Presenting the South African Energy Sector
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Overview of the South African Energy Sector

Sources of power

Electricity production

- Coal-Fired: 92.6%
- Nuclear Power: 5.7%
- Gas Turbine: 0.1%
- Hydroelectric: 0.5%
- Pumped: 1.2%

Electricity consumption

- Residential Segment: 36.8%
- Commercial: 11.4%
- Transportation: 2.7%
- Industrial Segment: 40.9%
- Other: 8.1%

Overview

- Electricity market grew by $1.4bn in 2009 to reach $5.6bn
- Electricity generation dominated by state-owned power company Eskom, which currently produces over 96.7% of the power used in the country
- Eskom has a current nominal installed capacity of 44,175MW
- Government addressing electricity supply issues with Eskom and Independent Power Producers ("IPPs")
- South Africa needs over 40,000 MW new generation capacity by 2025
- Eskom is part of Southern African Power Pool, a group of utilities in the region aiming to create a common market for electricity in the region

Transmission and Distribution Overview

- Currently, the transmission of electricity in South Africa is undertaken by Eskom
  - The company has over 28,000km of transmission lines spanning the entire country
- Electricity distribution is the final stage in the delivery of electricity to end users, currently undertaken by Eskom, together with 187 municipalities
SA has a relatively infant but growing renewable energy industry.

Renewable energy will contribute a total of 18.2 GW by 2030 (about 42% of the new build):

- Wind – 8.4 GW
- Solar PV – 8.4 GW
- CSP – 1 GW
- Other – 0.4 GW

Minister made a determination for procurement of 3,625 MW across different technologies.

RE Independent Power Producers were invited to submit bids.

“Government is committed to diversifying its energy mix and this include the introduction of renewable energy at a large scale”
### Allocation to Preferred Bidders: Window 1

<table>
<thead>
<tr>
<th>Energy Type</th>
<th>MW Allocation</th>
<th>Percentage</th>
<th>MW Allocation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar PV</td>
<td>631.53</td>
<td>43.6%</td>
<td>818.47</td>
<td>56.4%</td>
</tr>
<tr>
<td>Solar CSP</td>
<td>150.00</td>
<td>75.0%</td>
<td>50.00</td>
<td>25.0%</td>
</tr>
<tr>
<td>Wind</td>
<td>633.99</td>
<td>34.3%</td>
<td>1216.01</td>
<td>65.7%</td>
</tr>
<tr>
<td>Biomass</td>
<td>0.00</td>
<td>0.0%</td>
<td>12.50</td>
<td>100.0%</td>
</tr>
<tr>
<td>Biogas</td>
<td>0.00</td>
<td>0.0%</td>
<td>12.50</td>
<td>100.0%</td>
</tr>
<tr>
<td>Landfill gas</td>
<td>0.00</td>
<td>0.0%</td>
<td>25.00</td>
<td>100.0%</td>
</tr>
<tr>
<td>Small Hydro</td>
<td>0.00</td>
<td>0.0%</td>
<td>75.00</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Total MW</strong></td>
<td><strong>1415.52</strong></td>
<td><strong>39.0%</strong></td>
<td><strong>2209.48</strong></td>
<td><strong>61.0%</strong></td>
</tr>
</tbody>
</table>

#### Total Capacity - Bids Received

| Total Capacity - Bids Received | 2127.66 |

#### Percentage Preferred Bidders

| Percentage Preferred Bidders | 66.5% |

#### Number of Passing Bids

| Number of Passing Bids | 28 |
South Africa has very limited natural gas resources.

Natural gas accounts for 3% of energy consumption.

Awaiting outcome of the assessment of shale gas potential estimated to be approximately 485 trillion cubic feet by the USA Energy Information Administration.

Petro SA efforts to source gas for its Gas-to-Liquids facility in Mossel Bay from other African Countries.

IRP 2010 -2030 expects the imported gas to meet 6% of all new generation capacity and OCGTs to meet 8%
Clean Coal

- South Africa is committed to the management of efficient use of its coal through employment of Clean Coal Technologies such as Carbon Capture Storage (CCS) and the stabilization of CO$_2$ emissions.

- CCS development roadmap:
  - 2009 – Launch of the South African Centre for Carbon Capture and Storage under South Africa Energy Development Institute (SANEDI).
  - 2010 – Launch of Atlas on Geological Storage of in CO$_2$ South Africa.
  - 2011 – Regulatory Framework Development included in work plan.
  - 2016 – conduct a test injection experiment by end of 2016.
  - 2020 – commission a demonstration plant.
  - 2025 – commission a commercial scale plant.
Nuclear Programme

- Only one nuclear power station (Koeberg), a base-load station with a nominal installed capacity of 1,930 MW (c.5%).
  - Produced 12,806 GWh electricity in year ended 31 March 2010.

- It is intended that nuclear will comprises 17% of South Africa’s base load energy mix by 2030.

- 9,600 MW will be added by 2030.
Energy Efficiency Programmes

- Energy Efficiency target is to reduce final energy demand by 12% by 2015.
- Targeted sectors – industry and mining, power generation, commercial and public sector buildings, residential sector & transport sector.
- Industrial energy efficiency programme is underway and tax incentives and rebates are used to encourage sustainable energy sector development and energy use through efficient practices.
- Appliance labelling programme is currently underway – companies are encouraged to manufacture and sell appliances which are energy efficient i.e. Samsung and Phillips have already signed the voluntary accord and other companies are following suit.
- Implementing a fiscus programme where municipalities and Eskom are implementing energy efficiency technologies on streetlights, buildings and installation of Solar Water Geysers (1 million SWHs to be installed by 2015).
Incentives and Policies

Incentives:

- Rebates for installation of energy efficiency and demand side management interventions.
- Tax credits for deploying energy efficiency interventions.
- Tax credits for investing in Green field projects.
- Government allocated R 20 billion to Industrial Development Corporation (IDC) to invest in Green Projects.

Policies:

Summary of the Policy-Adjusted IRP Plans for South Africa’s generation mix

Planned New Generation Mix 2030

- Nuclear: 17.0%
- Solar PV: 14.9%
- Gas: 12.9%
- CSP: 2.1%
- Coal: 29.7%
- Hydro: 7.2%
- Wind: 16.3%

Time Schedule New Power Generation Building

- 2010-2014: 18.6%
- 2015-2019: 24.6%
- 2020-2024: 20.0%
- 2025-2030: 36.8%
THANK YOU....