



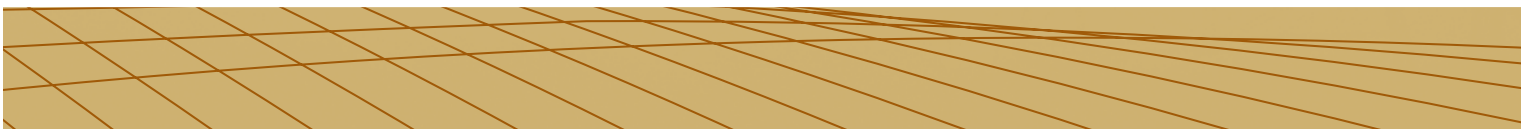
Eskom Build Programme

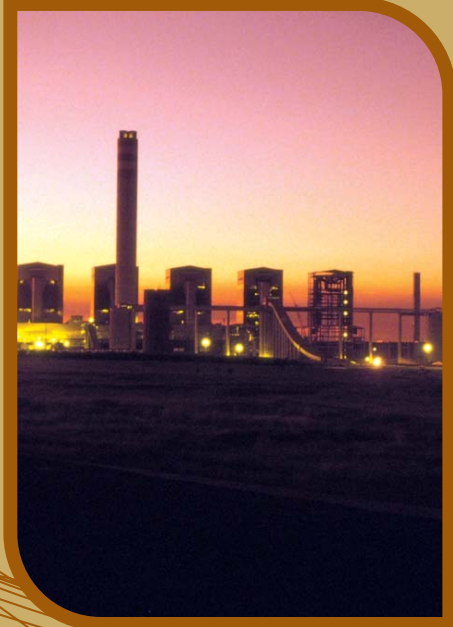
June 2007



public enterprises

Department:
Public Enterprises
REPUBLIC OF SOUTH AFRICA





Background

In June 2004 the Government initiated a new focus for state-owned enterprises (SOE) in response to President Thabo Mbeki's call, during the State of the Nation address, for an investment-led strategy with SOE playing a key role in economic development. Eskom and other SOE are now being viewed as key drivers of growth, redistribution and global expansion.

For many years Eskom has operated in an environment of surplus capacity. However, this surplus capacity has now been exhausted with increased consumer demand. Eskom's power system will remain tight over the next five years with an increased likelihood of power interruptions. This trend is set to continue at least until the first new coal-fired base load power station is commissioned in 2011.

Independent power producers (IPPs) will be introduced in respect of new capacity requirements. The Department of Minerals and Energy (DME) is in the process of procuring approximately 1000MW of new capacity from IPPs through a competitive tender process. Over the next five years, Eskom will still take the lead in meeting South Africa's energy needs with a mandate to invest an amount of approximately R150bn.

During the past two years, Eskom revised its business model to reflect the decision of the Eskom Board of Directors and management to focus on Eskom's core business – the generating, transporting, trading and retailing of electricity. Eskom will continue to be a catalyst for economic and social change and is well prepared to fulfill these requirements, while also continuing to improve its efficiencies. The current focus on implementing the capacity-building programme will continue in tandem with government-directed restructuring of the distribution sector.

Government has declared that of the new capacity to be built, Eskom will target approximately 70% thereof (in MW), with the balance from independent power producers.

Eskom's new business model has been driven by three main drivers - the need to prepare for market restructuring, the need to introduce a more integrated approach to capacity growth and the need to maximise synergies and operational excellence.

The growth in gross domestic product in recent years has been greater than expected. Against the backdrop of a rapidly-declining surplus and a growing economy, Eskom had to develop an integrated approach to the issue of capacity creation, not only in terms of the mix of options within the power-generation field, but also in the transmission and distribution fields. In the long term Eskom will plan for a reserve margin of 15% (reserve margin includes Demand Side Management). The actual operational reserve margin on the system at any point in time will however differ due to factors such as maintenance plans at power stations and deviations between actual and forecast demand.



THE FORUM OF EXECUTIVES IN ENERGY

The forum, which is co-chaired by the Director-General of the Department of Minerals and Energy, and the Director-General of the Department of Public Enterprises, aims to expedite the delivery of projects in the Capital Expansion Programme so as not to compromise security of supply. The Forum also has representatives from the Department of Provincial and Local Government, the Department of Environmental Affairs and Tourism, Eskom, the National Energy Regulator of South Africa and the National Nuclear Regulator.

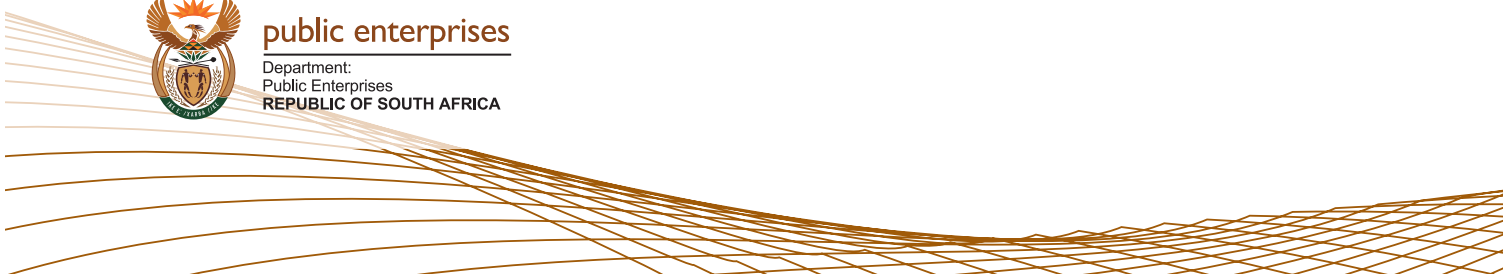
The fundamental objectives of the Forum of Executives in Energy are as follows:

- To integrate the work programme for energy in South Africa
- To develop an effective National plan to deal with national emergencies due to the loss of power
- To proactively devise contingency plans to minimize the impact of such interruptions to the power supply
- To facilitate co-ordinated planning, EIA approvals, land acquisitions and licensing of projects that need to be built
- To ensure alignment between policy and implementation plans
- To raise significant challenges and/or opportunities
- To tighten working relationships between Policy departments, Regulators, Shareholder departments and Operating Entities
- To direct the work of the Technical Working Group



public enterprises

Department:
Public Enterprises
REPUBLIC OF SOUTH AFRICA



KEY OBJECTIVES OF THE CAPACITY EXPANSION PROGRAMME:

- Delivery of the capacity expansion programme to support economic growth
- World-class safety performance
- Build strong partnerships and strategic alliances with local and international partners
- Development of critical skills for the Electricity Supply Industry
- Promote the development of SA's manufacturing industry, including Broad Based Black Economic Empowerment
- Maintain Eskom's position as the world's lowest cost electricity producer
- To maintain SA's reputation as an attractive investment destination for the energy-intensive industry.

Earlier this year the Eskom Board approved an increase in Eskom's 5-year spending on the new build programme from R97 billion to R150 billion. This R150 billion, as approved by the Board, is for the period starting on 1 April 2007 up to 31 March 2012.*

Generation projects account for about 72% of the R150 billion, Transmission about 12%, and Distribution about 14%. The rest of the funds will be used on other projects to diversify Eskom's energy mix.

The Eskom Board's decision to increase the amount from R97 billion to R150 billion was mainly driven by a change in an electricity demand growth assumption from 2,3% to 4% growth. At 4% electricity demand growth, Eskom's new build programme will now be aligned to government's target of a 6% GDP growth between 2010 and 2014. In terms of the revised plan, Eskom will now deliver an additional 22 000MW by 2017 against the previous target of 12 500MW.

1. Eskom's Existing Capacity

Eskom has an installed capacity (total nominal capacity) of 42 011MW, with a total net maximum capacity To get from installed to net maximum, subtract the mothballed station and the amount of electricity used by power stations. of 36 398MW as reported in the Eskom 2006 Annual Report.

Eskom's plant mix as of 2006

Coal-fired	13 stations	32 256 MW
Gas turbine	2 stations	342 MW
Hydroelectric	6 stations	600 MW
Pumped storage	2 stations	1 400 MW
Nuclear	1 stations	1 800 MW
Total	24 stations	36 398 MW

* To get from installed to net maximum, subtract the mothballed station and the amount of electricity used by power stations.

On the 1st of January 2007, and given that the utility is returning to service mothballed stations, Eskom's net maximum capacity was 36 748MW. As of the 1st of June 2007, and given that the utility is returning to service mothballed stations has commissioned the two new Open Cycle Gas Turbines in Atlantis and Mossel Bay, Eskom's net maximum capacity was recorded is now as 38 368 MW excluding imports from Cahora Bassa.

2. Eskom's Reserve Margin

Over the years, Eskom had a steady decline in its reserve margin. Currently, the reserve margin is 8-10% which is below the global benchmark of 15%. The reserve margin has declined from 25%, 20% and 16% in 2001, 2003, and 2005 respectively. The declining reserve margin can be attributed to several reasons. These include amongst others the fact Eskom started late with construction of new capacity, a growing customer base, and an economy that is growing at a rate higher than anticipated.

To compensate for the low reserve margin, Eskom have accelerated some of the projects, in particular the return to service projects. The Eskom Board has also approved the Open Cycle Gas Turbine (OCGT) Gas 1 project, which is to deliver an additional 1028 MW of open cycle gas turbine plant. This is an extension of the two new OCGTs in Atlantis and Mossel Bay that Eskom has recently commissioned.

In the long term Eskom will plan for a reserve margin of 15% (reserve margin includes DSM). The actual operational reserve margin on the system at any point in time will however differ due to factors such as maintenance plans at power stations and deviations between actual and forecast demand.

3. Meeting the Demand – Winter 2007

Eskom's forecasted annual peak for winter 2007 is 36 306MW, equating to a forecasted demand growth of 4.3 % on 2006. The demand for electricity continues to show a robust growth. Since the start of winter, almost all power system records for weekdays and weekend have been broken. The latest SA System Power demand record was set on 07 June 2007 with 36 174 MW supplied. Compared to the previous year's record of 35 479 MW, the new record shows an increase of 695 MW.

With 38 368MW of own plant available on-line in Eskom, 1 500MW available from Cahora Bassa at Apollo, and the Interruptible Load Supply and Demand Market Participation agreements, there is sufficient capacity to meet the expected demand. However, the reserve margin remains low.

4. Capacity Planning at Eskom

Due to the long lead times as well as the size and complexity of new power station development, a rigorous approach to capacity expansion planning is needed which takes a long term view of future demand and capacity availability. There is a hierarchy of plans in the energy sector in South Africa.

The Integrated Strategic Electricity Plan (ISEP) is Eskom's modelling tool to plan its future capacity strategy. It identifies the timing, extent and type of new capacity required by Eskom over the next 20 years and looks at both demand-side and supply-side technologies. Eskom reviews its ISEP on an annual basis as part of its strategic and business planning process. All required investments identified through the ISEP planning process are subject to rigorous investment appraisal. Most importantly, these would be subject to approval by the government (i.e. the shareholder), the National Energy Regulator and Eskom's Board of Directors. ISEP is important for sustainability in the long term as well as evaluation of technologies and resource utilisation.

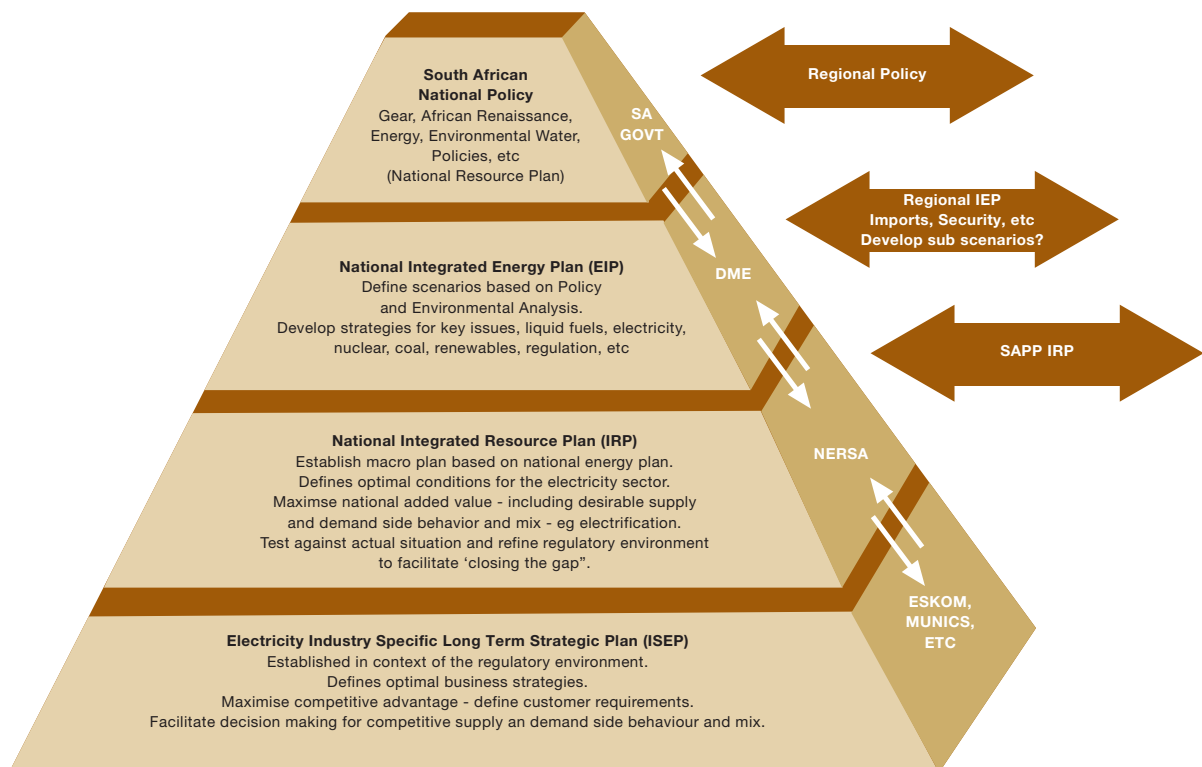


public enterprises

Department:
Public Enterprises
REPUBLIC OF SOUTH AFRICA

Feasibility studies are in progress for a range of future power development opportunities and technologies including conventional pulverised coal, fluidised bed combustion of coal, open cycle gas turbines, pumped storage, combined cycle gas turbines, Pebble Bed Modular Reactors, and renewables. In addition, Eskom is investigating importing power from neighbouring countries.

Eskom's current plan entails more than 40 000MW generating capacity addition over the next 20 years. Eskom has adopted a forecast that is in line with reaching a 6% GDP growth rate between 2010 and 2014. The plan is based on an average annual electricity demand of 4% over the full period. This long term plan offers the utility an opportunity to diversify the energy mix.



FUNDING STRATEGY

Eskom will fund 50% of the capital expenditure requirements from retained earnings, with the balance financed from debt. The envisaged debt funding will include issuing local and foreign (international) bonds, as well as the use of export credit facilities. Eskom's borrowing requirement over the next five years (2007/8 - 2011/12) is estimated to reach up to R100 billion. For the 2007/08 financial year, Eskom's borrowing is estimated to be R13 billion.



5. Update on the capacity expansion projects:

- **The Return to Service (RTS):**

The return to service of the three stations involves an investment expenditure totalling some R16 billion spread over a number of years. The three stations have a combined nominal capacity of 3 800MW. They were built in the 1960's, and were mothballed due to high excess capacity in the late 1980's and 1990's. Half of the units in Camden and Grootvlei were mothballed at the end of 1988. In 1990, Komati, Camden and Grootvlei were completely mothballed.

The following is an update on the three stations:

- Camden in Ermelo: The station has 8 units of 200MW each, with a total nominal capacity of 1 600MW. Camden was built and commissioned between 1966 and 1969. The first unit of Camden went into commercial service in 1967.
- For the first time in 15 years, Camden Power Station supplied electricity for the winter of 2005. Currently, Units 4,5,6,7,8 of Camden Power Station are in Commercial Operation to the national electricity grid and they supply the national demand for electricity. The target date for the commercial operation of the last unit of Camden remains 2008.
- Grootvlei in Balfour: The station has 6 units of 200MW each, with a total nominal capacity of 1 200MW. The first unit of Grootvlei went into commercial service in 1969.

A partnering contract with a joint venture company comprising Fluor SA (Pty) Ltd and Pangaea International (Pty) Ltd was concluded in December 2004 to assist the Eskom team with project management and engineering services. The project is on track with commercial operation of the first unit planned for this year. The target date for the last unit is 2009.

Komati in Middleburg: The station has 5 units of 100MW each and 4 units of 125MW each, with a total nominal capacity of 1 000MW. The first unit of Grootvlei went into commercial service in 1962.

The first unit (unit 9) is planned to be commissioned this year with the last unit scheduled to be in commercial operation by 31 October 2011.

- **Arnot Capacity Increase:**

Arnot power station, situated near Middelburg, in Mpumalanga, is one of South Africa's oldest power stations. The station was partially mothballed between 1992 and 1999, when three of its units were put into reserve storage due to the surplus generating capacity Eskom had at the time. The units were re-commissioned in January 1997, November 1997 and December 1998 respectively, as the demand for electricity increased. During its return-to-service exercise in 1999, major technical improvements were implemented. Arnot has since performed well, supplying a maximum of 1 980MW to the national transmission network.

Currently, Arnot is undergoing extensive refurbishment in order to meet increasing demand for power. The aim is to increase the capacity of Arnot by 300MW. Work has commenced and the upgrade is expected to be complete by November 2010.



public enterprises

Department:
Public Enterprises
REPUBLIC OF SOUTH AFRICA

- **The OCGT Project:**

Eskom is spending R3.5 billion on the construction of two new gas peaking stations in the Western Cape. The one station called Ankerlig Power Station is located in Atlantis and will generate 588MW (4 x 147MW units) and the second plant called Gourikwa Power Station is located in Mossel Bay, just outside the PetroSA facilities, and will generate 440MW (3 x 146MW units). These units will be developed in such a manner that they can be converted to Combined Cycle Gas Turbines should natural gas be found in any major quantities on the West Coast.

In July 2005, Eskom awarded Siemens AG a contract for the design, manufacture, supply, delivery to site, installation, commissioning, and testing of seven OCGT units for the two sites. Construction at both sites commenced in January 2006, and is progressing well.

The construction of both Ankerlig and Gourikwa Power Stations is almost complete with all seven unit of the two stations in commercial operation.

- **Gas 1 Project (OCGT):**

The Eskom Board has approved the Gas 1 project, which is to deliver an additional 1028 MW of open cycle gas turbine plant. This decision of the Board will see an extension of the two new OCGTs that that are currently under construction in Atlantis and Mossel Bay.

- **Medupi Power Station:**

The initial investment decision for the next base-load power station, code named Project Alpha. Located in Lephalale, Limpopo Province, Project Alpha Medupi Power Station will add about 4500MW (6 x 750MW) of base load coal-fired capacity. The new station will include super critical boilers, which are able to operate at higher temperatures and pressures than previous generation boilers and, more importantly, operate with greater efficiency. The station will be Eskom's fourth dry-cooled base-load station after Kendal, Majuba and Matimba.

All the necessary approvals are in place with access to site obtained. Construction activities have now commenced.

- **Project Hotel (Pump storage):**

In March 2006, the Eskom Board approved an investment of R8.9 billion to construct a new pumped storage scheme code named Project Hotel (also called Braamhoek Pumped Storage). In terms of Eskom's Integrated Strategic Electricity Plan, three such pumped storage schemes will be needed within the next 20 years, the first as soon as 2012.

The new pumped storage scheme will be located 23km northeast of Van Reenen, within the Little Drakensberg mountain range on the border between the Free State and KwaZulu-Natal. Project Hotel has four units of 333MW each, with a total capacity of 1 332MW. The station will comprise two dams (one at the top and the other at the bottom of the escarpment), underground waterways, an underground powerhouse complex, access tunnels and access roads.

PFMA approval for Project Hotel has been granted by the Ministry of Public Enterprises, with the National Energy Regulator of South Africa having granted Eskom a license to construct Project Hotel.

Exploratory tunnelling has commenced. The main construction activity is planned to commence in mid 2007. The station will be fully operational by 2013 with the first unit on load in 2012. As part of delivering Project Hotel, a partnership was formed between Eskom, Birdlife South Africa and Middelpunt Wetland Trust.

The following are the objectives of the partnership:

- To ensure integration of environmental factors into the planning and implementation phases of the project;
- To investigate the value of social, economic and environmental values of the area to users, and to measure the impact of the project on the users;
- To effectively monitor and manage environmental impacts relevant to the partnership at the site before, during and post construction; and
- To initiate and monitor appropriate environmental projects.

The partnership will exist for at least 10 years, and will be reviewed every five years. Eskom has committed considerable funding for the execution of projects and studies identified and approved by the partnership steering committee.

- **Transmission Projects:**

Strengthening of the electricity infrastructure in Southern Africa does not only involve the building of new power stations. Key to ensuring stability of supply is a strong transmission line network.

The strengthening of the transmission system into the Cape has been ongoing for some time. Since 2002, work has been done on strengthening the North-of-Hydra part of the system. Work is currently being done on the South-of-Hydra part of the system and the Southern Cape grid. On the main corridor between the Free State and the Western Cape, installations of 400kV capacitor banks are currently under way. The expected completion date of all this work is mid-2007. Additional activities aimed at reducing losses and increasing transfer capacity is already under way.

The next phase will include the Cape project entailing the building of an additional 1 450km of 765-kV power lines to strengthen the existing system. The line runs from Zeus in Mpumalanga to the new Omega substation in Cape Town and entails an R6.3 billion investment. In terms of the current schedules, the proposed infrastructure is expected to be in service by 2010.

Beyond the immediate transmission infrastructure plans, various options are being considered to further strengthen the transmission grid through the implementation of 765kV reinforcements and possibly through the introduction of high-voltage direct current (HVDC) into the Cape network. These plans, however, need to be developed in an integrated manner, taking into account possible new generation options for the Cape networks.



public enterprises

Department:
Public Enterprises
REPUBLIC OF SOUTH AFRICA

Eskom's other transmission strengthening projects include:

- Platinum Basin - Expansions include the development of a new transmission line and three new substations in Brits, Steelpoort and Rustenburg. Construction of the Apollo-Dinaledi line is underway.
- Eastern Cape (Southern grid) - Project entails the construction of a new 407km 400kV line between Beta and Delphi substations, expansion to Grassridge substation and installation of an additional 400/132kV, 500MVA transformer.
- Vaal Triangle - Project improving backup supply with the best technical and economical solution to problems in the Vaal Triangle area.
- KwaZulu-Natal - Expansions, expected to be approved in 2007, will include the construction of a 200km 765kV line, to be run at 400kV, between Majuba Power Station and Umfolozi substation.
- Johannesburg North - Construction on the substation is complete and provides 400kV in-feed to the network, which strengthens the network supplying the area.

6. Accelerated Demand Side Management

The objective for the accelerated demand side management (DSM) programme in South Africa is to cumulatively achieve 1 900MW by 2009, 3 000MW by 2012 and 8 000MW by 2025. The cost to Eskom is expected to be approximately R 11 billion.

Eskom's overall accelerated DSM Strategy includes:

- Set clear but flexible demand (MW) and energy (GWh) growth targets and compact for these.
- Create regional awareness of looming capacity shortages through responsible communication of a balanced message.
- Clear the current DSM project pipeline and launch load reduction projects in residential, industrial, mining and agriculture markets.
- Drive towards development and implementation of 'DSM' tariffs to end consumers.
 - Time-of-use tariffs - very few municipalities pass on TOU tariffs to their commercial and industrial customers and none to their residential customers.
 - Buy-back tariffs for distributed generation that will enable purchasing of excess capacity from smaller generators.
 - Adjustment of demand bidding of DMP tariffs to incentivise participation by smaller customers.

Eskom will further develop and implement a capacity rationing mechanism from 2007 to 2012 to ensure maximum value added to the economy and Eskom from the available generation capacity (in line with ASGISA objectives).

For further information visit www.eskom.co.za



Suite 301, Infotech Building, 1090 Arcadia Street, 0083 Private Bag X15, Hatfield, 0028

Pretoria Tel: (012) 431 1000 Fax: (012) 431 1039

Cape Town Tel: (021) 461 6376 Fax: (021) 465 1895/461 1741

www.dpe.gov.za