
- The U.S. twelve-month point-to-point inflation rate to February 28, 2015 of **-0.03%**, derived from the US Department of Labour statistical data² (i_{us})

The OUR has verified the above movement in the indices and in addition has determined that the base rates for the foreign exchange movement should be increased from US\$1: J\$112.00 to US\$1: J\$115.50

dI is determined to be 3.40%

2.2. Annual Offset to Inflation (X-Factor)

In accordance with the 2014 - 2019 Determination Notice,

X is determined to be 1.10%

2.3. Allowed Price Changes to Reflect Service Quality (Q-Factor)

In accordance with the 2014 -2019 Determination Notice,

Q is determined to be 0%

In accordance with the 2014 – 2019 Determination Notice the Q-factor adjusts the annual escalation rate to reflect changes in quality of service provided to customers by JPS.

2.4. Allowed Price Escalation to Reflect Special Circumstances (Z-Factor)

In accordance with the 2014 - 2019 Determination Notice,

Z is determined to be 0%

There were no special circumstances warranting an adjustment in this review period.

¹ Obtained from the Statistical Institute of Jamaica, CPI Statistical Bulletin

² Obtained from US Bureau of Labour Statistics website, <http://data.bls.gov/cgi-bin/surveymost>

2.5. Total Non - Fuel Adjustment

The annual adjustment of the base non-fuel tariffs approved by the Office to become effective **September 01, 2015** is **2.30%**

The effective change to the Non-Fuel Rate is **-0.20%**. This reflects the net impact of inflation (domestic and foreign (0.90%) and the productivity factor (X= -1.10%). The foreign exchange movement (2.50%) was pre-adjusted. The details of the current annual inflation adjustment are set out in Tables 2.1a and 2.1b below.

Table 2.1a: Details of Annual Inflation Adjustment (2015-2016)

| Annual Adjustment | |
|--|---------------|
| dl - Inflation and devaluation growth rate | 3.40% |
| X - Productivity Factor | -1.10% |
| Q - Quality of Service | 0.00% |
| Z - Exogenous Factor | 0.00% |
| Total dPCI | 2.30% |
| | |
| Total change in Non-Fuel Base Rates | 2.30% |
| Less pre-adjusted F/X Base Rate movement (Already accounted for monthly on customers' bills) | -2.50% |
| Effective change in Non-Fuel Rates | -0.20% |

Table 2.1b: Details of Annual Inflation Adjustment (2015-2016)

| Annual Adjustment | |
|--|---------------|
| F/X Increase | 2.50% |
| Jamaica Inflation | 0.91% |
| US Inflation | -0.01% |
| Total Inflation | 0.90% |
| Escalation Factor | 3.40% |
| Productivity (or X) Factor | -1.10% |
| Escalation Adjustment net of X-Factor | 2.30% |
| F/X Adjustment (Already Included in Bills) | -2.50% |
| Effective Change in Non-Fuel Rates | -0.20% |

As provided for in the Licence, this adjustment is applied to the basket of tariffs and JPS may adjust individual rates in the Schedule, so long as the average does not exceed the

overall adjustment of 2.30%; and the approved recovery of 23% in fixed charges and 77% in variable charges.

2.5.1. Non-Fuel Tariff Table

Table 2.2 below shows the inflation adjusted base non-fuel tariffs to be applied in the current 2015-2016 period.

Table 2.2: Inflation Adjusted Base Non-Fuel Tariffs (dI ± X ± Q+Z)

| Class | Block Rate Option | Customer Charge J\$/Mth | Energy Charge J\$/kWh | Demand Charge - J\$/KVA | | | |
|------------------|-------------------|-------------------------|-----------------------|-------------------------|----------|-----------|---------|
| | | | | Std. | Off-Peak | Part Peak | On-Peak |
| Rate 10 LV | ≤ 100 | 404.88 | 8.61 | - | - | - | - |
| Rate 10 LV | > 100 | 404.88 | 20.05 | - | - | - | - |
| Rate 20 LV | | 902.00 | 16.61 | - | - | - | - |
| Rate 40 LV - Std | | 6,355.0 | 5.18 | 1,622.78 | - | - | - |
| Rate 40 LV - TOU | | 6,355.0 | 5.18 | - | 68.43 | 714.03 | 914.24 |
| Rate 50 MV - Std | | 6,355.0 | 4.99 | 1,453.80 | - | - | - |
| Rate 50 MV - TOU | | 6,355.0 | 4.99 | - | 64.83 | 632.60 | 811.64 |
| Rate 60 LV | | 2,562.5 | 21.99 | - | - | - | - |

2.5.2. The Electricity Efficiency Improvement Fund (EEIF)

The EEIF revenues which is collected through a separate line item on customers' bills shall be billed at the rate of **J\$0.4998/kWh**.

2.5.3. Residential Customers Prepaid Rates (Rate 10)

The approved non-fuel pre-paid rate is **J\$13.19/kWh** for the first 100 kWh within a thirty (30) day consumption cycle and **J\$20.85/kWh** for each additional kWh thereafter within that thirty (30)-day consumption cycle. The prepaid rates shall be subject to review at the next Annual Tariff Adjustment.

2.5.4. Small Commercial Customers Prepaid Rates (Rate 20)

The approved non-fuel tariff to be charged for Rate 20 prepaid service shall be revenue neutral when compared to the existing postpaid rates for Rate 20 customers and shall be applied as follows:

| | | |
|------------------------|--------------|----------------------|
| First | 10kWh | J\$107.31/kWh |
| Additional kWhs | | J\$17.11/kWh |

The prepaid rates shall be subject to review at the next Annual Tariff Adjustment.

2.5.5. Community Renewal Rate (Rate 10)

The approved Community Renewal Rate to be charged for Rate 10 service is a flat rate of **J\$8.61/kWh** for consumption up to 150kWh. Customers consuming more than 150kWh per month, will pay the regular prepaid or post-paid rate, whichever is applicable, for the incremental consumption above 150kWh per month. The Community Renewal Rate and conditions related to it shall be subject to review at the next Annual Tariff Adjustment.

2.6. Fuel Cost Adjustment Factor – System Losses

The aggregate System losses target ceiling remains at **19.20%** for the adjustment period and is subject to be reviewed at the next Annual Tariff Adjustment.

2.7. Fuel Cost Adjustment Factor – Heat Rate

The JPS' generating heat rate target shall remain at **12,010 kJ/kWh** for the adjustment period and is subject to be reviewed at the next Annual Tariff Adjustment.

2.8. Bill Impact

It is estimated that with the determinations set out herein, on the average, there will be an overall 0.1% reduction in total consumers' bills. This results from the effects of:

- a) the 2.30% increase in the **base non-fuel rates** (effectively -0.20% given that bills have already been adjusted monthly by 2.50% for foreign exchange differential);
- b) No change in the **JPS' generating heat rate target**; and
- c) No change in the **aggregate System losses target ceiling**.

The average bill impact across all rate classes is summarized in Table 2.3 below. The impact is as follows:

| | |
|----------------------------|------------------|
| • Typical Rate 10 customer | = -0.1% Decrease |
| • Typical Rate 20 customer | = -0.1% Decrease |
| • Typical Rate 40 customer | = 0.0% No change |
| • Typical Rate 50 customer | = 0.0% No change |

Table 2.3: Estimated Bill Impact of OUR Determined Annual Tariff Adjustment

| Customer Class | Overall Bill Impact of the OUR Approved Rates | | | |
|---|---|--------------|------------------------------|--------------------|
| | Typical Usage (kWh) | Demand (kVA) | Total Bill Impact (%) | Average Change (%) |
| RT 10 LV Res. Service < 100 kWh | 90 | n/a | 0.0% | -0.1% |
| RT 10 LV Res. Service 101-350 kWh | 349 | n/a | -0.1% | |
| RT 10 LV Res. Service > 350 kWh | 350 | n/a | -0.1% | |
| RT 20 LV Gen. Service < 100 kWh | 90 | n/a | -0.1% | -0.1% |
| RT 20 LV Gen. Service 100-1000 kWh | 1,000 | n/a | -0.1% | |
| RT 20 LV Gen. Service 1000-7500 kWh | 5,000 | n/a | -0.1% | |
| RT 20 LV Gen. Service > 7500 kWh | 8,000 | n/a | -0.1% | |
| RT 40 LV Power Service (Std) | 35,000 | 100 | 0.0% | 0.0% |
| RT 50 MV Power Service (Std) | 500,000 | 1,500 | 0.0% | |
| RT 50 MV Power Service (TOU-Partial Peak) | 500,000 | 1,500 | 0.0% | |
| Efficiency Targets: | System Losses Target | | JPS Thermal Heat Rate Target | |
| | 19.20% | | 12,010 kJ/kWh | |

Table 2.4 below shows the effect of the JPS proposed adjustments

Table 2.4: Estimated Bill Impact of JPS Proposed Annual Tariff Adjustment

| Customer Class | Overall Bill Impact of the JPS Proposal | | | |
|---|---|--------------|------------------------------|--------------------|
| | Typical Usage (kWh) | Demand (kVA) | Total Bill Impact (%) | Average Change (%) |
| RT 10 LV Res. Service < 100 kWh | 90 | n/a | 0.4% | 0.2% |
| RT 10 LV Res. Service 101- 350 kWh | 349 | n/a | 0.1% | |
| RT 10 LV Res. Service > 350 kWh | 350 | n/a | 0.1% | |
| RT 20 LV Gen. Service < 100 kWh | 90 | n/a | 0.5% | 0.1% |
| RT 20 LV Gen. Service 100-1000 kWh | 1,000 | n/a | 0.0% | |
| RT 20 LV Gen. Service 1000-7500 kWh | 5,000 | n/a | 0.0% | |
| RT 20 LV Gen. Service > 7500 kWh | 8,000 | n/a | 0.0% | |
| RT 40 LV Power Service (Std) | 35,000 | 100 | -0.1% | -0.2% |
| RT 50 MV Power Service (Std) | 500,000 | 1,500 | -0.3% | |
| RT 50 MV Power Service (TOU-Partial Peak) | 500,000 | 1,500 | -0.3% | |
| Efficiency Targets: | System Losses Target | | JPS Thermal Heat Rate Target | |
| | 19.20% | | 12,010 kJ/kWh | |
| | | | | |

3. Synopsis of JPS' Annual Rate Adjustment Proposal

3.1. Current year annual inflation adjustment factor (dI – X)

JPS submitted its Annual Tariff Adjustment filing for the recalculation of the Non-Fuel Base Rates to the Office on May 29, 2015 with a replacement version dated June 01, 2015.

JPS' June 01, 2015 submission was not in conformance with the provisions of the Licence, the 2014 - 2019 Determination Notice, Addendum 1 and the rates published in the Jamaica Gazette on March 01, 2015.

Consequent on the OUR advising JPS of this, the company withdrew the June 01, 2015 submission and replaced same with submission dated June 22, 2015. This replacement addressed the issues raised in the Office's letter of June 11, 2015. Pursuant to the annual adjustment clause set forth in Schedule 3, JPS, in its submission, sought approval for an increase of **2.30%** on the base non-fuel tariffs for 2015 -2016 through the application of the annual adjustment formula (dI – X).

The weighted average increase in the inflation adjustment includes the productivity factor of 1.10% (X-Factor). There were no requests for adjustments for quality of service (Q-factor) neither were there any unforeseen events outside of the company's control that would have warranted adjustments through the Z-factor.

The requested annual adjustment in the base rates of 2.30% includes the foreign exchange component that is already reflected in customers' bills.

Tables 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 and 3.8 below summarize the computation of the adjustment factor (dI – X) and its application to consumers' customer charge, demand charge, energy charge and the overall non-fuel revenue of the company.

JPS also proposed a rate for the Community Renewal Programme. The company argued strongly that it is through these types of strategic partnerships that it will be able to achieve sustainable and holistic solutions to the problem of electricity theft.

JPS applied the full test year consumption for Rate 60 and indicated that this does not take into account the impact of the replacement of street lighting with LED fixtures. JPS contended that given the level of uncertainty in the timing and final outcome of the programme, it is prudent to wait until the LED replacement proposal is finalized before incorporating the resultant changes in the tariff.

Table 3.1 Annual Adjustment Factor (dI - X)

| Annual Adjustment Clause Calculation | | | |
|--------------------------------------|---------------------------------------|--|--------|
| Line | Description | Formula | Value |
| L1 | Base Exchange Rate | | 112.00 |
| L2 | Adjusted Base Exchange Rate | | 115.50 |
| L3 | Jamaican Inflation Index | | |
| L4 | CPI @ Feb 2015 | | 221.5 |
| L5 | CPI @ Feb 2014 | | 211.9 |
| L6 | US Inflation Index | | |
| L7 | CPI @ Feb 2015 | | 234.7 |
| L8 | CPI @ Feb 2014 | | 234.8 |
| L9 | Exchange Rate Factor | $(L2-L1)/L1$ | 3.13% |
| L10 | Jamaican Inflation Factor | $(L4-L5)/L5$ | 4.53% |
| L11 | US Inflation Factor | $(L7-L8)/L8$ | -0.03% |
| L12 | Escalation Factor | $0.80*(L9*(1+0.45*L11))+0.45*L11+0.20*L10$ | 3.40% |
| L13 | Productivity (or X) Factor | | -1.10% |
| L14 | Escalation Adjustment net of X-Factor | $(L12-L13)$ | 2.30% |

Table 3.2 below displays the number of customers across the rate classes and the respective demand charges and energy charges derived using the 2014 billing determinants.

Table 3.2 Customer Information 2014- 2015

| Class | | Block/ Rate Option | Average 2014 Customer | Energy kWh Std. | Demand-KVA | | | |
|---------|--------------|--------------------|-----------------------|-----------------|------------|----------|-----------|---------|
| | | | | | Std. | Off-Peak | Part Peak | On-Peak |
| Rate 10 | LV | <100 | 230,499 | 489,905,941 | - | - | - | - |
| Rate 10 | LV | >100 | 315,164 | 491,674,911 | - | - | - | - |
| Rate 20 | LV | | 62,075 | 600,599,256 | - | - | - | - |
| Rate 40 | LV - STD | | 1,626 | 646,532,253 | 2,270,232 | - | - | - |
| Rate 40 | LV - TOU | | 117 | 117,922,702 | - | 344,932 | 329,958 | 261,630 |
| Rate 50 | MV -STD | | 124 | 403,097,191 | 1,116,885 | - | - | - |
| Rate 50 | MV -TOU | | 24 | 92,249,990 | - | 330,411 | 313,844 | 240,396 |
| Rate 60 | STREETLIGHTS | | 308 | 70,573,255 | - | - | - | - |
| TOTAL | | | 609,937 | 2,912,555,499 | 3,387,117 | 675,343 | 643,802 | 502,026 |

Table 3.3 Proposed Non-Fuel Tariff Basket Weights

| Class | Block/ Rate Option | Customer Charge | Energy | Demand-J\$/KVA | | | | Total |
|------------------|--------------------|-----------------|---------------|----------------|--------------|--------------|--------------|---------------|
| | | | | Std. | Off-Peak | Part Peak | On-Peak | |
| Rate 10 LV | <100 | 2.68% | 10.11% | 0.00% | 0.00% | 0.00% | 0.00% | 12.79% |
| Rate 10 LV | >100 | 3.66% | 23.62% | 0.00% | 0.00% | 0.00% | 0.00% | 27.28% |
| Rate 20 LV | | 1.61% | 23.91% | 0.00% | 0.00% | 0.00% | 0.00% | 25.52% |
| Rate 40 LV - Std | | 0.30% | 8.02% | 8.83% | 0.00% | 0.00% | 0.00% | 17.15% |
| Rate 40 LV - TOU | | 0.02% | 1.48% | 0.00% | 0.06% | 0.56% | 0.57% | 2.67% |
| Rate 50 MV - Std | | 0.02% | 4.82% | 3.89% | 0.00% | 0.00% | 0.00% | 8.73% |
| Rate 50 MV - TOU | | 0.00% | 1.10% | 0.00% | 0.05% | 0.48% | 0.47% | 2.10% |
| Rate 60 LV | | 0.02% | 3.72% | 0.00% | 0.00% | 0.00% | 0.00% | 3.74% |
| TOTAL | | 8.31% | 76.76% | 12.72% | 0.11% | 1.04% | 1.04% | 100.0% |

Table 3.4 Proposed Non-Fuel Tariffs

| Class | Block/ Rate Option | Customer Charge | Energy-J\$/kWh | Demand-J\$/KVA | | | |
|------------------|--------------------|-----------------|----------------|----------------|----------|-----------|---------|
| | | | | Std. | Off-Peak | Part Peak | On-Peak |
| Rate 10 LV | --100 | 414.63 | 8.62 | - | - | - | - |
| Rate 10 LV | > 100 | 414.63 | 20.07 | - | - | - | - |
| Rate 20 LV | | 923.74 | 16.62 | - | - | - | - |
| Rate 40A LV | | | | | | | |
| Rate 40 LV - Std | | 6,508.1 | 5.11 | 1,634.52 | - | - | - |
| Rate 40 LV - TOU | | 6,508.1 | 5.11 | - | 68.92 | 719.20 | 920.85 |
| Rate 50 MV - Std | | 6,508.1 | 4.90 | 1,464.32 | - | - | - |
| Rate 50 MV - TOU | | 6,508.1 | 4.90 | - | 65.30 | 637.18 | 817.51 |
| Rate 60 LV | | 2,624.3 | 21.36 | - | - | - | - |
| EEIF | | | 0.4998 | | | | |

Table 3.5 Revenue from Proposed Tariffs

| Class | Block/ Rate Option | 12 Months Customer Revenue | Energy Revenue | Demand (KVA) revenue | | | | Total Demand Revenue | Total Revenue |
|--------------------------|--------------------|----------------------------|-----------------------|----------------------|-------------------|--------------------|--------------------|----------------------|-----------------------|
| | | | | Std. | Off-Peak | Part Peak | On-Peak | | |
| Rate 10 LV | <100 | 1,146,861,604 | 4,222,989,211 | | | | | - | 5,369,850,815 |
| Rate 10 LV | >100 | 1,500,117,392 | 9,087,915,404 | | | | | - | 11,438,032,856 |
| Rate 20 LV | | 688,093,926 | 9,081,959,635 | | | | | - | 10,670,053,561 |
| Rate 40 LV - Std | | 128,966,047 | 3,303,779,813 | 3,710,739,609 | | | | 3,710,739,609 | 7,141,505,469 |
| Rate 40 LV - TOU | | 9,137,372 | 602,585,007 | | 23,772,713 | 237,305,794 | 240,921,866 | 502,000,493 | 1,113,722,872 |
| Rate 50 MV - Std | | 9,684,053 | 1,975,176,236 | 1,635,477,043 | | | | 1,635,477,043 | 3,620,337,332 |
| Rate 50 MV - TOU | | 1,874,333 | 452,024,951 | | 21,575,838 | 199,975,120 | 196,526,134 | 418,077,092 | 871,976,376 |
| Rate 60 LV | | 9,699,413 | 1,507,444,727 | | | | | - | 1,517,144,140 |
| TOTAL BEFORE EEIF | | 3,560,454,140 | 31,913,875,044 | 5,346,216,652 | 45,348,551 | 437,280,914 | 437,448,120 | 6,266,294,237 | 41,740,623,421 |
| TOTAL EEIF | | | 1,455,695,238 | | | | | | |
| TOTAL | | 3,560,454,140 | 33,369,570,282 | 5,346,216,652 | 45,348,551 | 437,280,914 | 437,448,120 | 6,266,294,237 | 43,196,318,659 |

3.2. Alternative Rate Proposal

JPS by letter submitted to the OUR on April 1, 2015 advised that there were anomalies in the billing determinant data that was submitted as part of its 2014 Tariff Filing. JPS claimed that the billed consumption data for rate classes 20 and 50 in Auditor source-certified data submitted to the OUR on February 13, 2015 was materially different from the consumption data submitted in JPS' 2014 rate case filing, and consequently included in Addendum 1. JPS also asserted that the Auditor source-certified data more accurately reflects the billed consumption for the test year and that the discrepancy is material and will significantly affect its ability to realize the revenue requirement awarded in the determination and subsequent addendum. JPS argued that the revenue deficiency occasioned by the use of the alleged incorrect billing determinants submitted in JPS' 2014 rate case filing, is J\$310M (or US\$2.8M per annum) being 0.75% of the revenue requirement (excluding EEIF).

JPS therefore proposed that a correction should be made as part of the 2015 Annual Tariff Adjustment to allow for the 0.75% shortfall in the 2014 revenue requirement. So, in addition to the application of the annual inflation adjustment formula, JPS proposed that an adjustment of 0.7672% be implemented to account for the revenue deficit. JPS derived the adjustment factor of 0.7672% from the 0.75% revenue shortfall adjustment for 2014 compounded by the proposed 2015 annual inflation adjustment factor of 2.30%. Taken together this resulted in a gross adjustment factor of 3.07% (2.30% plus the additional factor of 0.7672%) for 2015.

3.3. Pre-paid Rates

3.3.1. Rate 10 Pre-paid Rates

JPS argued that the approved 2014/2015 pre-paid tariff was computed on the basis of consumption bands that were obtained from the 2013 billing determinant data and that this tariff will have an adverse financial impact on JPS if all customers were to switch from post-paid to pre-paid customers. JPS argued that if all customers consuming less than 100 kWh switched to the pre-paid service, it stands to lose J\$399M in non-fuel revenues per annum. JPS further stated that if all Rate 10 customers switched to prepaid service, the revenue loss faced by JPS would be reduce to J\$255M per annum. The company noted however that the probability of the latter scenario occurring is low as the incentive to switch only exists for customers consuming between 0 to 100 kWh. It claimed that by any measure, this exposure is significant and further increases its risk profile especially given the challenges in meeting certain financial covenants.

3.3.2. Rate 20 Pre-paid Rates

JPS' proposal for the non-fuel tariff for the Rate 20 prepaid customers using the proposed post-paid tariffs as the basis of the calculation were as follows:

- \$109.498/kWh for the first 10kWh in a 30 day cycle

- \$17.118/kWh for every kWh above 10kWh in a 30 day cycle

3.4. Community Renewal Programme

JPS claimed that the Community Renewal Programme (CRP) is an output of the deliberations of a committee, chaired by the Hon State Minister Julian Robinson. A task force was set up to enable consultation with multiple stakeholders who have a direct interest in reducing non-technical electricity losses through the development and implementation of a sustainable model that integrates both technical and social elements. JPS stated that this approach is a departure from previous strategies which included the identification and prosecution of illegal users and the disconnection of streetlights.

JPS asserted that it has entered into a Public Private Partnership with the Government through JSIF and its role in the program is to provide support to the partnership by improving power distribution infrastructure and implementing SMART metering in the targeted communities. The company stated that this support will include extension of the electricity network as needed and where necessary. JPS also proposed to assist with energy conservation and management efforts in the targeted communities by providing advice on energy conservation and assistance with the distribution of energy efficient lighting.

3.4.1.1. JPS Proposed Pilot Programme – PROJECT STEP UP

JPS proposed a pilot programme branded as “Project Step Up”. This programme JPS indicated will target seven communities, viz, McGregor Gardens, Denham Town, Arnette Gardens, Payne Ave, Whitfield Town, Tower Hill and Majesty Gardens. It outlined the project’s major objectives as to educate customers in the targeted communities on energy and bill management and to introduce more flexible payment options (e.g. payment arrangements & pre-paid metering). JPS said that this is to be achieved through partnership with stakeholders such as JSIF, PATH and the Members of Parliament for the selected communities. The project will finance the delivery of infrastructure, services, and civil works relevant to the provision of legal electricity connections.

Table 3.6 which is reproduced below was presented by JPS as providing a profile of the communities targeted for the project.

Table 3.6: Community Profiles

| Community | ⁸Population | Housing Infrastructure | % Unemployed | ⁹Losses (% of Billed Sales) | Nos. of Existing Customer | Potential Customers/Users |
|-------------------------|-------------------------------|-------------------------------|---------------------|---|----------------------------------|----------------------------------|
| McGregor Gardens | 450-500 | Majority Concrete | 70% | 90% | 14 | 197 |
| Denham Town | 6,279 | Majority Concrete | 46.3% | 83% | 2,146 | 583 |
| Arnette Gardens | 1500 | Exclusively Concrete | 75% | 82% | 1283 | 255 |
| Whitfield Town | 13,690 | Majority wood based | 31% | 79% | 1,325 | 840 |
| Payne Ave | 3,500 | Majority Concrete | 50% | 40% | 1,422 | 544 |
| Tower Hill | 1,500 | Exclusively Concrete | 60% | 55% | 2,834 | 272 |
| Majesty Gardens | 3,168 | Majority wood based | | 81% | 14 | 175 |

JPS averred that the losses figures in Table 3.6 above reflect that of each community as a whole and not the specific areas within the communities that are selected for the pilot programme. The company also indicated that meters are currently being installed to capture the level of losses in the targeted areas, however, the losses for the community provide an insight into the level of loss reduction that can be expected from the pilot areas.

JPS further claimed that core objectives, elements and activities of the pilot programme are:

- a. To facilitate the conversion two 2,000 consumers (illegal users) of electricity to customers.
- b. To reduce system losses by 0.25% and recover 2.9 GWh of electricity sales for the first year of the programme.
- c. To aid participation in the programme in support of which house wiring is to be included for two communities, McGregor Gardens and Majesty Gardens.
- d. To allow for GEI certification of households affected by the pilot programme which include:
 - i. Premises that have been disconnected for more than one year; and
 - ii. Premises wired by a private electrician and for which certification affordability is an obstacle.
- e. To provide beneficiaries with new billing and payment options, including prepaid metering.
- f. The establishment of seven (7) JPS satellite offices in the selected communities. These offices will be managed by Trained Community Facilitators and will allow for closer project monitoring and evaluation during and after project implementation, as well as closer contact with the project beneficiaries to facilitate

- project communication and improve the relationship between JPS and the beneficiaries.
- g. Skills training and provision of employment opportunities for community residents of McGregor Gardens and Majesty Gardens in:
 - i. Electrical Installation
 - ii. House wiring Refrigeration assessments and installation of Gaskets
 - h. Social marketing and public education component for all communities, which includes training in energy conservation, meter reading and electricity bill literacy.
 - i. To pilot and test various methodologies to improve customers' ability to pay electricity bills, through reduction in consumption and increased information provision about electricity usage. The community facilitators, as part of their role, will be identifying conservation opportunities (Light bulb replacements and refrigerator repairs) and making recommendations for continued improvements in customer consumption patterns and programme execution.
 - j. The distribution of LED and Fluorescent light bulbs to select households in the pilot areas.
 - k. Assessment and replacement of refrigerator gaskets.

Table 3.7 below shows the JPS proposed key performance indicators.

Table 3.7: JPS' Proposed Key Performance Indicators

| | Measure | Targets |
|-------------------------------------|-----------------------------|-------------------|
| Financial Viability | | |
| Billed Customers | # of Billed Customers | 2,000 |
| Changes in Billed Sales | MWh Billed | 240 MWh per month |
| Infrastructure Improvements | | |
| STS Meters Installed | # of Meters Installed | 218 |
| Enclosures YYP Installed | # of Enclosures | 41 |
| Total Meters commissioned | # of Total Meters Installed | 21 |
| Non-Technical Losses | | |
| Converted Consumers | # of customers | 2,000 |
| Losses Recovery | KWh per customer | 120 KWh per month |
| Social Intervention | | |
| House wiring | N# of Houses Wired | 250 |
| Recertification | N# of Houses Recertified | 1,200 |
| Refrigerator Assessments | N# Assessments | 2,000 |
| Replacement of Refrigerator Gaskets | # of Gaskets Replaced | 155 |
| Light Bulb Distribution | # of Bulbs Distributed | 3,107 |

JPS further stated that the project will utilize a capital expenditure of US\$800,000 in 2015.

3.4.1.2. Community Renewal Rate

JPS proposed a rate under its Community Renewal Programme (CRP). JPS claimed that the success of the CRP is highly contingent on the affordability of electricity for residents in the targeted communities and that these are communities with high levels of unemployment and with a large percentage of people earning minimum wage. JPS proposed a special rate for selected beneficiaries of the programme up to a maximum usage of 150kWh/month.

JPS indicated that customers who exceed 150kWh/month will be required to pay for the excess at the regular Rate 10 rates. It is proposed that the selection of those eligible for the special rates will be done through the PATH programme. JPS also proposed, as a primary conditionality, that only new customers or customers who have been inactive for more than one (1) year be eligible for special rates.

JPS proposed that the CRP tariff be the Rate 10 lifeline level for up to 150kWh. This JPS stated is in order to improve affordability and that it is willing to forego the customer charges for participants in the programme. JPS proposed a flat rate of \$8.62/kWh for consumption up to 150kWh for the CRP tariff. JPS claimed this would be the same tariff applicable under the pre-paid or post-paid metering programme. Persons consuming more than 150kWh per month will pay the regular prepaid or post-paid rate, whichever is applicable, for incremental consumption.

JPS further stated that the CRP is predicated on the assumption that the company and its partners will maintain the strategic thrust toward the initiative and the continued provision of support through funding. JPS made the claim that the success of the residents' participation in the programme is highly dependent on affordability and regulatory support of the proposed rate is crucial. JPS stated that the company is confident that a successful social intervention programme implemented by the various stakeholders should bear greater fruits than that achieved from stand-alone technical solutions.

3.5. Fuel Efficiency Mechanism

JPS in its March 2015 billing, began applying the new fuel rate adjustment mechanism that was determined by the Office in the 2014 -2019 Determination Notice. JPS however, reiterated its objections to the design of this mechanism but noted that as the matter is the subject of an appeal, it would not comment further.

3.5.1.1. System Losses Target

JPS noted that system losses continue to be a tremendous challenge for it despite significant investment and initiatives undertaken to reduce the problem. JPS observed further that in 2014, the company incurred US\$52M in fuel penalty resulting from system loss impairment while at the same time, the investment made in system losses reduction initiatives amounted to just over US\$15M for the same period.

JPS reported that rolling system losses average for 2014 was 26.65% representing a 0.01% increase in system losses when compared to the previous year of 26.64%. JPS deemed it

important however, to underscore that there was yet another decline in billed sales and net generation for 2014. It noted that although on a percentage basis system losses increased by 0.01%, there was a reduction in actual GWh system losses in 2014 when compared to 2013. Losses for 2014 was 1,093GWh when compared to 1,103GWh in 2013. This, JPS observed, is a reduction of 9.67GWh or approximately 0.24% of net generation.

JPS also took the opportunity to restate its case that external studies and benchmarking suggest that the present mechanism used to determine system losses target poses a significant sales risk and to express its disagreement with the OUR's treatment of system losses. The company noted however that this too is a part of its appeal against the 2014 – 2019 Determination Notice and that consequently it made a decision not to propose a revised target for system losses in its application.

3.5.1.2. Heat Rate Target

JPS reported that the System heat rate continues to improve in 2014 as evidenced by its fall by 260 kJ/kWh when compared to 2013 reflecting a 2.6% improvement in performance. JPS identified as the major drivers of this improved efficiency, the US\$21M in major maintenance investments made, the addition of 7.2MWs of hydro from Maggoty, steam turbine overhaul of the Hunts Bay Unit #B6 unit, improved efficiency from Bogue combined cycle after hot gas path works on GT#12, de-silting of Rio Bueno Hydro intake, Old Harbour Unit #4 boiler chemical clean and the Rockfort Engine #2 overhaul. JPS also reported improvement in the JPS' thermal heat rate which improved by 4.7% from 12,013kJ/kWh in 2013 to 11,451kJ/kWh in 2014 as a result of the improvements to JPS thermal units.

3.6. Ensuring Quality of Service: The Q-Factor

JPS submitted its 2014 dataset for review and subsequent establishment of the Q-factor baseline. Further details of JPS proposal and the OUR response is dealt with in section 4.5 of this document.

4. OUR's Analysis of the Proposal

4.1. Alternative Rate Proposal

Subsequent to receiving the 2014-2019 Determination Notice, JPS responded on January 13, 2015 suggesting that there was “an error in the computation of the energy revenue for Rate 10 customers. It stated that, based on the OUR's determined tariffs, JPS would not be able to recover the determined revenue requirement of J\$41,570,355,652 (excluding the EEIF)”. JPS attributed the error to the manner in which the data for Rate 10 customer class was presented. JPS then indicated that the Rate 10 energy consumption for each of the years 2011 through 2013, had to be restated and formatted to be consistent with the presentation for the years 2008 to 2010. This revised format it claimed would allow JPS to recover the determined revenue requirement.

The OUR in letter dated February 09, 2015 requested JPS to provide the following information:

- Auditor's verification that the Rate 10 energy demand data which was uploaded to the shared electronic platform on February 5th and 6th were taken from the CIS data file and was unaltered (source-verified data).
- Submission of the monthly energy consumption data from the JPS Meter Reading System (MRS) for all customers for the year 2013 with verification from the JPS auditors that the information was unaltered.
- Resubmission of the energy demand data summary in the format that aggregates the lifeline consumption for Rate 10 customers (that is, lifeline consumption for all Rate 10 customers should be in one bucket) and energy demand data summary for all the other rate classes.

These were submitted and the OUR completed a review of the Auditor Certified version of the Rate 10 energy demand data and concluded that it matched the revised data. The OUR therefore accepted the revised data submitted on January 29, 2015 and recomputed the tariff to take into account the apportionment of the energy demand for residential customers.

The error that JPS pointed to (the allocation of consumption within the Rate 10 customer class data) did not require any change to the test year (2013) aggregate billing demand of 2,979,803 MWh that was determined by the Office on January 7, 2015 and neither was any change made.

The JPS in a letter submitted to the OUR on April 1, 2015 then claimed that it had since identified errors in the Rate 20 and Rate 50 billing determinants in particular that would alter the Office determined test year billing demand of 2,979,803MWh downwards. JPS argued that that these alleged errors will significantly impair its ability to earn its approved revenue requirement. JPS therefore requested that the OUR give due consideration to an alternative tariff proposal which included an additional adjustment factor to account for the

alleged shortfall which arose as a result of the errors in the billing determinants, the company submitted to the OUR during the 2014 Rate Case Application.

The OUR considered the request and consistent with the decision in Addendum 1, takes the position that JPS' claims could only be verified by conducting an extensive and detailed audit. In this regard, the OUR reaffirms that an audit of the energy demand data will be conducted to ascertain whether there is a material difference between the audited results and the revised data which JPS submitted to the OUR on January 29, 2015. In the event that this is the case, the OUR reserves the right to make an appropriate adjustment to the non-fuel rates. Outside of an audit, the alternative proposal as presented by JPS could not be, and was therefore not considered.

4.2. Annual growth rate in inflation and devaluation (dI)

The 2014 – 2019 Determination Notice specifies the inflation adjustment formula to be used during the 2014 - 2019 tariff period as follows:

$$dI = USP * \left(\frac{EX_n - EX_b}{EX_b} \right) (1 + USAF * INF_{US}) + (USP * USAF * INF_{US} + (1-USP) * INF_J$$

Where:

INF_{US} = the US Inflation rate

INF_J = the Jamaica Inflation rate

EX_n = the new Base Exchange rate

EX_b = the Base Exchange rate

USP = **0.80**, the Foreign Exchange Adjustment Factor

$USAF$ = **0.45**, the US Adjustment Factor (USAF), which represents that portion of the US component of the total non-fuel expenses that is subject to US inflation adjustment.”

The 2015- 2016 annual adjustment factor of **3.40%** was derived by applying to the formula the following factors:

- The Jamaican twelve-month point-to-point inflation rate to February 28, 2015 of **4.53%**, derived from the most recent CPI data³
- The U.S. twelve-month point-to-point inflation rate to February 28, 2015 of **-0.03%**, derived from the US Department of Labour statistical data⁴

³ Obtained from the Statistical Institute of Jamaica, CPI Statistical Bulletin

⁴ Obtained from US Bureau of Labour Statistics website, <http://data.bls.gov/cgi-bin/surveymost>

- The base exchange rate was adjusted from US\$1.00 : JA\$112.00 to **US\$1.00 : JA\$115.50**

DETERMINATION 1

The 2015- 2016 annual growth rate in inflation and devaluation (dI) is 3.40%.

4.3. *X-Factor* Component of PBRM

The *X-Factor* is based on JPS' expected productivity gains. The *X-Factor* equals 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 2014-2019 Determination Notice, the Office determined that the productivity efficiency gain (*X-factor*) for JPS is to be applied at the Annual Tariff Adjustments during the price-cap period and it shall be 1.10%

DETERMINATION 2

The *X-Factor* applicable for this review period is 1.10%.

4.4. Annual inflation adjustment (dI - X) calculation

The annual growth rate in the inflation and devaluation measure (dI) calculation which is the escalation factor less the expected productivity gains of JPS (*X-Factor*) as derived is shown in Table 4.1 below:

Table 4.1 Annual inflation adjustment (dI - X) calculation

| Annual Adjustment Clause Calculation | | | |
|--------------------------------------|---------------------------------------|--|--------|
| Line | Description | Formula | Value |
| L1 | Base Exchange Rate | | 112.00 |
| L2 | Adjusted Base Exchange Rate | | 115.50 |
| L3 | <u>Jamaican Inflation Index</u> | | |
| L4 | CPI @ Feb 2015 | | 221.5 |
| L5 | CPI @ Feb 2014 | | 211.9 |
| L6 | <u>US Inflation Index</u> | | |
| L7 | CPI @ Feb 2015 | | 234.7 |
| L8 | CPI @ Feb 2014 | | 234.8 |
| L9 | Exchange Rate Factor | $(L2-L1)/L1$ | 3.13% |
| L10 | Jamaican Inflation Factor | $(L4-L5)/L5$ | 4.53% |
| L11 | US Inflation Factor | $(L7-L8)/L8$ | -0.03% |
| L12 | Escalation Factor | $0.80*(L9*(1+0.45*L11))+0.45*L11+0.20*L10$ | 3.40% |
| L13 | Productivity (or X) Factor | | -1.10% |
| L14 | Escalation Adjustment net of X-Factor | $(L12-L13)$ | 2.30% |

4.5. Q-Factor Component of PBRM

Background

The electricity transmission and distribution (T&D) system is inherently a communal asset. That is, the system is expected to provide the same level of service to all customers, or to all customers within a defined area. The T&D system does not easily differentiate among different customers' needs, therefore, there must be appropriate requirements for the basic level of service quality and reliability the system will provide to all customers. This is essentially a regulatory decision that regulators make by considering the value of reliability and service quality to the aggregation of all customers and comparing that value with the cost of providing that level of service. Once the regulator decides on the level of service quality and reliability that is desired, market forces can be used to incent the regulated utility to provide that service at the lowest cost. In the case of regulated utilities, performance-based rates can be used to provide a financial incentive for the electric utility to deliver the desired level of service quality and reliability.

To manage System reliability effectively, a utility must be able to properly measure and monitor it. In this regard, performance metrics become useful as they provide a mechanism to quantitatively measure System reliability and improvements in it. The use of metrics such as the frequency and duration of power interruptions have been essential in managing System reliability. This is because reliability measurements provide a quantitative and objective basis for assessing the effectiveness of the utility's efforts to maintain or improve reliability. Additionally, reliability measurements are necessary to support utility

regulators' efforts to monitor performance and to establish performance benchmarks and incentive mechanisms that will encourage the utility to improve the reliability and quality of electricity service to customers.

The reliability and service quality of an electric utility distribution system is commonly assessed by the use of the following reliability indices:

- SAIFI – System Average Interruption Frequency Index;
- SAIDI - System Average Interruption Duration Index;
- CAIDI - Customer Average Interruption Duration Index; and
- MAIFI - Momentary Average Interruption Frequency Index

Definition of Reliability Indices

These indices are defined in the IEEE Standard 1366 – 2012, the Guide for Electric Power Distribution Reliability Indices. JPS in its 2014-2019 Tariff Application indicated that it has adopted this Standard as the guide for deriving the aforementioned indices, which are used to assess the reliability performance of the electricity System and the quality of service provided to customers in accordance with the Licence.

SAIFI: System Average Interruption Frequency Index

SAIFI indicates how often the average customer experiences a sustained interruption over a predefined period of time. Mathematically, this is given in the equation below:

$$SAIFI = \frac{\sum \text{Total Number of Customer Interrupted}}{\text{Total Number of Customers Served}}$$

SAIDI: System Average Interruption Duration Index

SAIDI indicates the total duration of interruption for the average customer during a predefined period of time. It is commonly measured in minutes or hours of interruption. Mathematically, this is given in the equation below:

$$SAIDI = \frac{\sum \text{Customer Minutes of Interruption}}{\text{Total Number of Customers Served}}$$

CAIDI: Customer Average Interruption Duration Index

CAIDI represents the average time required to restore service. Mathematically, this is given in the equation below:

$$CAIDI = \frac{\sum \text{Customer Minutes of Interruption}}{\text{Total Number of Customer Interrupted}}$$

Mathematically, CAIDI can also be derived by the quotient: SAIDI/SAIFI.

MAIFI: Momentary Average Interruption Frequency Index

MAIFI indicates the average frequency of momentary interruptions. Mathematically, this is given in the equation below:

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

Momentary interruptions are 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-breakers open operations are equivalent to two momentary interruptions

SAIFI, SAIDI and CAIDI in particular, are considered by the OUR to be the main reliability (quality of service) performance indicators which will be used for establishing the baseline or benchmark level to facilitate the implementation of the Q-Factor incentive mechanism as required under Exhibit 1, Schedule 3 of the Licence.

Performance Based Rate-making Mechanism (PBRM) - Q-Factor

According to the price control regime for JPS set out in Schedule 3 of the Licence, the approved Non-Fuel Base Rates will be subject to an annual adjustment using the established PBRM.

The framework of the PBRM incorporates specific factors, including the Q-factor which represents the allowed price adjustment to reflect changes in the quality of service provided to JPS' customers.

The regulatory requirements for implementing the Q-factor are set out in Schedule 3, paragraph 3 (B) of the Licence.

Q-Factor Implementation Criteria

As set out under Exhibit 1, Schedule 3 of the Licence, the Q-Factor is the allowed price adjustment to reflect changes in the quality of service provided to customers.

"The Q-factor adjusts the annual escalation rate to reflect changes in the quality of service provided to customers by the Licensee. The Q-factor will be a symmetrical adjustment to the PCI. A benchmark level will be determined for each specified service component."

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

For the implementation of the Q-Factor, the OUR and JPS agreed that it should satisfy the following criteria:

- provide proper financial incentive to provide a level of service quality based on customers' view of the value of that service quality;
- the measurement and calculation should be accurate and transparent without undue cost of compliance;
- should provide fair treatment for factors affecting performance that are outside of JPS' control, such as IPP forced outages, natural disasters, and other Force Majeure events, as defined under the Licence; and
- should be symmetrical in application, as stipulated in the Licence with appropriate caps or limits of effects on rates.

Q-Factor Implementation Issues

Despite the need to satisfy the regulatory requirements under the PBRM, the implementation of the Q-Factor has been greatly hindered due to significant issues with JPS' service quality performance data necessary to establish the Q-Factor baseline and the incentive scheme.

At the 2009 tariff review in particular, the OUR indicated that it was not convinced that the available reliability performance data satisfied all the relevant criteria for use in the Q-Factor adjustment mechanism. For reference, in section 8.4 of the Determination Notice – Tariff Review for period, Jamaica Public Service Company Limited (JPS) [Document No. Ele 2009/04: Det/03] dated September 18, 2009 (2009-2014 Determination Notice) the OUR argued that the baseline data proposed by JPS at the time represented data that was reflective of a period when there were a number of countervailing factors militating against adequate reliability, and consequently there was high variability in the monthly indices.

The OUR also stated that the initial baseline data used by JPS to derive the indices were found to be unreliable and there was the need to improve the data collection system.

Given the various issues identified with JPS' service quality performance data at the time, the OUR was of the view that such data was unsuitable and not representative enough to ensure the optimum baseline for a robust Q-Factor. The OUR also noted that until a reasonable trend and consistent quality in the reliability data is realized, it would be constrained in establishing a fair and reasonable baseline. Further, the OUR indicated that in order to move forward with the implementation, it was necessary that an audit of the collection and measurements of the outage data be done to verify its representativeness and validity.

Following the issuance of the 2009-2014 Determination Notice, the OUR in 2012 engaged KEMA to carry out an audit of JPS' Q-Factor performance indicators and data collection

procedures and methods. The objective of the audit was to inform regulatory decisions with respect to appropriate baseline and quality-of-service measurements.

A key finding of the Q-Factor audit as reported by KEMA was that JPS was moving to best practice interruption data collection with an accurate Outage Management System (OMS), interfacing with GIS and SCADA.

In JPS' 2014-2019 Tariff Application, the company indicated that following the receipt of the final audit report, it established a Q-Factor working group comprised of several key stakeholders involved in the Q-Factor process across the company. In the 2014 – 2019 Tariff Application, JPS also indicated that the working group's purpose was to identify initiatives and projects to be implemented in keeping with recommendations made by KEMA in the audit report.

According to JPS, the working group identified and embarked on the following major initiatives:

- The adoption of standardized definitions for reliability performance indices;
- Implementation of OMS and the finalization of GIS customer mappings;
- Development of business process charts and policy documents for the Q-Factor process;
- Implementation/modification/review of data collection and recording systems for the Q-Factor process in OMS/GIS/SCADA;
- Implementation of a data collection and reporting validation system in compliance with the "Reliability Data Collection and Reporting Manual" provided by KEMA.

JPS Outage Management System (OMS)

As identified by KEMA during the Q-Factor audit, implementation of the planned OMS was the key component of JPS' strategy to address the issues surrounding its outage data integrity and veracity for reliability reporting.

In the 2014-2019 Tariff Application, JPS reported that it commissioned its OMS and Service Suite (Mobile Work Dispatch System) on December 5, 2013 and has worked to quickly bring the associated Q-Factor elements on track. According to JPS, the OMS was interfaced with JPS' existing GIS system and at the launch of the system, all but 9000 customers were correctly mapped to their service transformers with full location data and phase of power serving them.

In the 2014 – 2019 Tariff Application, JPS also stated that the OMS has been broadly meeting its expectations but as with all such major IT implementation the system at the time was undergoing post cut-over monitoring, adjustments and data integrity verification that has delayed the immediate production and reporting of reliability indices. JPS further stated that the evaluation period would have concluded in March 2014.

JPS also noted that the global experience with utilities and regulators is for reported reliability to worsen relatively after the implementation of OMS. According to JPS, this result is because the outage information is more accurate due to the automation of the data capture and reporting process over the manual process that it generally replaces. In recognition of this concern, JPS recommended that the OMS be allowed to collect at least twelve (12) months of data for establishing a baseline for Q factor computations. JPS also indicated that it intends to install a business intelligence (BI) system in September 2014 which would integrate with the OMS to facilitate reporting of reliability indices directly from the OMS.

Evaluation of JPS Outage Data from OMS during 2014 Tariff Review

As stated at section 3.5 of the 2014-2019 Determination Notice, since 2004, an appropriate baseline for implementing the Q-Factor has not been developed mainly due to the unsuitability of the outage data collected by JPS. It is understood that the recording and collection of outage data by a utility is not void of challenges. Nevertheless, it is important to recognize that the quality of such data is critical to the accuracy and credibility of the benchmark reliability indices that will be used to establish the Q-Factor baseline and the efficacy of the Q-Factor incentive scheme that will be applicable to the PBRM as stipulated by the Licence.

As indicated in the 2014 -2019 Determination Notice, JPS in its 2014-2019 Tariff Application, provided two (2) full months (April and May 2014) of System outage data which was collected by its OMS. This data was evaluated by the OUR and used to compute the indices, SAIFI, SAIDI and CAIDI. Although that data range was relatively limited, the evaluation results suggested that the reported outage data captured by the OMS was not of sufficient quality and reliable enough to be used for deriving the benchmark indices required for establishing the Q-factor baseline.

Regarding the implementation of the OMS and improved accuracy in outage data capture, the OUR concurs with KEMA's view in the Q-factor audit report that the accuracy of the data may not be fully realized immediately after the implementation of the advanced data collection systems although over time it is expected to improve. The logic therefore, holds that it would not be prudent to include data collected by the OMS shortly after commissioning in the data set that will be considered for establishing the Q-Factor baseline as this can potentially undermine the credibility of such baseline and the incentive mechanism. Notwithstanding, JPS in the 2014 – 2015 Tariff Application committed that its OMS evaluation including, post cut-over monitoring, adjustments and data integrity verification would be concluded in March 2014.

Accordingly, as set out under section 3.5.15 of the 2014 -2019 Determination Notice, the OUR having considered JPS' reported issues pertaining to the operation of the OMS and specific concerns related to quality of the data collected by the system, determined that JPS will be required to submit a properly calibrated and complete 12-month System outage

dataset to the OUR by the 2015 Annual Tariff Adjustment for a complete evaluation to determine acceptability before proceeding to establish the Q-Factor baseline.

JPS' Q-Factor Proposal

In the 2015 Annual Tariff Adjustment filing, JPS posited that as part of its effort to take full advantage of the OMS application, FocalPoint user interface was procured and the asset reliability module will be implemented by September 30, 2015. According to JPS, this business intelligence solution will enable the generation of reliability statistics and reports automatically, without user interface. JPS also stated that in order to meet the deadline for the introduction of FocalPoint, it is undertaking the following steps to resolve data issues identified.

1. Procurement of handheld devices and correction of GIS mapping/field validation, to improve GIS data quality:
 - a. Mapping and validation of customer to transformer to improve accuracy of the number of customers affected by an outage.
 - b. Mapping and validation of switch locations to enable the improvement of the stage restoration accuracy.
 - c. Validation of feeder configuration to improve load transfer data accuracy at the feeder level.
2. Ongoing additional/refresher training for JPS teams (System Control, Dispatch and Field Crews).
3. Continued correction of outage data inaccuracies due to errors inherent to Ventyx OMS (Outage restoration time mismatch with crew completion time, incorrect merging of outages, etc).

Additionally, JPS indicated that in addition to resolving data inaccuracy issues, it is making efforts to optimize the use of the OMS application through:

1. Implementation of SCADA/OMS down to the section level.
2. Integration of OMS with the Distribution Automation program.
3. Integration of SynerGee recommended Fuse Coordination in OMS through which the fuse replacement activities are guided in the field.

On the matter of the outage data, JPS noted that the 2014 dataset is included in its 2015 Annual Tariff Adjustment filing as required for the OUR's review and subsequent establishment of the Q-factor baseline by the OUR after consultation with JPS.

OUR's Review of JPS Q-Factor Data

As stated above, JPS submitted a 12-month outage dataset as part of its 2015 Annual Tariff Adjustment filing in compliance with the 2014-2019 Determination Notice. This data was submitted in the form of an MS Excel file entitled "*Annexes_final OMS_Reliability Indices.xlsx*". The dataset contained information for outages which occurred on JPS'

System for the period January 1, 2014 to December 31, 2014. The elements of the outage dataset as defined by JPS are as follows:

1. *Annex A - OMS Raw Outage data*
2. *Annex B - Summary OMS Raw data*
3. *Annex C -Reportable Outage Data*
4. *Annex D-Non-Reportable Outage*
5. *Annex E - MED Daily SAIDI*
6. *Annex F – Tmed*
7. *Annex G - Calibrated Summary*

Review and Observations

The OUR has reviewed JPS' Q-Factor details contained in the 2015 Annual Tariff Adjustment filing and also examined and analyzed the entire outage data in order to ascertain whether the data was of the quality and representative enough to be accepted as part of the data requirements for establishing a credible Q-Factor baseline.

The OUR's observations and findings are set out below:

Period of Outage Data

- The dataset covered the period January 1, 2014 to December 31, 2014. This is clearly an issue because JPS by its own confirmation, affirmed that the OMS evaluation which involved, post cut-over monitoring, recalibration and data integrity verifications aimed at rectifying initial errors and problems in the system that could render the collected data and computed indices unreliable was reported by the company as being completed in March 2014.
- During the 2014-2019 tariff review, the OUR's evaluation of the JPS outage data captured by the OMS for the months of April and May 2014 found that the data could not be considered reliable. Nonetheless, this data was included as part of the dataset.
- Under section 3.2 of the tariff adjustment filing, JPS indicated that the data validation and users interface have revealed that more time is required for fixing system glitches and improving GIS data set to arrive at the desired improvements needed to guarantee accurate reliability reporting. This is another cause for significant concern because this situation is likely to have impacted the entire range of the outage data submitted by JPS.

Planned Outages

- It was observed that planned outages were included as part of the dataset. Since the Q-Factor involves only unplanned interruptions of service, the inclusion of planned