

ENERGY STAR[®] Computers Showcase:

The Department of Minerals and Energy Shows the Way

June 1999

1. Executive Summary

The Department of Minerals and Energy (DME) is responsible for the oversight and management of South Africa's energy and mineral resources. Ensuring the wise and efficient use of these resources is an important part of that mission. As the DME's 1998 White Paper on Energy noted:



"Since expenditure on energy constitutes a large portion of the country's GDP (15%),...it is necessary to give attention to the effective and efficient use of energy. Energy efficiency and energy conservation considerations must therefore form part of an overall energy policy."

While DME provides enormous guidance to the country by promulgating policies that promote energy efficiency awareness and encourage energy-efficient practices, the DME has also proven that it can lead by example. In an office environment like that of the DME's headquarters at the Synodal Centre in Pretoria, computers and other office equipment can account for nearly 10% of the facility's electricity demand. By recently enabling the ENERGY STAR feature on 25 percent of the computer monitors at the Synodal Centre, the DME is saving 7,400 kilowatt-hours of electricity per year, reducing its annual energy bill by R2,220 (US\$290) and protecting the natural environment. Enabling all computers and monitors in the department would save 10 times as much money and electricity.

2. Background

Computers and other office equipment are one of the most rapidly growing energy users in South African commercial buildings. Due to the success of the U.S. Environmental Protection Agency's ENERGY STAR Computers programme, almost all the computers sold in South Africa have ENERGY STAR capability. The ENERGY STAR feature allows computers and monitors to go into a low-power mode when they are not being used, quickly re-powering when the user touches the keyboard or moves the mouse. In South Africa, however, the ENERGY STAR feature is rarely enabled. By simply enabling the feature on existing computers, a significant opportunity exists to:

1. reduce electricity use (and the accompanying burning of coal) in South Africa;
2. save money on companies' electricity bills; and
3. protect the natural environment by reducing the demand for coal and water to generate electricity.

The graph and table below depict a first-order estimation of the annual per computer potential for energy, rand and greenhouse gas emissions savings.¹ The range in estimates derives from current uncertainty in actual use patterns of computers in South Africa.

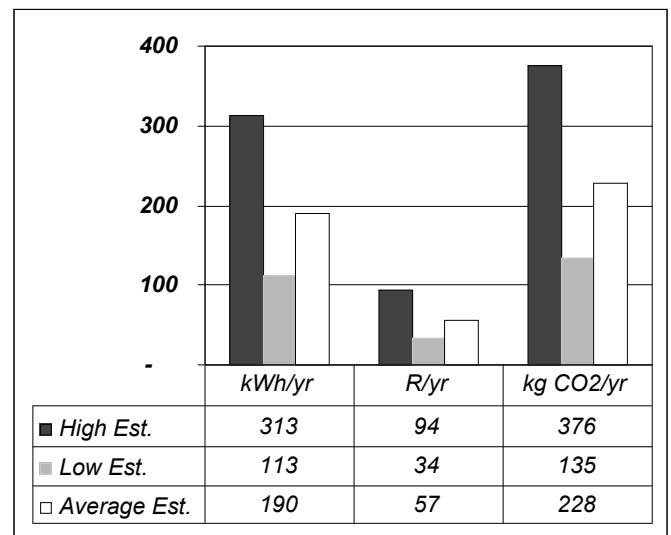


Figure 1. Potential savings per computer.

Under the conservative "average estimate" the annual electricity, rand and greenhouse gas savings from enabling the ENERGY STAR feature on the country's installed base of 2.1 million personal computers is nearly 400 gigawatt-hours, R120 million (about US\$27 million) and 480,000 metric tons of carbon dioxide, respectively.² In other words, efficient computers could reduce the annual electricity consumption of South Africa's commercial sector of ~13,000 gigawatt-hour by almost three percent.³

¹ Estimates derived by IIEC-Africa.

² From BMI Techknowledge, a market research firm specialising in computer hardware and software.

³ National Electricity Regulator, 1996 *Electricity Supply Statistics for South Africa*, 1997.

3. The DME's Success

In March 1999 as part of a planned upgrade of their information systems, the Department of Minerals and Energy (DME) purchased 70 new desktop computers for its headquarters at the Synodal Centre in Pretoria. The new computers and monitors were all ENERGY STAR compliant, but the ENERGY STAR feature was not enabled at the time that DME took ownership of the machines.

Mr. Pieter Venter, the DME's Network Controller, ensured that the ENERGY STAR feature on all 70 monitors was enabled at the time the machines were set up. The monitors were set to enter low-power mode after 30 minutes of inactivity. Although his technical staff is stretched thin, Mr. Venter reports that enabling the ENERGY STAR feature was quick and easy.

Mr. Venter opted not to enable the ENERGY STAR feature on the computers out of concern that entering low-power mode could cause the machine to lose its connection to the network. He is, however, testing the effect of computer power-down, and if the results are satisfactory, Mr. Venter will eventually enable the computers as well.

IIEC-Africa estimates that the average computer at DME is on for 10.5 hours per day and that the new monitors will spend 4 hours in "on mode" per day and 6.5 hours in "low-power mode" per day.⁴ The annual electricity savings from this simple measure will save the South African government R11 100 (US\$1440) over the expected five-year life of the computers. In addition, DME staff remains satisfied with the performance of their computers and has not complained to the IT department about the short delay in monitor start-up.



Energy Star computers can help us save money, energy and South Africa's environment.

Mr. Venter first learned about the ENERGY STAR feature when Mrs. Elsa du Toit, the DME's Deputy Director EDI Restructuring and Development Policy, introduced him to representatives from the U.S. Environmental Protection Agency and IIEC-Africa in May 1998. Mrs. du Toit was working with IIEC-Africa on a range of energy efficiency initiatives and was interested in simultaneously making the DME's facility a showcase of good energy stewardship.

⁴ IIEC-Africa will refine this estimate based on network logon data and a survey of DME staff.

4. The Calculations

DME's new computers draw 130-watts in "on-mode"—75-watts for the monitor and 55-watts for the computer. When the monitor goes to "low-power mode" its energy consumption drops to 10-watts, a savings of 65-watts. Since an ENERGY STAR enabled monitor will spend 6.5 hours per day in "low-power mode" rather than "on-mode," the monitor will save 422.5 watt-hours per day ([6.5 hours/day] x [65 watts]).

On an annual basis across all 70 new machines, the electricity savings will come to ~7 400 kilowatt-hours ([422.5 watt-hours per day per monitor] x [70 monitors] x [250 days per year] ÷ [1000 watts per kilowatt]). DME is currently paying R0.30 ((US\$0.04) per kilowatt-hour, so enabling the ENERGY STAR feature will save the government R2,220 per year ([7 400 kilowatt-hours] x [R0.30 per kilowatt-hour]).

The environmental benefits are also large. Generating one kilowatt-hour of electricity creates 1,2 kilograms of carbon dioxide and consumes 1,2 litres of water. As a result, DME's effort will reduce carbon dioxide emission by 8,9 tons and save 8 900 litres of water.

5. Next Steps

Mr. Venter and his team have proven that saving energy is easy and cost-effective, and IIEC-Africa plans to build on their success. Using the DME as an example, IIEC-Africa is working with the State Information Technology Agency and the State Tendering Board to specify that all future computers that the government buys come with the ENERGY STAR feature already enabled. This will ensure that the government saves electricity, money and the environment with every computer they buy. In the future, IIEC-Africa plans to expand this initiative to private firms and to other ENERGY STAR capable office equipment.

6. To Learn More

To learn how to start saving energy at your office or for more information on ENERGY STAR Computers contact Mr. Bob Price or Mrs. Elsa du Toit, DME, Private Bag X59, Pretoria 0001; elsa@mepta.pwv.gov.za.

The term ENERGY STAR and the ENERGY STAR logo are U.S. registered marks of the United States Environmental Protection Agency.