

# ELECTRICITY GENERATION AND DISTRIBUTION

Third Quarter 2018 Stats Brief

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## STATISTICS BOTSWANA

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## 1.0 Preface

This statistical brief is intended to apprise on Electricity Generation, Importation and Distribution by presenting Monthly, Quarterly and Yearly Volumes as well as Indices for Electricity Generation in Botswana. Also included are Year-on-Year and Quarter-on-Quarter Percentage Changes in Indices of Electricity Generation from 2008 to the third quarter of 2018. In subsequent sections of this report, emphasis will be given to the third quarter of 2018, compared to the second quarter in 2018, and the corresponding quarter in 2017. This report uses 2013 as the base year.

The Index of Electricity Generation (IEG) stood at 184.3 during the third quarter of 2018, giving a decrease of 13.3 percent compared to 212.6 recorded during the same quarter in 2017. From a quarter-on-quarter perspective, the Index of Electricity Generation shows a decrease of 5.5 percent, from 195.0 during the second quarter of 2018 to 184.3 during the period under review.

Statistics Botswana is mandated to compile data on industrial production in Botswana, hence electricity indices are only confined to electricity generated locally. However, importation and distribution volumes, and their percentage changes will be included as well. This is intended to shed light as to whether Botswana is managing, over time, in generating enough electricity to meet her demand. The data used on this brief is sourced from the Botswana Power Corporation.

The release further shows changes in the volume of electricity generation in a given period against the base year (2013), and hence provides a reflection of the trend in the local electricity sector.

For more information, contact the Directorate of Stakeholder Relations at 3671300. All Statistics Botswana outputs/publications are available on the website at [www.statsbots.org.bw](http://www.statsbots.org.bw) and also at Statistics Botswana Information Resource Centre (Head-Office, Gaborone).

I sincerely thank all stakeholders involved in the formulation of this brief, for their continued support, as we strive to better serve users of our products and services.



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**Dr. Burton S. Mguni**  
**Statistician General**  
**December 2018**

## 2.0 Summary of Findings of the Index of Electricity Generation (IEG)

All figures in this report are not seasonally adjusted.

**Table 1** presents summary key indicators of electricity generation from the first quarter of 2013 to the current quarter (third quarter of 2018). During the third quarter of 2018, the Index of Electricity Generation (**IEG**) stood at **184.3**, reflecting a decline of 13.3 percent compared to 212.6 recorded during the same period in 2017. The quarter-on-quarter comparison shows a decrease of 5.5 percent, from the index of 195.0 during the second quarter of 2018 to the current index of 184.3.

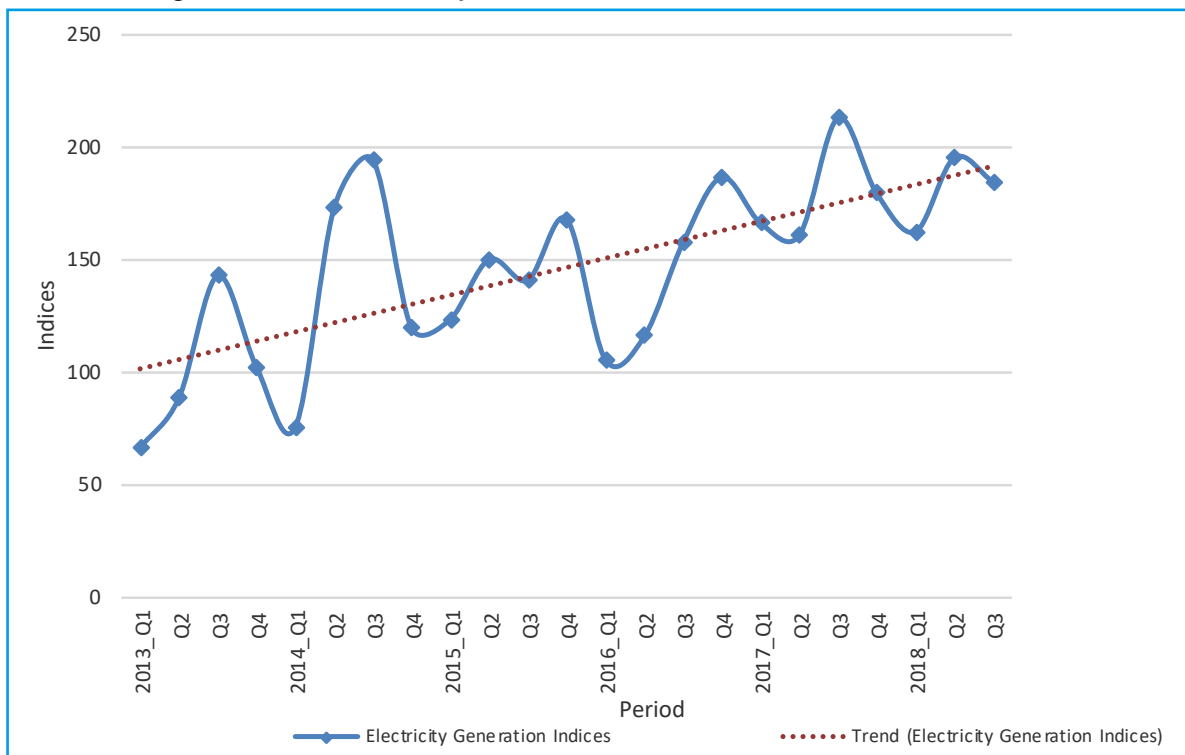
**Table 1: Selected Key Indicators of Electricity Generation: 2013 First Quarter to 2018 Third Quarter**

| Period  | Index of the Physical Volume of Electricity Generation | Year-on-Year Percentage Change | Quarter-on-Quarter Percentage Change |
|---------|--|--------------------------------|--------------------------------------|
| 2013_Q1 | 66.5   | 151.4                          | 0.0                                  |
| Q2      | 88.5   | 202.8                          | 33.1                                 |
| Q3      | 142.7  | 216.7                          | 61.3                                 |
| Q4      | 102.3  | 53.8                           | (28.3)                               |
| 2014_Q1 | 75.5   | 13.4                           | (26.2)                               |
| Q2      | 172.6  | 95.1                           | 128.6                                |
| Q3      | 194.2  | 36.1                           | 12.6                                 |
| Q4      | 119.6  | 16.9                           | (38.4)                               |
| 2015_Q1 | 123.4  | 63.5                           | 3.2                                  |
| Q2      | 149.9  | (13.2)                         | 21.4                                 |
| Q3      | 140.8  | (27.5)                         | (6.0)                                |
| Q4      | 167.8  | 40.2                           | 19.2                                 |
| 2016_Q1 | 105.5  | (14.5)                         | (37.1)                               |
| Q2      | 115.7  | (22.8)                         | 9.7                                  |
| Q3      | 157.3  | 11.7                           | 36.0                                 |
| Q4      | 186.3  | 11.1                           | 18.4                                 |
| 2017_Q1 | 166.1  | 57.4                           | (10.8)                               |
| Q2      | 160.6  | 38.8                           | (3.4)                                |
| Q3      | 212.6  | 35.2                           | 32.4                                 |
| Q4      | 179.1  | (3.9)                          | (15.8)                               |
| 2018_Q1 | 162.3  | (2.3)                          | (9.4)                                |
| Q2      | 195.0  | 21.4                           | 20.1                                 |
| Q3      | 184.3  | (13.3)                         | (5.5)                                |

Note: 1. ( ) Indicates negative figures

**Figure 1** shows that the Index of Electricity Generation has been growing from the first quarter of 2013 to the third quarter of 2018. Although it depicts a fluctuating pattern, local generation has been growing steadily over the reporting period. The growth is generally influenced by the addition of the new power generation plants.

**Figure 1: Index of Electricity Generation: 2013 First Quarter to 2018 Third Quarter**



## 2.1 Electricity Generation

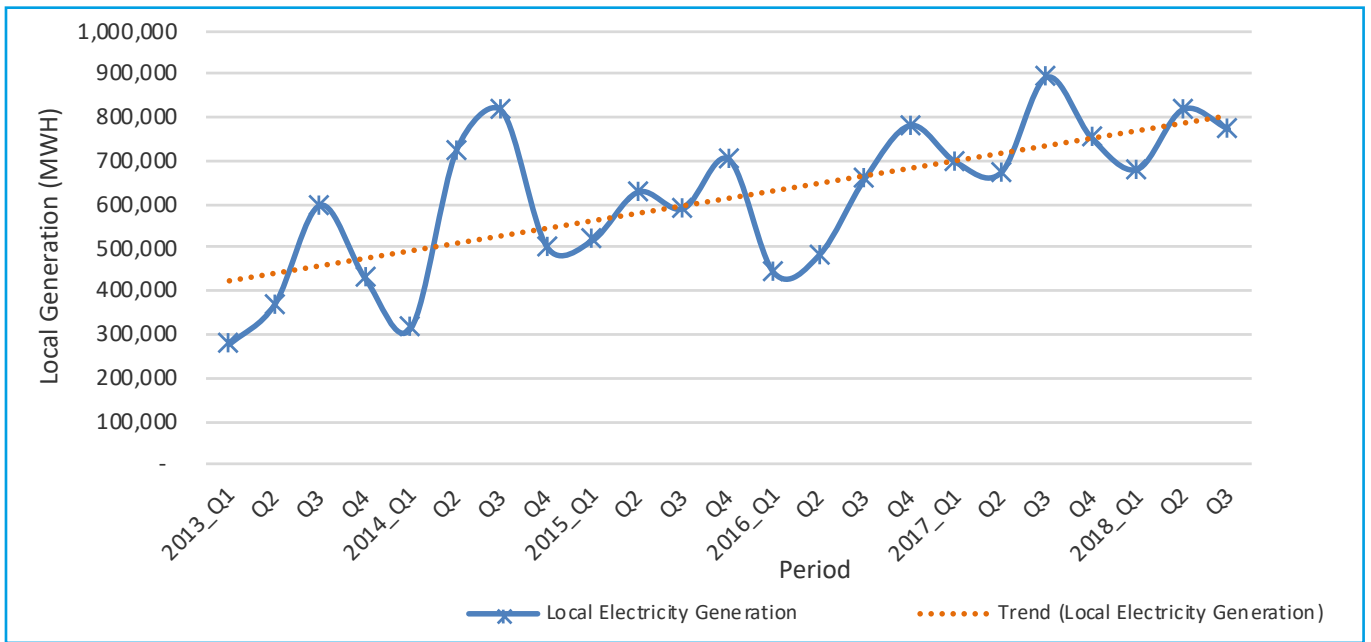
This Sub-Section discusses the physical volume of electricity generated locally as presented in **Table 2**. The table forms the basis for computation of indices of electricity generation in **Table 3**. The year-on-year and quarter-on-quarter percentage changes in the volume of electricity generated are presented in **Table 4** and **Table 5**, covering the period 2008 to 2018 third quarter.

The physical volume of electricity generated locally decreased by 13.3 percent (119,009 MWH), from 893,831 MWH during the third quarter of 2017 to 774,822 MWH during the period under review.

The quarter-on-quarter comparison shows that local electricity generation decreased by 5.5 percent (44,933 MWH), from 819,755 MWH during the second quarter of 2018 to 774,822 MWH during the third quarter of the same year.

The decrease is mainly attributable to the operational challenges realized at the Morupule B power plant. During the month of September, only two out of the four units were in operation. Moreover, none of the emergency power plants were utilized during the period under review (third quarter of 2018).

**Figure 2: Physical Volume of Generated Electricity (MWH): 2013 First Quarter to 2018 Third Quarter**



## 2.2 Imported Electricity

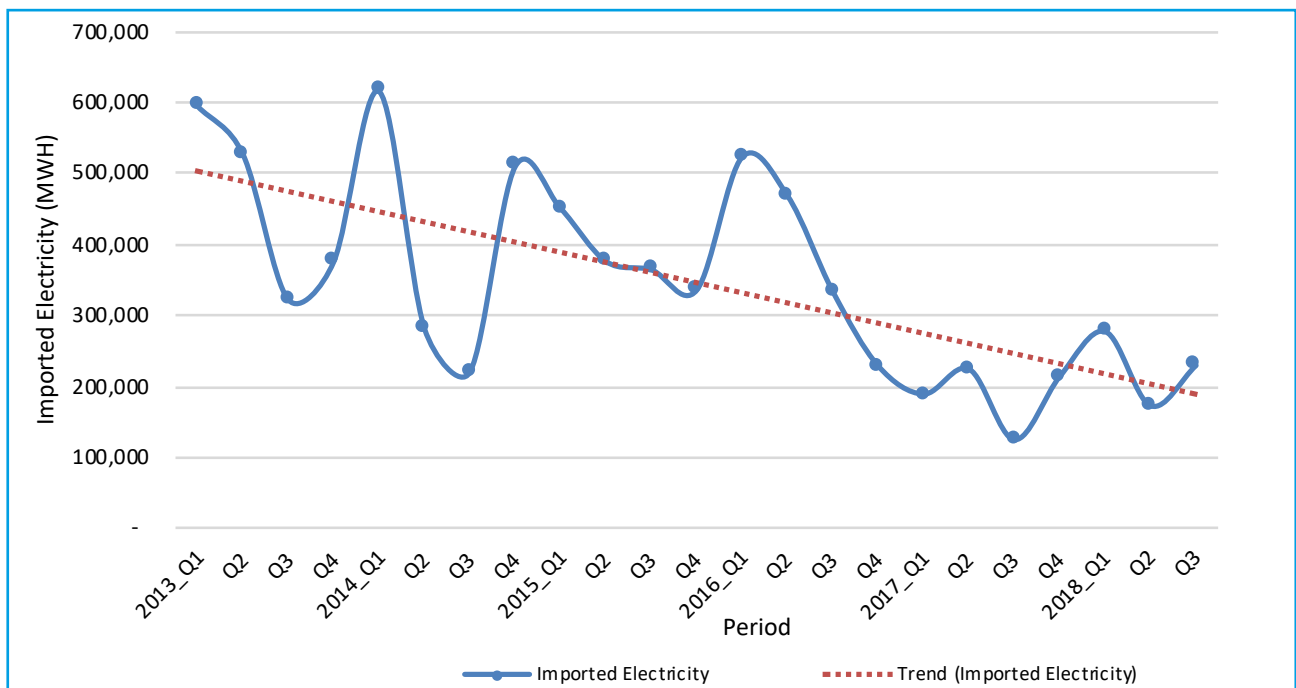
Discussions on this section are based on **Table 6**, and **Table 7** as well as **Figure 3**.

The volume of imported electricity stood at 229,427 MWH during the third quarter of 2018, reflecting an increase of 84.1 percent (104,815 MWH), from 124,612 MWH during the third quarter of 2017.

The quarter-on-quarter comparison shows an increase of 33.0 percent (56,970 MWH), from 172,457 MWH of imported electricity during the second quarter of 2018 to 229,427 MWH during the period under review.

The increase in electricity imports was to cover for the decrease in local electricity generation so that distribution is not negatively affected.

**Figure 3: Physical Volume of Imported Electricity (MWH): 2013 First Quarter to 2018 Third Quarter**



**Figure 3** shows that even though there are fluctuations in the physical volume of imported electricity, generally importation of electricity indicates a downward trend. This is indicative of the fact that as time goes on, Botswana is generating more and more electricity leading to less reliance on electricity imports.

Botswana imported 28.7 percent (229,427 MWH) of total electricity distributed during the third quarter of 2018. The Southern African Power Pool was the main source of imported electricity at 82.4 percent of total electricity imports. Cross-border markets supplied 9.5 percent while 5.2 percent and 2.9 percent were sourced from Eskom and Nampower respectively.

### 2.3 Distribution of Electricity

The section combines the local generation and imported electricity that is available for distribution in Botswana. This does not take into account electricity used for auxiliary services, pumping, network losses as well as production of electricity through incineration of waste. The computation of electricity distribution is guided by the International Recommendations for Industrial Statistics (**IRIS**) 2008. Tables **8**, **9** and **10** form the basis for discussion under this subsection.

**Table 8** shows the physical volume of electricity distributed from 2008 to the third quarter of 2018, while **Table 9** presents annual percentage changes in the volume of electricity distributed from 2008 to the third quarter of 2018. These tables can also be used as guidance with regard to whether electricity distributed is improving over time, thereby indicating that there are ongoing efforts to meet the domestic demand.

The year-on-year comparison shows a decrease of 1.4 percent (14, 1931 MWH), from 1,018,442 MWH of electricity distributed during the third quarter of 2017 to 1,004,249 MWH of total electricity distributed during the third quarter of 2018.

The quarter-on-quarter comparison of distributed electricity shows a decrease of 19.6 percent when the period under review is compared to the preceding quarter (second quarter of 2018).

Electricity generation given as a percentage of electricity distributed is of paramount importance in assessing whether local generation is improving overtime to reduce reliance on imported electricity. This information is displayed in **Table 10**.

It can be observed from **Table 10** that electricity generated locally contributed 77.2 percent to electricity distributed during the third quarter of 2018, compared to a contribution of 87.8 percent during the same quarter in 2017. This shows a decline of 10.6 percentage points when making comparison between the two quarters.

On the other hand, a quarter-on-quarter comparison shows that the contribution of electricity generated to electricity distributed during the current quarter decreased by 5.4 percentage points compared to the 82.6 percent contribution of locally generated electricity during the second quarter of 2018.

**Table 2: Physical Volume of Electricity Generation (MWH): January 2008 – September 2018**

| Period       | 2008           | 2009           | 2010           | 2011           | 2012           | 2013             | 2014             | 2015             | 2016             | 2017             | 2018*            |
|--------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Jan          | 53,926         | 33,922         | 44,442         | 39,195         | 26,574         | 110,960          | 137,802          | 158,907          | 206,381          | 245,598          | 209,333          |
| Feb          | 49,732         | 37,890         | 38,641         | 32,847         | 16,938         | 80,410           | 77,067           | 180,520          | 127,975          | 216,264          | 227,955          |
| Mar          | 51,072         | 46,413         | 55,401         | 20,079         | 67,761         | 88,358           | 102,377          | 179,400          | 109,272          | 236,589          | 245,092          |
| Apr          | 49,313         | 38,987         | 40,872         | 29,593         | 34,069         | 94,011           | 151,675          | 195,568          | 112,765          | 195,073          | 210,965          |
| May          | 61,558         | 49,464         | 41,943         | 15,762         | 39,826         | 140,454          | 252,235          | 206,905          | 179,837          | 205,705          | 310,500          |
| Jun          | 58,334         | 20,132         | 30,676         | 23,045         | 48,928         | 137,414          | 321,453          | 227,503          | 193,586          | 273,639          | 298,291          |
| Jul          | 54,588         | 38,103         | 33,156         | 27,814         | 81,013         | 158,120          | 318,627          | 240,314          | 213,841          | 311,655          | 293,739          |
| Aug          | 47,278         | 48,795         | 39,594         | 24,536         | 11,205         | 223,420          | 296,036          | 177,052          | 219,402          | 315,552          | 289,885          |
| Sep          | 39,890         | 36,522         | 35,177         | 21,063         | 97,177         | 218,222          | 201,802          | 174,617          | 228,002          | 266,623          | 191,199          |
| Oct          | 42,689         | 32,361         | 37,746         | 27,166         | 77,236         | 32,183           | 71,243           | 301,913          | 299,002          | 234,090          | -                |
| Nov          | 40,367         | 26,443         | 20,894         | 23,044         | 113,384        | 203,228          | 244,723          | 213,798          | 213,303          | 296,547          | -                |
| Dec          | 38,538         | 34,885         | 38,430         | 19,231         | 89,101         | 194,717          | 186,915          | 189,490          | 269,893          | 222,240          | -                |
| Q1           | 154,730        | 118,225        | 138,485        | 92,120         | 111,274        | 279,728          | 317,245          | 518,828          | 443,628          | 698,451          | 682,380          |
| Q2           | 169,206        | 108,584        | 113,491        | 68,400         | 122,823        | 371,879          | 725,363          | 629,976          | 486,188          | 675,047          | 819,755          |
| Q3           | 141,756        | 123,420        | 107,927        | 73,413         | 189,395        | 599,762          | 816,465          | 591,983          | 661,245          | 893,831          | 774,822          |
| Q4           | 121,594        | 93,689         | 97,070         | 69,441         | 279,721        | 430,128          | 502,881          | 705,201          | 783,141          | 752,887          | -                |
| <b>TOTAL</b> | <b>587,286</b> | <b>443,918</b> | <b>456,972</b> | <b>303,374</b> | <b>703,213</b> | <b>1,681,497</b> | <b>2,361,954</b> | <b>2,445,988</b> | <b>2,374,202</b> | <b>3,020,206</b> | <b>1,502,135</b> |

**Note:**

1. – Indicates that data is not available
2. 2018\* Data is for the first three quarters

**Table 3: Indices of Physical Volume of Electricity Generation: January 2008 – September 2018**

| Period      | 2008        | 2009        | 2010        | 2011        | 2012        | 2013         | 2014         | 2015         | 2016         | 2017         | 2018*    |
|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|----------|
| Jan         | 38.5        | 24.2        | 31.7        | 28.0        | 19.0        | 79.2         | 98.3         | 113.4        | 147.3        | 175.3        | 149.4    |
| Feb         | 35.5        | 27.0        | 27.6        | 23.4        | 12.1        | 57.4         | 55.0         | 128.8        | 91.3         | 154.3        | 162.7    |
| Mar         | 36.4        | 33.1        | 39.5        | 14.3        | 48.4        | 63.1         | 73.1         | 128.0        | 78.0         | 168.8        | 174.9    |
| Apr         | 35.2        | 27.8        | 29.2        | 21.1        | 24.3        | 67.1         | 108.2        | 139.6        | 80.5         | 139.7        | 150.6    |
| May         | 43.9        | 35.3        | 29.9        | 11.2        | 28.4        | 100.2        | 180.0        | 147.7        | 128.3        | 146.8        | 221.6    |
| June        | 41.6        | 14.4        | 21.9        | 16.4        | 34.9        | 98.1         | 229.4        | 162.4        | 138.2        | 195.3        | 212.9    |
| July        | 39.0        | 27.2        | 23.7        | 19.8        | 57.8        | 112.8        | 227.4        | 171.5        | 152.6        | 222.4        | 209.6    |
| Aug         | 33.7        | 34.8        | 28.3        | 17.5        | 8.0         | 159.4        | 211.3        | 126.4        | 156.6        | 225.2        | 206.9    |
| Sep         | 28.5        | 26.1        | 25.1        | 15.0        | 69.4        | 155.7        | 144.0        | 124.6        | 162.7        | 190.3        | 136.4    |
| Oct         | 30.5        | 23.1        | 26.9        | 19.4        | 55.1        | 23.0         | 50.8         | 215.5        | 214.1        | 167.1        | -        |
| Nov         | 28.8        | 18.9        | 14.9        | 16.4        | 80.9        | 145.0        | 174.6        | 152.6        | 152.2        | 211.6        | -        |
| Dec         | 27.5        | 24.9        | 27.4        | 13.7        | 63.6        | 139.0        | 133.4        | 135.2        | 192.6        | 158.6        | -        |
| Q1          | 36.8        | 28.1        | 32.9        | 21.9        | 26.5        | 66.5         | 75.5         | 123.4        | 105.5        | 166.1        | 162.3    |
| Q2          | 40.3        | 25.8        | 27.0        | 16.3        | 29.2        | 88.5         | 172.6        | 149.9        | 115.7        | 160.6        | 195.0    |
| Q3          | 33.7        | 29.4        | 25.7        | 17.5        | 45.1        | 142.7        | 194.2        | 140.8        | 157.3        | 212.6        | 184.3    |
| Q4          | 28.9        | 22.3        | 23.1        | 16.5        | 66.5        | 102.3        | 119.6        | 167.8        | 186.3        | 179.1        | -        |
| <b>Year</b> | <b>34.9</b> | <b>26.4</b> | <b>27.2</b> | <b>18.0</b> | <b>41.8</b> | <b>100.0</b> | <b>140.5</b> | <b>145.5</b> | <b>141.2</b> | <b>179.6</b> | <b>-</b> |

**Note:**

1. – Indicates that data is not available
2. 2018\* Data is for the first three quarters



**Table 4: Annual Percentage Changes in the Indices of the Physical Volume of Electricity Generation:  
January 2008 – September 2018**

| Period       | 2008         | 2009          | 2010       | 2011          | 2012         | 2013         | 2014        | 2015       | 2016         | 2017        | 2018*    |
|--------------|--------------|---------------|------------|---------------|--------------|--------------|-------------|------------|--------------|-------------|----------|
| Jan          | (4.2)        | (37.1)        | 31.0       | (11.8)        | (32.2)       | 317.5        | 24.2        | 15.3       | 29.9         | 19.0        | (14.8)   |
| Feb          | (11.7)       | (23.8)        | 2.0        | (15.0)        | (48.4)       | 374.7        | (4.2)       | 134.2      | (29.1)       | 69.0        | 5.4      |
| Mar          | (11.2)       | (9.1)         | 19.4       | (63.8)        | 237.5        | 30.4         | 15.9        | 75.2       | (39.1)       | 116.5       | 3.6      |
| Apr          | (12.1)       | (20.9)        | 4.8        | (27.6)        | 15.1         | 175.9        | 61.3        | 28.9       | (42.3)       | 73.5        | 7.8      |
| May          | 24.7         | (19.6)        | (15.2)     | (62.4)        | 152.7        | 252.7        | 79.6        | (18.0)     | (13.1)       | 14.4        | 50.9     |
| Jun          | 18.2         | (65.5)        | 52.4       | (24.9)        | 112.3        | 180.9        | 133.9       | (29.2)     | (14.9)       | 41.4        | 9.0      |
| Jul          | (10.9)       | (30.2)        | (13.0)     | (16.1)        | 191.3        | 95.2         | 101.5       | (24.6)     | (11.0)       | 45.7        | (5.7)    |
| Aug          | (24.4)       | 3.2           | (18.9)     | (38.0)        | (54.3)       | 1,893.9      | 32.5        | (40.2)     | 23.9         | 43.8        | (8.1)    |
| Sep          | (23.6)       | (8.4)         | (3.7)      | (40.1)        | 361.4        | 124.6        | (7.5)       | (13.5)     | 30.6         | 16.9        | (28.3)   |
| Oct          | 3.7          | (24.2)        | 16.6       | (28.0)        | 184.3        | (58.3)       | 121.4       | 323.8      | (0.7)        | (22.0)      | -        |
| Nov          | 4.8          | (34.5)        | (21.0)     | 10.3          | 392.0        | 79.2         | 20.4        | (12.6)     | (0.2)        | 39.0        | -        |
| Dec          | (12.5)       | (9.5)         | 10.2       | (50.0)        | 363.3        | 118.5        | (4.0)       | 1.4        | 42.4         | (17.7)      | -        |
| Q1           | (9.0)        | (23.6)        | 17.1       | (33.5)        | 20.8         | 151.4        | 13.4        | 63.5       | (14.5)       | 57.4        | (2.3)    |
| Q2           | 9.3          | (35.8)        | 4.5        | (39.7)        | 79.6         | 202.8        | 95.1        | (13.2)     | (22.8)       | 38.8        | 21.4     |
| Q3           | (19.5)       | (12.9)        | (12.6)     | (32.0)        | 158.0        | 216.7        | 36.1        | (27.5)     | 11.7         | 35.2        | (13.3)   |
| Q4           | (1.7)        | (22.9)        | 3.6        | (28.5)        | 302.8        | 53.8         | 16.9        | 40.2       | 11.1         | (3.9)       | -        |
| <b>TOTAL</b> | <b>(6.0)</b> | <b>(24.4)</b> | <b>2.9</b> | <b>(33.6)</b> | <b>131.8</b> | <b>139.1</b> | <b>40.5</b> | <b>3.6</b> | <b>(2.9)</b> | <b>27.2</b> | <b>-</b> |

**Note:**

1. ( ) Denotes negative numbers
2. - Indicates that data is not available
3. 2018\* Data is for the first three quarters

**Table 5: Quarter-on-Quarter Percentage Changes: 2008 – September 2018**

| Period | 2008   | 2009   | 2010   | 2011   | 2012 | 2013   | 2014   | 2015  | 2016   | 2017   | 2018* |
|--------|--------|--------|--------|--------|------|--------|--------|-------|--------|--------|-------|
| Q1     | 25.1   | (2.8)  | 47.8   | (5.1)  | 60.2 | 0.0    | (26.2) | 3.2   | (37.1) | (10.8) | (9.4) |
| Q2     | 9.4    | (8.2)  | (18.0) | (25.7) | 10.4 | 32.9   | 128.6  | 21.4  | 9.7    | (3.4)  | 20.1  |
| Q3     | (16.4) | 14.0   | (4.8)  | 7.3    | 54.2 | 61.3   | 12.6   | (6.0) | 36.0   | 32.4   | (5.5) |
| Q4     | (14.2) | (24.1) | (10.1) | (5.4)  | 47.7 | (28.3) | (38.4) | 19.1  | 18.4   | (15.8) | -     |

**Note:**

1. ( ) Denotes negative numbers
2. - Indicates that data is not available
3. 2018\* Data is for the first three quarters

**Table 6: Physical Volume of Imported Electricity (MWH): January 2008 – September 2018**

| Period       | 2008             | 2009             | 2010             | 2011             | 2012             | 2013             | 2014             | 2015             | 2016             | 2017           | 2018*          |
|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------|----------------|
| Jan          | 210,395          | 201,994          | 236,110          | 243,795          | 272,338          | 193,786          | 192,251          | 184,564          | 140,172          | 57,679         | 124,148        |
| Feb          | 213,161          | 188,165          | 219,836          | 229,027          | 274,079          | 185,022          | 216,031          | 113,430          | 166,303          | 56,951         | 77,257         |
| Mar          | 227,289          | 203,111          | 250,756          | 269,723          | 249,777          | 216,621          | 207,923          | 153,098          | 217,261          | 74,422         | 75,865         |
| Apr          | 209,664          | 205,743          | 234,466          | 256,694          | 253,390          | 206,965          | 162,767          | 129,605          | 196,075          | 88,783         | 94,226         |
| May          | 214,604          | 223,094          | 280,917          | 277,975          | 271,135          | 169,159          | 85,246           | 129,487          | 138,677          | 92,379         | 39,052         |
| Jun          | 216,285          | 267,277          | 275,405          | 279,130          | 275,063          | 151,442          | 33,474           | 117,155          | 134,100          | 43,156         | 39,179         |
| Jul          | 245,954          | 270,073          | 276,165          | 275,387          | 245,151          | 161,866          | 39,365           | 99,695           | 110,932          | 34,746         | 55,772         |
| Aug          | 246,899          | 220,243          | 259,190          | 268,187          | 296,226          | 82,084           | 48,497           | 132,541          | 119,340          | 35,332         | 45,131         |
| Sep          | 233,921          | 247,990          | 248,636          | 256,871          | 200,082          | 78,365           | 132,060          | 132,191          | 103,083          | 54,534         | 128,524        |
| Oct          | 247,374          | 263,707          | 266,963          | 264,952          | 240,631          | 123,785          | 266,785          | 59,516           | 57,653           | 83,734         | -              |
| Nov          | 239,255          | 262,763          | 271,584          | 274,539          | 209,811          | 123,785          | 96,415           | 115,763          | 116,517          | 36,094         | -              |
| Dec          | 223,135          | 238,572          | 268,052          | 272,789          | 212,114          | 128,060          | 147,112          | 160,652          | 54,373           | 94,307         | -              |
| Q1           | 650,845          | 593,269          | 706,702          | 742,544          | 796,194          | 595,429          | 616,206          | 451,092          | 523,736          | 189,052        | 277,270        |
| Q2           | 640,554          | 696,114          | 790,788          | 813,799          | 799,587          | 527,566          | 281,487          | 376,248          | 468,852          | 224,318        | 172,457        |
| Q3           | 726,774          | 738,305          | 783,991          | 800,444          | 741,459          | 322,315          | 219,922          | 364,427          | 333,355          | 124,612        | 229,427        |
| Q4           | 709,764          | 765,042          | 806,599          | 812,281          | 662,556          | 375,630          | 510,311          | 335,931          | 228,543          | 214,135        | -              |
| <b>TOTAL</b> | <b>2,727,938</b> | <b>2,792,730</b> | <b>3,088,080</b> | <b>3,169,068</b> | <b>2,999,797</b> | <b>1,820,940</b> | <b>1,627,926</b> | <b>1,527,697</b> | <b>1,554,486</b> | <b>752,117</b> | <b>679,154</b> |

**Note:**

1. - Indicates that data is not available
2. 2018\* Data is for the first three quarters

**Table 7: Annual Percentage Changes in the Physical Volume of Imported Electricity: January 2008 – September 2018**

| Period       | 2008       | 2009       | 2010        | 2011       | 2012         | 2013          | 2014          | 2015         | 2016       | 2017          | 2018*    |
|--------------|------------|------------|-------------|------------|--------------|---------------|---------------|--------------|------------|---------------|----------|
| Jan          | 1.7        | (4.0)      | 16.9        | 3.3        | 11.7         | (28.8)        | (0.8)         | (4.0)        | (24.1)     | (58.9)        | 115.2    |
| Feb          | 3.1        | (11.7)     | 16.8        | 4.2        | 19.7         | (32.5)        | 16.8          | (47.5)       | 46.6       | (65.8)        | 35.7     |
| Mar          | 5.3        | (10.6)     | 23.5        | 7.6        | (7.4)        | (13.3)        | (4.0)         | (26.4)       | 41.9       | (65.7)        | 1.9      |
| Apr          | 9.1        | (1.9)      | 14.0        | 9.5        | (1.3)        | (18.3)        | (21.4)        | (20.4)       | 51.3       | (54.7)        | 6.1      |
| May          | 1.1        | 4.0        | 25.9        | (1.0)      | (2.5)        | (37.6)        | (49.6)        | 51.9         | 7.1        | (33.4)        | (57.7)   |
| Jun          | 5.5        | 23.6       | 3.0         | 1.4        | (1.5)        | (44.9)        | (77.9)        | 250.0        | 14.5       | (67.8)        | (9.2)    |
| Jul          | 24.3       | 9.8        | 2.3         | (0.3)      | (11.0)       | (34.0)        | (75.7)        | 153.3        | 11.3       | (68.7)        | 60.5     |
| Aug          | 23.1       | (10.8)     | 17.7        | 3.5        | 10.5         | (72.3)        | (40.9)        | 173.3        | (10.0)     | (70.4)        | 27.7     |
| Sep          | 13.5       | 6.0        | 0.3         | 3.3        | (22.1)       | (60.8)        | 68.5          | 0.1          | (22.0)     | (47.1)        | 135.7    |
| Oct          | 8.6        | 6.6        | 1.2         | (0.8)      | (9.2)        | (48.6)        | 115.5         | (77.7)       | (3.1)      | 45.2          | -        |
| Nov          | 3.3        | 9.8        | 3.4         | 1.1        | (23.6)       | (41.0)        | (22.1)        | 20.1         | 0.7        | (69.0)        | -        |
| Dec          | 3.4        | 6.9        | 12.4        | 1.8        | (22.2)       | (39.6)        | 14.9          | 9.2          | (66.2)     | 73.4          | -        |
| Q1           | 3.4        | (8.8)      | 19.1        | 5.1        | 7.2          | (25.2)        | 3.5           | (26.8)       | 16.1       | (63.9)        | 46.7     |
| Q2           | 5.1        | 8.7        | 13.6        | 2.9        | (1.7)        | (34.0)        | (46.6)        | 33.7         | 24.6       | (52.2)        | (23.1)   |
| Q3           | 20.2       | 1.6        | 6.2         | 2.1        | (7.4)        | (56.5)        | (31.8)        | 65.7         | (8.5)      | (62.6)        | 84.1     |
| Q4           | 5.1        | 7.8        | 5.4         | 0.7        | (18.4)       | (43.3)        | 35.9          | (34.2)       | (32.0)     | (6.3)         | -        |
| <b>TOTAL</b> | <b>8.3</b> | <b>2.4</b> | <b>10.6</b> | <b>2.6</b> | <b>(5.3)</b> | <b>(39.3)</b> | <b>(10.6)</b> | <b>(6.2)</b> | <b>1.8</b> | <b>(51.6)</b> | <b>-</b> |

**Note:**

1. ( ) Denotes negative numbers
2. - Indicates that data is not available
3. 2018\* Data is for the first three quarters

**Table 8: Physical Volume of Electricity Distribution (MWH): January 2008 – September 2018**

| Period | 2008             | 2009             | 2010             | 2011             | 2012             | 2013             | 2014             | 2015             | 2016             | 2017             | 2018*            |
|--------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Jan    | 264,322          | 235,916          | 280,552          | 282,990          | 298,912          | 304,746          | 330,053          | 343,471          | 346,553          | 303,277          | 333,481          |
| Feb    | 262,893          | 226,055          | 258,477          | 261,873          | 291,017          | 265,432          | 293,098          | 293,950          | 294,278          | 273,215          | 305,212          |
| Mar    | 278,361          | 249,524          | 306,157          | 289,801          | 317,538          | 304,979          | 310,300          | 332,498          | 326,533          | 311,011          | 320,957          |
| April  | 258,978          | 244,730          | 275,338          | 286,287          | 287,459          | 300,976          | 314,442          | 325,173          | 308,840          | 284,486          | 305,191          |
| May    | 276,163          | 272,558          | 322,860          | 293,737          | 310,961          | 309,613          | 337,481          | 336,392          | 318,514          | 298,084          | 349,552          |
| Jun    | 274,619          | 287,410          | 306,081          | 302,176          | 323,990          | 288,856          | 354,927          | 344,658          | 327,686          | 316,795          | 337,470          |
| Jul    | 300,542          | 308,176          | 309,321          | 303,201          | 326,165          | 319,986          | 357,992          | 340,009          | 324,773          | 346,401          | 274,644          |
| Aug    | 294,177          | 269,037          | 298,784          | 292,723          | 307,431          | 305,504          | 344,533          | 309,593          | 338,742          | 350,884          | 258,683          |
| Sep    | 273,811          | 284,512          | 283,813          | 277,934          | 297,258          | 296,587          | 333,861          | 306,808          | 331,085          | 321,157          | 264,884          |
| Oct    | 290,063          | 296,067          | 304,709          | 292,118          | 317,867          | 155,968          | 338,027          | 361,429          | 357,598          | 317,824          | -                |
| Nov    | 279,622          | 289,206          | 292,478          | 297,584          | 323,195          | 327,013          | 341,138          | 329,561          | 329,820          | 332,641          | -                |
| Dec    | 261,673          | 273,458          | 306,482          | 292,020          | 301,215          | 322,777          | 334,027          | 350,142          | 324,266          | 316,547          | -                |
| Q1     | 805,576          | 711,494          | 845,186          | 834,665          | 907,468          | 875,157          | 933,451          | 969,920          | 967,364          | 887,503          | 959,650          |
| Q2     | 809,759          | 804,698          | 904,279          | 882,199          | 922,411          | 899,445          | 1,006,850        | 1,006,224        | 955,040          | 899,365          | 992,212          |
| Q3     | 868,531          | 861,725          | 891,918          | 873,857          | 930,854          | 922,077          | 1,036,387        | 956,410          | 994,600          | 1,018,442        | 798,212          |
| Q4     | 831,358          | 858,731          | 903,669          | 881,721          | 942,277          | 805,758          | 1,013,192        | 1,041,132        | 1,011,684        | 967,012          | -                |
| Year   | <b>3,315,223</b> | <b>3,236,648</b> | <b>3,545,052</b> | <b>3,472,442</b> | <b>3,703,010</b> | <b>3,502,437</b> | <b>3,989,880</b> | <b>3,973,685</b> | <b>3,928,688</b> | <b>3,772,322</b> | <b>2,750,074</b> |

Note:

1. - Indicates that data is not available
2. 2018\* Data is for the first three quarters

**Table 9: Annual Percentage Changes for the Physical Volume of Electricity Distribution: January 2008 – September 2018**

| Period | 2008       | 2009         | 2010       | 2011         | 2012       | 2013         | 2014        | 2015         | 2016         | 2017         | 2018*    |
|--------|------------|--------------|------------|--------------|------------|--------------|-------------|--------------|--------------|--------------|----------|
| Jan    | 0.4        | (10.7)       | 18.9       | 0.9          | 5.6        | 2.0          | 8.3         | 4.1          | 0.9          | (12.5)       | 10.0     |
| Feb    | (0.1)      | (14.0)       | 14.3       | 1.3          | 11.1       | (8.8)        | 10.4        | 0.3          | 0.1          | (7.2)        | 11.7     |
| Mar    | 1.8        | (10.4)       | 22.7       | (5.3)        | 9.6        | (4.0)        | 1.7         | 7.2          | (1.8)        | (4.8)        | 3.2      |
| Apr    | 4.3        | (5.5)        | 12.5       | 4.0          | 0.4        | 4.7          | 4.5         | 3.4          | (5.0)        | (7.9)        | 5.0      |
| May    | 5.5        | (1.3)        | 18.5       | (9.0)        | 5.9        | (0.4)        | 9.0         | (0.3)        | 5.3          | (6.4)        | 15.0     |
| Jun    | 8.0        | 4.7          | 6.5        | (1.3)        | 7.2        | (10.8)       | 22.9        | (2.9)        | (4.9)        | (3.3)        | 4.4      |
| Jul    | 16.0       | 2.5          | 0.4        | (2.0)        | 7.6        | (1.9)        | 11.9        | (5.0)        | (4.5)        | 6.7          | (20.7)   |
| Aug    | 11.8       | (8.5)        | 11.1       | (2.0)        | 5.0        | (0.6)        | 12.8        | (10.1)       | 9.4          | 3.6          | (26.3)   |
| Sep    | 6.0        | 3.9          | (0.2)      | (2.1)        | 7.0        | (0.2)        | 12.6        | (8.1)        | 7.9          | (3.0)        | (17.5)   |
| Oct    | 7.9        | 2.1          | 2.9        | (4.1)        | 8.8        | (50.9)       | 116.7       | 6.9          | (1.1)        | (11.1)       | -        |
| Nov    | 3.5        | 3.4          | 1.1        | 1.7          | 8.6        | 1.2          | 4.3         | (3.4)        | 0.1          | 0.9          | -        |
| Dec    | 0.7        | 4.5          | 12.1       | (4.7)        | 3.1        | 7.2          | 3.5         | 4.8          | (7.4)        | (2.4)        | -        |
| Q1     | 0.7        | (11.7)       | 18.8       | (1.2)        | 8.7        | (3.6)        | 6.7         | 3.9          | (0.3)        | (8.3)        | 8.1      |
| Q2     | 6.0        | (0.6)        | 12.4       | (2.4)        | 4.6        | (2.5)        | 11.9        | (0.1)        | (5.1)        | (5.8)        | 10.3     |
| Q3     | 11.2       | (0.8)        | 3.5        | (2.0)        | 6.5        | (0.9)        | 12.4        | 7.7          | 4.0          | 2.4          | (21.6)   |
| Q4     | 4.1        | 3.3          | 5.2        | (2.4)        | 6.9        | (14.5)       | 25.7        | 2.8          | (2.8)        | (4.4)        | -        |
| Year   | <b>5.5</b> | <b>(2.4)</b> | <b>9.5</b> | <b>(2.0)</b> | <b>6.6</b> | <b>(5.4)</b> | <b>13.9</b> | <b>(0.4)</b> | <b>(1.1)</b> | <b>(4.0)</b> | <b>-</b> |

Note:

1. ( ) Denotes negative numbers
2. - Indicates that data is not available
3. 2018\* Data is for the first three quarters

**Table 10: Generation of Electricity (MWH) as a Percentage of Distribution 2008 – September 2018**

| Year \ Utility | Electricity Generation | Imported Electricity | Electricity Distribution | % Contribution of Generated Electricity to Distributed |
|----------------|------------------------|----------------------|--------------------------|--|
| 2008           | 587,286                | 2,727,938            | 3,315,223                | 17.7   |
| 2009           | 443,918                | 2,792,730            | 3,236,648                | 13.7   |
| 2010           | 456,972                | 3,088,080            | 3,545,052                | 12.9   |
| 2011           | 303,374                | 3,169,068            | 3,472,442                | 8.7  |
| 2012           | 703,213                | 2,999,797            | 3,703,010                | 19.0   |
| 2013           | 1,681,497              | 1,820,940            | 3,502,437                | 48.0   |
| 2014           | 2,361,954              | 1,627,925            | 3,989,879                | 59.2   |
| 2015           | 2,445,988              | 1,527,697            | 3,973,685                | 61.6   |
| 2016           | 2,374,202              | 1,554,486            | 3,928,688                | 60.4   |
| 2017           | 3,020,206              | 752,117              | 3,772,322                | 80.1   |
| 2018*          | 2,276,958              | 679,154              | 2,750,074                | 82.8   |
| <hr/>          |                        |                      |                          |  |
| 2013_Q1        | 279,728                | 595,429              | 875,157                  | 32.0   |
| Q2             | 371,879                | 527,566              | 899,445                  | 41.3   |
| Q3             | 599,762                | 322,315              | 922,077                  | 65.0   |
| Q4             | 430,128                | 375,630              | 805,758                  | 53.4   |
| 2014_Q1        | 317,245                | 616,206              | 933,451                  | 34.0   |
| Q2             | 725,363                | 281,487              | 1,006,850                | 72.0   |
| Q3             | 816,465                | 219,922              | 1,036,387                | 78.8   |
| Q4             | 502,881                | 510,311              | 1,013,192                | 49.6   |
| 2015_Q1        | 518,828                | 451,092              | 969,920                  | 53.5   |
| Q2             | 629,976                | 376,248              | 1,006,224                | 62.6   |
| Q3             | 591,983                | 364,427              | 956,410                  | 61.9   |
| Q4             | 705,201                | 335,931              | 1,041,132                | 67.7   |
| 2016_Q1        | 443,628                | 523,736              | 967,364                  | 45.9   |
| Q2             | 486,188                | 468,852              | 955,040                  | 50.9   |
| Q3             | 661,245                | 333,355              | 994,600                  | 66.5   |
| Q4             | 783,141                | 228,543              | 1,011,684                | 77.4   |
| 2017_Q1        | 698,451                | 189,052              | 887,503                  | 78.7   |
| Q2             | 675,047                | 224,318              | 899,365                  | 75.1   |
| Q3             | 893,831                | 124,612              | 1,018,442                | 87.8   |
| Q4             | 752,877                | 214,135              | 967,012                  | 77.9   |
| 2018_Q1        | 682,380                | 277,270              | 959,650                  | 71.1   |
| Q2             | 819,755                | 172,457              | 992,212                  | 82.6   |
| Q3             | 774,822                | 229,427              | 1,004,249                | 77.2   |

Note:

1. 2018\* Data is for the first three quarters

## 3.0 Technical Notes

### 3.1 Background

The generation of electricity in Botswana started in 1985 with a coal fired thermal power station at Morupule operating at a capacity of 132 MWH. Prior to this period, most of Botswana's electricity was imported from South Africa's power utility, Eskom. In 2008 South Africa's electricity demand started to exceed its supply, resulting in the South African government restricting power exports. As a result, Botswana and the entire Southern African region experienced massive power shortages because of the reduced electricity exports from South Africa ([http://en.wikipedia.org/wiki/Energy\\_in\\_Botswana](http://en.wikipedia.org/wiki/Energy_in_Botswana)).

To avert the situation, Botswana Government opted for alternative ways of sourcing electricity for the country; hence the plan to increase local generation of electricity at Morupule Power Station. The Morupule Power A plant of capacity 132 MWH was augmented with the construction of Morupule Power B plant having production capacity of 600 MWH (BPC Annual Report, 2010).

### 3.2 Concepts and formula of the Index of Electricity Generation, Importation and Distribution

The Index of Electricity Generation is a Laspeyres index. The weighted average for electricity generation equals one because there are no various electricity products. The index is thus calculated using the formula;

$$I = \frac{\sum R_i * W_i}{\sum W_i}$$

Where;

**I** is the index

**R** is the electricity generation relative

**W** is the weight

The electricity generation relative for the quarter has been calculated by using the formula:

$$R_i = \frac{P_{ic}}{P_{io}} * 100$$

Where **P<sub>ic</sub>** is the electricity generation of the current quarter and **P<sub>io</sub>** is the generation of electricity of the base year.

The calculation of the monthly generation indices is based on the volume of electricity units produced.

### 3.3 Base Year

The base year, also referred to as **reference period** used in this brief is 2013, which is set at 100. The selection of the reference period was informed by the availability of relevant data and synchronization of data with other sectors within the industry.