

Demystifying Tariff Setting

The tariff conundrum – Lower rates now, blackouts later?



Does South Africa need a cost reflective tariff?

For years, low electricity costs have been a driver behind South Africa's economic growth and our competitiveness as a nation. Now, sharply rising electricity tariffs are beginning to have a significant impact on our country's economic sustainability. Based on most of the comments on Eskom's tariff application given at the NERSA public hearings in January 2013, general consensus seems to be that tariff adjustments should be kept to a minimum.

Short term measures to keep tariffs low may however have significant long term implications for sustainable electricity supply. Addressing the risk of long term electricity supply shortfalls is of paramount importance, but the question is whether it can be done in a socially and economically responsible manner. How do we find a balance between keeping electricity prices to a minimum and simultaneously ensuring continued investment in infrastructure? Are cost reflective tariffs a necessity for security of supply?

South Africa's demand for electricity has increased drastically in the past few decades, resulting in a reduced supply surplus to the point where our reserve margin is below international norms. Infrastructure investment is required to ensure that demand is met into the future. This investment comes at a significant cost, which Eskom, together with government support, is currently funding. Eskom requires a healthy balance sheet in order to meet its increasing debt repayment levels, and to

sustain this capital expansion programme. Eskom's debt is forecasted to rise above R300bn over the next five years from the current R179bn.

Eskom's proposed tariff increases are intended to move electricity costs to a point of cost reflectivity over the next five years, ultimately resulting in a utility and / or electricity industry that is self-funding and does not require financial support from government. A cost reflective price path is supported by the Electricity Pricing Policy (EPP) as regulated by NERSA. Achieving the point of cost reflectivity will surely result in attracting private sector capital to support infrastructure development, but will the costs associated with getting there be prohibitive to economic development for South Africa?

It is estimated that the current proposed increase in tariffs of 16% annually over the next five years will take the tariff to a point of cost-reflectivity. In the meantime, to survive, business needs to be innovative and think ahead of the approaching cost curve in order to maintain and obtain a competitive edge in the global economy.

Developments in the South African electricity sector

South Africa supplies two-thirds of Africa's electricity, with 90% of electricity generated in coal-fired power stations. Power generation is dominated by Eskom, the national wholly state-owned utility, which also owns and operates the national electricity grid. Eskom supplies about 95% of

South Africa's electricity and is ranked among the top seven global utilities in generating capacity.

Eskom does not have exclusive generation rights; however it has a practical monopoly on bulk electricity. It supplies electricity directly to large consumers such as mines, mineral beneficiaries and other large industries. In addition, it supplies electricity directly to commercial farmers and, through the Integrated National Electrification Programme, to a large number of residential consumers. It sells in bulk to municipalities, who then distribute to consumers within their boundaries.

Historically, South Africa has always had the privilege of a relatively large power supply reserve. In the early to mid-

2000's this began to change as strong economic growth led to rising electricity demand. A plan was needed to address the sharply declining reserve margin.

The Eskom Board of Directors took a decision in 2003 for the return to service of the three power stations, Camden in Ermelo, Grootvlei in Balfour and Komati between Middelburg and Bethal that were decommissioned in the late 1980s and early 1990s. In addition, after the load shedding events of 2008, a longer term capacity expansion plan was formulated by the Department of Energy - The Integrated Resource Plan (IRP), the latest version of which is depicted in Figure 1 below:

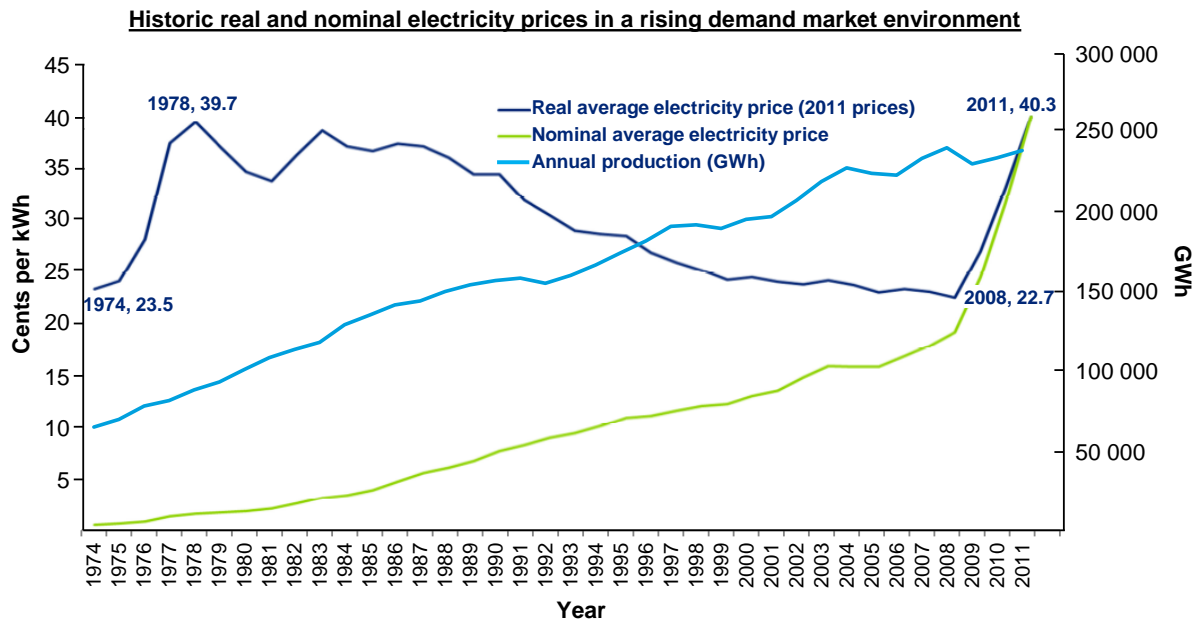
	New build options								Committed					Non IRP	TOTAL
	Coal imports	Nuclear	Import hydro	Gas – CCGT	Peak – OCGT ¹	Wind	CSP	Solar PV	Coal	Other	DoE Peaker	Wind ²	Other Renew.	Co-generation	
	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	
2010	-	-	-	-	-	-	-	-	380	260	-	-	-	-	640
2011	-	-	-	-	-	-	-	-	679	130	-	-	-	-	809
2012	-	-	-	-	-	-	-	300	303	-	-	400	100	-	1,103
2013	-	-	-	-	-	-	-	300	823	333	1,020	400	25	-	2,901
2014	500	-	-	-	-	400	-	300	722	999	-	-	100	-	3,021
2015	500	-	-	-	-	400	-	300	1,444	-	-	-	100	-	2,944
2016	-	-	-	-	-	400	100	300	722	-	-	-	-	200	1,722
2017	-	-	-	-	-	400	100	300	2,168	-	-	-	-	200	3,168
2018	-	-	-	-	-	400	100	300	723	-	-	-	-	200	1,723
2019	250	-	-	237	-	400	100	300	1,446	-	-	-	-	-	2,733
2020	250	-	-	237	-	400	100	300	723	-	-	-	-	-	2,010
2021	250	-	-	237	-	-	-	-	-	-	-	-	-	-	487
2022	250	-	1,143	-	805	-	-	-	-	-	-	-	-	-	2,198
2023	250	-	1,183	-	805	-	-	-	-	-	-	-	-	-	2,238
2024	250	-	283	-	-	-	-	-	-	-	-	-	-	-	533
2025	-	-	-	-	805	-	-	-	-	-	-	-	-	-	805
2026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	2,500	-	2,609	711	2,415	2,800	500	2,700	10,133	1,722	1,020	800	325	800	29,035

Figure 1: IRP 2010 Source: Department of Energy

Are cost reflective tariffs a necessity for security of supply?

Eskom embarked on the significant capital expansion programme to construct new generation capacity. Medupi, Kusile and Ingula will cost close to R300 billion in total. At 2008 tariff levels, Eskom was simply not in a financial position to fund a capital expansion programme of this size.

The sharp tariff adjustment since 2009 is clear from the graph below. The main causes are a shift in the valuation of the asset base, and the commencement of the new build programme.



Had the real average electricity tariff been maintained with a long term sustainability view rather than reduced through the 1990s and 2000s, South Africans would have had twenty years to come to terms with cost reflective electricity tariffs. The rapid increase has been far more difficult to deal with.

After calculating and adding up the proposed increases for the 3rd Multi-Year Price Determination (MYPD3) period, there will be a further 110% increase in electricity prices from 61c/kwh to 128c/kwh between 2013 and 2018. The current tariff application does not consider the longer term cost implications of additional large scale capital projects included in the IRP other than making provision for the introduction of Independent Power Producers (IPPs). Whether the tariff will be sufficient to support IPPs remains to be seen. Eskom's capital expansion programme ends with Kusile, beyond which the accountable parties for development and funding of the longer term aspects of IRP 2010 have not yet been determined.

Whichever way you look at it, South Africans need to change their behaviour to be more energy efficient.

How the tariff is determined

NERSA is required by the Electricity Regulation Act to allow an efficient supplier to recover its costs to supply plus a fair rate of return. A regulatory formula thus exists which creates the framework within which Eskom constructs its tariff application. NERSA is responsible for assessing whether the costs included in the application reflect those of an efficient supplier.

Tariff in this instance relates to the average tariff required by Eskom in terms of its interpretation of the regulatory formula. This tariff measured in cents/kWh, when multiplied by Eskom's planned electricity output results in Eskom's revenue requirement. The terms pricing / tariff and revenue determination thus relate to the same regulatory process of determining the amount of revenue that Eskom needs to recover its costs and earn a fair return.

It is at this point where conflicting views on what should or should not be allowed enter the fray. What are allowable costs, and what is an allowable return? In fact, as a State Owned Company, should Eskom be entitled to any return?

The debate around return is clouded by Eskom's monopolistic state, and the role that government plays in supporting economic development. In a competitive market for which the regulation was designed, it would be inconceivable for a fair return not to be allowed, as this would undoubtedly restrict any private sector participation, and render the regulation completely impractical. Whether the allowed return is ever converted by Eskom into a cash dividend to the shareholder is a very different debate. If the shareholder forgoes its return (as it has done in the last financial year), Eskom's financial position is strengthened, and there should be long term tariff benefit.

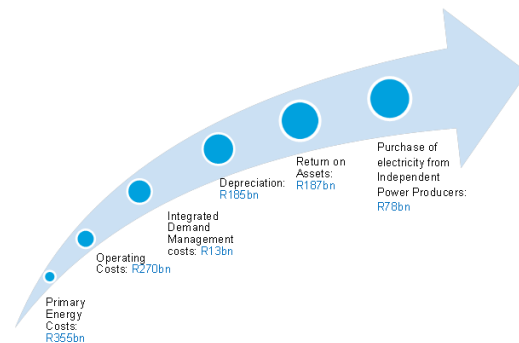
If one can agree that a return is permissible, the question is then what is the allowable rate of return, and what is the value of the asset base to which it is applied? The rate of return is determined and regulated by NERSA. One could argue that it should be set at a level that will be able to attract private sector investors into the market.

The valuation methodology applied in the determination of the value of the asset base has raised a point of debate; should it be based on the depreciated historical cost of the plant, or the depreciated replacement cost? The use of the depreciated historical cost approach has contributed to our low tariffs for many years, but this has recently changed. Using the replacement cost approach better approximates returns that would be required to cover the costs of funding a new facility at today's development costs, and thus is a preferred approach when trying to attain true cost reflectivity. It is the changeover from the historical cost approach to the replacement cost approach that has had a significant impact on the tariff, both by raising the value of the asset base, and increasing annual depreciation costs.

Other costs to be allowed typically include operating and maintenance costs, and tax. It is up to the regulator to determine whether the costs put forward by Eskom are reasonable.

Bearing this in mind, Eskom's Multi-Year Price Determination 3 (MYPD3) application has allowed for and anticipated the following components in determining their revenue requirement over the next five years:

Cost reflective tariff vs. pricing



Once Eskom's revenue requirement has been determined, the way in which it is ultimately collected from consumers can be varied. This results in different customer segments paying vastly different rates. As with most products, a greater volume purchased enables a lower cost, and indeed the same applies for electricity. Large Electricity users pay a lower cost per unit than lower volume users such as individuals. Furthermore, it is significantly cheaper to distribute electricity to bulk users as compared to residential customers, thus it is logical that residential users carry the costs of an extensive distribution network.

Notwithstanding the volume segmentation aspect, pricing needs to give consideration to two other key issues; protecting the poor, and enabling competitive industry and economic growth. Inevitably this leads to certain users cross-subsidising others and adds complexity to rate determination.

The final piece of the puzzle which has been a recent focus area for NERSA is the pass-through of the rate increase to municipal distributors. Municipal distributors are entitled to recover the costs of their distribution infrastructure from their customers; however there has been inconsistency in the past with respect to how they applied the NERSA approved tariff increases to their pricing structures. NERSA is now playing a stronger role in regulating the municipal tariff adjustments rather than stopping at the wholesale (Eskom) level.

Summary

Whilst the theory of rate determination is reasonably straight forward, the regulatory process and potential ramifications are complex and far reaching.

What is preferable? A vertically integrated state owned utility that doesn't earn a return, keeping tariffs as low as possible, but placing the burden of funding new infrastructure squarely on government which may not be sustainable in the long term. Or, a competitive generation environment requiring cost reflective tariffs in the short term (i.e. rising tariffs), but ultimately in theory through competitive behaviour driving lower costs of infrastructure

development and operations. Whilst it is not a simple solution, the latter option would appear to be a more sustainable one, but one which requires a short term pain period to reach cost reflectivity.

Either way, with an aging fleet, a desire for clean generation technologies and a capital intensive industry, the issue of rising tariffs is not going to disappear quickly. Perhaps South Africans need to realise that it is no longer a question of whether the price of electricity is too high, but rather one of whether we are using electricity efficiently?

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