# Energy Efficiency Plug Device Systems in South Africa for bigEE

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Abbreviations and acronyms

| Abbreviation/acronym | Description |
|---|---|
| EE | Energy Efficiency |
| BAT | Best Available Technologies |
| POET | Performance, Operation, Equipment and Technology |
| Plug Device | The totality of office equipment. |
| LCD | Liquid Crystal Display |
| OLED | Organic Light-Emitting Diode |

The objective of this energy efficiency (EE) document is to provide useful information of the best available technologies (BAT) of existing plug devices in office buildings in the South African and international markets.

# 1 Introduction

## 1.1 The scope of Plug Devices

In this document, the plug devices represent the totality of office appliances that are usually found in office/government/university buildings. The plug devices include but not limited to computer monitors and displays, desktop/laptop computers, printers, scanners and multifunctionals.
Information on plug devices is provided in terms of the performance, operation, equipment and technology (POET) framework. When possible, the information is classified in to groups of South Africa best available technologies and practices and International best available technologies and practices.
The feasibility of using energy efficiency technologies outlined in this report shall be evaluated based on the incremental investment costs incurred to achieve energy and energy cost saving. An easy and quick decision making indicator is the payback period. A maximum payback period should be fixed for each energy efficiency technology or optimal component design. The energy efficiency technology or optimal component design will be recommended if its payback period does not exceed the maximum payback period.

# 2 Plug Device system Technology

## 2.1 Displays

A. International best available technology/practice: Reduce the power consumption of the computers by replacing the old monitors by energy efficient ones. Furthermore, the energy consumption of the monitors can be optimized by the power saving settings of the operation system.
B. South Africa best available technology/practice: Monitors and displays are rated and labeled as per the South African energy label which also indicates their level of energy efficiency.

## 2.2 Computers

A. International best available technology/practice: Improve the energy efficiency of the computers by employing more energy efficient models subject to energy rating, e.g., the Energy Star label.
B. South Africa best available technology/practice: N/A.

## 2.3Printers/Scanners/Multifunctionals

A. International best available technology/practice: More energy efficient models can be applied subject to energy efficiency rating system, e.g., the Energy Star label.
B. South Africa best available technology/practice: South African energy label includes the rating of printers/scanners, indicating their energy efficiency.

## 2.4Recommendation and Comments

South Africa available technologies and International available technologies shall be used based on the available local standard.

# 3Plug Device system Equipment

## 3.1Monitors

A. South Africa best available technology/practice: Flat screen monitors are widely used in South African offices. Most of the flat screen monitors use Liquid Crystal Display (LCD) panels (Chin and Chen, 2004), which consume less electricity and emit less heat.
B. International best available technology/practice:
    - LCD monitors are widely used.
    - New models of monitors using Organic Light-Emitting Diode (OLED) (Elze, Taylor and Bex, 2013) panels are being deployed nowadays, which consume even less electricity compared to LCD monitors.

## 3.2Computers

A. South Africa best available technology/practice: N/A
B. International best available technology/practice: Laptop computers that consume much less electricity compared to desktop computers should be used in office buildings. The average power of a laptop computer is 20 watts when the average power of desktop computers is 90 watts. The average power is estimated under light workload, e.g., documents preparation or internet surfing. Computers undertaking heavy computational workload are excluded.

## 3.3Printers

A. South Africa best available technology/practice: South African energy label A and above models are deployed in office buildings

B. International best available technology/practice: Models with Energy star labels are deployed in office buildings.

## 3.4 Scanners

A. South Africa best available technology/practice: South African energy label A and above models are deployed in office buildings
B. International best available technology/practice: Models with Energy star labels are deployed in office buildings.

## 3.5 Multifunctionals

A. South Africa best available technology/practice: South African energy label A and above models are deployed in office buildings
B. International best available technology/practice: Models with Energy star labels are deployed in office buildings.

## 3.6 Recommendation and Comments

South Africa available equipment shall be used according to the local context.

# 4 Plug Device system Operation

## 4.1 Computer monitor operation

A. South Africa best available technology/practice: N/A.
B. International best available technology/practice: Turn off time of the monitors is set to be less than 2 minutes.

## 4.2 Recommendation and Comments

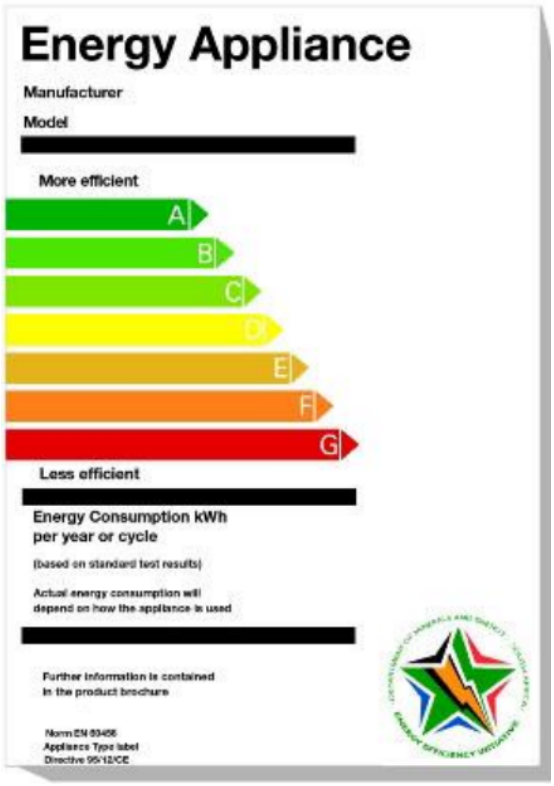
International available practice shall be used for high energy efficiency.

# 5 Plug Device system Performance

## 5.1 Energy rating system

**A.** South Africa best available technology/practice: The South African energy labels as described in (The green business guide, 2017).

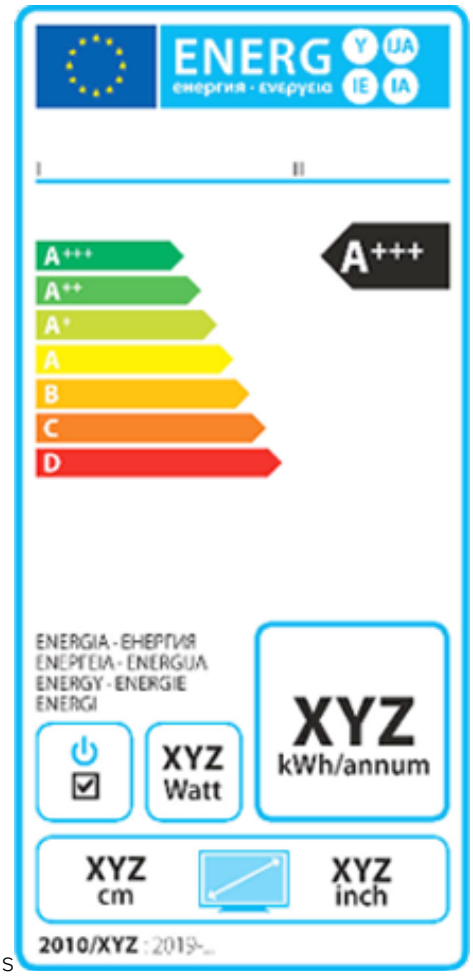
- The current South African label gives a rating from A down to G – with A being the best. Old equipment may be the inefficient equal of a G-rated appliance. In addition, to the alpabetical rating, the label should also carry total energy consumption per year or cycle in kilowatt hours. It is often more useful to compare the energy consumpiton information between models rather than to compare the alpabetical rating (mygreenhome.com, 2017).




**B.** International best available technology/practice:

- The Energy Star label – US (Energystar.gov, 2017): The blue Energy Star label system was developed in the United States but it is used in many other countries. The label guarantees the equipment to be fairly efficient; however, it provides no further grading (mygreenhome.com, 2017).

- European Union energy label – EU (Newenergylabel.com, 2017): The EU ratings look very similar to the South African label, which are based upon the EU model. And the standards are also similar, therefore, a B-rating on an EU label is equal to a B-rating on an South African label. However, the EU label has added higher grades as appliances have become more efficient, all the way up to A+++. South African labels with higher efficiency grades are being planned for release in the future. The EU label may include extra information – depending upon the appliance – such as water consumption or noise levels measured in decibels (dB) (mygreenhome.com, 2017).

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## 5.2 Recommendation and Comments

South Africa available practice shall be used.

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Your guide to energy efficiency in buildings.

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The bigee.net platform informs users about energy efficiency options and savings potentials, net benefits and how policy can support achieving those savings. Targeted information is paired with recommendations and examples of good practice.

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